

*Décor Corporation Pty Ltd v Dart Industries Inc.* [1988] FCA 682

**FEDERAL COURT OF AUSTRALIA**

LOCKHART, SHEPPARD & FOSTER JJ

**LOCKHART J:**

The Supreme Court of Victoria (King J.) held that closures for plastic food storage containers manufactured by the appellants infringed certain Claims of the complete specification of Australian letters patent number 462612 of which the respondent is the registered proprietor and which relates to an invention entitled "Three-Part Press Type Seal". King J. made orders for delivery up by the appellants to the respondent of all infringing articles in their possession, power, custody or control and directed that there be an inquiry as to damages or, at the respondent's option, an account of profits. His Honour held that Claims 1, 2 and 5 were valid (Claims 3, 4 and 6 are not in issue in these proceedings) and dismissed a counter claim of the appellants for revocation. The appellants appealed to this Court from the whole of the Supreme Court's judgment.

The appeal turns primarily on the construction of Claim 1 of the specification. It was common ground that Claims 2 and 5 are narrower than Claim 1 and contain no additional matter relevant to this case. As subsidiary arguments counsel for the appellants submitted that the Claims are invalid as not being fairly based on the description of the invention in the body of the specification and as not being useful. It was also argued that the Claims are bad for ambiguity. Although the appellants appealed from King J.'s order for delivery up to the respondent of the infringing articles, this ground of appeal was abandoned in the course of argument.

The specification is dated 18 February 1972. The priority date of the specification is 9 March 1971 which is the convention priority date based on a patent application in the United States of America.

It is necessary to set out the material parts of the specification. It commences by saying:

"This invention relates to containers and container closures in which the closures are formed from distortable materials of construction. More particularly, the invention concerns distortable, reusable, plastic container closures for open-mouthed containers and further contemplates a closure arrangement that is quickly and easily operable and

which assures a reliable hermetic seal."

This is followed by a description of the prior art in the field relating to closures for plastic food storage containers and a statement of particular respects in which the closures that have been available for years past are unsatisfactory.

There then follow these paragraphs:

"This invention provides a sealing closure that is, in all respects, representative of a compromise incorporating the good features of those mentioned above, and in addition, is more simple in its mode of operation. The construction more fully described hereinbelow enables the user to apply the closure of this invention to any of several types of containers simply by an application of pressure to the approximate center of the closure main wall. As is readily discernible from the drawings, this closure is of a multi-pieced construction and includes a finger operable plunger that is adapted to transmit pressure to the approximate center of the main wall. This new closure further includes several distinctive constructional features which enhance its applicability for use in a food storage capacity as well as in other related fields. Among these is a biased, corrugated, fluted or similar center main wall arrangement that effectively and easily enables the contraction and recovery of the center main wall peripheral edge to a relaxed or as-molded position. This edge, of course, includes as an integral part a sealing wall portion which functions to produce a sealed relationship between closure and container, thus preserving and physically retaining the contained materials therein.

The invention also encompasses variable construction parameters affecting the efficient operability of such closures. Therefore, the construction described in detail below has as its principle objectives to minimize both internal stresses within the closure and the force required to properly assemble a closure and container, while at the same time to maximize the sealing pressure between the closure and container and the lateral contraction of the closure sealing wall portion per unit of applied force. In these respects, it is applicant's wish that the disclosures in Australian Application No. 24825/70 (accepted as Patent No. 455,330) be incorporated by reference in this application for Letters Patent."

Patent No. 455,330, which is incorporated by reference in this last cited passage, refers to a particular embodiment of the invention; but it is not asserted that the appellants reproduced it. On page 6 of the specification there is a consistory statement which is expressed in the same terms as Claim 1; and this is followed by reference to what are said to be "Further objectives of the invention". The learned primary Judge described this reference as a description of particular embodiments by reference to the drawings; but the correctness of this description was questioned by counsel for the appellants in argument before us.

There follow the six Claims. I shall set out Claims 1, 2 and 5 which are the Claims relevant to this case. They are made in the specification in the following terms; but I have for ease of

reading and reference arranged the elements of the subject matter set out in Claim 1 in numbered paragraphs.

Claim 1 refers to:

" A locally distortable closure member contractably and distensibly constructed and having an elastic memory such that it is adapted to hermetically seal an open-mouthed container, said closure member comprising:

(1) a center main wall including a biased area radially emanating from a central portion thereof to a peripheral terminus, said center main wall being adapted for the application of pressure to the approximate center thereof in such manner that said biased area tends to collapse upon itself and substantially uniformly displace said peripheral terminus until said closure is easily positionable in an open-mouthed container;

(2) integral extended sealing means positioned around said peripheral terminus of the center main wall, said sealing means being displaceable in like manner with said peripheral terminus such that at least a portion of said sealing means is closely engageable with and sealable against the walls of an open-mouthed container due to the resiliency and elastic memory of said closure upon the discontinuance of applied pressure to said center main wall;

(3) a closure top wall interconnected with said integral extended sealing means and said center main wall, said closure top wall further including an integral and substantially centered upstanding bushing-like guide terminating at its upper extremity in a finger grippable flange; and

(4) an axially movable plunger positioned in said guide in such manner as to have a portion thereof exposed above said flange so that pressure applied to the plunger is transmitted to the approximate center of said center main wall."

Claim 2 refers to:

" A closure member according to claim 1 wherein said plunger is secured to said center wall at the approximate center thereof."

Claim 5 refers to:

" A closure member according to claim 1 wherein the closure top wall and the integral extended sealing means including opposed locking means interconnectably overlapping to secure said and main walls together."

The closure to which the patent in suit relates is applicable to open-mouthed containers which are quickly and easily operable and which ensure a reliable seal. The specification describes a closure with three parts: an upper wall (called "closure top wall" in the specification), a lower wall (called "center main wall" in the specification) and a plunger. The lower wall provides a

division between two cavities. Such a structure is known to engineers as a "diaphragm". The diaphragm is in the shape of a shallow cone; it is manipulated by means of a plunger which passes through the upper wall and contacts the lower wall at about its centre. By depressing the plunger the diaphragm is moved axially downwards at the centre causing a substantially simultaneous inward movement around the edge of the diaphragm. This inward radial movement is sufficient to break the seal which is effected between the outer edge of the diaphragm and the inner edge of the mouth of the open-mouthed container in which the closure is placed.

The diaphragm or the lower wall has a central area and a biased or slanted, and thus generally conical, area which surrounds and extends radially outwards from the central area, being configured so as to tend to close upon itself under axial force applied to its centre by the plunger. The closure is constructed of resilient material. This has the result that the closure will have elastic recovery. The closure is therefore capable of being distorted by application of force, and when that force is removed it will return to its normal or relaxed shape. The shape of the parts of the closure, especially the biased area, and the resilient properties of the material from which the closure is made combine so that the closure can contract and expand radially as necessary to effect a seal within the open mouth of a container.

The learned trial Judge found that the closure manufactured by the appellants incorporated each of the elements of Claims 1, 2 and 5 of the specification.

His Honour held that, in construing Claims 1, 2 and 5, the reference therein to a "biased area" which tended to collapse upon itself, on application of pressure to its approximate centre, included a closure member such as the closure member manufactured by the appellants, the centre main wall of which is smooth rather than corrugated or fluted. In those circumstances his Honour held that the appellants' closure member infringed the Claims.

His Honour found that the Claims did not go beyond the invention described in the complete specification and that they did not include closure members which would fail to achieve the promise of the specification.

His Honour rejected the appellants' argument that it was not clear what was meant in the Claims by the expression "an open-mouthed container" and accordingly rejected the argument that the specification was invalid for that reason.

It was argued by counsel for the appellants in this Court that, on their proper construction, Claims 1, 2 and 5 are limited to closures in which the centre main wall is corrugated or fluted. Reliance was placed by counsel upon the following matters in support of this argument:-

- (a) the reference in the specification to a "biased area" means an area that is predisposed to move in a particular manner;
- (b) the alternative meaning of bias, namely, an oblique or slanting line is not an appropriate way of describing an area;
- (c) if a biased area means an area the cross section or outline of which is oblique or convex it would have been described as conical;
- (d) the specification reveals no reason why the centre main wall of the closure in its relaxed state should be conical rather than substantially flat;
- (e) the fact that the biased area is described in the specification as "radially emanating" from a central portion to a peripheral terminus of the main wall indicates flutes or corrugations;
- (f) the requirement that the biased area tends to "collapse upon itself" is more apt to refer to the folding of flutes upon themselves rather than an increase in conicity of the biased area;
- (g) reference to the body of the specification confirms that the biased area refers to an area containing flutes or corrugations in that biased is used as a synonym for fluted or corrugated throughout the specification; and such a construction ensures that the closures of the Claims incorporate the distinctive feature of the invention and fulfil one of its main objectives;
- (h) the biased area is clearly an essential feature of the Claims. Accordingly, the absence of flutes or corrugations in the appellants' article means that the Claims are not infringed.

It was argued by counsel for the appellants, in the alternative, that the Claims are invalid if they are not limited to closures the centre main wall of which contains a fluted or corrugated area:

first, because they are not limited to the essence of the invention described in the specification and, second, because they fail to fulfil the advantages promised by the specification. The latter is, of course, an argument as to inutility.

It was also argued on behalf of the appellants that the scope of Claims 1, 2 and 5 is bad for lack of clarity because of the lack of definition of and ambiguity in the expression "open-mouthed container".

I turn to the principal question which we have to decide, namely whether the word "biased" where appearing in the Claims in the context of a closure the centre main wall of which is "biased" in relation to the horizontal, means "biased" in the sense of oblique or "biased" in the sense of corrugated or fluted. If the word "biased" has the sense of oblique and assuming that the appellants fail in their other submissions, then the appellants' article infringes the patent in suit. If the word "biased" has the sense of corrugated or fluted there is no infringement because the undersurface of the appellants' closure, though oblique, is smooth rather than corrugated or fluted. It was not suggested before the Supreme Court or this Court that "biased" is used in a special or technical sense.

In order to be valid a patent must comply with the requirements laid down in relation to Claims and complete specifications in s. 40 of the *Patents Act 1952* which, so far as relevant, provides:

"40(1) A complete specification –

(a) shall fully describe the invention, including the best method of performing the invention which is known to the applicant; and

(b) shall end with a claim or claims defining the invention. ...

(2) The claim or claims shall be clear and succinct and shall be fairly based on the matter described in the specification."

To be fairly based the invention claimed must be the same invention which is described in the body of the specification; the Claim or Claims must be fairly based on what has been described and must not seek to extend the patentee's monopoly beyond this. The patentee is only permitted to claim what he has invented: see Ricketson, "The Law of Intellectual Property" (1984) at para. 49.93. The function of the Claims is to define clearly and precisely the monopoly claimed. Their primary object is to limit and not to extend the monopoly. See

Electric and Musical Industries Limited v Lissen Limited (1938) 56 RPC 23 at 39 per Lord Russell; Ballantyne v Aktiebolaget Separator (1915) 19 CLR 620 at 628 per Isaacs J.

It is well established that there are no special rules for the interpretation of patent specifications, which are to be interpreted in the same way as any other written document upon ordinary principles of interpretation. The words used in a specification are to be given the meaning which the normal person skilled in the art would attach to those words, both in the light of his own general knowledge and in the light of what is disclosed in the body of the specification: *British Thomson-Houston Company Ltd. v. Corona Lamp Works Ltd.* (1922) 39 RPC 49 per Viscount Haldane at 67, per Lord Shaw at 89; *Monsanto Company v Commissioner of Patents* (1974) 48 ALJR 59 per Stephen J. at 60.

In one sense it is right to say that the specification must be read as a whole, but the specification is a whole made up of several parts and those parts have different functions. It is not legitimate to reduce or enlarge the meaning of the words of a Claim by glosses derived from other parts of the specification, or to confine the scope of the Claims by reference to some limitation which may be found in the body of the specification but is not expressly or by inference reproduced in the Claims themselves. In ascertaining the width of a particular claim it is not permissible to vary or qualify the plain and unambiguous meaning of the Claim by reference to the body of the specification: *Welch Perrin & Co. Pty. Limited v Worrell* (1961) 106 CLR 588 per Dixon C.J., Kitto and Windeyer JJ. at 610. However, if an expression in the Claim is not clear, it is then permissible to resort to the body of the specification in order to define or clarify the meaning of words used in the Claim without infringing the rule that clear and unambiguous words in the Claim cannot be varied or qualified by reference to the body of the specification: *Electric and Musical Industries Limited v Lissen Limited* (1938) 56 RPC 23; *Rosedale Associated Manufacturers Limited v Carlton Tyre Saving Co. Limited* (1960) RPC 59 per curiam at 69; *Interlego A.G. v Toltoys Pty. Limited* (1973) 130 CLR 461 per Barwick C.J. and Mason J. at 479.

The specification in suit was not drafted with economy of language. Indeed, the seeming complexities of the specification are mainly the result of the considerable detail in which the patentee has described the invention and the particular embodiments of the invention.

I turn to the meaning of the word "biased" in Clause 1. The dictionaries are of some assistance. The Oxford English Dictionary provides a useful definition of the adjective "biased" in the sense of an oblique or slanting line and contains a reference to bowls as being "swelled as the bowl on the biased side". Reference is made by that Dictionary to the use of the word "bias" with reference to the construction or form of the bowl which imparts an oblique motion, to the oblique line in which the bowl runs, and to the kind of impetus given to the bowl to cause it to run obliquely, so that a bowl is said "to have a wide or narrow bias" or to run with a great or little bias while the player is said to give the bowl more or less bias in throwing it.

If Claim 1 is construed in isolation from the body of the specification in my opinion the word "biased" bears the meaning of oblique or slanting. It is apt to refer to the centre main wall as including a biased area which radially emanates from a central portion thereof to a peripheral terminus. "Radially" is used in the sense of "in a radial manner", that is in the sense of a radius or having the position or direction of a radius.

The appellants place strong reliance upon the context in which the word "biased" appears in the Specification preceding the statement of the Claims to support their argument that the word is used in the Claims in the sense of corrugated or fluted. I do not regard the word "biased", where appearing in Claim 1, as unclear or ambiguous, so in my view it is neither necessary nor permissible to construe the term in the light of the body of the specification that precedes the Claims. If it were necessary to examine the body of the specification for this purpose, the meaning which I place upon the word would not alter.

