

IN THE MATTER OF Patent Application
No 8219431 in the name of
D L McNeight and J G Lawrence

DECISION

During the course of the substantive examination proceedings the examiner raised a variety of objections against the application, and although the application was amended on 30 April 1984 and further amendments were proposed by Mr McNeight, one of the applicants, at an interview held on 11 September 1984, the examiner found himself unable to accept that the application complied with the requirements of the Act. The applicants were invited to request a hearing to resolve the issues, and, these being somewhat involved, the examiner furnished the applicants with a full and detailed report on 22 January 1985 in which he set out reasons why he considered that objections to the claims by way of lack of novelty, inventive step, clarity and support could be sustained. The applicants having requested a hearing, the matter came before me on 23 April 1985. Mr McNeight, a patent agent by profession, appeared in person.

The specification, in its opening paragraphs, explains that the invention is concerned with a method and apparatus for use against counterfeiting of mass produced articles. As I understand it, the invention in general terms resides in two things: (i) applying marks to mass-produced articles, the marks being selected according to a secret algorithm and each mark being applied to one or more articles, and (ii) examining the marks found on articles, eg in retail establishments, to determine whether a mark (a) does not conform to the secret algorithm or (b) conforms to the secret algorithm but occurs more frequently than it should.

The marks may take various forms such as a string of humanly-legible alphanumeric characters, or a machine-readable bar-code.

Each mark may be printed on or woven or embroidered into a label to be attached to an article or its packaging, or it may be stamped or embossed onto the article directly. In the case of banknotes or other serially numbered items, the mark may be applied as a coded adaptation of the regular numbering system. Information may be included in the mark so as to indicate colour or style of an article of clothing, the authorised sales territory or the monetary value of a banknote.

Detection of the presence of counterfeit articles on the market involves the employment of inspectors who, according to the description, for reasons of security preferably have no knowledge of the secret algorithm by which the marks are selected. The specification suggests the possibility that the inspectors may read humanly legible marks found on articles and report these marks back to a central computer for analysis, but it is preferred that the inspectors are provided with a portable device which can read and store bar coded marks applied to articles. The stored codes may be sent to a central processing unit at some later time, but to avoid delays, during which the inspected articles may be sold or otherwise removed, it is preferred that the portable device is programmed to indicate whether or not a mark conforms to the algorithm. The device may also be programmed and organised so that it can detect when a given mark which conforms to the algorithm has been found more than a predetermined number of times. Such a device may be provided with a plug-in module which carries a program for discriminating between valid and invalid code marks, a keyboard by means of which data and instructions may be entered into the device, and a display on which the characters making up a mark may be displayed together with an indication, when appropriate, that the mark is invalid and the reason why it is invalid.

The specification also describes a system for use with banknotes bearing marks selected to conform to a secret algorithm in accordance with the principles of the invention. In this system bank tellers are provided with an optical reading machine which supplies the codes read from banknotes to a local processor which is programmed to recognise valid codes and, presumably, to identify invalid codes. A number of such local processors

communicate with district processors so that the latter may store the codes passed to them over a period of time and the district processors may also communicate with each other to check for duplicated codes over a wide geographical area.

The main method claim, as it now stands, reads as follows, though for convenience I have also indicated in brackets the amendments proposed by Mr McNeight at the interview held on 11 September 1984.

"1 A method for distinguishing articles belonging to genuinely produced and/or properly sold mass produced articles from fake or diverted such articles that may be identical or apparently so, comprising selecting, according to a secret algorithm (that cannot reasonably be deduced from a knowledge of a few genuine marks), a small (, non-serial) subset of marks from a serial set of marks, applying marks from the selected subset each to only one or a small number of articles from the said set of articles so that all articles of said set are marked, and examining articles which may or may not be articles of the said set to determine if they bear marks belonging to the said small subset and to determine if, in the set of articles examined, any mark from the said small subset occurs more than once or more often than would be expected from the known small number of articles of the said set to which it was applied."

I think it is clear from the consistency clause on pages 2 and 3, and for claim 1 to read correctly, that the applicants intended this claim to be read with the words "a set of" immediately preceding the words "genuinely produced", and I propose to view the claim in that light.

