

Rehm Pty Limited v Websters Security Systems (International) Pty Ltd [1988]
FCA 232

FEDERAL COURT OF AUSTRALIA

GUMMOW J

GUMMOW J:

Introduction

These proceedings were commenced in 1986, that is to say, before the passage of the *Jurisdiction of Courts (Miscellaneous Amendments) Act 1987*. The significance of that circumstance shortly will become apparent. The applicant and the first, second and third respondents are companies incorporated in New South Wales. From time to time between 26 May 1986 and 10 November 1987, the first respondent supplied to the second respondent on a retail basis products known as the Hirsch Micro-50 and the Hirsch Micro-55 Access Control Security Systems. The first respondent has imported these products from the United States since early 1986. In July 1987, the first respondent agreed with Talbot Street and Associates to sell the Hirsch products to a joint venture company and in August 1987 the third respondent was acquired for this purpose. The fourth and fifth respondents are directors of the third respondent and the fifth and sixth respondents are directors of the first respondent.

The applicant is the registered proprietor of standard patent No. 537136 which was granted pursuant to the *Patents Act 1952* ("the Patents Act") for an invention entitled "Improvements in Security Means" ("the patent"). The provisional specification was lodged on 15 February 1980, and the complete specification was lodged on 5 February 1981. The term of the patent is a period of 16 years commencing on 5 February 1981. The patent was sealed on 27 September 1984.

The applicant alleges that the first respondent has imported into Australia from the United States the two Hirsch security systems which I have mentioned; the importation of those products together with the advertising for sale, offering for sale and selling of those products are alleged to be infringements of the patent by the first respondent. It is further alleged that the advertising for sale, offering for sale and marketing of those products by the second and third respondents likewise constitutes infringement.

The applicant also complains of alleged contraventions of s. 52 of the *Trade Practices Act 1974* ("the TP Act") together with contraventions of sub-ss. 53 (c) and (g) of that Act; the jurisdiction of this Court thus initially was attracted by s. 86 of the TP Act. The complaint arises from the circulation of various brochures and other written material by the first, second and third respondents. It is then said that the fourth, fifth and sixth respondents have aided, abetted, counselled or procured the contraventions by the corporate respondents and further that they have been directly or indirectly knowingly concerned in or parties to such contravention, within the meaning of s. 75B of the TP Act.

Little time was spent at the trial in dealing with the trade practices allegations, and their fate was seen by both parties as following the outcome of the patent dispute. This was because the complaints made of the advertising material, in essence, are directed at assertions made therein which would be accurate if the respondents were successful in the patent dispute; if the applicant were successful in the patent dispute, then the parties indicated to the Court that the future dissemination of these advertising materials probably would be dealt with by consent orders or other means not requiring further resolution of any dispute by the Court.

Accordingly, I turn to the patent matter. The patent contains seven claims and attention has been directed principally to claim 1, on the footing that if the products in question infringe claim 1, there is no need to deal with claims 2-6 inclusive. However, the applicant pressed an allegation of infringement of claim 7 as not necessarily following the fate of the allegation of infringement of claim 1.

In addition to resisting the allegations as to infringement, the respondents, by cross-claim, put in question the validity of claim 1 (and the other claims, so far as it is necessary for the purposes of the case to do so). Section 115 of the *Patents Act* enables revocation to be sought in this way without presenting a petition under s. 99.

By the cross-claim, allegations were made as to want of novelty and as to obviousness. A considerable proportion of the material in the affidavits which were filed was devoted to those topics. But at the commencement of the hearing the Court was informed that the respondents no longer pressed lack of novelty and obviousness. The respondents still pressed an allegation of want of fair basing (within the meaning of sub-s. 40 (2) and sub-para. 100 (1))

(c) of the *Patents Act*), together with a further and fresh allegation of lack of utility (within the meaning of sub-para. 100 (1) (h) of the *Patents Act*).

The trial proceeded on the basis that it was only with these two grounds that the attack on validity was concerned. I should also note that Counsel were agreed that if the applicant was successful in its allegation of infringement and in resisting the attack on validity, then questions of the form of injunctive and ancillary relief and of the conduct of any inquiry as to damages or for an account of profits, should stand over for further submissions.

Allegations also are made in the cross-claim that the applicant has made to the second respondent unjustifiable threats within the meaning of s. 121 of the *Patents Act* and by those threats also contravened s. 52 and sub-s. 53 (g) of the *TP Act*. This aspect of the case may also be left until resolution of the patent infringement and validity issues.

The cross-claim also denies jurisdiction in the Court to entertain the proceedings for patent infringement, presumably on the basis that there is no associated matter within the meaning of s. 32 of the *Federal Court of Australia Act 1976*. No submissions were made in support of that allegation. I have treated it as a pleader's conceit (albeit an embarrassing one in the technical sense) in the light of *American Optical Corp. v Allergan Pharmaceuticals Pty. Ltd.* (1985) ATPR 40-539.

The Body of the Patent Specification

As I have indicated, the invention is entitled "Improvements in Security Means". The complete specification opens with a general description of the invention and a statement of the problem to which it was directed. It does so thus:

This invention relates generally to security systems. More particularly, it relates to access control systems which may be used for controlling access to, for example, safes, strong rooms, buildings, security areas in buildings, computer terminals and electronically stored information such as credit records, just to mention a few of the applications where security is required.

Many types of access control systems have been devised over the years, from the earliest forms of key operated locks, to the sophistication of combination locks and the relatively recent advent of electronically coded card key systems and readers. None of these systems has been particularly satisfactory, however, since more and more sophisticated procedures have been developed to defeat them. Keys can be duplicated, combinations can be broken by trial and error or detected by observation of an authorized person opening the combination controlled lock and electronically coded card keys can be forged.

The complete specification goes on to describe a previous proposal and the shortcomings thereof. It does so in the following terms:

It has previously been proposed to provide an access control system incorporating a manually actuable keyboard, the keys of which are selectively actuable to generate a code which, if correct, will provide the necessary access. This system has the advantage that there is no key or card which can be lost, stolen or forged, but conventional keyboard systems suffer a similar disadvantage to combination locks in that it is possible for an observer to note the combination of keys actuated by an authorized person. The present invention provides an improved keyboard security apparatus by which this problem is overcome.

