



## PATENTS ACT 1977

APPLICANT                      Zebra Technologies Corporation

ISSUE                          Whether patent application GB2101928.6 complies  
   with the requirements of sections 1(1)(b) and 3

HEARING OFFICER              B Micklewright

---

### DECISION

#### Introduction

- 1 Patent application number GB2101928.6 was filed on 11 February 2021 in the name of Zebra Technologies Corporation, claiming priority from an earlier US application filed on 24 February 2020. The application was published on 02 February 2022 as GB 2597560 A.
- 2 The examiner considered the claimed invention to lack an inventive step, thereby failing to comply with the requirements of sections 1(1)(b) and 3 of the Patents Act 1977 (“the Act”). The applicant disagreed and the matter came before me at a hearing on 13 November 2023, at which the applicant was represented by Peter Lucas of the firm LKGLOBAL.

#### The invention

- 3 The invention relates to a barcode reading and weighing apparatus (scale 120 of Figure 1, reproduced below). It includes an off-platter detection assembly which detects whether a portion of the item being weighed is not fully resting on weigh platter 116. A light emission assembly 126 may be used to detect when an item is off-platter.
- 4 According to claim 1, if a portion of the item is not resting on the weigh platter, the measured weight is modified to an out-of-bounds weight or an invalid weight to indicate that a portion of the item is not resting on the weigh platter. This modified weight is then sent to a point-of-sale (POS) system.
- 5 Independent claim 12 states that the weight is only modified if a weight priority associated with the item is a first priority. If it is a second priority and the item is not wholly resting on the weigh platter, the weight measured by the scale is sent to the POS system. The first priority may be associated with more expensive items or

higher cost-per-weight items, and the second priority with less expensive items or lower cost-per-weight items. A user-controllable threshold may be used to identify items with first or second priorities. Items may be identified using an object recognition algorithm trained using machine learning, or a barcode or RFID tag could be used.

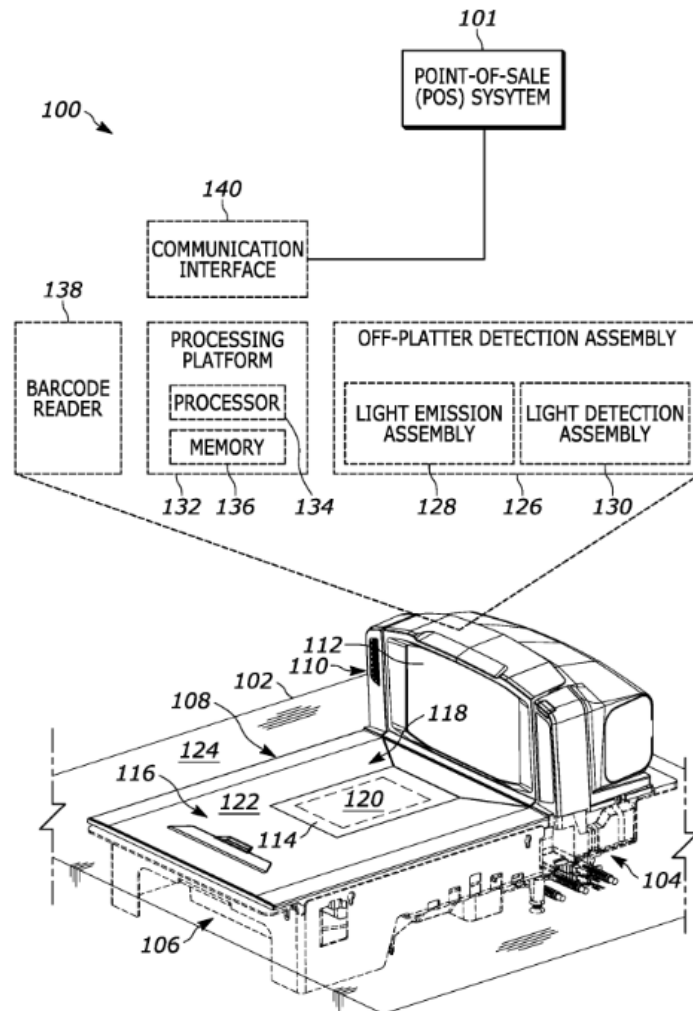


FIG. 1

6 The latest claims were filed on 27 September 2022. Of the 21 claims, claims 1, 8 and 12 are independent. Claims 1 and 8 are similar in scope and relate to apparatus and method claims respectively. Claim 12 has a slightly different scope. Claims 1 and 12 read:

1. A barcode reading and weighing apparatus, the apparatus comprising:
  - a weigh platter having a surface extending in a first transverse plane;
  - a scale configured to measure a weight of an item on the surface;
  - an off-platter detection assembly configured to detect whether a portion of the item is not resting on the weigh platter;

a communication interface configured to communicate with a point-of-sale (POS) system;

a processor in communication with the weigh platter, the off-platter detection assembly and the communication interface; and

a non-transitory computer-readable storage medium storing instructions that, when executed by the processor, cause the barcode reading and weighing apparatus to, when the portion of the item is not resting on the weigh platter, modify the weight to form a modified weight and send the modified weight to the POS system via the communication interface, wherein the weight is modified to indicate the portion of the item was not resting on the weigh platter, and wherein modifying the weight to form the modified weight comprises least one of: changing the weight to an out-of-bounds weight; or changing the weight to an invalid weight.

12. A barcode reading and weighing apparatus, the barcode reading and weighing apparatus comprising:

a weigh platter having a surface extending in a first transverse plane;

a scale configured to measure a weight of an item on the surface;

an off-platter detection assembly configured to detect whether a portion of the item is not resting on the weigh platter;

a communication interface configured to communicate with a point-of-sale (POS) system;

a processor in communication with the weigh platter, the off-platter detection assembly and the communication interface; and

a non-transitory computer-readable storage medium storing instructions that, when executed by the processor, cause the barcode reading and weighing apparatus to:

identify a weight priority associated with the item,

when the weight priority is a first priority and the item is not wholly resting on the weigh platter, provide an indication that the item is not wholly resting on the weigh platter by modifying the weight measured by the scale and changing the weight to an out-of-bounds weight; or changing the weight to an invalid weight and sending the weight to a POS system, such that the POS system will not accept the modified weight and return the indication, and

when the weight priority is a second priority and the item is not wholly resting on the weigh platter, send the weight measured by the scale to a POS system.

## **The law**

7 Section 1(1) of the Act states:

*A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say —*

*(a) ...*

*(b) it involves an inventive step;*

*(c) ...*

*(d) ...*

8 Section 3 of the Act states:

*An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).*

9 Section 2(2) explains what is meant by the state of the art for the purposes of inventive step:

*The state of the art in the case of an invention shall be taken to comprise all matter (whether a product, a process, information about either, or anything else) which has at any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.*

10 In *Windsurfing*<sup>1</sup>, the Court of Appeal formulated a four-step approach for assessing whether an invention is obvious to a person skilled in the art. This approach was restated and elaborated upon by the Court of Appeal in *Pozzoli*<sup>2</sup> where Jacob LJ reformulated the *Windsurfing* approach as follows:

*(1)(a) Identify the notional “person skilled in the art”*

*(b) Identify the relevant common general knowledge of that person;*

*(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;*

*(3) Identify what, if any, differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed;*

*(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?*

## **Assessment**

11 The examiner considered the invention claimed in claims 1-21 to lack an inventive step in view of what has already been disclosed in the following document:

---

<sup>1</sup> *Windsurfing International Inc v Tabur Marine (Great Britain) Ltd* [1985] RPC 59

<sup>2</sup> *Pozzoli SPA v BDMO SA* [2007] EWCA Civ 588

D1: US 2011/0132985 A1 (MCQUEEN *et al*)

- 12 I will use the *Windsurfing/Pozzoli* approach in my analysis to determine whether the claimed invention involves an inventive step over D1.

*Steps (1)(a) and (1)(b): Identify the notional “person skilled in the art”, and Identify the relevant common general knowledge of that person*

- 13 The examiner identified the person skilled in the art to be a designer or manufacturer of point-of-sale (POS) systems. They would be aware of commonly known design features in the art and capable of routine workshop alteration. Mr Lucas made no specific comments in relation to these steps at the hearing or in correspondence, and I am content to accept the examiner’s identification.