The examiner found several points of difficulty in construing claim 1, these forming the basis for his objection of lack of clarity, and I will deal with these points in turn. In the first place, there is the question of what meaning is to be placed on the expression "secret algorithm". The specification describes three forms of algorithm. One algorithm is presented in general terms only and involves the generation, in a manner akin to the conventional derivation of check digits, of one or more additional

symbols from the symbols of an original mark such as a banknote serial number, and the interleaving of the additional symbol(s) in the original mark at inconspicuous position(s). A second algorithm is simply "all even numbers are valid", this algorithm being referred to as "trivial" and less satisfactory than a third algorithm which takes the form "all ten-digit even numbers with their fourth digit divisible by three and their seventh digit odd and all ten-digit odd numbers with their third digit even and their fourth and fifth digits differing by one". An interesting and most unusual point arises from this in that any algorithms which are specifically disclosed in the application automatically must be excluded from the scope of the expression "secret algorithm" as used in claim 1, and at the hearing Mr McNeight willingly conceded that this was so. The examiner took the view that the term "algorithm" should be construed as meaning any rule or set of rules, whereas at the hearing Mr McNeight maintained that the term should be construed in a more limited sense as "a set of rules for performing a calculation". For my part, in particular when bearing in mind that the second algorithm referred to above cannot be regarded as forming any part of the invention claimed, I find nothing in the specification which is clearly inconsistent with the more limited construction placed on the term "algorithm" by Mr McNeight, and I construe that term accordingly.

The examiner's objection that it is not clear what is meant by "secret algorithm" in the context of the specification and his unwillingness to accept the qualifying wording proposed by Mr McNeight seem to me to be based to a substantial degree on the assumption that "all even numbers are valid" is an algorithm which could be used in the performance of the invention. If one takes the view, as I have done, that that particular algorithm is not within the scope of the invention, then I do not think there is too much difficulty in understanding what is meant by "secret algorithm" as used in the applicants' specification, and although I do not think that the insertion of the wording "that cannot reasonably be deduced from a knowledge of a few marks" into claim 1 assists greatly in clarifying the meaning of that claim, I am unable to find any more suitable wording which would

be supported by the description.

In my opinion however it is necessary for the purposes of clarity in construing claim 1 for the term "algorithm" to be defined in the specification in terms such as Mr McNeight used at the hearing and for it to be made clear specifically that the second and third algorithms to which I have referred above are not to be regarded as algorithms which could be used in practising the invention. I also take the view that the introductory wording of claim 1 is not clearly appropriate to the described application of the invention to banknotes which, though mass produced, are not "sold".

A second point of difficulty in construing claim 1 concerns the expression "small subset". On considering the general objectives of the invention, one might at first come to the view that "small subset" must mean a sufficiently small proportion of the total number of serial marks possible that the probability of anyone being able to produce a pseudo-genuine mark by an entirely random selection or in any other way not making use of the secret algorithm must be slight. Clearly the smaller the subset in relation to the total number of possible marks the more effective the invention could be in detecting counterfeiting, but the invention does not rely on the genuine marks forming a very limited subset for its ability to detect counterfeit articles, since the test for excess repetition of valid marks also forms an essential feature of the method claimed. What is an acceptably small probability that a pseudo-genuine mark may be produced without knowledge of the secret algorithm seems to me to be capable of a fair degree of variation, and must be dependent, at least to some extent, on the particular circumstances of manufacture and distribution of the articles which are to be protected against counterfeiting or diversion. In my opinion therefore it would not be right to restrict the applicants to a more specific relative size of subset of genuine marks. Nevertheless, having considered the various forms of algorithm which might be used to produce the subset of genuine marks, as far as I am able to do so from a thorough reading of the applicants' specification and the helpful explanation provided

by Mr McNeight at the hearing, I find myself sharing the examiner's view that the proposed qualification of "small subset" as being "non-serial" is inappropriate and rather misleading, for, as I understand it, the subset of genuine marks may include one or more strings of consecutive numbers and, in any event, as a whole must conform to a mathematical series, albeit complex and difficult to recognise as such.

A third point of difficulty stems from the reference in claim 1 to each mark of the subset being applied to one or a small number of articles, but I think reasoning similar to that advanced when considering the second point applies. It seems abundantly clear to me that, if large scale copying of a relatively small number of genuine marks is to be detected effectively, the number of articles to which a given genuine mark is applied must be limited. Indeed, this much is confirmed in the specification at page 4 lines 19-22 where it is stated that the problem of detecting spurious articles is reduced to the problem of detecting marks which do not conform to the algorithm or marks which occur many times when they should only occur once or just a few times. At the hearing Mr McNeight argued that it would be unduly restrictive to impose any specific upper limit on the number of articles to which a given genuine mark might be applied, and I accept that argument.