I shall now look at the whole of the specification including the Claims, the consistory statement and the preferred embodiment of the invention for the purpose of dealing fully with the arguments presented by counsel for the appellants. But in doing so it must be remembered that the preferred embodiment of the invention is a statement of the preferable method of construction of the article or the best method of performing the invention and it is in the Claims that one finds the definition of the function or a statement of the essence of the invention.

As I construe the specification, the statement of the preferred embodiment of the invention commences on page 4 of the specification with the words "The construction more fully described hereinbelow enables the user to apply the closure of this invention to any of several types of containers ..., continues to the commencement of the consistory clause on page 6; then



recommences on page 7 with the words "Other objectives and advantages will become more apparent upon further reference to the specification, drawing and claims" and concludes at the foot of page 13 immediately preceding the statement of the Claims.

It is clear that the drawings which appear as figures 1, 2, 3, 4 and 5 show a closure that is both biased and fluted or corrugated, but the references to the drawings occur in the context of the statement of the preferred embodiment of the invention.

I do not construe the word "biased" where it appears in the context of "biased, corrugated, fluted or similar center main wall arrangement ..." (bottom of page 4 of the specification) or "radially biased, fluted or corrugated center main wall ..." or "the biased or corrugated areas" (both on page 8 of the specification) or "(t)he biased, corrugated, fluted or plaited center main wall ..." (on page 10) as used as a synonym for or an alternative to the words "corrugated", "fluted" or "plaited". Nor are the words "corrugated", "fluted" and "plaited" themselves synonymous. "Corrugated" is used in the sense of marked with parallel ridges or furrows; "fluted" in the sense of having channels or furrows which are not necessarily parallel; and "plaited" in the sense of pleats, involving the notion of intertwining elements or parts in a pattern. In my view, "biased" is used in reference to a centre main wall of the closure that it both biased and corrugated or fluted or plaited.

Even if biased were used as a synonym or an alternative to these other terms, any such usage occurs in the statement of the preferred embodiment of the invention and not in the Claim which is the statement of the essence of the invention. It is of some importance that immediately preceding the Claims there appears this paragraph:

"From the foregoing description, it should be apparent that the invention encompasses an advantageous advance in the art. Further, it should be clear that the invention may be embodied in other specific forms without departing from the spirit of the essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive."

Thus the specification itself clearly states that the invention is not confined to the preferred embodiment which precedes the Claims.

Hence, even if it were appropriate to interpret the word "biased" where it appears in the Claims by reference to the contexts in which it is used in the body of the specification, I would not

interpret it as a synonym for or alternative to the other words with which it is associated in the specification such as "corrugated", "fluted" or "plaited". The biased area of which Claim 1 speaks does not require bias in the sense of flutes, corrugations, plaits or pleats. Claims 1, 2 and 5 are not therefore limited to closures the centre main wall of which contains a corrugated, fluted or plaited area. The Claims are for a biased area in the sense of an oblique surface and thus encompass the appellants' closure with its smooth under-surface.

It was submitted by counsel for the appellants that, assuming the Claims are not limited to closures the centre main wall of which contains a fluted, corrugated or plaited area, then the Claims are invalid because (a) they are not fairly based on the essence of the invention described in the specification; and (b) they fail to fulfil the advantages promised by the patentee in the specification.

As to the first of those submissions, in my opinion the Claims do not go beyond the invention described in the body of the specification. A complete specification must fully describe the invention including the best method of performing it which is known to the applicant: para. 40(1)(a) of the *Patents Act*. Claims do not have to be limited to the preferred embodiment of the invention. Claim 1 covers all closures with a centre main wall containing a biased area, and in my view this claim is fairly based on the closures described in the specification as the preferred embodiment of the invention, being the best method of performing the invention, namely closures with centre wall containing areas that are both biased and corrugated or fluted or plaited. Biased has a wider connotation than the words corrugated, fluted or plaited, using biased in the sense of oblique, and what is corrugated, fluted or plaited must be biased in the sense of oblique. Hence, there is no substance in the argument that the Claims of the specification are not fairly based on the disclosure of an article that is both biased and corrugated, fluted or plaited.

The further submission of counsel for the appellants was that the Claims failed to fulfil the advantages asserted by the specification. It is a ground of revocation of a patent that the invention, so far as claimed in any relevant Claim in the patent, is not useful: para. 100(1)(h) of the *Patents Act*. "Inutility" means that the invention as claimed in the patent does not attain the result promised for it by the patentee. It does not mean that the article to be produced by following those directions is not commercially viable. See *Lane-Fox v Kensington and Knightsbridge Electric Lighting Co. Limited* (1892) 9 RPC 413 per Lindley L.J. at 417; *Camp*

v Amalgamated Photo-Finish Pty. Limited (1950) VLR 213 per Barry J. at 224-5. The argument was that the invention as claimed extended to closures with smooth or corrugated surfaces, but the result promised in the body of the specification by the patentee was confined to closures with corrugated surfaces. By following directions in that promise only corrugated (or fluted or plaited) surfaces could be produced; hence, it was argued that since the Claims extend to closures with smooth surfaces they go beyond the promise of the specification.

The promise of the specification is to be found at p 5, immediately preceding the consistency clause, where the following paragraph appears:

"The invention also encompasses variable construction parameters affecting the efficient operability of such closures. Therefore, the construction described in detail below has as its principal objectives to minimize both internal stresses within the closure and the force required to properly assemble a closure and container, while at the same time to maximize the sealing pressure between the closure and container and the lateral contraction of the closure ceiling wall portion per unit of applied force. In these respects it is applicant's wish that the disclosure in Australian Application No. 24825-70 (accepted as Patent No. 455,330) be incorporated by reference in this application for Letters Patent."

In my opinion it is plain that this promise refers only to the preferred embodiment of the invention described below the promise, namely, a closure with a corrugated, fluted or plaited surface. This is clear from the language of the clause cited above, from the detailed statement of the preferred embodiment which appears after the clause and from the incorporation by reference of Patent No. 455,330, in particular pages 15 and 16 thereof, which states that a biased and corrugated construction is better than a biased and smooth construction. The promise is not an exhaustive statement of the invention; it is only a statement of the promise of the preferred embodiment. I reject the argument based on lack of utility.

The final argument of the appellants was that Claims 1, 2 and 5 are bad for lack of clarity because of the lack of definition of and ambiguity in the expression "open-mouthed" container where they appear in the Claims.

Claims of a complete specification must be reasonably free from ambiguity: *Electric and Musical Industries Limited v Lissen Limited* (1938) 56 RPC 23 per Lord Russell of Killowen at 39; *Ballantyne v Aktiebolaget Separator* (1915) 19 CLR 620 per Isaacs J. at 628; *Kauzal v Lee* (1936) 58 CLR 670 per Dixon and McTiernan JJ. at 685-686, where their Honours observe that:

"(v)agueness of description, want of particularity and evident indistinctness of thought may be the source of so much uncertainty as to the scope of the monopoly that the claim fails to fulfil the requirement of stating with definiteness to what the patentee is exclusively entitled."

It is true that there are many containers which would answer the description of open-mouthed containers. That very expression necessarily connotes a degree of generality; but there are in my view two answers to the submission. First, the invention claimed in the specification is not for an open-mouthed container; it is for a closure for a container of that description. It is not suggested that there is an ambiguity in the description of the closure itself in the specification, and in particular in the Claims. The question is whether the description of the closure is sufficient to enable persons to whom the specification is directed to understand how the closure as an article to be manufactured has to be made and how it is to work. It is plain, in my opinion, that the closure as described in the specification is one that will hermetically seal an open-mouthed container.

There is in any event no ambiguity in the use of the words "open-mouthed container" as contained in the claims or other parts of the specification. There is no suggestion that the expression "open-mouthed container" is a term of art in Australia or that it bears a technical meaning. It is to be given its ordinary meaning. The Oxford English Dictionary defines "open-mouthed" as:

1. having the mouth open; having an open mouth; hence rapacious, in full cry, etc.  
b. of a vessel or the like; having a wide mouth.
2. Gaping, as with astonishment or surprise.
3. With mouth open to speak; speaking freely, clamorous, vociferous."

Any problems that arise from the use of the expression "open-mouthed container" in the Claims are not problems of definition or interpretation, but of identification. In any event, as was observed by Aickin J. in *Minnesota Mining & Manufacturing Company v Beiersdorf (Australia) Limited* (1980) 144 CLR 253 at 274:

"Lack of precise definition in claims is not fatal to their validity so long as they provide a workable standard suitable to the intended use - see *British Thomson-Houston Co. Ltd. v Corona Lamp Works Ltd.* (1922) 39 RPC 49 and *Monsanto Co. v Commissioner of Patents* (1974) 48 ALJR 59 at 60."

The use of the expression "open-mouthed", in the context of containers which the closure being the subject matter of the invention is designed to fill and seal, provides "a workable standard suitable to the intended use".

I would dismiss the appeal with costs.

### **SHEPPARD J:**

This is an appeal from a judgment of the Supreme Court of Victoria (King J.) given in an action brought by the respondent for infringement of its patent no. 462,612. The learned primary Judge found that a lid intended to effect an air-tight seal on containers, such as canisters, manufactured and distributed by the appellants ("Decor") infringed claims 1, 2 and 5 of the letters patent in suit. The specification for the patent is entitled, "Three-part Press Type Seal." The invention which is the subject of the patent has this title because it consists of three plastic parts which, when put together, form a lid which provides an air-tight seal when used in conjunction with a container of an appropriate size.

His Honour made orders for an injunction, delivery up and an enquiry as to damages. He dismissed a counter-claim brought by Decor in which it was contended that the letters patent were invalid and an order for revocation was sought.

The letters patent had a Convention priority date of 9 March 1971. They expired on 18 February 1988 shortly after judgment was delivered on 4 February 1988.

Three grounds of appeal were argued, the first going to the question of infringement, and the others to invalidity. If the first were upheld, the second would not arise for consideration. The third arises irrespective of the outcome of ground 1, although its determination in favour of Decor, would make the questions to which ground 3 gives rise largely academic.

The three grounds all raise questions concerning the construction of the specification. Although the question of novelty was raised at first instance, no ground of appeal concerning it was relied upon before us. Before coming to the terms of the specification, it is useful to refer to two of the lids which are in evidence. The first is a commercial embodiment of a lid produced by or on behalf of the respondent ("Dart") in accordance with the specification. The second is a lid

produced by Decor which was found by the primary Judge to be an infringement of the patent. Each lid, as I have said, consists of three plastic parts. These comprise two circular disks and a plunger. One of the plastic lids is slightly smaller than the other. It forms the upper part of the lid and has a hole in it into which the plunger is inserted. The larger disk forms the larger part of the lid and has no hole. The plunger is inserted through the hole in the upper disk which in turn is inserted into the lower disk. The three parts are then locked into position. The plunger, even at rest, exerts pressure on the lower disk. The pressure may be increased by depressing the plunger. This causes the lower lid to contract (collapse upon itself is the expression used in the specification) so that it may be inserted into a container such as a canister of an appropriate size. When the pressure on the plunger is released the lower disk expands against the lip or edge of the container forming an air-tight seal thus preserving food or liquid stored in the container. There is little difference between the two lids in evidence. The mechanism by which each operates is precisely the same. The essential difference between them is that the underside of the lower disk of the Dart product is fluted or corrugated (really grooved), the flutes or corrugations extending as radii from the centre of the disk. The underside of the lower disk of the Decor product, on the other hand, is smooth. It has no flutes or corrugations. It will be seen that this difference is of critical importance because counsel for Decor has contended that the flutes or corrugations are an essential part of the invention protected by the letters patent and that it follows that a device performing a similar function made without flutes or corrugations is not an infringement. Counsel for Dart, on the other hand, contend that a lid which is fluted or corrugated represents only the preferred embodiment of the invention. The lid will operate more efficiently if it is corrugated or fluted, but the letters patent equally cover an embodiment which has a smooth, rather than a corrugated or fluted, underside.

Although I shall quote a number of the provisions of the specification, it is difficult to do the submissions made in relation to it justice without referring to the scheme of it and also to diagrams which form part of it. For ease of reference, I have therefore appended a copy of the entire specification to these reasons.

Before coming to the detail of the specification, it is necessary to refer to s. 40 of the *Patents Act 1952* and to certain well established rules of construction of specifications. These are perhaps trite, but it is useful to have them in mind as one approaches the task of construction which is involved.

Subsections 40(1) and (2) of the *Patents Act* are as follows:-

"40.(1) A complete specification-

(a) shall fully describe the invention, including the best method of performing the invention which is known to the applicant; and

(b) shall end with a claim or claims defining the invention.

.....

(2) The claim or claims shall be clear and succinct and shall be fairly based on the matter described in the specification."

Paragraph (1)(a) not only requires a description of the invention, but also a statement of the best method of performing it known to the applicant. This last matter may be referred to as the requirement of the *Act* that the preferred embodiment of the invention be stated in the specification. Its object is to teach or inform those concerned to know the state of the art in a particular area at the time the patent is applied for. Statements made in relation to the preferred embodiment of the invention are not directly relevant to the matters which arise for determination in an infringement action or in a claim that the patent is invalid. For those purposes the critical statements are those made in the claims, in any consistory clause and in that part of the body of the specification in which the invention is described. In *Welch Perrin & Co. Pty Limited v. Worrel* (1961) 106 CLR 588 Dixon C.J. and Kitto and Windeyer JJ. said (p 609):-

"Most of the argument before us centred upon the construction of the specification and, as in every patent case, it is necessary to determine from it what exactly is the invention it describes and for which a monopoly is claimed, before proceeding to consider objections to the validity of particular claims: *Electrical and Musical Industries Ltd. v. Lissen Ltd.* (1938) 56 RPC 23, at p 39."

and (pp 610-1):-

"If it is impossible to ascertain what the invention is from a fair reading of the specification as a whole, that, of course, is an end of the matter. But this objection is not established by reading the specification in the abstract. It must be construed in the light of the common knowledge in the art before the priority date. The general principles governing the construction of specifications are well known, and no lengthy reference to them is necessary. It is, however, fitting that we remind ourselves of the criterion to be applied when it is said that a specification is ambiguous. For, as the Chief Justice pointed out in *Martin v. Scribal* (1954) 92 CLR 17, at p 59, referring to Lord Parker's remarks in *National Colour Kinematograph Co. Ltd. v. Bioschemes Ltd.* (1915) 32 RPC 256, we are not construing a written instrument operating inter partes, but a public instrument which must, if it is to be valid, define a monopoly in such a way that it is not reasonably capable of being misunderstood. Nevertheless, it is to be remembered that any purely verbal or grammatical question that can be resolved according to ordinary rules for the construction of written documents, does not, once it has been resolved, leave uncertain the ambit of the monopoly claimed (see *Kauzal v. Lee* (1936) 58 CLR 670, at p 685.) The specification must be read as a whole.