*Step (2): Identify the inventive concept of the claim in question or if that cannot readily be done, construe it*

- 14 The invention relates to a barcode reading and weighing apparatus, in particular to alerting a point-of-sale (POS) system when a portion of an item to be weighed is not fully resting on the weigh platter.
- 15 The inventive concept of claim 1 achieves this by modifying the weight measured by the scale and sending this modified weight to the POS system, the weight being modified to indicate that a portion of the item was not resting on the weigh platter. The weight is modified by changing the weight to an out-of-bounds weight or to an invalid weight.
- 16 At the hearing there was some discussion as to whether claim 1 was limited to the situation whereby the measured weight is not recoverable from the modified weight. I note however that there is no explicit limitation to this effect in the claim. In my view the claim covers apparatus which operates in a manner such that the original weight is recoverable, for example by removing an added minus sign. This limitation does not therefore form part of the inventive concept.
- 17 The inventive concept of claim 12 is different in that the weight is only modified in the manner set out in claim 1 if a weight priority associated with the item being weighed is a first priority. If it is a second priority, and the item is not wholly resting on the weigh platter, the measured weight is not modified but is sent as measured to the POS system.
- 18 I will briefly consider the inventive concepts of the dependent claims. Claims 2 and 9 state that the weight is sent to the POS system if the item is wholly resting on the weigh platter. Claim 3 defines a surface around the weigh platter which is substantially coplanar with the weigh platter. Claims 4 and 5 provide more specific information as to how the weight is modified, namely by including a letter or an inverted sign respectively. Claim 10 includes both these alternatives. Claim 6 incorporates a barcode reader into the apparatus. Claim 7 provides details of the detection assembly which include a light emission assembly and a light detection assembly. Claim 11 states that the weight can be obtained from the modified weight at the POS system.

19 In relation to the claims dependent on claim 12, claim 13 states that the weight is useable at the POS system for at least one of charging the customer or verifying the item. In claim 14 the indication that the item is not wholly resting on the weigh plater is provided to the POS system. Claim 16 involves additionally providing the measured weight as well as the indication that the item is not fully resting on the weigh platter. Claim 17 provides for alerting a user of the barcode and weighing apparatus of an invalid weight when the weight priority is the first priority, and not alerting the user when the weight priority is the second priority. Claims 18 and 19 provide more detail on the criteria by which first and second priorities are associated with items. Claim 20 relates to methods by which items are identified so that the relevant weight priority can be associated with them. Claim 21 relates to storing a list of item identifiers associated with the first priority.

*Step (3): Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed*

20 D1 discloses a system for reducing or otherwise mitigating erroneous weighing of items which includes detecting items extending beyond or encroaching upon the periphery of a scale. It forms part of a scanner-scale. When it is detected that an item extends beyond the edge of the scale, this is reported to the POS system. Paragraph [0083] states:

*"The data pertaining to the off-scale/overhanging condition may be reported by appending data to the weight information or sending an extra message pertaining to the overhang condition, separate from the weight data, such as in a "special" or "phantom" barcode (i.e., non-item identification data such as disclosed in U.S. Pat. No. 7,527,198 hereby incorporated by reference) or as special PLU (price look-up) data."*

21 D1 therefore discloses an embodiment whereby an off-scale/overhanging condition is reported to the POS by appending data to the weight information. It does not however specify any particular method for appending this data. D1 therefore differs from the inventive concept of claim 1 in that it does not specify that the data is appended to the weight information by "changing the weight to an out-of-bounds weight; or changing the weight to an invalid weight", as is specified in claim 1.

22 As I have mentioned above, at the hearing there was some discussion as to whether the system of D1 necessarily provides for the recovery of the measured weight, and whether this a difference between the inventive concept of the present invention and D1. I have however found that the inventive concept of claim 1 of the present invention is not limited in this manner, and this does not therefore constitute a difference between D1 and the inventive concept of claims 1 or 12.