The complete specification then proceeds, under the heading "DISCLOSURE OF THE INVENTION", with the consistory clause, the language of which is reflected in claim 1. The consistory clause is as follows:

According to the invention there is provided security apparatus comprising:

a keyboard having an array of selectively actuable keys;

key value designation means with a random number generator for generating random digits and a memory storage for storing the random digits in successive locations of a digit storage array corresponding to the array of the keys;

display means comprising an array of display units, each corresponding to a respective key and associated to a respective location of the digit storage array and register means to register for each key actuation the value designated to the actuated key;

characterised in that a multiplexing circuit is provided for successively transferring the random digits from the locations of the digit storage array to the respective associated display units and that the register means comprises a microprocessor detecting the location of a key in the keyboard array as the key is actuated and interrogating the multiplexing circuit to register the current value of said key by determining that location of the digit storage array, which is associated to the display unit corresponding to the actuated key, and entering the digit stored in the said location of the digit storage array into a number store.

The complete specification continues:

The keys may be in the form of push-buttons and the display units may comprise light-emitting diode or liquid crystal displays located adjacent the respective buttons or carried by the buttons so as to display the indicia through the outer ends of the buttons.

The complete specification goes on to describe in the following terms the particular type of insecurity with which the invention deals:

In operation of the above described apparatus the random scrambling of the designated key values prevents an observer *from detecting a correct code merely by noting the order in which particular keys are actuated* since the position of the keys for the correct code will be changed.

In a simple access control system, access may be obtained solely by operation of the keyboard. In more sophisticated systems, however, additional security equipment may be included. For example, the system may also include a magnetic code reader which must receive a correctly coded instrument such as a key or card to enable [sic] the keyboard.

The passage I have italicised indicates the promise of the invention concerns a specific and limited aspect of insecurity; this will be of importance in dealing with the allegation of inutility.

The complete specification then describes one particular embodiment of the invention by reference to the accompanying drawings and goes on to detail the best modes for carrying out the invention by reference to those drawings. This is in compliance with the requirement of sub-s. 40 (1) of the *Patents Act* that the full description of the invention shall include "the best method of performing the invention which is known to the applicant". In the course of submissions on issues both of validity and of infringement, reference was made to this portion of the specification, but it is appropriate that I defer any treatment of it until I deal with those submissions. However, I should at this stage set out the final paragraph of the treatment of the preferred embodiment, as an indication of the significance to be attached to the embodiment:

It is accordingly to be understood that the invention is in no way limited to the details of the illustrated embodiment and that many modifications and variations will fall within the scope of the appended claims.

The body of the specification concludes with the following:

INDUSTRIAL APPLICABILITY

Apparatus according to the invention may be incorporated in any security system for controlling physical access to a security area or for controlling access to data storage equipment and/or information stored in such equipment.

It will be apparent from what I have said that the problem to which the invention is directed concerns conventional security devices using a keyboard or keypad, the keys of which are selectively actuable to generate a code which provides access to a particular facility. An example, to which reference was made in the evidence, is provided by the type of keyboard used in banks as part of a system permitting access by customers to "automatic tellers", such keyboards containing a configuration of ten keys in fixed physical relation each to the others, each key bearing fixed on its face a number between "0" and "9", there being no duplication of numbers. In such cases the selection by a person using the facility of a particular sequence

of keys representing a code for that person may be observed by other persons who, if sufficiently observant, might be able to arrive at the code.

The invention addresses the problem by providing for a keyboard, each of the keys of each does not bear on its face a fixed consecutive number; rather, a random number between "0" and "9" is assigned to each key on each activation of the device. The code of the operator remains constant, but on each activation of the device each number is assigned to a key by a process of selection that is not deterministic but random, and the device causes these changes to appear in the numbers displayed on the keys in each activation of the device. The location of each key that is pressed by a particular operator may still be apparent to an observer but no key will display a fixed number. Hence, security will be improved, because the observer will not be able to detect the code of the operator merely by noting the order in which the particular keys are actuated.

The Claims

The invention is the subject of seven claims. Each is for a "security apparatus", not for a method of achieving security. The last claim is for a security apparatus "substantially as hereinbefore described with reference to the accompanying drawings". I turn now to the text of the remaining claims, numbered 1 to 6 inclusive, and in doing so indicate that the debate before me turned in large measure upon the construction of the portion of claim 1 set out below which is italicised. The claims proceed in familiar fashion with a progressive narrowing of the invention claimed, "the patentee hoping that somewhere along the line he may find a claim sufficiently narrow to be valid and sufficiently wide to catch an infringer": Sir Arthur Dean, "Claiming Clauses" (1949) 4 Res Judicatae 144 at 148. The text of claims 1-6 is as follows:

(1) Security apparatus comprising:

a keyboard having an array of selectively actuatable keys;

key value designation means with a random number generator for generating random digits and a memory storage for storing the random digits in successive locations of a digit storage array corresponding to the array of the keys;

display means comprising an array of display units, each corresponding to a respective key and associated to a respective location of the digit storage array and register means to register for each key actuation the value designated to the actuated key;

characterized in that a multiplexing circuit is provided for successively

transferring the random digits from the locations of the digit storage array to the respective associated display units and that the register means comprises a microprocessor detecting the location of a key in the keyboard array as the key is actuated and interrogating the multiplexing circuit to register the current value of said key by determining that location of the digit storage array, which is associated to the display unit corresponding to the actuated key, and entering the digit stored in said location of the digit storage array into a number store.

(2) Security apparatus according to claim 1, characterized in that the multiplexing circuit provides a key actuation signal to the microprocessor at the time the display unit corresponding to the actuated key is switched by the multiplexing circuit and the microprocessor registers the current value of the actuated key as being that digit in the digit storage [sic] array which is displayed by the display means at the time of the key actuation signal.