But it is a whole made up of several parts, and those parts have different functions. Courts have often insisted that it is not legitimate to narrow or expand the boundaries of monopoly as fixed by the words of a claim by adding to those words glosses drawn from other parts of the specification. Similarly, if a claim be clear it is not to be made obscure simply because obscurities can be found in particular sentences in other parts of the document.

This specification is at first sight a formidable and difficult document, but on analysis it becomes apparent that it is not so obscure or uncertain as the appellant's argument suggested. Its basic structure does not depart far from the form now usual in English specifications, as described in Halsbury's Laws of England 3rd ed., vol. 29, p 6. Its seeming complexities are mainly the result of the detail in which the patentee has described particular embodiments of his device."

The paragraph from Halsbury (Halsbury's Laws of England, 3rd ed., vol. 29, para. 8, p 6) is as follows:-

"8. Body and claims. A complete specification customarily begins, after the title, with a general preamble, stating, usually in more detail than in the title, the subject to which the invention relates, indicating upon what old arrangements the invention is an improvement and the respects in which they needed improvement, and otherwise stating the objects of the invention, possibly summarising other proposals for solving the same problems, and setting out the nature of the invention in general terms. This statement usually includes a clause, known as 'the consistory clause', in substantially the same terms as the claims. Then follows a detailed description of one or more embodiments of the invention, often with a suggestion of alternatives. The whole of this is known as the body of the specification. The specification ends with the claims, delimiting the monopoly granted by the patent. There may be included in the body, usually immediately before the claims, disclaimers of part of the matter covered by the language of the claims. The preamble to the body and the claims, on the one hand, and the remainder of the body on the other, have quite different functions. The body, apart from the preamble, is there to instruct those skilled in the art concerned in the carrying out of the invention; provided it is comprehensible to, and does not mislead, a skilled reader, the language used is seldom of importance. The claims, on the other hand, since they define the monopoly, will in the event of legal proceedings be scrutinised with as much care as any other document defining a legal right, and require to be as carefully drawn. The preamble, which may be used to explain the claims and treated as defining the results the patentee undertakes that his invention shall achieve, should be drawn with almost equal care."

In *Interlego A.G. v. Toltoys Pty Limited* (1973) 130 CLR 461 Barwick C.J. and Mason J. (as he then was) said (p 478-9):-

"We venture to think that no one would conclude, on reading the specification as a whole, that the invention as described makes claim to a method of assembly of blocks which depends on the insertion of primary projections into the recesses of secondary projections in an adjacent block. However, the settled rule is that in ascertaining the width of a particular claim it is not permissible to vary or qualify the plain and unambiguous meaning of the claim by reference to the body of the specification (*Welch Perrin & Co. Pty. Ltd. v. Worrel*).

.....



If the expression is not clear it is then permissible to resort to the body of the specification to define or clarify the meaning of words used in the claim without infringing the rule that clear and unambiguous words in the claim cannot be varied or qualified by reference to the body of the specification (see *Electric & Musical Industries Ltd. v. Lissen Ltd.* (1938) 56 RPC 23; *Rosedale Associated Manufacturers Ltd. v. Carlton Tyre Saving Co. Ltd.* (1960) RPC 59, at p 69). Once reference is made to the body of the specification, it is apparent that the expression is not used in the sense urged by the respondent."

In *Rosedale Associated Manufacturers Limited v. Carlton Tyre Saving Co. Limited* (supra)

Lord Evershed M.R. said (p 69):-

"It is no doubt true and has been well established (see for example, the speech of Lord Russell of Killowen in the E.M.I. case (*Electric & Musical Industries v. Lissen* (1939) 56 RPC 23 at p 41) that you must construe the claims according to their terms upon ordinary principles, and that it is not legitimate to confine the scope of the claims by reference to some limitation which may be found in the body of the specification but is not expressly or by proper inference reproduced in the claims themselves. On the other hand, it is clearly no less legitimate and appropriate in approaching the construction of the claims to read the specification as a whole. Thereby the necessary background is obtained and in some cases the meaning of the words used in the claims may be affected or defined by what is said in the body of the specification. In the present case our last observation will be seen to have particular consequence in regard to the meaning of the word 'holes' when used in Claim 1."

In the Lissen case Lord Russell had said (56 RPC at p 41):-

"I would point out that there is no question here of words in Claim 1 bearing any special or unusual meaning by reason either of a dictionary found elsewhere in the Specification or of technical knowledge possessed by persons skilled in the art. The prima facie meaning of words used in a claim may not be their true meaning when read in the light of such a dictionary or of such technical knowledge; and in those circumstances a claim, when so construed, may bear a meaning different from that which it would have borne had no such assisting light been available. That is construing a document in accordance with the recognised canons of construction."

See also Terrell on the Law of Patents, 13th ed., paras. 4.31-4.34, pp 74-77.

Reference should also be made to the judgment of Gibbs J. (as he then was) in *Montecatini Edison S.p.A. v. Eastman Kodak Company* (1971) 45 ALJR 593 and the decision of the House of Lords, in which Lord Diplock wrote the principal judgment, in *Catnic Components Limited v. Hill & Smith* (1982) RPC 183. There Lord Diplock said (pp 242-3):-

"My Lords, a patent specification is a unilateral statement by the patentee, in words of his own choosing, addressed to those likely to have a practical interest in the subject matter of his invention (i.e. 'skilled in the art'), by which he informs them what he claims to be the essential features of the new product or process for which the letters patent grant him a monopoly. It is those novel features only that he claims to be essential that constitute the so-called 'pith and marrow' of the claim. A patent specification should be given a purposive construction rather than a purely literal one

derived from applying to it the kind of meticulous verbal analysis in which lawyers are too often tempted by their training to indulge. The question in each case is: whether persons with practical knowledge and experience of the kind of work in which the invention was intended to be used, would understand that strict compliance with a particular descriptive word or phrase appearing in a claim was intended by the patentee to be an essential requirement of the invention so that any variant would fall outside the monopoly claimed, even though it could have no material effect upon the way the invention worked."

In summary, the relevant rules of construction which may be distilled from the authorities referred to are as follows:-

- (1) The claims define the invention which is the subject of the patent. These must be construed according to their terms upon ordinary principles. Any purely verbal or grammatical question that can be answered according to ordinary rules for the construction of written documents is to be resolved accordingly.
- (2) It is not legitimate to confine the scope of the claims by reference to limitations which may be found in the body of the specification but are not expressly or by proper inference reproduced in the claims themselves. To put it another way, it is not legitimate to narrow or expand the boundaries of monopoly as fixed by the words of a claim by adding to those words glosses drawn from other parts of the specification.
- (3) Nevertheless, in approaching the task of construction, one must read the specification as a whole.
- (4) In some cases the meaning of the words used in the claims may be qualified or defined by what is said in the body of the specification.
- (5) If a claim be clear, it is not to be made obscure because obscurities can be found in particular sentences in other parts of the document. But if an expression is not clear or is ambiguous, it is permissible to resort to the body of the specification to define or clarify the meaning of words used in the claim.
- (6) A patent specification should be given a purposive construction rather than a purely literal one.
- (7) In construing the specification, the Court is not construing a written instrument operating inter partes, but a public instrument which must define a monopoly in such a way that it is not reasonably capable of being misunderstood.

- (8) The body, apart from the preamble, is there to instruct those skilled in the art concerned in the carrying out of the invention; provided it is comprehensible to, and does not mislead, a skilled reader, the language used is seldom of importance.
- (9) Nevertheless, the claims, since they define the monopoly, will be scrutinized with as much care as is used in construing other documents defining a legal right. 10.If it is impossible to ascertain what the invention is from a fair reading of the specification as a whole, it will be invalid. But the specification must be construed in the light of the common knowledge in the art before the priority date.

The specification in the present case takes up a little over 15 pages. These are followed by two pages of diagrams. The device which is the subject of the invention is, as I have earlier indicated, a comparatively simple one no matter that its design was the result of novel and inventive steps which took the previously existing state of the art further ahead. In order to grapple with the questions of construction which arise for determination, it is necessary to say something of the scheme of the specification and to quote some portions of it at some length.

The specification opens with a paragraph describing the nature of the invention in the following terms:-

"This invention relates to containers and container closures in which the closures are formed from distortable materials of construction. More particularly, the invention concerns distortable, reusable, plastic container closures for open-mouthed containers and further contemplates a closure arrangement that is quickly and easily operable and which assures a reliable hermetic seal."

There follow paragraphs setting out the existing state of the art and then paragraphs which counsel for Dart contended referred to the preferred embodiment of the invention but which counsel for Decor contended were part of the consistory statement. In these is incorporated part of an earlier specification number 455,330. There then follows a paragraph which either alone or with the earlier paragraphs to which I have referred unquestionably comprises the consistory statement. Pages 7 to 13 undoubtedly describe the preferred embodiment of the invention whether read alone or read with those earlier paragraphs. Finally, pages 14 to 16 comprise six paragraphs in which the claims are made. These are as follows:-

"The claims defining the invention are as follows:-

1. A locally distortable closure member contractably and distensibly constructed and having an elastic memory such that it is adapted to hermetically seal an open-mouthed container, said closure member

comprising: a center main wall including a biased area radially emanating from a central portion thereof to a peripheral terminus, said center main wall being adapted for the application of pressure to the approximate center thereof in such manner that said biased area tends to collapse upon itself and substantially uniformly displace said peripheral terminus until said closure is easily positionable in an open-mouthed container; integral extended sealing means positioned around said peripheral terminus of the center main wall, said sealing means being displaceable in like manner with said peripheral terminus such that at least a portion of said sealing means is closely engageable with and sealable against the walls of an open-mouthed container due to the resiliency and elastic memory of said closure upon the discontinuance of applied pressure to said center main wall; a closure top wall interconnected with said integral extended sealing means and said center main wall, said closure top wall further including an integral and substantially centered upstanding bushing-like guide terminating at its upper extremity in a finger grippable flange; and an axially movable plunger positioned in said guide in such manner as to have a portion thereof exposed above said flange so that pressure applied to the plunger is transmitted to the approximate center of said center main wall.

2. A closure member according to claim 1 wherein said plunger is secured to said center wall at the approximate center thereof.

3. In combination a container and closure member according to claim 1 wherein said container includes a projecting wall construction forming the open mouth thereof and including therein a pouring spout and venting slot approximately opposite one another, both above and below which said closure member is engageable with and sealable against said projecting wall.

4. The combination according to claim 3 wherein said projecting wall also includes inwardly protruding means removed from said upper edge such that said portion of the sealing means is positionable therebetween, said protruding means further providing an abutable surface against which said closure is positionable to assure its proper placement within the container.

5. A closure member according to claim 1 wherein the closure top wall and the integral extended sealing means include opposed locking means interconnectably overlapping to secure said top and main walls together.

6. A locally distortable closure member substantially as described herein and with reference to the accompanying drawings."

The paragraph of the specification which, either alone or along with earlier paragraphs, comprises the consistency statement appears on page 6 of the specification and is in language similar to that used in claim 1.

It is common ground that, if one has regard only to the claims, the invention would comprise a lid manufactured as previously described whether the lower portion of it was corrugated or fluted or not. It would follow that the appellant's article, subject to two further submissions,

would be an infringement of the patent. One of these submissions was that the expression "open-mouthed container" was too vague and uncertain to be given a meaning. The other, which, to a degree, is bound up with the first, was that, if the specification be construed so as to include a claim for an article which is not corrugated or fluted, it is invalid because the claims are not limited to the essence of the invention.

One of the rules of construction to be applied is that the specification must be read as a whole. It is therefore inappropriate merely to excise from it the consistory statement and the claims without having regard to the balance of it. Ultimately the balance may have no relevance, but until the whole specification has been read and understood, one cannot tell. I propose, therefore, to refer to other parts of the specification, particularly those parts of it which may, when the rules of construction earlier set out are applied, shed light on the meaning of the expression "a biased area radially emanating from a central portion thereof" in claim 1.

The first part of the specification to which I go comprises those paragraphs which counsel for the respondent asserted and counsel for the appellant denied form part of the consistory statement. The relevant passage begins on page 4 of the specification in the paragraph that commences, "This invention provides a sealing closure that is ..." The second sentence of that paragraph begins, "The construction more fully described hereinbelow ...", and the sentence which follows it, "As is readily discernible from the drawings ..."

The paragraphs which follow and which lead to what is undoubtedly either the whole or part of the consistory statement on page 6 are, in my opinion, a development of what is introduced in the paragraph which commences, "This invention provides a sealing closure ..." Although I do not consider the matter to be free from doubt, I think the better view is that counsel for the respondent is correct in his submission that that paragraph and those which appear on the balance of page 4 and on page 5 do refer to the preferred embodiment and do not form part of the consistory statement. Nevertheless, they are relevant to be considered because they, along with others which appear later in the specification and which are part of the description of what is undoubtedly the preferred embodiment, may shed light on what is meant by the expression, "biased area radially emanating from a central portion thereof", in claim 1. Important in this respect is the paragraph which commences towards the end of page 4, "This new closure further includes several distinctive constructional features ..." There follows the critical sentence:-

"Among these is a biased, corrugated, fluted or similar center main wall arrangement

that effectively and easily enables the contraction and recovery of the center main wall peripheral edge to a relaxed or as-molded position."