23 Paragraph [0083] relates to Figure 19 which is reproduced below.

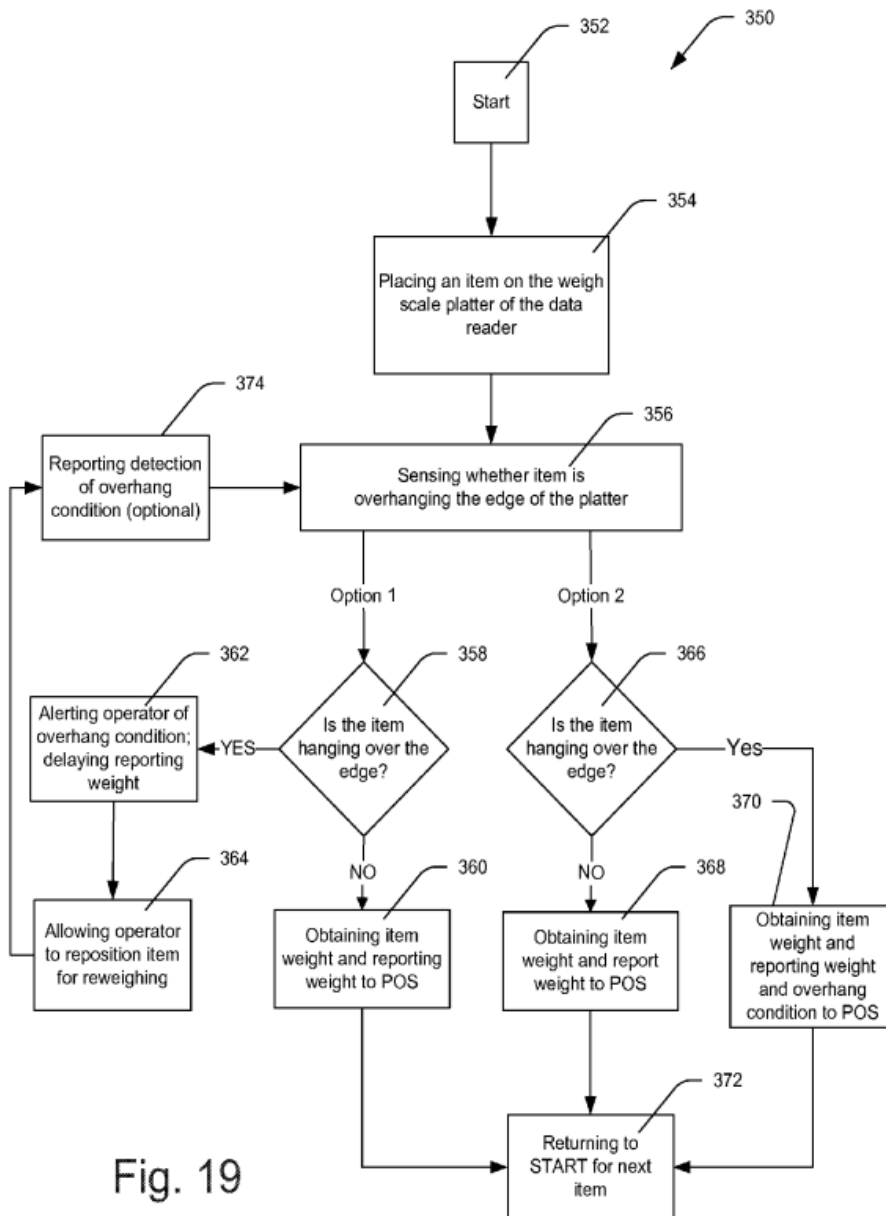


Fig. 19

- 24 In Figure 19, two options are disclosed. In option 1, when an overhang condition is detected, the operator is alerted and the reporting of the weight is delayed. In option 2, both the weight and overhang condition are reported to the POS. D1 does not specify the criteria by which either options 1 or 2 are selected.
- 25 In claim 12 of the present invention, if an item is a “first priority” item, then the weight is modified in accordance with the method of claim 1 and the modified weight reported to the POS system. Although Mr Lucas argued that the measured weight is lost once the weight is modified, I have found that this is not apparent from the claim and the inventive concepts of both claims 1 and 12 include embodiments where the measured weight and the overhang condition are reported to the POS system by way of the modified weight, as is disclosed in option 2 of D1. I note however that option 2 does not disclose the specific manner in which the weight is modified, as is claimed in claim 12 for first priority items.