(3) Security apparatus as claimed in claim 1 or claim 2, characterized in that the display units comprise light emitting diode or liquid crystal displays.

(4) Security apparatus as claimed in any of the claims 1 to 3, characterized in that the display units are located adjacent the respective keys.

(5) Security apparatus as claimed in any of the claims 1 to 4, characterized in that the key value designation means is inoperative until an additional key is actuated.

(6) Security apparatus as claimed in any one of the preceding claims, characterized in that there is further provided comparator means to compare a sequence of values entered into the number store upon sequential operation of a number of said keys with a sequence of values representing the preselected code and output means conditioned by the outcome of that comparison.

Expert evidence was presented primarily on affidavit, and this was supplemented by oral evidence from Dr. A.K. Burston and Professor J.R. Seberry (for the applicant) and Mr. D.J. Morgan (for the respondents). There were differences in emphasis between the opinions expressed by the experts on various topics, but there were no conflicts of substance on the meaning of the technical terms, the state of the prior art, or the elements in the preferred embodiment of the invention.

Infringement

I deal first with the two Hirsch products. For the purposes of this case, there is no relevant distinction or difference between them.

The essential issue is whether, within the meaning of claim 1, the Hirsch products contain a key value designation means with a random number generator for generating random digits, and a memory storage for storing the random digits in successive locations of a digit storage array corresponding to the array of the keys. It is agreed between the parties that the Hirsch

products have (i) a random number generator, (ii) for generating random digits, (iii) a memory storage, and that the memory storage stores random digits in locations corresponding to the array of the keys. Nevertheless, the respondents submit there is no infringement of claim 1. That submission is only to be understood by further consideration of the nature and method of operation of the Hirsch products. There was, I should indicate, no substantial difference between the parties as to the description of the Hirsch products, the debate being whether once their nature and operation is understood, the Hirsch products are security apparatus comprising the integers claimed in the crucial passage in claim 1.

Mr. Morgan, who gave evidence in a clear and concise manner, described the nature and operation of the Hirsch products as follows:

- (1) The device is switched on by the operation of a key marked "start" and there is established an initial configuration in the digit storage array consisting of digits 1 to 9 and 0, in the order corresponding to their consecutive positions on the keypad.
- (2) Mr Morgan described each of these positions in the initial configuration as a "pigeon hole" or "location"; the initial configuration was visually represented (in a sense metaphorically, but usefully) as follows:

1 st location 1	2 nd location 2	3 rd location 3
4 th location 4	5 th location 5	6 th location 6
7 th location 7	8 th location 8	9 th location 9
X	0 th location 0	X

- (3) The devices contain a means for generating or "seeding" random digits by operation of a programme in a microprocessor.
- (4) By this means there is generated a random number being 0 or a number between 1 and 9; there follows a process described as "swapping", commencing with the 0th location, and following with the 1st and 2nd locations and so on.

- (5) If the first random number generated or "seeded" was the digit 5, that digit would be placed in 0th location and the zero would be "swapped" for the number in the 5th location. A second digit would then be generated by the random number generator. On the assumption that this was 7, 7 would be placed in the 1st location and the number 1 would be placed in the 7th location. In this sense, there has been a "swap". Likewise, if the next random number was 9, the digit 9 would be swapped for the number in the 2nd location and the digit "2" would be placed in the 9th location. This procedure is followed until the configuration has been, as it were, completely swapped. The process of 10 swaps was described as Mr. Morgan as one shuffle.
- (6) This process is then repeated 7 times by what was described as 7 shuffles.
- (7) At the end of each shuffle sequence, there is always a digit storage array containing the numbers 0 to 9 without duplication of any number. What happens is that the order of the numbers is changed by each shuffle.
- (8) It may happen in the course of a shuffle that the random number generator produces a digit which is the same digit as it has already produced in the course of the same shuffle. For example, the random number generator might produce for the 1st location, containing the digit 1, the digit 7, which is in the 7th location. The digit 7 in the 7th location is then swapped for the digit 1 in the 1st location. Suppose the random number generator then generates the number 7 for the 2nd location, which contains the digit 2. There is no difficulty. The number in the 7th location (i.e. 1) is swapped for the digit in the 2nd location, viz. the digit 2. There is thus, as Mr. Morgan explained, no special step needed to deal with "duplication" in the way there is with a device containing the preferred embodiment of the Rehm invention. I shall deal further with this question of duplication later in these reasons.
- (9) If the process of swapping is on the 5th location and the random number generator picks the digit 5, there is no problem. The digit can be swapped with itself, in effect leaving it where it is. Alternatively, it may be ignored and another digit picked to make an actual swap for this location; the process of swapping continues so as to deal with the next location until each location has been swapped and the shuffle completed.

In his evidence, Mr. Morgan said under cross-examination that "a random number generator is measured more by its output than by the precise internal works. If it is uniform on a

domain, then it is a random number generator". He was then asked "By 'uniform on a domain' you mean having equal probability of generating any number within that domain?" He responded "Yes - equal frequency, equal likelihood". The domain, in the example I have been considering, is zero and the numbers 1 - 9 inclusive.

If the shuffling was conducted in a deterministic manner, then it might be fairly suggested that random numbers were not being generated by operation of the Hirsch device. But I think that in the end Mr. Morgan agreed with senior counsel for the applicant that the circumstance that the numbers in the pigeon holes were arranged in the initial configuration in a certain pattern before the first random number was generated and the swapping commenced did not, of itself, mean that the operation of the system failed to satisfy the description of random number generation. As Professor Seberry pointed out, whilst the initial configuration with the Hirsch product is fixed, each location is filled at random by each swap because the seed number used for the swap is randomly generated by the programme in the microprocessor.

The submissions for the respondents, in effect, if not in form, fasten upon the phrases "for generating random digits" and "for storing the random digits" in claim 1 as indicating a claim to no more than the generation of random digits that is immediate and direct so that that which is generated is that which is stored, with the result that there is no claim to the generation of random digits involving (as is the case with the Hirsch device) a series of steps in the course of which random numbers are generated but each is not transferred directly to the digit store.