Towards the end of the next paragraph is the reference to Letters Patent No. 455,330. In particular the specification says, "In these respects, it is applicant's wish that the disclosures in Australian application No. 24825/70 (accepted as Patent No. 455,330) be incorporated in this application for Letters Patent." It is convenient to interrupt this account of the subject letters patent to refer to the earlier letters patent insofar as they bear on the questions here to be decided.

The earlier letters patent also related to re-usable, plastic container closures for open-mouthed containers and contemplated a closure arrangement and sealing method that was quickly and easily "effectable" and which ensured a lasting, reliable, hermetic seal. As I understand it, the difference between the earlier invention and the subject one lay mainly in the fact that the earlier invention was in respect of a lid which comprised only two, as distinct from three, parts. The two parts which comprised the earlier invention were the lid and the plunger. When the plunger was depressed the lid would "collapse" thus making it possible for it to be inserted in a container. When the pressure was released the seal would be effected. The subject invention was an improvement because the making of the lid in two parts improved the ease with which the lid could be distorted so that it was easier to insert and easier to extract from a container.

The earlier specification is relevant because it was contended by both parties that it shed light on the significance of a reference in the subject specification to the meaning of the word "biased". For this purpose an important part of the earlier specification is the following:-

"Computer analyses of closure member 10 is accomplished treating the member as a shallow orthotropic thin elastic conical shell of revolution with the side wall 26 acting as an edge stiffener. Thus, it was found that the peak stresses in this closure member 10 occur during the push-down phase as the closure is applied to the container. Further, the dominant stresses occur at the edge of the planar area 16 and are radially and circumferentially directed. Shear stresses are found to be of secondary importance. Similarly, by varying the structural parameters, one learns that the radial contraction per unit push-down force for a corrugated closure is much larger than that for a flat closure even if the latter is determined by a nonlinear plate analysis. The radial contraction for a smooth conical closure, an isotropic shell, whose meridional slope is about one-half of the uppermost flute portion 38, approximates that of a corrugated closure but only if the side wall construction is very stiff. If, however, the side wall is relatively flexible, the radial contraction of a smooth conical closure will be theoretically only about one-third that of a corrugated closure. Further, the smooth conical arrangement has at least one other disadvantage in that the peak stresses produced therein are about twice as high as those created in a corrugated closure

member. These behaviors are all due to an important property of the corrugated construction, i.e., its relatively low bending and stretching stiffness in the circumferential direction. This property is also characterized by the fact that the radial or lateral displacement per unit push-down force increases with flute height and with the number of flutes. It follows that for a given lateral displacement, a seal with a larger number of flutes will require a smaller push-down force and therefore the peak stresses will be reduced."

The numbers which are referred to are numbers shown on diagrams which form part of the specification. It is unnecessary to refer to the detail of these diagrams.

Reference should also be made to a further paragraph of the earlier specification, namely:-

"Additional analysis reveals that a measure of the sealing pressure of the closure is the radial stress at the outer edge of the corrugated seal after the closure is fitted with the container and the push-down force is removed and it becomes apparent that the sealing pressure will increase as the ratio between the flute height at the side wall and the flute base width at the side wall increases. The same effect may also be obtained by increasing the ratio between the radius of planar area 16 and the radius at the side wall 26."

Finally, reference should be made to claim 1 which is as follows:-

"1. A laterally and transversely contractable and distensible closure member having an elastic memory so as to be capable of hermetically sealing an open-mouthed member and including:

a centre main wall having a plurality of fluted portions each extending from a peripheral edge portion and tapering inwardly towards a central portion of the centre main wall; and

upwardly and outwardly sloping sealing means located around said peripheral edge portion;

the arrangements being such that application of a generally centrally and downwardly directed force to said centre main wall enables placement of said closure member upon the open-mouthed member and reduction of said force enables said closure member to distend whereby said sealing means forms a sealing engagement with said open-mouthed member."

After reference to the earlier specification the subject letters patent made the consistency statement to which I have referred and continued to describe the preferred embodiment. To aid this description reference was made to a number of diagrams appended to the specification. On page 8 it was said:-

"Referring now to Figs. 1-4, it can be seen that the closure member 10 of this invention is composed of a plurality of separate parts which function together in the operation of the closure. These include a radially biased, fluted or corrugated center main wall 14 having a centrally positioned substantially planar area 16 in the center surface wall and an upwardly extended side wall 26; a closure top wall 12 having an integral

substantially centered bushing-like guide 13; and a plunger 15. Specifically, the biased or corrugated areas are composed of a plurality of upstanding tapered ridges 18, more fully described hereinafter, which emanate from the substantially planar area 16 and terminate at the peripheral edge 24 of the center main wall 14."

On page 10 there is reference to figure 3. In this paragraph appears the following:-

"Therefore, the radially extending biased center main wall 14 which extends between the center portion or substantially planar area 16 to a peripheral terminus 24 is of considerable importance to the invention. In essence, the biased center main wall 14 tends to collapse upon itself upon the application of pressure to center portion 16. This collapse substantially uniformly displaces the peripheral terminus 24 inwardly and thus draws the wall 26 inwardly."

It is to be observed that in relation to this description there is no reference either to corrugations or to fluting. However, immediately following this paragraph the following is said:-

"The biased, corrugated, fluted or plaited center main wall 14 includes, therefore, a plurality of upwardly and outwardly tapered ridges 18. As can be readily seen in Figs. 2, 3 and 4, the upper portion 38 of these ridges are angularly directed with respect to planar area 16 and therefore their respective peripheral terminus portions 24 lie plane removed from that of area 16. Similarly, the bottom portions 40 of these plaits lie in a substantially parallel plane approximate to that of area 16 when the closure is in a relaxed or as-molded condition. However, when the closure is in place upon a container, even the bottom portions 40 will be at least slightly angularly directed toward the container center; such being the result of oversizing which assures a proper seal between the components. The corrugation height at its peripheral terminus 24, i.e., the point of connection to the integral upwardly extended side wall 26, is such that the uppermost flute portion 38 is approximately opposite or above the protruding bead 32."

A little later a new word appears for the first time, namely, the word "conically". The specification says:-

"The closure top wall 12 includes a conically disposed upper wall 38 in the approximate center of which there is positioned the bushing-like guide 13. This guide extends above the upper wall 38 and is aligned with the socket 39. A peripherally disposed depending skirt 40 is positioned adjacent the outermost periphery of upper wall 38 so as to create a lip 42 around the periphery thereof."

The description of the preferred embodiment concludes with the following paragraph:-

"In operation, the closures of this invention tend to experience a lateral displacement within the conical, corrugated or fluted area 18 as pressure is applied to the planar area 16. The conical corrugated construction accentuates this displacement as the flutes fold upon themselves in an accordion-like fashion. This, then, similarly tends to draw the side wall 26 inwardly, thereby facilitating entry of the central surface wall area 14 into the open-mouth end of the container or pitcher 20. After insertion and upon release of the applied pressure, the resilient closure material attempts to assume its relaxed orientation and thus expands the side wall 26 against the inner portion of the container wall to hermetically seal the container. To remove the closure, it is only necessary to similarly depress the plunger 15 and remove the closure from the pitcher or container."



It is to be observed that the expression has become, "conical, corrugated or fluted area". This is to be compared with the expression, "biased, corrugated, fluted or similar center main wall arrangement" which appears in the first part of the description of the preferred embodiment and also with the words of claim 1, "a biased area radially emanating from a central portion thereof to a peripheral terminus."

It remains to mention the paragraph which leads from the description of the preferred embodiment to the claims. It appears on page 13 of the specification and is as follows:-

"From the foregoing description, it should be apparent that the invention encompasses an advantageous advance in the art. Further, it should be clear that the invention may be embodied in other specific forms without departing from the spirit of the essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive."

The essence of the first submission made by counsel for Decor was that, on their proper construction, claims 1, 2 and 5 are limited to closures in which the centre main wall is corrugated or fluted. In the context of the specification a biased area was said to mean an area that was pre-disposed to move in a particular manner. Counsel said that the alternative meaning of bias, namely, an oblique or slanting line was not an appropriate way of describing an area. Counsel also said that, if a biased area meant one, the cross-sectional outline of which was oblique or convex, it would have been described as conical. Both the expressions "conical" and "angularly directed" were used elsewhere in the specification where appropriate. Counsel said that there was no reason revealed in the specification why the centre main wall of the closure, in its relaxed state, should be conical rather than substantially flat. If "biased" indicated a slanted area, the preferred embodiments would appear not to come within the main claims. A substantially flat centre main wall would not only operate just as easily as one which was conical, but would exert a higher sealing pressure. This was said to be confirmed by some of the expert evidence to which I shall later refer.

Counsel also submitted that reference to the body of the specification was justified in order to interpret the relevant expression in the claims. He said that "biased" was used as a synonym for "corrugated" or "fluted" throughout the specification. He also said that such a construction would ensure that the closures, which were the subject of the claims, would incorporate the distinctive feature of the invention and fulfil one of its main objects.

Counsel for Dart submitted that "biased" in the first claim had its ordinary meaning and that in the context it meant oblique. All the references to corrugated and fluted were directed to the preferred embodiment of the invention and not to the invention itself. They did not support a reading down of the language of the first claim in the manner contended for by counsel for Decor. Indeed, the absence from claim 1 of the words "corrugated, fluted or plaited" and similar expressions, supported the view that the first claim was not limited to a corrugated construction. Counsel said that the contrast between the reference to "conical, corrugated or fluted" and the earlier references to "biased, corrugated or fluted" showed that "biased" was not used as a synonym for "conical". It followed that nothing in the body of the specification supported the view that the expressions "biased" and "corrugated" were used synonymously in the body of the specification or that "biased" in the first claim meant "corrugated".

In reaching his conclusion that the Dart submission should be accepted, his Honour relied on the paragraph immediately preceding the claims in which it is said that the invention may be embodied in other specific forms without departing from the spirit of the essential characteristics of it. The present embodiments were therefore to be considered in all respects as illustrative and not restrictive. He said that these words were consistent with the construction of claim 1 which required the word "biased" to be construed in its ordinary meaning without reference to the other words with which it appears in the body of the specification which related to the particular embodiments. His Honour did not think it necessary to go to the expert witnesses' definition of "biased" as there was no reason to suppose that it was being used in the specification as a technical term. He thought that it was proper to describe the outline of a slightly convex surface as oblique. Such a use of the term "biased" to refer to a curved line was supported by the definition of it in the Shorter Oxford Dictionary with reference to bowls as including the curved course in which a bowl was caused to run by its construction. His Honour said that the function of the "bias" in the claimed closure was to enable the collapse upon itself of the lower disk upon downward pressure being applied to its centre; this function was consistent with the lower disk being slightly convex.

The starting point for a consideration of the competing submissions of the parties is the consideration of the dictionary meanings of the words "bias" and "biased". In the Shorter Oxford Dictionary the word "bias" is defined primarily as oblique. It may mean an oblique or slanting line or the construction or form of the bowl causing it to swerve when rolled. It may also mean the curved course in which it runs and the allowance made for this deviation. A

consequential meaning is an inclination, a leaning or bent and thus a predisposition towards, a predilection or a prejudice. "Biased" means having a bias or unfavourably inclined. In the Macquarie Dictionary "bias" is defined to mean an oblique or diagonal line of direction especially across a woven fabric; a particular tendency or inclination especially one which prevents an unprejudiced consideration of a question; in bowls a bulge or a greater weight on one side of the bowl causing it to swerve and thus the swerved course of a bowl due to shape or weighting. "Biased" may mean cut, set, folded diagonally and "biasing" slantingly or obliquely.

A number of expert witnesses were called to express opinions on the meaning of the various expressions used in the specification. Professor J.D.C. Crisp is the Professor of Engineering Dynamics in the Department of Mechanical Engineering at Monash University. Professor Crisp said that the expression "tends to collapse upon itself" was one which was well understood by engineers. Tendency to collapse is a state which could arise where a load is imposed on a structure. Recovery would be contingent upon removal of the load. Where the load was not entirely removed, the degree of recovery would be contingent upon the degree to which the load was diminished. If a structure collapses upon itself, engineers would conclude that one part of that structure must move inwards towards another. As an example, Professor Crisp referred to the inward movement of the surface of a cone. If load or pressure caused it to move inwards, engineers would say that this involved the cone collapsing upon itself. Professor Crisp said that the closure in a commercial embodiment of the respondent's invention had three parts - an upper wall, a lower wall (diaphragm) and a plunger. He said that the most important part in the working of the closure was the diaphragm. It had a central area and "a biased, or slanted (and thus generally conical) area which surrounds and extends radially outwards from a central area, being so configured as to tend to close upon itself under axial force applied to its centre by the plunger." The closure was constructed of resilient material. This meant that it would have "elastic recovery" and would therefore be capable of being distorted by application of force. When that was removed it would return to its normal (relaxed) shape. Professor Crisp said that the shape of the parts of the closure (particularly the biased area) and the resilient properties of the material from which the diaphragm closure was made combined so that the closure could contract and expand radially as necessary to engage within the open mouth of a container.

Professor Crisp said that knowledge of how the shape of the diaphragm and the properties of the materials used in its construction combined in the function of the respondent's closure was essential to a proper understanding of the disclosure in the specification and its relationship with "prior art" disclosures. The effective operation of the respondent's disclosure depended on three things:-

- (1) The shape of the diaphragm and the arrangement of the individual parts of the closure ("geometrical arrangement");
- (2) The properties of the materials from which the parts, and particularly the diaphragm were made ("material or elastic properties"); and
- (3) Forces obtained and applied in the parts ("force configuration").

Professor Crisp said that, in order to obtain the radial forces in the biased area which were necessary in order to provide effective making and breaking of the seal, the angle of the slope of the biased area and the relative stiffness of the diaphragm were vital factors. He said, however, that the closure as a whole worked by a combination of all three elements - geometrical arrangement, material properties and force configuration.

One of Professor Crisp's conclusions was that, whether one used a shallow cone constructed with corrugations or a shallow cone with a flat or slightly curved surface, assuming that the walls were constructed of the same material and with material of the same thickness suitable for such a closure, there was likely to be a difference between the efficacy of the closures so formed but he would expect all three to work satisfactorily in accordance with the principles of the respondent's closure. Professor Crisp went on to conclude that a corrugated construction was to be preferred because a smaller push-down force was required. In other words he concluded that the preferred embodiment of the invention would contain a diaphragm which was corrugated or fluted, but that a diaphragm which was not fluted or corrugated would work satisfactorily, although not as efficiently.