- 26 For “second priority” items, according to claim 12 the weight is sent through to the POS system in the event of an overhang condition. This differs from option 1 in Figure 19 of D1 in that, in option 1, the weight is not reported to the POS system. Nor, for that matter, is the overhang condition. Rather the overhang condition is reported to the operator so that they can re-weigh the item.
- 27 Thus, although D1 discloses two options where different actions take place, these two options do not read on to the actions associated with weighing items that have associated with them a “first priority” or “second priority”, as in the inventive concept of claim 12.
- 28 D1 also does not disclose that weight priorities are associated with items or that the weight is only modified if the item being weighed is a first priority, and not if it is a second priority, as is specified in claim 12.

*Step (4): Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?*

- 29 At the hearing Mr Lucas referred me to paragraph 3.49 of the Manual of Patent Practice<sup>3</sup> (as well as similar guidance in the EPO Guidelines for Examination, Part C, Chapter III, paragraph 4.1.1<sup>4</sup>) which states:

*“The nature of the expertise implied depends on the matter to be determined and on the circumstances of the application. For example the substantive examiner is not in most cases in a position to deny simply from their own knowledge facts (such as whether a given technique is well-known, or whether a given reaction has specified by-products) to which evidence has been brought forward from a witness -possibly the applicant themselves - who can claim relevant expert knowledge. In such circumstances the examiner is likely to have to accept the evidence from the applicant unless they can produce documentary evidence of contrary effect. Nevertheless, the substantive examiner must be taken to be qualified to decide, given the prior art and other relevant technical facts, whether the resulting position implies the presence or absence of an inventive step.”*

- 30 Mr Lucas commented that the examiner did not provide any evidence as to why the differences between the inventive concept and the prior art are obvious. Whether or not this is the case, I however note the last sentence of the above paragraph which states that the examiner “must be taken to be qualified, given the prior art and other relevant technical facts, whether the resulting position implies the presence or absence of an inventive step.” Mr Lucas also highlighted the warnings concerning the use of hindsight mentioned, for example, in paragraph 3.10 of the Manual of Patent Practice. I am aware of the dangers of using hindsight and will be careful not to do so in my analysis.
- 31 Mr Lucas submitted that it would not be obvious to modify the weight measured in accordance with paragraph [0083] of D1 by changing the weight to an out-of-bounds weight or an invalid weight because D1 teaches that it is desirable to transmit the

---

<sup>3</sup> The Manual of Patent Practice is available at <https://www.gov.uk/guidance/manual-of-patent-practice-mopp>.

<sup>4</sup> The relevant paragraph of the EPO Guidelines is available at [https://www.epo.org/en/legal/guidelines-epc/2023/c\\_iii\\_4\\_1\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2023/c_iii_4_1_1.html).

measured weight in addition to the presence of an off-scale condition. He referred to paragraphs [0069] and [0070] which state:

*“[0069] In an alternate embodiment, the perimeter detection system may be configured to report additional data about the condition of weigh scale veracity when the condition of off-scale weighing occurs providing useful insight to store operations.*

*[0070] In one example, if the scale receives a weight request from a connected POS device and the overhanging condition is sensed by the detectors, the system may respond with a weight and some extra appended data that indicates (a) the overhanging condition; (b) identification of which side of the platter is affected. This feature may be particularly useful for stores that are transitioning to new scanner/scale systems that include such a scale perimeter monitoring option. It may be desirable to not to fully disable weight reporting during an overhanging condition as it may be determined that such disabling may negatively affect store throughput until personnel get used to the new system. This option allows monitoring how often weight transactions may be incorrect, which can be useful in store loss analysis and operator training evaluations.”*