The respondents pray in aid for this construction of the claim two considerations flowing from material outside the body of claim 1. The first concerns the description of the preferred embodiment in the body of the complete specification. That embodiment describes a device in which the digit storage array which (unlike the Hirsch device) contains no digits at the start of operations; rather, the microprocessor generates random digits or "seeds" between "0" and "9". In the words of the preferred embodiment (with reference to drawings):

The random number generator generates a first random digit which is transferred to a digit store within the working member 25. Successive digits are then taken from the random number generator and, after rejection of any duplicated digits, these are stored at successive locations in the digit store to build up a random sequence of the 10 digits 0 to 9.

The respondents submit that this assists their suggested construction of claim 1. This treats the expression "for generating random digits" and the expression "for storing the random digits" as limited to the generation of the first random digit and its direct transfer to a digit store, followed by the generation of the second random digit with its transfer directly to the digit store, and so on, subject only to the rejection of duplicated digits and avoidance of an end result whereby the configuration contained 10 locations but, for example, the digit 3 appeared in two of them, and the digit 7 did not appear at all. (The passages in the preferred embodiment dealing with rejection of duplicated digits are of importance also in considering the attack on the validity of claim 1 for want of fair basing; I deal with that aspect later in these reasons.)

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; provided that if an expression in the claim is not clear, then it is permissible to resort to the body of the specification to define or clarify the meaning of the words used in the claim: *Interlego AG v Toltoys Pty. Ltd.* (1973) 130 CLR 461 at 478-479. The use of the word "for" in patent claims to introduce expressions such as "for generating" and "for storing" has been deprecated: Blanco White, "Patents for Inventions", 4th Ed., 2' 2-213. However, the present is not a case which illustrates the concerns expressed by the learned author. Further, whilst resort may be had in the circumstances I have indicated to the body of the specification, it also must be remembered that it usually is not legitimate, in the absence of an express reference in the claim itself, to import into a claim features of the preferred embodiment. The preferred embodiment cannot properly be used to introduce into the definite words of a claim an additional definition or qualification of the patentee's invention: *Erickson's Patent* (1923) 40 RPC 477 at 491. This (with some justification) the applicant complains, is what is attempted by the respondents' submission as to the significance of the preferred embodiment in the construction of claim 1.

The second matter to which the respondents refer as an aid to construction requires attention to claim 1 in its original form, before it was amended in the course of examination before grant in the Patent Office. Section 157A of the *Patents Act* (formerly sub-s. 88 (3) of that statute) makes this reference permissible, by providing that in construing a complete specification as amended, the Court may refer to the specification without the amendment.

In its unamended form, the second paragraph of claim 1 read:

Key value designation means to designate values to the keys and including designation scrambling means operative randomly to scramble the designation of key values.

That paragraph was sufficiently widely expressed apparently to catch the Hirsch device, because it encompassed any means of scrambling the designation of key values. Then, the respondents submit, it is clear that the amendment was made to exclude all means of scrambling the designation of key values, other than that means which is described in the preferred embodiment.

Reference was made in the evidence to two Japanese patent applications (No. 54-102844 and No. 54-102845, both dated 13 August 1979) which were cited in the course of the examination of the application which led to the grant of the patent presently in suit. The Japanese prior art was described and analysed in the evidence, particularly that of Dr. Burston and Mr. Morgan. It differed markedly from the random generation and selection found both in the preferred embodiment in the patent, and in the Hirsch device, because it involved a set of fixed ten value displays, one of which was selected by the user; there was no device that generated a random pattern of digits.

However, as the respondents agree, on one view of it in its unamended form, claim 1 would encompass the Japanese prior art as well as the other means of scrambling the designation of key values found in the Hirsch device and in the preferred embodiment of the patent. In that setting, there is much substance in the submission of the applicant that the recasting of claim 1 may have been in response to the citation of the Japanese material and that this, to put it broadly, was achieved by introducing a computer based mechanism in contrast to the unintelligent mechanism presented by the citations of prior art emanating from Japan.

For these reasons, I place no significant weight upon the two special factors referred to by the respondents as favouring their construction of claim 1.

I turn now as to the submissions as to construction by the applicant. The applicant submitted that there was infringement on the proper reading of the claim, without resort to any body of special learning by which there may be liability without "textual" infringement in a direct or immediate sense. The applicant's argument proceeded by the following steps:

- (a) claim 1, like the other claims, is not for a method of achieving or improving security, but for a security apparatus;
- (b) that apparatus comprises, inter alia, a key value designation means with (i) a random number generator for generating random digits and with (ii) a memory storage for storing the random digits (i.e. the digits generated as described) in successive locations of a digit storage array corresponding to the array of the keys;
- (c) there will be a random number generator for generating random digits if the product is random digits and the precise algorithm for generating the random digits that are stored in the memory storage is not a matter of concern;
- (d) this is so even if the generation of the digits stored in the digit storage array comprises more than one stage or step (as is the case with the swapping and shuffling in the operation of the Hirsch device) such that each step itself might be described as generating random numbers;
- (e) the word successive describes the relation of the locations each to the others, the locations taken as a configuration corresponding to the array of the keys;
- (f) it is not to the point that the procedure for generating and storing digits does not operate so that all steps are gone through to produce and store one such digit, and then repeated to produce the next digit, and so on; it is enough that all such digits are produced and stored, without the temporal limitation or sequence I have described;
- (g) accordingly, it is not of concern that in the course of random number generation, one puts random numbers in "locations" and then overrides or replaces them with other random numbers; one still has a random number generator that generates those random digits which are the digits stored in the memory storage, within the meaning of claim 1.

I accept those submissions. It follows, in my view, that the claim for infringement of claim 1 is made out.