Mr. P.K. Bayly is an industrial designer. He has had a long experience in industrial design. Mr. Bayly said that the word "biased" is used by engineers to mean that an article has a predisposition to move in a certain direction or to take up a certain condition or state. He also said that it was a deviation from the norm of a predetermined nature or direction.

Mr. Bayly was asked about the efficiency of a flat wall as distinct from one which was slightly conical. He thought that the flat wall would operate somewhat more efficiently and would be no more difficult to operate than would a wall which had a degree of conicity. This evidence was used by counsel for Decor in order to suggest that there was no purpose in a slightly conical diaphragm. If the draftsman had intended to make a claim in respect of a smooth diaphragm, he would have done so whether the diaphragm was flat or slightly conical. Each would have been equally effective. It followed that the word "biased" was not intended to apply to a diaphragm which, whether corrugated or fluted or not, was slightly conical; there would have been no point in his making such a claim. The claim would have been in respect of diaphragms whether flat or conical. Mr. Bayly said that the displacement of the flutes or corrugations could be described as "the flutes collapsing upon themselves". He also agreed that they were positioned so that they would be displaced in a predetermined manner if a suitable force "acted upon them or a restraint of force was released".

Mr. K.W. Lohning is a consulting engineer. He thought, contrary to Mr. Bayly, but in common with Professor Crisp, that the fact that the flutes or corrugations folded in or collapsed upon themselves would permit a lower thumb force than would be necessary in the case of a lid which had a completely smooth wall.

I have now referred to sufficient of the specification, the relevant dictionary meanings of the word "biased" and the engineering and design evidence to come to the question of construction which is involved. The difference between the parties centres upon the words used in claim 1, "a center main wall including a biased area radially emanating from a central portion thereof to a peripheral terminus", and, "being adapted for the application of pressure to the approximate center thereof in such manner that said biased area tends to collapse upon itself and substantially uniformly displace said peripheral terminus." Similar words are used in the consistory clause on page 6 of the specification.

The submissions made by the parties differ in relation to the meaning of the word "biased" in the context in which it appears in claim 1. As mentioned, counsel for Decor contended that a "biased area" was, in the context, an area that was pre-disposed to move in a particular manner. Counsel for Dart said that, in the context of the specification, "biased" meant oblique. Upon the basis of the dictionary meanings of the word "bias" and "biased" to which I have referred either meaning is open. Although the expert evidence is not entirely consistent, each meaning

is also open according to that evidence. There may be a question whether expert evidence on this matter can be referred to. But nothing turns on it because, whether one has regard only to the dictionaries or to what the experts said, the position is the same.

The submission of counsel for Dart was that a biased area in the context of the specification referred to an area, whether smooth or corrugated or fluted, which was slanted or oblique. In other words, it was designed to indicate that the claim applied to a surface which was slightly conical in shape. Counsel for Decor, on the other hand, contended that it referred to the corrugations or flutes and to their propensity or disposition to act in a particular way by collapsing upon themselves when pressure or force of a particular kind was applied.

I think that, if the word "biased" had been used to refer to a slightly conical shape, that expression would have been used. I am strengthened in that view by the consideration mentioned by Mr. Bayly that it seems unlikely that the draftsman would have intended to exclude from the claim a wall or surface which was flat as distinct from one which was, however slightly, curved or oblique. It is difficult to think that the slightly curved surface of which the Dart embodiment provides an example was intended to be an essential part of the invention. These considerations lead me to conclude that the word "biased" was used to refer to a surface or area which had a predisposition to move in a particular way. But the fact that that is so does not of itself lead to the conclusion that Decor is entitled to succeed. Both a fluted or corrugated area and a smooth area, in the context of this specification, will be predisposed to move in a particular way. When the plunger is depressed, the shape of each will be distorted into a more conical shape, that is to say, it will become more curved. When the pressure is removed, the surface will recover its former shape. But that will occur whether the area is a smooth surface or one which is made up of corrugations or flutes.

The principal strength which the Dart case has is that there is no reference to the words "corrugated" or "fluted" in the claims. In counsel's submission, a proper course is to construe the claims without resort to the other parts of the specification unless there is some ambiguity to be found in them. But that ignores the fundamental rule of construction that the specification must be read as a whole. In *K. & S. Lake City Freighters Pty. Limited v. Gordon & Gotch Limited* (1985) 157 CLR 309 Mason J. (as he then was) said (p 315):-

"On its face s. 133 (of the *Motor Vehicles Act 1959* (S.A.)), which is expressed in general terms, contains no limitation on the nature of the claim to damages or other

remedy to which it refers. However, to read the section in isolation from the enactment of which it forms a part is to offend against the cardinal rule of statutory interpretation that requires the words of a statute to be read in their context: *Cooper Brookes (Wollongong) Pty. Limited v. Federal Commissioner of Taxation* (1981) 147 CLR 297, at pp 304, 319-320; *Attorney-General v. Prince Ernest Augustus of Hanover* (1957) AC 436, at pp 461, 473. Problems of legal interpretation are not solved satisfactorily by ritual incantations which emphasize the clarity of meaning which words have when viewed in isolation, divorced from their context. The modern approach to interpretation insists that the context be considered in the first instance, especially in the case of general words, and not merely at some later stage when ambiguity might be thought to arise."

Care must be taken in relying on a dictum from a judgment dealing with the construction of statutes when there are special rules laid down for the construction of patent specifications. Nevertheless, what Mason J. said is but an aspect of the general rule of construction applicable to patents as well as to other instruments that the words to be construed are to be read in the context of the whole document.

There are two specific circumstances in which the body of the specification may be referred to in ascertaining the meaning of the claims. One is where there is an ambiguity. In such a case resort may be had to the earlier part of the specification for the purpose of resolving the ambiguity. And, if there is disclosed in the specification an intention on the part of the draftsman that words used elsewhere are to have a particular meaning, that meaning must be given those words because the draftsman has used his own dictionary.

In the light of these various considerations, I think the only safe approach to adopt is to look at all parts of the specification claimed by either party to be relevant or irrelevant to the task of construction and come ultimately to a conclusion on what is covered by the claims. That means that one must consider, even if one ultimately discards them as of assistance, words used in the description of the preferred embodiment of the invention.

The most critical sentence is that referred to on page 18 above in which the specification, in describing distinctive features of the preferred embodiment, refers to "a biased, corrugated, fluted or similar center main wall arrangement that effectively and easily enables the contraction and recovery of the center main wall peripheral edge to a relaxed or as-molded position." As mentioned, counsel for Decor contended that this phrase showed that the words "biased", "corrugated" and "fluted" were used synonymously or interchangeably. Support for

that view is to be found in the expression "or similar center ..." which follow the words in question. In ordinary language it would not seem to me to be appropriate to use the words "corrugated" or "fluted" to describe something which is biased even in the sense of something which is predisposed to move in a particular way. "Biased" is a word of general application. "Corrugated" and "fluted" involve particular concepts. But the draftsman, because of his use of the expression "or similar center main wall", has, so counsel submitted, given an indication that the three words are to be regarded as having a similar meaning. Further support for this view was said to be found in later paragraphs (see pp 21-24 above) in which it is made clear, in relation to the preferred embodiment, that an advantage of corrugated construction is that less force is required to depress the plunger than would be the case if the surface were smooth. This is something which is supported by Professor Crisp's and Mr. Lohning's evidence.

In my opinion the problem is not so simply solved. I do not think the draftsman intended to use the word "biased" as a synonym for "corrugated" or "fluted", or, for that matter, "plaited" which is a word used in later paragraphs. No matter what meaning is given to the word "biased", it can never in ordinary language bear a meaning which is similar to, let alone synonymous with, "corrugated" or "fluted". The concepts are so different that it is quite impossible to conclude that the two were intended to have the same meaning. No support for such a meaning is to be found in the technical evidence. Indeed the totality of that evidence is plainly opposed to it.

What then is the meaning to be ascribed to the phrase, "biased, corrugated, fluted or similar center main wall", and similar expressions used elsewhere in the specification. In my opinion there are two possible solutions. One is that the words are used as alternatives. The other is that "biased" qualifies each of the words which follow it so that it should be read as "biased corrugated" or "biased fluted" or "biased similar center". I am against the first alternative, not only because it would involve an inappropriate use of language, but also because a biased wall or surface, that is a wall or surface predisposed to move in a particular way, is at the heart of the invention. The predisposition of the surface to move in a predetermined manner when the plunger is depressed and return to its former shape when pressure is released is one of the invention's essential features. No surface, whether smooth, corrugated, fluted or plaited, will be appropriate unless it has this quality.

It follows that I prefer the second of the two alternatives, namely, that the word "biased" qualifies each of the words which follow it. This meaning is the only one which, in my opinion,



gives effect to the draftsman's intention which I deduce to have been to describe (for the purposes of the preferred embodiment) a surface or wall which was predisposed to move in a particular way and which was corrugated or fluted or of a similar construction.

I now come to what I consider to be the principal difficulty in this case. The words which I have construed come from that part of the specification which describes the preferred embodiment of the invention. They are not used in the claims nor in the consistory statement. The relevant words of claim 1 and the consistory statement are, as earlier mentioned, "a center main wall including a biased area radially emanating from a central portion thereof to a peripheral terminus", and, "being adapted for the application of pressure to the approximate center thereof in such manner that said biased area tends to collapse upon itself and substantially uniformly displace said peripheral terminus." Having reflected on the matter, I have reached the conclusion that these words do not disclose an ambiguity. They clearly indicate an area or surface predisposed to move in a particular way when pressure is applied to or released from its centre. Contrary to the submission for Decor, the words do not give rise to ambiguity because of the use of the expression, "radially emanating from a central portion thereof". No reading of the specification as a whole in accordance with the rules of construction earlier referred to suggests a link between radial emanations from the central portion of the surface and corrugations or flutes, or raises in one's mind a question whether the radial emanations are, upon a reading of the specification as a whole, intended to refer to corrugations or flutes. That is because the draftsman is dealing with a different matter, namely, the predisposition which the area must have to move in a particular way outwardly from its centre to its "peripheral terminus".

The central question then becomes whether there is to be found in the description of the preferred embodiment a clear indication that the word "biased" wherever it is used, whether in the claims or otherwise, is to be read as if it referred to an area which is biased and corrugated or biased and fluted or biased and shaped in a manner similar to an area which is either corrugated or fluted. This is a matter upon which my mind has undergone a degree of fluctuation. A reading of the specification as a whole leaves one with the impression that very great advantage was seen by the draftsman, and thus the inventor, in using a surface which was corrugated or fluted. Indeed, as one reads the specification, one is so impressed with this feature of the description, repeated as it is on numerous occasions, sometimes with the addition of the word "plaited", that it comes as quite a surprise to find the words missing from the claims. It is

then that one must remember the rules of construction which are to be applied and take care to give effect to them. One must also give weight to the paragraph (relied upon by the learned primary Judge), which leads from the description of the preferred embodiment to the claims, in which it is said that the invention may be embodied in other specific forms without departing from the spirit of the essential characteristics thereof and that the present embodiments are to be considered in all respects as illustrative and not restrictive.

Having given the matter the anxious consideration which I have indicated, I have reached the conclusion that the word "biased" in the claims is not to be restricted in its meaning so as to apply only to corrugated, fluted or similar surfaces which are biased in the sense that they have a predisposition to move in a particular way. The matter is a difficult one, but I think that that is the better view.

In reaching this conclusion I have taken into account the terms of the earlier specification which is incorporated in some respects in the subject specification. I have not myself found assistance from the relevant parts of it to which I have earlier referred. The claim plainly enough relates to a surface which is corrugated or fluted and the invention was probably restricted to a lid having this characteristic. But the fact that that is so does not shed light on the meaning of the claims made in the subject specification. As earlier said, each party sought to obtain assistance from the words of the earlier specification, but I have found no ambiguity in the words used and I think there is no warrant to refer to the earlier specification for guidance on the meaning of the words in the claims in question here.

Two further submissions need to be considered. The first of these is a submission by counsel for Decor that, if the claims are not limited to closures, the centre main walls of which contain a corrugated or fluted area, they are invalid because they are not limited to the essence of the invention described in the specification and fail to fulfil the advantages promised by the specification. In my opinion this submission should be rejected. The essence of the invention is described in the opening paragraph of the specification and in the claims. The essential features of it are a closure or lid which is predisposed to move in a particular way, namely, to fold in or collapse upon itself when pressure is applied by the plunger to its centre and to regain its shape when pressure is released. If the closure is used to seal a container, it will not regain the entirety of its original shape when pressure is released. It will be prevented from doing so by the walls of the container. It is that factor which brings about the seal. All those features are

present whether the surface of the area or wall of the closure is smooth, corrugated or fluted. The references to corrugations and flutes are all to be found in the description of the preferred embodiment. There is no warrant for the view that the promise made in the specification necessarily involved a surface which was corrugated or fluted.

The second submission was that claims 1, 2 and 5 were bad for lack of clarity because of the lack of definition of and ambiguity in the expression, "open mouthed container". As his Honour said the expert evidence establishes that the expression is not a term of art in Australia. His Honour referred to dictionary meanings of the expression "open-mouthed". Not unexpectedly its primary meaning is having the mouth open or having an open mouth. None of the secondary meanings given in the dictionaries is of assistance. His Honour said:

"I think that the concept of a mouth which gapes is inherent in the term 'open-mouthed containers' as it is used in the specification, that a bottle is not an 'open-mouthed' container, and that a bottle closure is not properly described as a device for sealing an 'open-mouthed container' within the meaning of Claim 1."

