Patents Act 1977 **Opinion Number** **15/24**

OPINION UNDER SECTION 74A

Patent	EP(UK)2566699
Proprietor(s)	Perkins School for the Blind
Exclusive Licensee	
Requester	Paige Braille Ltd.
Observer(s)	
Date Opinion issued	25 October 2024

The Request

1. The comptroller has been requested to issue an opinion as to whether EP(UK)2566699B1 (hereafter the Patent) is invalid for lack of novelty and/or inventiveness in light of four documents.

2. The Request was filed on 30th July 2024. No Observations on the Request were filed.

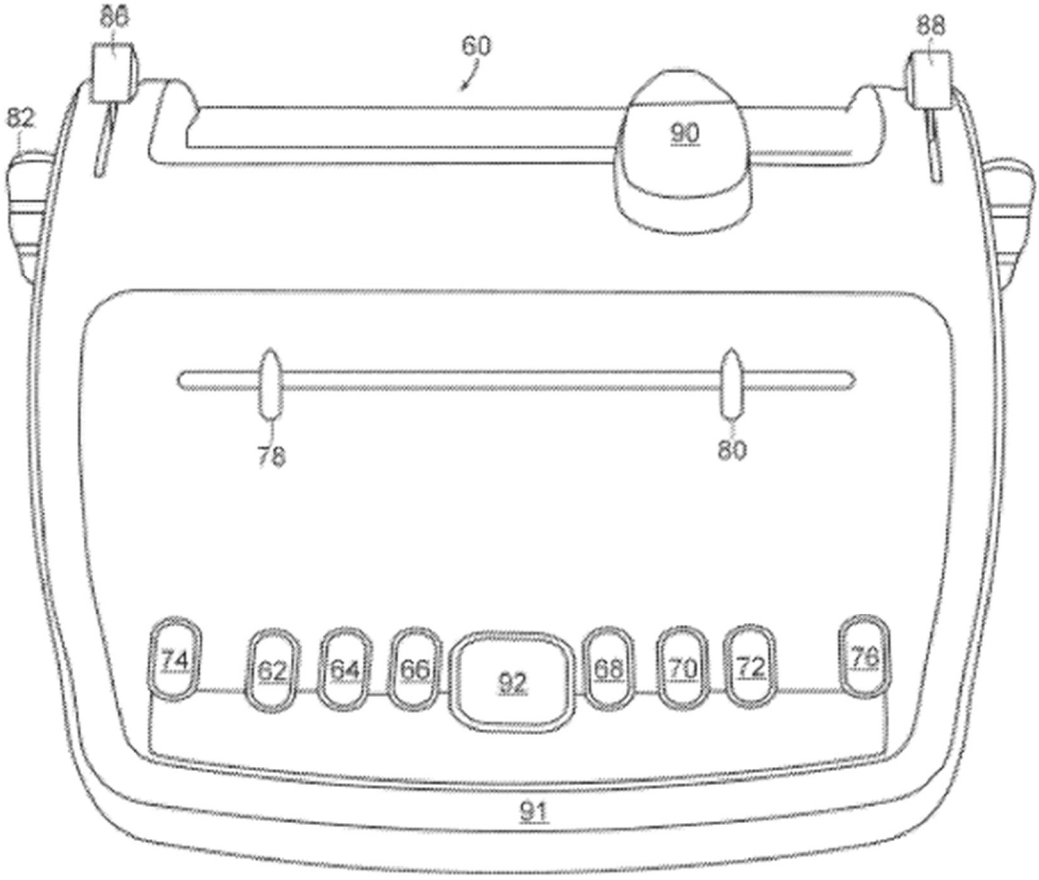
3. The four documents (detailed below) referred to in the Request are three non-patent literature documents and one patent GB2126765A. The cited references of the Patent are eight patent documents and none of these correspond to the patent discussed in the Request. Therefore, all of the documents referred to in the Request are new and issues arising from them can be considered in this Opinion.