The applicant also urged there was infringement of claim 7. This, as I have indicated, claims "security apparatus substantially as hereinbefore described with reference to the

accompanying drawings". The operational sequence is illustrated by the flow sheet in figure 7, and I have set out that passage from the body of the specification dealing with the preferred embodiment which details the method of generation of random numbers and the transfer to the digit store. It is apparent from what I have there said that there is absent from any security apparatus described by reference to the accompanying drawings, the features of swapping and shuffling which I have described when dealing with the Hirsch device. The question is whether the Hirsch device is nevertheless a security apparatus *substantially* as described in the body of the specification with reference to the accompanying drawings.

The terms of claim 7 succeed in incorporating the drawings into the claim: *Raleigh Cycle Co. Ltd. v Miller & Co. Ltd.* (1948) 65 RPC 141; *Utilux Pty. Ltd. v AMP Incorporated* (1974) 48 ALJR 17 at 20. The preferred embodiment, read with the drawings (particularly figure 7), makes it quite plain that, as an essential feature, the claimed device takes successive digits seeded by the random number generator and after rejection of any duplicated digits (in the sense I have earlier described) each digit is stored at successive locations in the digit store. This is not what takes place with the swapping and shuffling procedures in the Hirsch products.

The applicant submitted that, nevertheless, the two devices, the Hirsch and that described in the preferred embodiment, operate in the same way in the sense that the user enters a code and a microprocessor works out the numbers to be associated with the keys; what was involved in the working out of the numbers was, it was said, so closely similar as not to be substantially different. In my view, to approach the matter in this fashion is to do so at too general a level of of abstraction and comparison. I say this bearing in mind the force of the term "substantially" as appearing in claim 7: *Monsanto Company v Commissioner of Patents* (1974) 48 ALJR 59; Blanco White, "Patents For Inventions", 4th Ed., 2' 2-209; Fox, "Canadian Patent Law and Practice", 4th Ed., p. 359.

Nor, in my view, is this a case where the differences presented by the swapping and shuffling procedures in the Hirsch device may be characterised as a subterfuge and an attempt to take full advantage of the invention while avoiding trespass upon the literal meaning of the claim by a modification so small as to be insignificant and to have no material effect upon the way the invention as claimed in claim 7 works: *Commonwealth Industrial Gases Ltd. v M.W.A. Holdings Pty. Ltd.* (1970) 44 ALJR 385 at 388 per Menzies J. As senior counsel for the

respondents pointed out, the facts in *Catnic Components Ltd. v Hill and Smith Ltd.* (1982) RPC 183, are illustrative of the type of situation with which Menzies J. had been dealing in the Australian case. The remarks of Lord Diplock ((1982) RPC at 242-243) as to "purposive" rather than "purely literal" construction, may be understood in that light. It may be for this reason that in *Populin v H.B. Nominees Pty. Ltd.* (1982) 59 FLR 37 at 42-43, the Full Court of this Court in essence treated the House of Lords as having confirmed that what is called for in construing claims is a common sense assessment of what the words used convey, in the context of the then-existing published knowledge, and did not treat their Lordships as having propounded any novel principle or new category of "non-textual" infringement; cf. *Rhone-Poulenc Agrochimie SA v UIM Chemical Services Pty. Ltd.* (1986) 12 FCR 477 at 496-497.

There being no "textual" infringement, the question remains whether the substance of the invention as claimed in claim 7 has been taken. In my view, the essential integers of claim 7 include the generation of random digits as described in the passage I set out earlier, detailing the preferred embodiment, with the rejection of duplicate digits as therein indicated. This conclusion is enforced by the flow-sheet drawings in Figure 7 showing the operational sequence of the microprocessor based circuit of the preferred embodiment. This may be contrasted with the integers of the Hirsch products. The current state of the law in Australia as to the "pith and marrow" doctrine is discussed in *Populin v H.B. Nominees Pty. Ltd.* (1982) 59 FLR 37 at 41-43. The effect of the structure and sequence of the claims in the subject patent is progressively to narrow the area of monopoly claimed. The form of claim 7 is to leave open and unclaimed what has been done with security apparatus which includes the swapping and shuffling integers of the Hirsch products. The "pith and marrow" doctrine, therefore, does not bring the respondents within the field of infringement of claim 7.

I turn now to the question of validity.

Fair Basing

The respondents submit that claim 1 of the patent is not fairly based on the matter described in the body of the complete specification.

Section 40 of the *Patents Act*, so far as is material, 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.

The phrase "fairly based" appears in other provisions of the *Patents Act*. In s. 45, it appears in a context concerned with the priority dates of claims in a complete specification allegedly fairly based on matter disclosed in a provisional specification. It was with s. 45 in an earlier form, and with analogous British legislation, that Fullagar J. and Lloyd-Jacob J., respectively, were concerned in *Societe des Usines Chimiques Rhone-Poulenc v Commissioner of Patents* (1958) 100 CLR 5, *Re Mond Nickel Company Ltd.'s Application* (1956) RPC 189 at 194, and *Imperial Chemical Industries Ltd.'s Application* (1960) RPC 223 at 228. In sub-s. 45A (2), the phrase "fairly based" is directed to the fixing of the priority date of the claim in certain petty patent specifications by reference to earlier applications. This Court was concerned with s. 45A in *Coopers Animal Health Australia Ltd. v Western Stock Distributors Pty. Ltd.* (1986) 67 ALR 390; affd. (1987) 76 ALR 429. In s. 141 of the *Patents Act*, the expression "fairly based" is used to describe the necessary relationship between a claim made in an Australian complete specification or petty patent specification and matter disclosed in a basic application which has been made in a "Convention country" within the meaning of Part XVI. It was with the term in this latter setting that Gibbs J. dealt in *F. Hoffman La Roche & Co. AG v Commissioner of Patents* (1971) 123 CLR 529 at 538-539.

It has been pointed out that the question of "fair basing" of a claim upon the body of a complete specification (involving a comparison within the one document) is not altogether analogous to questions of "fair basing" of claims upon earlier documents, such as a provisional specification or basic application: Blanco White, "Patents For Inventions", 4th Ed., 2' 2-115. Nevertheless, it was accepted by the parties before me that what was said in the cases I have mentioned gave a guide to the approach that should be taken in dealing with sub-s. 40 (1), although the comparison is not between documents but within different parts of the one document.