In my opinion the expression "open-mouthed container" is imprecise but not so vague and uncertain of meaning as to render the claims bad for lack of clarity. I do not gainsay that there may not be closures of a size which are on the borderline so that whether a closure of a particular size constituted an infringement may involve a question which is not free from difficulty. But usually the closures will be of a size which plainly fall on one side of the line or the other. In *Minnesota Mining and Manufacturing Company v. Beiersdorf (Australia) Limited* (1980) 144 CLR 253 Aickin J. said that lack of precise definition in claims was not fatal to their validity so long as they provided a workable standard suitable to the intended use. He referred to *British Thomson-Houston Co. Limited v. Corona Lampworks Limited* (1922) 39 RPC 49 and *Monsanto Co. v. Commissioner of Patents* (1974) 48 ALJR 59 at p 60. There Stephen J. rejected a submission that a claim lacked clarity because it used the adjective "substantial" in the phrase, "any substantial effect as a cooling medium". Each case must, of course, depend upon the words used and the context in which they appear. In my opinion the use of the expression "open-mouthed container" does not warrant the conclusion that the claims are not clear or succinct for the purposes of the provisions of subsec. 40(2) of the *Patents Act*. I would reject the submission.

I have dealt with the three submissions relied upon by counsel for Decor. In my opinion each should be rejected. In the result I would dismiss the appeal with costs.

## **FOSTER J:**

This is an appeal from the decision of the Supreme Court of Victoria (King, J.) given on the 4th of February, 1988 in which his Honour held that the appellants had infringed certain claims of the complete specification of Australian letters patent No. 462,612 held by the respondent. His Honour also held that claims 1, 2 and 5 of the specification, being the claims infringed, were valid and should not be revoked, as sought by the appellants' counter claim.

The specification in suit related to a form of closure specially designed for the hermetic sealing of containers described as "open-mouthed". The alleged infringing article was a closure designed for the same purpose. Each design provided for the closure's having "a centre main wall", the shape of which could be altered by downward finger pressure on a plunger, this alteration being fundamental to the sealing operation. The appellants' allegedly infringing article had a centre main wall which is smooth. It was and is asserted by the appellants that this feature of its closure put it outside the claims of the respondent's specification. His Honour held that, as a matter of construction, the claims of the specification covered the appellants' article. It was also asserted by the appellants that if, as a matter of construction, their closure was caught by the claims of the specification, then those claims were not "fairly based on the matter described in the specification" as required by s. 40(2) of the *Patents Act, 1952* and the claims should therefore be made the subject of an order for revocation. The learned trial judge refused this order.

He also refused such an order claimed on the basis that the complete specification failed to define the invention clearly and succinctly, as required by the section.

The grounds of appeal, as ultimately relied upon, were as follows:-

"2. The learned judge –

- (a) erred in construing claims 1, 2 and 5 of the said complete specification and, in particular the reference therein to a "biased area" which on application of pressure to the approximate centre thereof "tends to collapse upon itself" as including a closure member such as the closure member of the appellants, the centre main wall of which is smooth;
- (b) should have construed the said claims as limited to a closure member the centre main wall of which is corrugated or fluted;
- (c) accordingly erred in finding that the appellants' closure member infringed the said claims.

3. Alternatively, if (which is denied) claims 1, 2 and 5 of the complete specification

should be construed as including a closure member the centre main wall of which is smooth, the learned judge should have held each of claims 1, 2, 3, 4 and 5 of the complete specification to be invalid in that –

(a) they go beyond the invention described in the complete specification, namely a closure member including a centre main wall which is corrugated or fluted so that upon application of pressure to the approximate centre thereof the corrugations or flutes tend to collapse or fold upon themselves and thereby secure a contraction of the circumference of the centre main wall;

(b) they include closure members which would fail to achieve the promise of the specification that the invention minimises both internal stresses within the closure and the force required to properly assemble a closure and container while at the same time maximising the sealing pressure between the closure and container and the lateral contraction of the closure sealing wall portion per unit of applied force.

4. The learned judge should have held that each of claims 1, 2, 3, 4 and 5 of the complete specification is invalid for failure to define the invention in that it is not clear what is meant in those claims by the following expressions:

(a) an open-mouthed container;"

It was sought, by the appeal, that his Honour's judgment and orders be set aside and, in lieu thereof, orders:

- (a) that the action be dismissed with costs; and
- (b) that there be judgment on the counter-claim for revocation of each of the claims 1, 2, 3, 4 and 5 of Australian letters patent no. 462612.

There is no doubt that, at least so far as concerns the "preferred embodiment" of the respondent's specification, the respondent's closure is described and depicted as having a fluted or corrugated centre main wall. Indeed, it is claimed that the structural components of fluting or corrugation assisted in the over-all sealing operation as mentioned hereafter. However, the respondent maintains that the fluted and corrugated surface of the centre main wall is not essential to the invention, the subject of the claims. The appellants contend that it is, and that the claims, properly construed, are restricted to closures having this feature, or that, if the construction be not so restricted, then the claims are bad as exceeding the description of the invention in the specification.

The relevant claims are claims 1, 2 and 5. Claims 2 and 5 were acknowledged in argument to be dependent upon claim 1 and to contain no additional material bearing upon the issues in the case. It is therefore necessary to set out only claim 1. It reads as follows:-

"The claims defining the invention are as follows:-

1. A locally distortable closure member contractably and distensibly constructed and having an elastic memory such that it is adapted to hermetically seal an open-mouthed container, said closure member comprising: a center main wall including a biased area radially emanating from a central portion thereof to a peripheral terminus, said center main wall being adapted for the application of pressure to the approximate center thereof in such manner that the said biased area tends to collapse upon itself and substantially uniformly displace said peripheral terminus until said closure is easily positionable in an open-mouthed container; integral extended sealing means positioned around said peripheral terminus of the center main wall, said sealing means being displaceable in like manner with said peripheral terminus such that at least a portion of said sealing means is closely engageable with and sealable against the walls of an open-mouthed container due to the resiliency and elastic memory of said closure upon the discontinuance of applied pressure to said center main wall; a closure wall interconnected with said integral extended sealing means and said center main wall, said closure top wall further including an integral and substantially centered upstanding bushing-like guide terminating at its upper extremity in a finger grippable flange; and an axially movable plunger positioned in said guide in such manner as to have a portion thereof exposed above said flange so that pressure applied to the plunger is transmitted to the approximate center of said center main wall."

As is, of course, not uncommon, this claim is couched in the widest terms of all the claims and is an identical copy of what is acknowledged to be the consistory clause of the specification which introduces the words of description set out above with the phrase "In accordance with the present invention there is provided ...".

The Court was provided with an example of the appellants' allegedly infringing closure. Like the closure described in the specification in suit, it is a "Three-part press type seal". The learned trial judge provided a written description of it in his judgment, the completeness and accuracy of which has not been disputed. I quote it in full as follows:-

"This article is a plastic closure for what I shall refer to as a wide-mouthed container. It may be taken to pieces. When taken to pieces it comprises three members, which I shall describe by reference to the posture which the whole article assumes when being used to close a container of appropriate dimensions. One member is a plastic disc with an integrally formed upturned circumferential flange. Its central part, which has a diameter about one-fifth that of the diameter of the disc, is made of thicker material than the remainder of the disc. The disc is almost flat, with a slight downwardly convex curvature, and has on its upper face above and surrounding its said central part an integrally formed upwardly extending circular projection. Around the outside of the upturned circumferential flange and above the periphery of the slightly curved disc is an outwardly projected bead, integrally formed with the flange. Into the circular cavity formed by the flange there is inserted from above a second member, which is another plastic disc with a downwardly turned integrally formed circumferential flange which clips into a groove on the inside of the flange of the lower disc, where it is firmly held against the upper surface of that disc. In the centre of the upper disc is a hole and around it is an integrally formed upwardly-extending circular projection ending in a circumferential outwardly-extending flange. The third member of the article is a

hollow cylinder of about the same diameter as the central part of the lower disc, which has a flange extending outwardly from its open lower end. In the assembled article the open end of the third member clips over the projection extending upwardly from the centre of the first member; when this is done the third member rests upon shoulders on the outside of the said projection. The effect of this interconnection is that the open lower end of the third member is still some distance from the upper face of the lower disc, but any downward force exerted on it is transmitted through the shoulders to the centre of that disc. When the second member is clipped on to the first member the upper end of the third member projects upwardly through the hole in the second member. The effect of this assembly is that one may transmit force downwardly upon the centre of the disc of the first member by the thumb pressure of one hand on the top of the third member, with the index and middle fingers of the same hand engaged behind the outwardly extending flange on the second member. By such thumb pressure and transmission of force the central part of the disc of the first member is caused to move downwardly, thereby increasing the convexity of the remainder of the disc and reducing its radial diameter, enabling the closure to be inserted into the mouth of the container to be closed. Upon release of such pressure the various parts of the disc tend to return to their initial position; thereby the projecting bead on the first member is caused to press firmly against the inside surface of the container mouth to effect an hermetic seal. Upon the third member again being depressed by thumb pressure the radial diameter of the disc is again reduced and the closure may be removed from the mouth of the container without friction."

There is no dispute that the appellants' closure so described would fall within the first claim of the respondent's specification provided that its centre main wall, described by his Honour as "a plastic disc", "which is almost flat, with a slight downwardly convex curvature" and having a "central part, which has a diameter about one fifth that of the diameter of the disc ... made of thicker material than the remainder of the disc" and which central part is by the "transmission of force ... caused to move downwardly thereby increasing the convexity of the remainder of the disc and reducing its radial diameter enabling the closure to be inserted into the mouth of the container to be closed", is equivalent to the centre main wall described in the claim. As set out above, that must include "a biased area radially emanating from a central portion thereof to a peripheral terminus, said centre main wall being adapted for the application of pressure to the approximate centre thereof in such manner that said biased area tends to collapse upon itself and substantially uniformly displace said peripheral terminus until said closure is easily positionable in an open-mouthed container".

It will readily be seen that the critical questions are whether the wall of the alleged infringing closure can be properly described as "a biased area radially emanating from a central portion to a peripheral terminus" and whether, on the application of appropriate pressure, its increasing convexity with concurrent reduction of its radial diameter answers the description of a "biased area tending to collapse upon itself with uniform displacement of its peripheral terminus."

The appellants submit that these questions must be answered adversely to the respondent. The appellants' primary submission, is that these crucial words of the claim has the effect of limiting it to closures in which the centre main wall is of corrugated or fluted construction, this being the natural meaning to accord to them, without reference to the wording of other parts of the specification. The basis of this argument is the according to the word "bias" an essential meaning of "predisposed to move in a particular manner" rather than the meaning espoused by the respondent and accepted by the trial judge of "oblique slanting or curved". A reference to reputable dictionaries provides authority for both meanings.

Despite counsel for the appellants' valiant efforts to establish the contrary, I am quite unable to accept that it is logically possible to move from the appellants' preferred definition to a position which requires that claim 1 can apply only to closures with a corrugated or fluted main wall. It is undoubtedly true that, as established in the evidence, corrugation and fluting predisposes the material upon which such a structure is imposed to move in a particular direction. However, that does not enable one to take the step of equating the word "bias" with the words "corrugated or fluted". The corrugating or fluting of material may be one way of giving it the characteristic of "bias" but quite clearly it is not the only way. Indeed, modified conicity, when imposed as a shape upon resilient material, would clearly predispose that material to movement in the direction of increased conicity if appropriate force be applied.

It is my view that, if either of these basic definitions of the terms "bias" or "biased" are accepted, the result is that the wording of the claim is apt to cover the centre main wall of the appellants' closure. It is slanting oblique or curved and it is also predisposed to move in a particular manner, namely, with the application of pressure, in the direction of increased conicity, and with the removal of that pressure, in the direction of its original slight conicity.

I do not consider that the appellants can gain any assistance from the words "radially emanating". Although these words are apt to describe a configuration such as the spokes of a wheel radiating outwards from its axel to its outer rim, they are equally capable of conveying the concept of an area extending outwards from the centre of a circle to its circumference.

Similarly, there is no difficulty, in my view, in accepting that when, upon the application of the plunger force, the centre main wall of the appellants' closure adopts the character of an



extending cone, it also thereby answers the description of a biased area tending to collapse upon itself. This was clearly the view espoused by expert engineering evidence in the case. However, without any such assistance, I would have no difficulty in arriving at this result. Whilst it may be true that the words are also apt to describe a fluted or corrugated area folding upon itself whilst under appropriate pressure, it simply cannot be said that they are appropriate only to describe such a happening.

In my view, therefore, it is simply impossible to arrive at a construction of the first claim that would confine its operation to closures which have a centre main wall which is of corrugated or fluted construction.

Indeed, in my view, the wording of the claim, standing alone and unassociated with the other material in the specification, is more than apt to describe the appellants' closure. The trial judge accepted that the more appropriate meaning to give to the word "bias" in the context of the claim, was "slanting oblique or curving". I am satisfied that he was correct in doing so.

I am by no means persuaded that it is legitimate, in this case, to look beyond the wording of the claims to determine their construction. I doubt that any relevant ambiguity exists requiring recourse to other portions of the specification to explain it (*Welch Perrin & Co. Pty. Ltd. v. Worrel*, 106 CLR 588, at p 609, 610; *Interlego A.G. v. Toltoys Pty. Ltd.*, 130 CLR 461 at 478, 479; *Electric and Musical Industries Ltd. v. Lissen Ltd.* (1938) 4 AER 221; *Rosedale Associated Manufacturers Ltd. v. Carlton Tyre Saving Co. Ltd.* (1960) RPC 59 at p 69). However, as the possible effect of other portions of the specification upon the construction of the words referred to above in claim 1 has been the subject of submissions on both sides, and as the specification must be considered, in any event, upon the question of the validity of the claims in question, I shall consider the appellants' arguments in this regard. It is convenient, in the first instance, to refer to the structure of the specification, which was the subject of some debate, but in respect of which I have come to a firm conclusion.

The specification commences with the following general statement as to the invention claimed:-

"This invention relates to containers and container closures in which the closures are formed from distortable materials of construction. More particularly, the invention concerns distortable, reusable, plastic container closures for open-mouthed containers and further contemplates a closure arrangement that is quickly and easily operable and

which assures a reliable hermetic seal."

There then follows a description of existing forms of closure together with their disadvantages. The specification then continues by referring to the invention to be claimed in these words "This invention provides a sealing closure that is, in all respects, representative of a compromise incorporating the good features of those mentioned above, and in addition, is more simple in its mode of operation." For ease of reference, I indicate that this passage appears at p 69 of the Appeal Papers, in the part of those papers where the specification is set out.