- 32 I agree that in the system disclosed in these paragraphs, and in paragraph [0083] and option 2 of Figure 19 of D1, appending data pertaining to the overhang condition to the weight data is carried out in a manner which preserves the measured weight in D1. I have however found that this does not constitute a difference between D1 and the present invention. I do not however agree that this precludes modifying the weight data in D1 by changing it to an out-of-bounds weight or an invalid weight. It is clearly possible to modify the weight data in this manner and preserve the original weight. For example, 100KG could be added to the measured weight to result in an out-of-bounds weight, or a minus sign added to result in an invalid weight. Providing the POS is aware of the algorithm used to modify the weight, it can retrieve the original weight data, for instance, in the examples above, by merely subtracting 100KG from the reported weight, or by removing the minus sign.
- 33 Mr Lucas argued that a benefit of the present invention is that no changes need to be made to the POS system in order for the present invention to operate, because it is the weight itself that is modified. Presumably the system would create an exception if it received an invalid or out-of-bounds weight, and the operator could then determine if the exception was caused by an overhang condition.
- 34 There is however no disclosure in the specification that the system should be designed in such a manner. In fact the specification includes the possibility of obtaining the measured weight from the modified weight and this is explicitly claimed in claim 11. Mr Lucas suggested that claim 11 is inconsistent with the latest amendments made to the independent claims and should be deleted. I do not however consider it to be inconsistent. The independent claims cover embodiments where the measured weight is recovered and there is no suggestion in the application that it may be disadvantageous to implement such a feature.
- 35 Moreover claims 4 and 5 relate to specific ways in which the weight may be modified in accordance with claim 1, namely by adding a letter or an inverted sign respectively to the measured weight. In both such cases it would be relatively simple to recover the measured weight from the modified weight.

- 36 I do not therefore consider that the teaching in D1 that the measured weight is reported along with the overhang condition when data is appended to the measured weight, teaches away from the present invention.
- 37 Paragraph [0083] of D1 teaches that an overhang condition and a measured weight can be reported to a POS system by appending data to the measured weight information. It does not provide any examples as to how this may be done. The person skilled in the art would, in my view, by way of routine workshop modifications, consider a number of ways of modifying the weight data and would consider adding a negative sign or another ascii character or characters such as a letter. In any event it is likely that the resultant data field, once the data had been appended, would be considered an invalid or out-of-bounds weight by the POS system, with the POS programmed to then recover the measured weight from that data field. Thus I consider the inventive concept of claim 1 to be obvious to the person skilled in the art when considering the disclosure of D1. Similar arguments apply to independent claim 8.
- 38 Reviewing the claims dependent on claims 1 and 8, I do not consider any of these claims to involve an inventive step over D1. Claims 2 and 9 merely confirm that the weight is sent to the POS system if the item is wholly resting on the weigh platter. Claim 3 defines a surface around the weigh platter which is substantially coplanar with the weigh platter, which is disclosed in D1. Claims 4 and 5 provide more specific information as to how the weight is modified, whereby it is modified by including a letter or an inverted sign respectively, with claim 10 including both options. I have considered these features in the paragraph above and in both cases consider that the person skilled in the art would arrive at these solutions through routine workshop modifications. Claim 6 incorporates a barcode reader into the apparatus. Claim 7 provides details of the detection assembly which include a light emission assembly and a light detection assembly, all of which is disclosed in D1. Claim 11 states that the weight can be obtained from the modified weight at the POS system, which is disclosed in D1.
- 39 Independent claim 12 is, however, a different matter. There are significant differences between the inventive concept of claim 12 and the system disclosed in Figure 19 of D1 and the associated paragraphs of the description. Although D1 discloses two options, these options do not align with the two possible actions set out in claim 12. Nor is there any disclosure of selecting a particular action based on a priority of the item. It would not in my view be obvious to the person skilled in the art to modify the two options disclosed in Figure 19 of D1 and the associated description so as to align with the options disclosed in claim 12, namely to either modify the weight and transmit the modified weight to the POS system, or to transmit the weight unmodified to the POS system. Nor would it be obvious to select an option based on a priority of the item being weighed. I therefore conclude that the invention claimed in claim 12 is not obvious over D1.

## **Conclusion**

- 40 I have found that the invention claimed in claims 1-11 does not involve an inventive step over the cited prior art. I have however concluded that independent claim 12 does involve an inventive step over the cited prior art.

41 I will therefore allow a period of 28 days after the date of this decision for filing amendments deleting the obvious claims and retaining claim 12. Any amendments filed during this period will be referred to the examiner who will consider their allowability in the light of this decision. If no amendments are filed within this period, then the application will be refused because the claimed invention does not involve an inventive step.

**Appeal**

42 Any appeal must be lodged within 28 days after the date of this decision.

**B MICKLEWRIGHT**

Deputy Director, acting for the Comptroller