I should add that s. 35 of the *Patents Act 1903* stipulated that the provisional specification must "fairly describe the nature of the invention", and s. 36 stated that the complete

specification must "fully describe and ascertain the invention and the manner in which it is to be performed, and must end with a distinct statement of the invention claimed". The requirement of "fair basing" of claims upon matter disclosed in the body of the specification or in some other document was introduced into the present [Patents Act](#) from British law, though its origins in that country are by no means clear: Blanco White, "Patents for Inventions", 4th Ed., 2' 2-117.

In *Societe des Usines Chimiques Rhone-Poulenc v Commissioner of Patents (supra)* Fullagar J. (at 11) spoke of the necessity for "a real and reasonably clear disclosure". In my view, it is this characteristic which makes the claim "fairly" based on that disclosure: cf. *Coopers Animal Health Australia Ltd. v Western Stock Distributors Pty. Ltd.* (1987) 76 ALR 429 at 447-448. As will become apparent, whilst accepting what Fullagar J. had said, the present respondents in effect pitched the standard rather higher in their submissions.

The criteria propounded by Lloyd-Jacob J. and approved and adapted by Gibbs J., in the authorities to which I have earlier referred, express in more detail the general approach indicated by Fullagar J. Adapting those criteria to s. 40 of the *Patents Act*, one asks the following:

- (1) Is the alleged invention as claimed in claim 1 broadly (i.e. in a general sense) described in the body of the specification?
- (2) Is there anything in the body of the specification which is inconsistent with the alleged invention as claimed in claim 1?
- (3) Does claim 1 include as a characteristic of the invention a feature as to which the body of the specification is wholly silent?

More succinctly, Mr. Blanco White QC would ask whether "the idea" of the invention claimed in the claim in question was to be found in the body of the specification: "Patents For Inventions", 4th Ed., 2' 2-111.

In the present case, the respondents submitted that there was a want of fair basing for two reasons.

First, they submitted that if in the body of the specification it is stated as a requirement that there be a means of avoiding duplication of digits, and that if claim 1 on its proper

construction contains no such requirement, it follows claim 1 is not fairly based because a device with or without any means of avoiding the duplication of digits would be within claim 1 and this meant claim 1 was for an invention more widely delimited than the invention described in the body of the specification. I have earlier in these reasons described how the Hirsch products deal with the possibility of duplication.

Secondly, they submitted that if there is in the body of the specification a requirement for a viewing restriction and if no such requirement is contained in claim 1, on its proper construction, it follows that claim 1 is not fairly based. This is said to be because what is claimed, viz. a device with or without any viewing restriction to prevent the display being read by persons other than those directly in front of the display, is "wider" than the invention described in the body of the specification.

The preferred embodiment, in referring to the drawings figure 1 and figure 2, states that a person operating the keyboard "must look straight down the tubes 22 to read the characters displayed". This is an importation of a viewing restriction and it may be correct that this is an essential integer in claim 7. That, however, does not necessarily mean that claim 1 is not fairly based on matter disclosed in the body of the specification. The respondents referred to passages in *Coopers Animal Health Australia Ltd. v Western Stock Distributors Pty. Ltd.* (1986) 67 ALR 390 at 406. There, the question concerned the claim in a petty patent and the issue was one of fair basing of that claim upon matter disclosed in the provisional specification for a standard patent: sub-s. 45A (2) and s. 51. The question was approached by asking whether an essential integer of the claim was an essential integer of the invention described in the provisional specification.

I accept the submission of counsel for the applicant that when the question is one of fair basing of a claim upon matter disclosed either in the body of the specification or in a provisional specification, it is not appropriate and is, indeed, misleading to seek to isolate in the body of the specification or in the provisional specification "essential integers" which correspond with the essential integers in the claim in question. I should add that the applicant directed no such criticism to the treatment of "fair basing" in the Full Court: (1987) 76 ALR 429.

It is important when dealing with "fair basing" to bear in mind the different functions served by the body of a specification and the claims. As s. 40 itself indicates, the task of the body of the specification is fully to describe the invention including the best method of performing it known to the applicant. The description primarily is addressed to "all and sundry who may wish to construct the device after the patent has expired": *Ludlow Jute Co. v Low* (1953) 70 RPC 69 at 76. The function of the claims is to define the invention and mark out the ambit of the patentee's monopoly, and primarily is addressed to potential rivals: see generally Fox, "Canadian Patent Law and Practice", 4th Ed., pp., 165-166, 193-196. The circumstance that something is a requirement for the best method of performing an invention does not make it necessarily a requirement for all claims; likewise, the circumstance that material is part of the description of the invention does not mean that it must be included as an integer of each claim. Rather, the question is whether there is a real and reasonably clear disclosure in the body of the specification of what is then claimed, so that the alleged invention as claimed is broadly, that is to say in a general sense, described in the body of the specification.

In his final address on this issue, senior counsel for the respondents gave the impression somewhat of resiling from reliance upon what had been said in *Coopers Animal Health Australia Ltd. v Western Stock Distributors Pty. Ltd.* (*supra*) at first instance, in favour of a somewhat different proposition. This was that whilst it does not have to be specific, the inventor has to tell the reader "what is involved essentially" in his invention, so that one then asks whether the alleged invention as claimed is broadly described in the body of the specification, having regard to the essential character of the invention as described therein. Even that proposition, in my view, distorts the first of the propositions propounded in the judgments of Lloyd-Jacob J. and Gibbs J. to which I have referred. The inquiry in the present case is as I have expressed it in the immediately preceding paragraph.

I have earlier in this judgment set out the provisions of much of the body of the specification, including the consistory clause. That clause is reflected in claim 7. However, in my judgment, on its proper construction, claim 1 does not claim a viewing restriction means. I have set out earlier in these reasons the concluding paragraph of the passage which contains the preferred embodiment, with the statement therein that the invention is in no way limited to the details of the preferred embodiment. One of those details in the preferred embodiment concerns the restriction of viewing, as described in figures 1 and 2. Applying the principles I have

described, it is not correct to deny for this reason that claim 1 is fairly based on the material disclosed in the body of the specification.