There follows, immediately, a portion of the specification, which has been the subject of considerable debate in the appeal. I set it out in full as follows:-

"The construction more fully described hereinbelow enables the user to apply the closure of this invention to any of several types of containers simply by an application of pressure to the approximate center of the closure main wall. As is readily discernible from the drawings, this closure is of a multi-pieced construction and includes a finger operable plunger that is adapted to transmit pressure to the approximate center of the main wall.

This new closure further includes several distinctive constructional features which enhance its applicability for use in a food storage capacity as well as in other related fields. Among these is a biased, corrugated, fluted or similar center main wall arrangement that effectively and easily enables the contraction and recovery of the center main wall peripheral edge to a relaxed or as-moulded position. This edge, of course, includes as an integral part a sealing wall portion which functions to produce a sealed relationship between closure and container, thus preserving and physically retaining the contained materials therein.

The invention also encompasses variable construction parameters affecting the efficient operability of such closures. Therefore, the construction described in detail below has as its principle objective to minimize both internal stresses within the closure and the force required to properly assemble a closure and container, while at the same time to maximize the sealing pressure between the closure and container and the lateral contraction of the closure sealing wall portion per unit of applied force. In these respects, it is applicant's wish that the disclosures in Australian Application No. 24825/70 (accepted as Patent No. 455,330 be incorporated by reference in this application for Letters Patent."

On a reading of the whole of the specification, I am satisfied that this passage, with the exception of the first sentence of the last paragraph, is intended by the draftsman to be a compliance with the requirement of s. 40 1(a) of the *Patents Act, 1952* that the specification shall describe "the best method of performing the invention which is known to the applicant". In other words, this passage is describing what is commonly referred to as "the preferred embodiment".

There then follows an hiatus in the description of the preferred embodiment in which the draftsman, perhaps untidily, but nevertheless definitely, sets out the consistory clause which, as previously indicated, is identical with the first claim. The draftsman then, at the middle of page 72 of the Appeal papers, recommences his description of the preferred embodiment which continues to the end of the first full paragraph on page 78. This is a lengthy passage which I shall not set out in full. It contains extensive explanatory references to the diagrams of the closure which form part of the specification.

The following paragraph then appears:-

"From the foregoing description, it should be apparent that the invention encompasses an advantageous advance in the art. Further, it should be clear that the invention may be embodied in other specific forms without departing from the spirit of the essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive."

The specification then moves to the claims. These progress from the general to the more particular. The final claim (6) is clearly for the described preferred embodiment. It is in these terms:- "A locally distortable closure member substantially as described herein and with reference to the accompanying drawings."

It is therefore plain that passages in the specification relied upon by the appellants to give the highly specialised meaning sought to be attributed to the word "bias" in the first claim are all to be found in that part of the specification which deals with "the preferred embodiment". Equally, it is clear that it is the preferred embodiment which incorporates the corrugated or fluted characteristics of the centre main wall. In the passage quoted, the "biased corrugated fluted or similar centre main wall arrangement" is described as a distinctive constructional feature, said to "enhance" the applicability of the closure, the construction of which is being described. It is further said that this particular form of construction (and I summarize) assists the sealing operation by affecting beneficially the ease of contraction and relaxation of the sealing periphery.

It is submitted on behalf of the appellant that the placing of the word "biased" in this collocation of words indicates that it is intended to be synonymous with corrugated or fluted. I simply do

not accept this. It does not seem to me that this series of words can, in any way, be said to produce this effect.

Moreover, a reference to the earlier Australian patent and its disclosures, incorporated by reference in the passage, clearly indicates, in my view, that "bias" is not being used synonymously with the other words. Thus, at page 45 of the Appeal papers, there appears the following passage from the earlier patent:-

"This new closure further includes several distinctive constructional features which enhance its applicability in the use of the food storage container area and in other related fields. Among these is a biased or conical center wall arrangement which preferably includes a corrugated fluted or similarly pleated construction that effectively and easily enables the contraction of the center wall peripheral edge and the recovery thereof toward or to its extended position with minimum development of internal stresses."

This passage makes a clear distinction between the concept of "biased" which it equates with "conical" and the concepts of "corrugation" or "fluting". Similarly, at page 51, a description of the preferred embodiment of this earlier invention speaks of "a conical or radially biased center main wall" and goes on "specifically, the conical or biased area is preferably formed of a plurality of upstanding tapered ridges that produce a corrugated fluted or pleated construction ...". Also, at page 52, it is said "The biased or conical center main wall ... includes therefore, in the preferred embodiment a corrugated or fluted structure such as is exemplified by the plurality of upwardly and outwardly tapered ridges". Other passages are to like effect.

Reverting to the specification in suit, one finds, at page 73, in the description of the preferred embodiment and in relation to the diagrams, the statement, "it can be seen that the closure member ... of this invention is composed of a plurality of separate parts which function together in the operation of a closure. These include a radially biased, fluted or corrugated center main wall ... specifically, the biased or corrugated areas are composed of a plurality of upstanding tapered ridges ...". Quite apart from any other considerations, bearing upon the difference in meaning between the word "biased" and the words "fluted or corrugated", the obvious similarity between this passage and the passage from the incorporated specification, in my view, completely militates against the acceptance of an argument that "biased" is intended to be synonymous with "corrugated" simply because they are connected by the word "or".

So far from it being the draftsman's intention to use "biased" in a way synonymous with "corrugated" or "fluted", it was, in my view, his intention to use it synonymously with "conical". This sufficiently appears from the passage, at page 78 of the Appeal papers, where it is stated that "in operation, the closures of this invention tend to experience a lateral displacement within the conical, corrugated or fluted area ... as pressure is applied to the planar area ... The conical, corrugated construction accentuates this displacement as the flutes fold upon themselves in an accordion-like fashion." "Conical" is here, quite clearly, used as a substitute for "biased".

I am, therefore, quite satisfied that the word "biased" appearing in claim 1 is inter-changeable with the word "conical" and not with the words "corrugated or fluted". The appellants' closure is biased in this sense. It is not saved from infringement by the absence of inclusion in the design and structure of its centre main wall, the corrugations and flutings specified in the preferred embodiment of the respondent's specification.

I therefore reject the first ground of appeal.

As to the second ground of appeal, it follows that I reject it in so far as it depends upon the submission that the claims went beyond the invention described in the complete specification. I am satisfied that the invention is fully described in the consistory clause, which does not limit it to the inclusion of a centre main wall having a corrugated or fluted construction. Clearly, the absence of this characteristic would prevent the appellants' closure from falling within claim 6 but does not prevent it from falling within claim 1. I am clearly of the opinion that it does.

The second aspect of this ground of appeal is what is commonly described as a claim of inutility. It is said that claim 1, and the associated claims, are invalid because they do not achieve the promise of the specification, that promise being that "the invention minimizes both internal stresses within the closure and the force required to properly assemble a closure and container while at the same time maximizing the sealing pressure between the closure and container and the lateral contraction of the closure sealing wall portion per unit of applied force."

Statements to this effect are to be found in the passage already quoted from page 70 of the Appeal papers. A similar passage is to be found at page 77, where the promise is described as "one prime objective of this invention".

It is quite clear that the claim is made that the use of a corrugated or fluted surface constructed in the manner indicated in the drawings to the specification makes the most efficient use of the forces generated within the system by the application of pressure to the plunger. It is equally clear that this claim is borne out by the expert evidence in the case. There is no need to set out the technical explanation for this in these reasons.

However, this promise is quite clearly made only in respect of the preferred embodiment of the invention. No claim is made that an invention which accords merely with the broad description of the consistory clause, would produce this maximum result. The impugned claims are all made in accordance with the consistory clause and closure members made in accordance with those claims would fulfil the promise of that clause.

I therefore reject this ground of appeal.

The final ground of appeal, as indicated, depends upon a submission that the use of the description "an open-mouthed container" in the claims is unclear, fails to define the invention, and thus renders the claims invalid.

I have no hesitation in rejecting this ground. The container is not itself part of the claimed invention. The specification makes it clear that the closure is capable of being adapted to a range of containers. The conception of an open-mouthed container being one with an opening sufficiently wide to take a closure make in accordance with the specification and being of a shape that would enable sealing to take place as a result of the uniform outward circumferential distension of the sealing edge of the closure, is quite easy to envisage. An adequate "workable standard suitable to the intended use" is provided by this description (*Minnesota Mining & Manufacturing Co. & Anor. v. Beiersdorf (Aust) Ltd.* 144 CLR 253 at 274; *British Thomson-Houston Co. Ltd. v. Corona Land Works Ltd.* (1922) 39 RPC 49; *Monsanto Co. v. Commissioner of Patents* (1974) 48 ALJR 59 at p 60).

I would therefore propose that this appeal be dismissed with costs.





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# PATENT SPECIFICATION <sup>(21)</sup> 39,154/72

Class (52)	57.5; 57.2
Int. Cl. (51)	B65D 39/04, 39/16
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Applicant (71)	DART INDUSTRIES INC.,
Actual Inventor (72)	JACK VINCENT CROYLE, and JAMES BALDWIN SWETT
Related Art (56)	292148 (51721/64) 57.5 413344 (2326/66) 57.5; 57.2 455330 (31235/71) 57.5; 57.2

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The following statement is a full description of this invention, including the best method of performing it known to us.

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F. D. Atkinson Government Printer Canberra



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SPECIFICATION

This invention relates to containers and container closures in which the closures are formed from distortable materials of construction. More particularly, the invention concerns distortable, reusable, plastic container closures for open-mouthed containers and further contemplates a closure arrangement that is quickly and easily operable and which assures a reliable hermetic seal.

Plastic food storage containers have been available for many years and have generally employed a bowl, cylinder, pitcher or similarly shaped vessel and a separate closure or lid made of a relatively flexible material. Further, the closures have normally been of several types, one of which includes an inverted peripheral groove that is placed upon the top edge or rim of a container wall and is pressed onto or expanded over that edge to form a hermetic seal between the two parts. Another typical closure is the two-position type which may be flexed to either of two fixed positions. In one of these positions, the closure may be easily fitted over the rim or within the open-mouth of a container, and then when flexed to the second position, its peripheral portions are forced into tight locking contact with the rim or inside container wall. Others include the cork-like and toggle-like closures which loosely fit into the open mouth of a container and which are thereafter expanded into contact with the container inside wall surfaces. Then, of course, there have been the relatively inflexible plug type closures that have been provided for these purposes. Normally, these have been employed with vessels that are also relatively inflexible and include a tapered body portion into which the closure could be inserted until it frictionally engaged the tapered body.

As might be expected, all of the mentioned closures have been quite satisfactory in operation and construction. It should

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be noted, however, that each is not wholly satisfactory from a plurality of diversified points of view. For example, the closure having the inverted peripheral groove has had to be stretched over or pressed onto the container rim normally by finger pressure applied at successively adjacent points along the top groove defining wall. This, of course, may be a time-consuming and laborious procedure, especially if the closure is as tight fitting as is required to obtain a hermetic seal. Further, when the closure must be stretched in this manner, stress concentrations are increased to such a degree that stress cracking may result. Similarly, lids of this type are susceptible to warpage due to the inordinate internal stresses and in this warped condition, placement of the lid on a container is made more difficult and sometimes even impossible.

The two-position closure may also require some dexterity if it is to be accurately locked in position. When using this closure, the peripheral edge of the closure must be maintained in close association with the top edge of the container as the top wall of the closure is flexed to its locking position. As might be expected, this, in some instances, necessitates that the closure be simultaneously held at the edges and flexed at the center.

Similarly, the toggle-action closures may also require dexterity in their proper asserolage with suitable closures. In addition, however, the toggle action lids include hinged areas that necessarily have been weakened and are therefore more susceptible to failure. These also present numerous molding difficulties which tend to limit the materials of construction from which they may be manufactured. And, of course, like the tightly stretched closure mentioned above, extreme stresses are created in the sealed position and this accelerates stress cracking of the closure. Further, if a roll-type toggle is

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employed, it is not uncommon for the seal between the closure and container to be lost if items are placed on top of the closure so that the weight of such items depresses the dome-like central area thereof. It should also be apparent that such closures also have a tendency to turn inside-out, thus requiring that the user reinvert the closure before any further attempt is made to seal the container.

The expandible cork-like closures are also deficient in several respects, especially where large open-mouthed containers are concerned. For example, the construction of such closures besides employing complicated mechanical manipulative devices also necessarily decrease the usable volume in where they are used because of their bulk. Likewise, the plug type closures lack versatility and, of course, are somewhat unreliable in their sealing action.

This invention provides a sealing closure that is, in all respects, representative of a compromise incorporating the good features of those mentioned above, and in addition, is more simple in its mode of operation. The construction more fully described hereinbelow enables the user to apply the closure of this invention to any of several types of containers simply by an application of pressure to the approximate center of the closure main wall. As is readily discernible from the drawings, this closure is of a multi-pieced construction and includes a finger operable plunger that is adapted to transmit pressure to the approximate center of the main wall.

This new closure further includes several distinctive constructional features which enhance its applicability for use in a food storage capacity as well as in other related fields. Among these is a biased, corrugated, fluted or similar center main wall arrangement that effectively and easily enables the contraction and recovery of the center main wall peripheral edge to a

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relaxed or as-molded position. This edge, of course, includes as an integral part a sealing wall portion which functions to produce a sealed relationship between closure and container, thus preserving and physically retaining the contained materials therein.

The invention also encompasses variable construction parameters affecting the efficient operability of such closures. Therefore, the construction described in detail below has as its principle objectives to minimize both internal stresses within the closure and the force required to properly assemble a closure and container, while at the same time to maximize the sealing pressure between the closure and container and the lateral contraction of the closure sealing wall portion per unit of applied force. In these respects, it is applicant's wish that the disclosures in *Australian Application No. 24825/70 (incorporated as Patent*

*No. 455,330)* be incorporated by reference in this application for Letters Patent.