The Patent

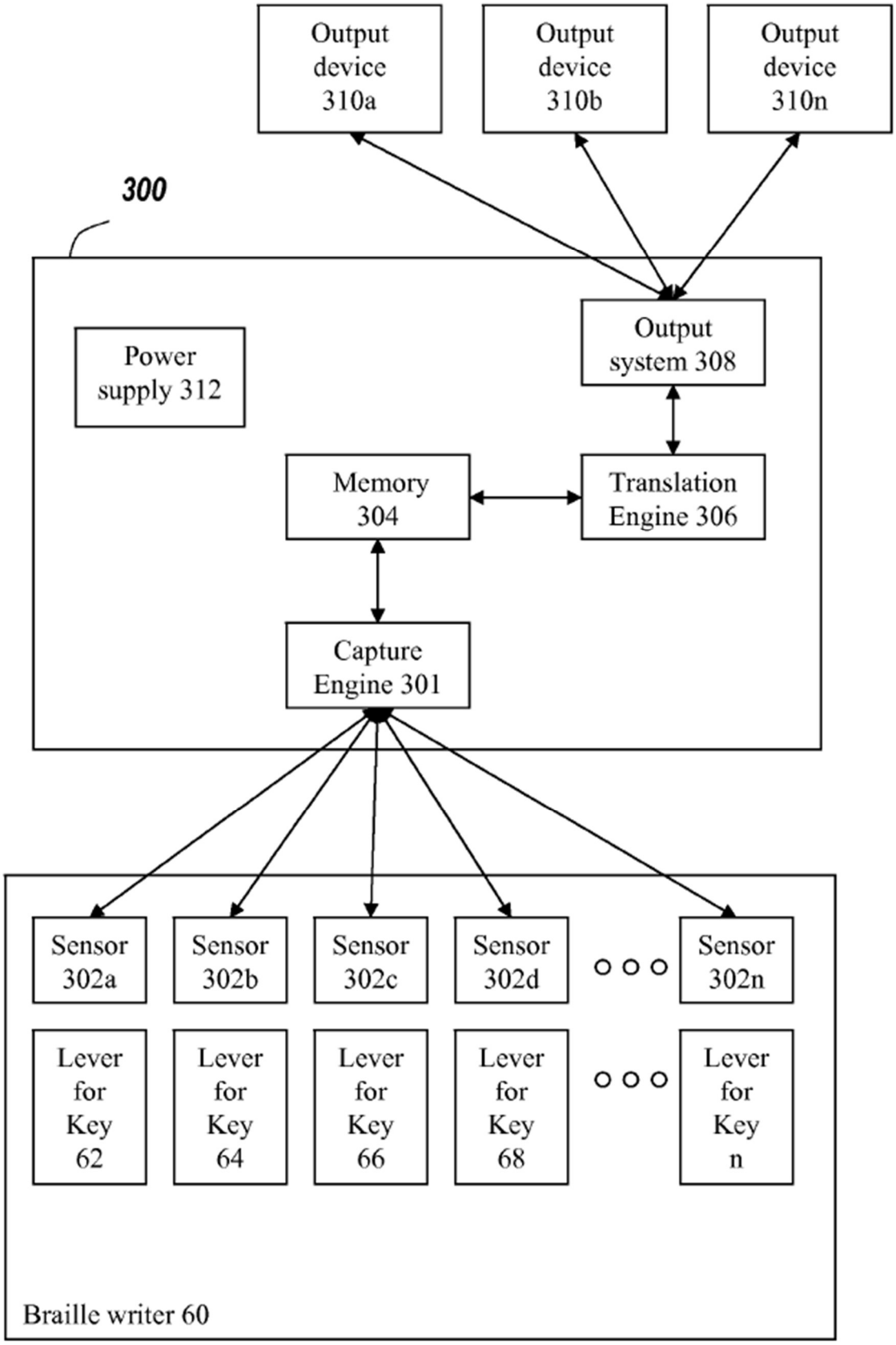
4. EP2566699B1 was published on 17th October 2017, resulting from the regional phase of an international application published as WO2011/140521A2 on 10th November 2011. The international application PCT/US2011/035645 was filed on 06th May 2011 and claimed priority from application US33231010P dated 07th May 2010. The Request states on page 1 that no priority was claimed but does not explain the assertion. In the absence of argument to support this assertion I shall assume that the statement was made in error and that the priority claim shown on the front page of the Patent is correct. I would also note that all four documents discussed in the Request predate both the claimed priority and filing dates (see discussion below for details) and so even if the Request is correct it would not affect the validity questions dealt with in this Opinion.