A further point which requires consideration at this juncture is the suggestion made by the examiner that the entire method claimed in claim 1 could be performed manually, the only apparatus required perhaps being a pen. For my part, I do not think claim 1 properly may be construed in such broad terms. It seems to me that for the algorithm to remain secret, knowledge of the algorithm must not be imparted to more people than is absolutely necessary, a point on which some stress is laid in the description, although at present it does not clearly exclude the inspectors from having such knowledge. It would appear to me to be essential to the invention that the generation and examination of marks must be performed automatically ie by some form of computer or calculator, and, from a practical point of view, if the algorithm is to be sufficiently complex for it to be such that it cannot reasonably be deduced from a knowledge of a few genuine marks, there would seem to be no sensible alternative to this.

Having construed claim 1 in this manner, I do not consider the claim as it stands to be objectionably unclear or unspecific given the nature of the invention and the circumstances under which it is intended to be performed.

Before proceeding further, it is convenient to deal with the question of whether or not the application relates to matter excluded from patentability by Section 1(2) of the Act. This question does not appear to have been raised by the examiner, and I only mention it now because at the hearing Mr McNeight sought confirmation of the position. Having given the matter full consideration I have concluded that there is sufficient doubt as to whether the application relates to matter excluded from patentability by Section 1(2) that it would not be proper for me on those grounds to refuse to allow the application to proceed.

I have carefully considered the prior art cited by the examiner in support of an objection that claim 1 lacks novelty and inventive step, but I have come to the conclusion, not without hesitation, that neither of these objections can be sustained when claim 1 is construed in the manner set forth above.

The application also includes a set of apparatus claims, and it is to the consideration of these that I now turn. The main apparatus claim reads as follows:

"10 Apparatus for distinguishing articles belonging to a set of genuinely produced and/or properly sold mass produced articles from fake or diverted such articles that may be identical or apparently so, comprising marking means for generating a small subset of marks by selection from a serial set of such marks according to a secret algorithm and applying such selected marks each to only one or only a small number of articles from the said set so that all articles of the set are marked, and examining means for examining articles which may or may not be articles of the said set to determine if they bear marks belonging to the said small subset and to determine if, in the set of articles examined, any mark from the said small subset occurs more than once or more often than would be expected from the known small

number of articles of the said set to which it was applied."

The examiner has argued that this claim does not define novel or inventive apparatus because it appears to do no more than define two known types of apparatus each performing its own task independently and separated not only in space but also in time. The examiner has also argued that the claim is not supported by the description, but having given the matter due consideration, I am not prepared to uphold that objection.

The objections that claim 10 lacks novelty and inventive step can be considered together I think, for both seem to me to rely on the premise that neither the marking means nor the examining means is novel, and this in turn relies on the application of the well-established principle when construing patent claims that any means "for" a particular purpose referred to in a claim is to be regarded as embracing any means suitable for that purpose. Looking at claim 10 in this light, I share the examiner's view that the claim as worded at present is directed to no more than a collection of known and independent integers and must be regarded as obvious if not lacking in novelty, since anyone who uses a computer to apply bar-coded marks to labels must be expected to intend those marks to be read by a bar code reader which, in common practice, would supply the information read thereby to a computer.

It is quite clear to me from reading the application that the applicants have not invented any new technical feature either in apparatus for generating and applying the marks or in apparatus for examining the marks. Indeed, at the hearing Mr McNeight demonstrated a commercially available portable calculator which had been programmed to analyse printed bar codes selected according to a mathematical algorithm and which had attached thereto a light pen as an input device.

Thus even if claim 10 were to be amended so as to clearly limit the marking means and the examining means to means specifically arranged to perform the functions required there still would not be, in my view, any technical novelty in either of those means

nor would there be any simultaneous functional co-operation between those means, so that such a claim when viewed as a whole could not be said to incorporate any new technical effect. This being so, I am of opinion that whether claim 10 or a similar apparatus claim is regarded as not satisfying Section 1(1)(a), (b) or (d) on no reasonable view can it be regarded as being a valid claim, and the same applies to all the claims dependent on claim 10.

In the result therefore I find that no apparatus claims are allowable in this application and that clarification of claim 1 and the description is necessary as specified above. I allow the applicants the period of two months from the date of this decision to delete their apparatus claims, to file amendments consequential to such deletion and to file clarifying amendments with a view to meeting this finding. Failing such response the application stands refused.

Dated this 16. day of May 1985

K E PANCHEN

Principal Examiner, acting for the Comptroller

PATENT OFFICE