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In accordance with the present invention there is provided a locally distortable closure member contractably and distensibly constructed and having an elastic memory such that it is adapted to hermetically seal an open-mouthed container, said closure member comprising: a center main wall including a biased area radially emanating from a central portion thereof to a peripheral terminus, said center main wall being adapted for the application of pressure to the approximate center thereof in such manner that said biased area tends to collapse upon itself and substantially uniformly displace said peripheral terminus until said closure is easily positionable in an open-mouthed container; integral extended sealing means positioned around said peripheral terminus of the center main wall, said means being displaceable in like manner with said peripheral terminus such that at least a portion of said sealing means is closely engageable with and sealable against the walls of an open-mouthed container due to the resiliency and elastic memory of said closure upon the discontinuance of applied pressure to said center main wall; a closure top wall interconnected with said integral extended sealing means and said center main wall, said closure top wall further including an integral and substantially centered upstanding bushing-like guide terminating at its upper extremity in a finger grippable flange; and an axially movable plunger positioned in said guide in such manner as to have a portion thereof exposed above said flange so that pressure applied to the plunger is transmitted to the approximate center of said center main wall.

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Further objectives of the invention, of course, are to provide: an improved closure that is easily applicable to a container and yet will effectively hermetically seal that container; a closure construction which may be molded by compression or injection techniques and which will be economical to manufacture and durable in operation.

Other objectives and advantages will become more apparent upon further reference to the specification, drawing and claims which describe the invention in more detail and wherein:

Fig. 1 is a top view of a closure construction incorporating the concepts of this invention;

Fig. 2 is an enlarged cross-section of the closure and a partial cross-section of a pitcher, the closure cross-section being taken along line 2-2 in Fig. 3 and showing the closure in

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sealing relationship with the container;

Fig. 3 is a bottom view of the closure as is depicted in Fig. 1;

Fig. 4 is a partial cross-section of a typical closure of this invention and of another container; and,

Fig. 5 is a partial cross-section of a pitcher adapted to accommodate the closure of this invention.

Referring now to Figs. 1-4, it can be seen that the closure member 10 of this invention is composed of a plurality of separate parts which function together in the operation of the closure. These include a radially biased, fluted or corrugated center main wall 14 having a centrally positioned substantially planar area 16 in the center surface wall and an upwardly extended side wall 26; a closure top wall 12 having an integral substantially centered bushing-like guide 13; and a plunger 15. Specifically, the biased or corrugated areas are composed of a plurality of upstanding tapered ridges 18, more fully described hereinafter, which emanate from the substantially planar area 16 and terminate at the peripheral edge 24 of the center main wall 14.

The closure center main wall 14 is preferably formed from a distortable thermoplastic, for example, low density polyethylene; however, high density polyethylene, polypropylene, polyolefin blends or similar materials, even light gage metals may be suitably employed using the inventive concept. Likewise, the open-mouthed containers 20 (Figs. 2 and 4) with which these closures are primarily intended for use, are also generally formed from the same or similar materials. It should be pointed out, however, that such closures may well be adapted for use with containers of a diversified range of materials such as glass, metal, etc.

Upon continued reference to Figs. 2 and 4, it can be seen that at the peripheral edge 24 of the center main wall, there

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is an integral upwardly extended side wall 26. The outer portion 28 of wall 26 is adapted for mating engagement with the inner area of the projecting wall 30 which forms the open mouth in container or pitcher 20. This engagement, of course, creates the hermetic seal spoken of and thus produces a highly desirable storage container especially suited for the storage of foodstuff and/or liquids.

These closure embodiments include an outwardly protruding bead 32 which extends around the periphery of outer portion 28 of wall 26 which bead presses against the container walls in sealing relationship with them. Fig. 2 further shows a circumferential ledge 34 which is intended to act as a bottom stop member for the closure 10. As is readily apparent, the ledge is produced by downwardly directed inwardly sloping portion 36 of the pitcher wall 21. This terminates after a relatively short inward progression and the normal inner wall contour is resumed. This ledge tends to assist the user in the proper orientation of the closure on the container; however, as is evident from Fig. 4, containers of other configurations may similarly employ this closure member. In fact, this type of closure may be used to "chase" a diminishing amount of foodstuff or liquid down into the container. This operation would minimize the amount of air trapped in contact with the remaining foodstuff in the container and thereby lengthen the time of preservation of the remaining contents.

Again with particular reference to the pitcher 20 in Figs. 2 and 5, note that a small interrupted bead 23 partially extends around the inside of wall 21, adjacent the upper edge 27 of the pitcher. This bead functions as an upper stop or position indicator so that the user may accurately reposition the closure 10 immediately below this bead. In this elevated position, the closure will not contact the wall 21 in the area of pour spout 25.



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Therefore, the closure 10 will remain securely engaged with the pitcher, yet pour spout 25 will be open to the container interior enabling the easy discharge of fluids or the like while the closure is so attached. To assist in this discharge, note that a tapered venting slot 17 is provided on the inside surface of wall 30 approximately opposite pour spout 25 so that when the closure is positioned in its elevated position, air may be bled into the pitcher at that point. For complete sealing of the pitcher 20, however, it is only necessary to again reposition the closure adjacent ledge 34 which is below the pour spout 25. Thus, sealing will be effected all around the pitcher 20 between protruding head 32 and wall 21.

Referring now to Fig. 3, in particular, one will recognize that in operation the locally distortable closure member is contractably and distensibly constructed so that the wall 26 will be displaceable with the peripheral-edge 24 of biased center main wall 14. In accomplishing this, the resiliency and elastic memory of the particular materials of construction must be considered and, in particular, the center main wall shape should be carefully constructed to take advantage of the physical characteristics of the materials employed. Therefore, the radially extending biased center main wall 14 which extends between the center portion or substantially planar area 16 to a peripheral terminus 24 is of considerable importance to the invention. In essence, the biased center main wall 14 tends to collapse upon itself upon the application of pressure to center portion 16. This collapse substantially uniformly displaces the peripheral terminus 24 inwardly and thus draws the wall 26 inwardly.

The biased, corrugated, fluted or plaited center main wall 14 includes, therefore, a plurality of upwardly and outwardly tapered ridges 18. As can be readily seen in Figs. 2, 3 and 4, the upper portion 38 of these ridges are angularly directed with respect to planar area 16 and therefore their respective peri-

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peral terminus portions 24 lie plane removed from that of area 16. Similarly, the bottom portions 40 of these plaits lie in a substantially parallel plane approximate to that of area 16 when the closure is in a relaxed or as-molded condition. However, when the closure is in place upon a container, even the bottom portions 40 will be at least slightly angularly directed toward the container center; such being the result of oversizing which assures a proper seal between the components.

The corrugation height at its peripheral terminus 24, i.e., the point of connection to the integral upwardly extended side wall 26, is such that the uppermost flute portion 38 is approximately opposite or above the protruding bead 32. Thus, even though the lateral dimensions of the outer portion 28 at bead 32 are slightly greater than that of the inside diameter of the container, the application of pressure to the centrally positioned substantially planar area 16 will cause sufficient inward lateral displacement of the side wall 26 such that the closure slips easily onto the container.

As is best apparent from Fig. 2, the side wall 26 also includes a plurality of inwardly and upwardly disposed projections 29 which are integrally molded at spaced points around the wall. These projections 29 terminate at points adjacent the upper edge 35 of the wall and below the inwardly directed undercut 37 that is formed at the upper edge. Similarly, the socket 39 framed by wall 41 projects upwardly from the planar area 16 such that it cooperates with the plunger 15 as is described hereinbelow.

The closure top wall 12 includes a conically disposed upper wall 38 in the approximate center of which there is positioned the bushing-like guide 13. This guide extends above the upper wall 38 and is aligned with the socket 39. A peripherally disposed depending skirt 40 is positioned adjacent the outermost

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periphery of upper wall 38 so as to create a lip 42 around the periphery thereof. This lip then is positioned between the undercut 32 and terminal points of projections 29 and is securely held therebetween by these elements.

The plunger 15 is, of course, received in the bushing-like guide 13 for axial movement therein and is further received by the socket 39. The socket further includes a plurality of inwardly extending ribs 44 which pressingly engage the plunger and secure it in the socket and to the center main wall 14. As is apparent, plunger 15 also includes a ledge area 47 intermediate of its extremities which ledge area is adapted to engage with the under-surface of wall 38 adjacent bushing 13 and to thereby function as a stop to arrest the upward movement of the plunger and center main wall 14. Thus, axially applied pressure is transmitted by the plunger 15 to the planar area 16 of the center main wall 14 and the displacement of peripheral terminus 24 of wall 26 results as discussed above. The upper portion of guide 13 also includes a finger-grippable flange 45 above which the plunger is adapted to protrude. Thus, in operation the guide may be gripped between the finger digits below flange 45 while the plunger is depressed with the thumb, creating the axial pressure spoken of.

As was mentioned, one prime objective of this invention is to optimize forces for applying closures, sealing pressures and stresses but at the same time, to obtain a maximum of sealing pressure using minimum force and creating minimum stresses. Therefore, analysis of the relationships between the applied axial force (push-down pressure), the lateral contraction or displacement of the side wall 26, the stresses within the closure, and the sealing pressure becomes significant and a discussion of these may be found in U.S. Serial Nos. 8,228 and 67,340, filed on February 3, 1970, and August 27, 1970, respectively.

It should be obvious that other similar top wall and plunger

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constructions may be employed in carrying out the invention. For example, a sleeve and plunger might be suitably inserted and retained within the bushing-like guide in such manner as to permit elimination of the socket 39. Similarly, the plunger might be made integral with the center main wall 14 thereby reducing the number of separate parts included in the construction.

In operation, the closures of this invention tend to experience a lateral displacement within the conical, corrugated or fluted area 18 as pressure is applied to the planar area 15. The conical, corrugated construction accentuates this displacement as the flutes fold upon themselves in an accordion-like fashion. This, then, similarly tends to draw the side wall 26 inwardly, thereby facilitating entry of the central surface wall area 14 into the open-mouth end of the container or pitcher 20. After insertion and upon release of the applied pressure, the resilient closure material attempts to assume its relaxed orientation and thus expands the side wall 26 against the inner portion of the container wall to hermetically seal the container. To remove the closure, it is only necessary to similarly depress the plunger 15 and remove the closure from the pitcher or container.

From the foregoing description, it should be apparent that the invention encompasses an advantageous advance in the art. Further, it should be clear that the invention may be embodied in other specific forms without departing from the spirit of the essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

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The claims defining the invention are as follows:-

1. A locally distortable closure member contractably and distensibly constructed and having an elastic memory such that it is adapted to hermetically seal an open-mouthed container, said closure member comprising: a center main wall including a biased area radially emanating from a central portion thereof to a peripheral terminus, said center main wall being adapted for the application of pressure to the approximate center thereof in such manner that said biased area tends to collapse upon itself and substantially uniformly displace said peripheral terminus until said closure is easily positionable in an open-mouthed container; integral extended sealing means positioned around said peripheral terminus of the center main wall, said sealing means being displaceable in like manner with said peripheral terminus such that at least a portion of said sealing means is closely engageable with and sealable against the walls of an open-mouthed container due to the resiliency and elastic memory of said closure upon the discontinuance of applied pressure to said center main wall; a closure top wall interconnected with said integral extended sealing means and said center main wall, said closure top wall further including an integral and substantially centered upstanding bushing-like guide terminating at its upper extremity in a finger grippable flange; and an axially movable plunger positioned in said guide in such manner as to have a portion thereof exposed above said flange so that pressure applied to the plunger is transmitted to the approximate center of said center main wall.

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2. A closure member according to claim 1 wherein said plunger is secured to said center wall at the approximate center thereof.
3. In combination a container and closure member according to claim 1 wherein said container includes a projecting wall construction forming the open mouth thereof and including therein a pouring spout and venting slot approximately opposite one another, both above and below which said closure member is engageable with and sealable against said projecting wall.
4. The combination according to claim 3 wherein said projecting wall also includes inwardly protruding means removed from said upper edge such that said portion of the sealing means is positionable therebetween, said protruding means further providing an abutable surface against which said closure is positionable to assure its proper placement within the container.
5. A closure member according to claim 1 wherein the closure top wall and the integral extended sealing means include opposed locking means interconnectably overlapping to secure said top and main walls together.

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6. A locally distortable closure member substantially as described herein and with reference to the accompanying drawings.

DATED: 27th May, 1975.

DART INDUSTRIES INC.  
By their Patent Attorneys:  
PHILLIPS ORMOND AND FITZPATRICK

*David B. Fitzpatrick*



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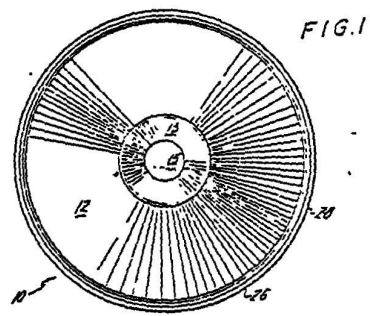


FIG. 1

FIG. 4

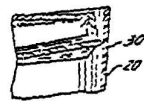
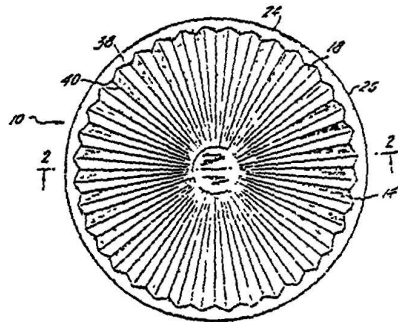


FIG. 3



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FIG. 2

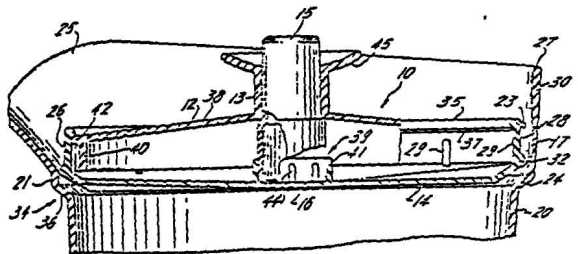
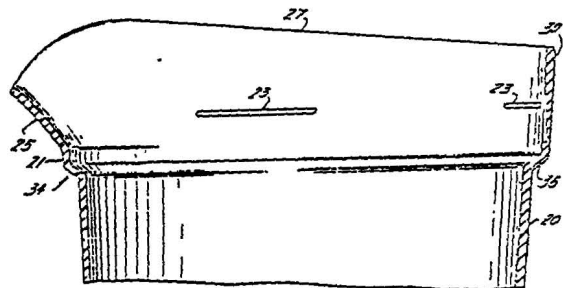


FIG. 5



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