I return now to the first ground urged by the respondents as disclosing a want of fair basing. The passage from the preferred embodiment, which I have set out when dealing with infringement makes it plain that the particular means of rejecting duplication of digits is an essential integer in claim 7. However, in my view, there is lacking in claim 1 any essential integer directed to the prevention of configurations with duplication of digits. This follows from what I said earlier in these reasons when dealing with infringement of claim 1. Bearing in mind the principles I have earlier discussed, in my view it is not correct that the invention as claimed in claim 1, without specification therein of a means of rejecting duplicated digits, is not "fairly based" on matter described in the body of the specification.

Inutility

The respondents do not suggest that claim 1 may lack utility simply for want of commercial practicality in results achieved by the invention so claimed: Bannon, "Australian Patent Law", 2' 156. The respondents rely for inutility of claim 1 on two grounds.

First, it is submitted that a device according to claim 1 does not contain any viewing restriction as I have earlier discussed, and that a device according to claim 1 containing scrambled digits will still not be useful for the purpose claimed if the values of the keys in use can be read by an observer other than the operator of the device. It is submitted that what must be considered is the usefulness of the device as claimed for the purpose claimed, viz. for the purpose of ensuring that it cannot be used by an observer not being the operator. The device as claimed was contrasted with the Hirsch products which contain a sophisticated viewing restriction means which greatly limits the angles from which the display may be observed by persons other than the operator.

The basic principle has been formulated as follows in *Fawcett v Homan* (1896) 13 RPC 398 at 405 per Lindley LJ:

If an invention does what it is intended by the Patentee to do, and the end attained is itself useful, the invention is a useful invention.

What the invention is intended to do is a matter to be gathered from the title and the whole of the specification: Blanco White, "Patents for Inventions", 2' 4-403. A distinction may be drawn between a case where a patentee claims a result and bases his claim on the production of that result and the case where a patentee merely points to certain advantages that will accrue from the use of his invention: Fox, "Canadian Patent Law and Practice", 4th Ed., pp. 152-154.

The title of the patent is "improvements in security means". The body of the specification commences with a statement of the problem, viz. that none of the existing types of access control systems have been particularly satisfactory and in particular a previous proposal to provide an access control system incorporating a manually actuable keyboard the keys of which were selectively actuable to generate a code which, if correct, would provide the necessary access, suffered a disadvantage in that it would still be possible for an observer to note the combination of keys actuated by the authorised person.

It is then said that the present invention provides "an improved keyboard security apparatus by which this problem is overcome". I take the reference to "this problem" being "overcome" to be a reference to the possibility for an observer to note the combination of keys actuated by an authorised person. However, this passage has to be read by a passage, after the intervening consistory clause, as follows:

In the operation of the above described apparatus the random scrambling of the designated key values prevents an observer from detecting a correct code merely by noting the order in which the particular keys are actuated since the position of the keys for the correct code will be changed.

In a simple access control system, access may be obtained solely by operation of the keyboard. In more sophisticated systems however additional security equipment may be included . . .

The phrase "*from detecting a correct code merely by noting the order in which the particular keys are actuated*" is significant. It indicates that the promise of the invention is to deal with a particular type of insecurity, viz. the breaking of a code merely by noting the order in which the keys are actuated. The evidence indicated that there are many different degrees of security which can be required, and many different ways in which security might be achieved. However, the promise of the invention is concerned with a particular aspect of security, the breaking of the code by the noting of the order in which the keys are pressed. It is in the light

of this that one has to consider the question of utility, and the question is whether in the sense of patent law the device is useless for that purpose. The circumstances that an even greater improvement in security might be obtained by the addition of a restricted viewing means, such as that which is present in the Hirsch products, does not mean that the invention as claimed in claim 1 is not useful, or that it does not attain the object of the invention.

In my view, the attack on utility based on this ground fails.

The other ground urged for inutility concerns the treatment in claim 1 and in the body of the specification of the avoidance of duplication of digits. The submissions for the respondents on this branch of the case proceed by the following steps:

- (1) A device according to claim 1, on its true construction, does not contain any means for avoiding duplication of digits.
- (2) It follows that a display generated by a device according to claim 1 may not contain some digits in a user code number.
- (3) For a 4-digit code number, the probability that one or more the digits in that code will be missing from any given display is such that on average a user would have to bring up more than 5 displays before the user would find a display in which there were present all 4 digits of the code. In the case of a 5-digit code, the probability is that on average, the user would have to bring up 12 or more displays before the user found a display with all the digits of the code present; the corresponding number of displays for 6, 7 and 8-digit codes, is 30 or more displays, 88 or more displays and 326 or more displays, respectively. (I should add that the evidence also showed that if no steps were taken to avoid duplication, the device claimed in claim 1 would permit entry of a 3-digit code after an average of 2 displays.)
- (4) If any device falling within the terms of claim 1 is not useful for the purpose of the invention, the whole claim is invalid and because 7 and 8-digit codes fall within claim 1 so as to give obviously useless embodiments, the device is not useful for that purpose. Hence, claim 1 is invalid for inutility.

The applicant submitted that the Court should be extremely reluctant to place a construction upon a claim that would render it invalid as including embodiments that a qualified reader would recognise as being obviously useless. The applicant referred to the treatment in the

preferred embodiment itself of the avoidance of digit duplication; it submitted that normally a construction will be adopted which treats the avoidance of such useless embodiments as something left by the draftsman to the reader of the specification to settle for himself. In support of this proposition, the applicant relied upon *Welch and Perrin & Co. Pty. Ltd. v Worrel* (1961) 106 CLR 588 at 601-602. There, in the course of discussing *Norton & Gregory Ltd. v Jacobs* (1937) 54 RPC 271 at 276, Menzies J. said that what was said in the earlier case by Greene MR did not mean that a specification should be construed in a way that any sensible person would appreciate would lead to unworkability when it could be given a more limited meaning.

In *Washex Machinery Corporation v Roy Burton & Co. Pty. Ltd.* (1974) 49 ALJR 12, Stephen J. considered an allegation of inutility in respect of a claim for a machine designed to wash and damp dry materials by immersing them in water or other cleaning liquid, subjecting them to rotary tumbling action and then, by the application of high centrifugal forces, driving off the washing liquids leaving the materials clean and damp. The machine worked at low speed in the washing operation, and at high speed in the extraction. Over the full range of speeds, it was necessary to avoid vibration.

The allegation was that claim 1 of the patent in suit was invalid because it failed to require that there be such a difference between the critical speed and the extraction speed as to ensure effective vibration isolation. Stephen J. said (at p. 18):

The evidence does make it clear that the latter must be considerably in excess of the former if the advantages of avoiding operation at critical speed are to be gained and claim 1 does no more than require critical speed to be less than the speed of extraction. However, the need in determining operating speeds, to avoid by a wide margin the critical speed, has long been common knowledge in the art and call for no statement to that effect in a claim. The claim states that during the extraction cycle the extraction speed is to be in excess of critical speed and it is no part of its function as a claim to go on to specify a minimum speed separation between the two; the failure to do so does not, in my view, amount to inutility.

In *Washex Machinery Corporation v Roy Burton & Co. Pty. Ltd.* (*supra*), there was a further attack made on claim 1 for inutility. There was said to be a failure to give effect to one object of the invention, viz. the provision of a machine in which the mass distribution of the load, axially of the cleaning unit, need not be uniform. The evidence was that during operation, any uneven distribution of load tended to correct itself, but that in some circumstances malfunction might occur. His Honour said (at 19) that to postulate such a happening was not

an appropriate mode of testing utility and referred to what had been said by Menzies J. in *Welch Perrin & Co. Pty. Ltd. v Worrel (supra)* at 602.

I should also set out the following passage (omitting footnotes) from the Mr. Blanco White's work (4th Ed., 2' 4-408):

Claim including that which is not useful

It follows from what has been said that it is often a convenient test of the utility of the invention contained in a claim to consider whether the claim includes forms of the invention which are not useful, but that this test must be applied with very great caution. The function of a claim is to delimit the monopoly given by the patent, not to give instructions for the working of the invention, and it is consequently not necessary that the claim should contain these instructions; even the body of the specification is required to contain only those instructions that the reader cannot supply for himself. It would be unreasonable to expect the claims to contain more. A distinction should accordingly be drawn between cases in which the invention claimed is not useful unless an additional feature or features be added to those claimed (the claim then being invalid), and cases where the qualifications and expedients necessary to make the article claimed work can be, and on a true construction of the claim are, left to the reader to supply for himself. Since in cases where the reader can make the thing work the courts tend wherever possible to construe claims as requiring him to do so, it is not in practice enough to ask whether the claim includes things that are not useful; it is necessary to ask also whether there is anything in the language of the claim positively pointing to some useless construction. The successful utility attacks are nearly always in cases of that sort. Examples are: where a claim specifies two alternative processes or constructions of mechanism, of which only one is useful; or the claim specifies the use of any of a group of chemical compounds, and it is not substantially true that all will work; or the claim includes a series of constructions, and only certain members of the series are useful; or more generally, the claim contains a limitation directed to a particular feature and further limitation of that same feature is needed for utility; or the feature needed for effective working is expressly made optional - as when it is added by a subsidiary claim.

In the present case, in the course of his cross-examination by senior counsel for the respondents, Dr. Burston said the following:

My interpretation of the claims, making what I consider an intelligent understanding of what they mean, is that in fact the random number generator is only generating a digit from the set that remains. For instance, if you have 9, 8 and 7, what is referred to as a random number generator is in fact generating a number between zero and six at that stage. The point is that when you start off with an array empty, you have a choice of ten digits and the random number generator will generate a digit 0 to 9 which will be put in your first pigeon hole. That is then eliminated as a digit you want to consider for allocating in the second pigeon hole. My impression would be then as part of the random number generator mechanism you would generate one of the remaining nine, restricting it by eliminating number duplicates. Does that answer the question?

Yes, you agree that are no express words relating to avoiding duplication?

There are no express words relating to avoiding duplication.

You rely on the fact that there is some reference to the avoidance of duplication in the body of the specification?

No, I would rely on the fact that an intelligent reader would immediately assume there would be no duplication.

Further, in her affidavit, Professor Seberry deposed that claim 1 of the patent in suit provided for the main feature of the patent, viz. that "the numbers zero to nine without duplication (*italics supplied*) will be produced in random sequence and allocating in such random sequence to a keyboard having ten keys". She was not cross-examined on this understanding of the invention claimed.

Accordingly, in my view, there is the evidentiary foundation for the conclusion that a qualified reader would not place a construction on claim 1 as including embodiments that were obviously useless; the claim does not positively point to some useless construction. The present is a case where the qualifications and expedients necessary to avoid duplication of digits are left to the qualified reader to supply. Accordingly, I accept the submission for the applicant that claim 1 is not lacking in utility for failure to specify a means of avoiding duplication of digits.

Conclusions

In summary, the conclusions I have reached are that claim 1 is infringed, claim 7 is not infringed, and claim 1 is not invalid either for want of fair basing or for inutility.

As indicated earlier in these reasons, I will stand the proceedings over to a date convenient to the parties for consideration of the further conduct of the matter, and the making of any final orders that can be made at that stage.

However, I should point out that it may be that an outstanding inquiry as to damages may result in any injunctive relief being in the meantime interlocutory; see *Computer Edge Pty. Ltd. v Apple Computer Inc.* (1984) 54 ALR 767 at 768, and the discussion thereof by Lockhart J. in *A.C.I. Australia Ltd. v Glamour Glaze Pty. Ltd.* (22 April 1988, unrep., p. 22).