5. The Patent is concerned with mechanical Braillers or Braille writing/embossing machines and in particular providing an additional output which could be fed to a printer/screen or similar.

6. The mechanical Brailler is a well known device shown in Fig. 1A where 6 levers (62-72) can be depressed to emboss 1-6 of the raised dots comprising a Braille cell, typically on to paper. The space lever 92 can insert spaces and other levers provide carriage return and similar functions.



7. The embodiment of the Patent shown in Fig. 3A proposes adding sensors 302a-n to this system to detect the depression of the levers 62—n and thus which Braille cell is being embossed. The signals from these sensors are captured 301, cached in memory 304, translated (e.g. using lookup tables) 306 and finally output 308 to devices 310a-n such as LCD displays, speakers (using text to speech) or storage devices.



8. The Patent has a single independent claim 1 [Reference letters A-H added].

A *A device (300) for capturing and translating embossing motions of a mechanical Braille embosser (60) comprising:*

B *a plurality of sensors (302a-302n) for positioning within a mechanical Braille writer to capture movement of mechanical parts of the Braille writer;*

C *an output system (308);*

D *a processor (306) coupled to the plurality of sensors and the output system; and*

E *a memory (304); the memory storing instructions that, when executed by the processor, cause the processor to:*

F *receive a signal from the plurality of sensors;*

G *interpret the signal as a first Braille cell; and*

H *send a signal corresponding to the first Braille cell to the output system.*

Claim Construction

9. Before considering the question of validity, I need to construe the claims of the Patent to determine the extent of protection the provide — that is to say, I must interpret them in the light of the description and drawings as instructed by Section 125(1):

> *For the purposes of this Act an invention for a patent for which an application has been made or for which a patent has been granted shall, unless the context otherwise requires, be taken to be that specified in a claim of the specification Of the application or patent, as the case may be, as interpreted by the description and any drawings contained in that specification, and the extent of the protection conferred by a patent or application for a patent shall be determined accordingly.*

10. I must interpret the claims in context through the eyes of the person skilled in the art. Ultimately the question is what the person skilled in the art (hereafter Skilled Person) would have understood the patentee to be using the language of the claims to mean. This approach has been confirmed in the recent decisions of the *High Court in Mylan v Yeda*[1] and the *Court Of Appeal in Actavis v ICOS*[2].

11. The Request does not explicitly define the person skilled in the art (hereafter Skilled Person) but does include this passage which seems to implicitly provide that definition.

> *Such developments may be undertaken be an individual or a team. That*

[1] *Generics UK Ltd (t/a Mylan) v Yeda Research and Development Co. Ltd & Anor [2017] EWHC 2629*
[2] *Actavis Group & Ors v ICOS Corp & Eli Lilly & co. [2017] EWCA Civ 1671*

individual or team would be familiar with art in the area, for example modifying mechanical typewriters or braille embossers ("braillers") to provide a digital output, and their common general knowledge would include common components and their equivalents or alternatives.

12. In my opinion this is a reasonable definition of the Skilled Person and in the absence of any contradictory observations will adopt it.

13. The wording of claim 1 is straightforward and can be readily understood. I would simply note the general point that where the device is 'for' capturing and translating and the sensors are 'for' positioning within the Braille writer this is construed as 'suitable for' those purposes in line with *L'Air Liquide*[3].

14. The dependent claims of the application specify individual features or lists of alternatives for an individual feature. The features can be straightforwardly understood and do not necessitate detailed discussion of their construction.

Validity

The Law

15. The Request questions the validity of the Patent for lack of novelty and/or inventive step and in this instance the law regarding these questions is primarily defined in Sections 1, 2(1), 2(2) and 3 of *The Patents Act 1977*

> *Section 1(1)*
> *A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say -*
> ***(a) the invention is new;***
> ***(b) it involves an inventive step;***
> *(c) it is capable of industrial application;*
> *(d) the grant of a patent for it is not excluded by subsections (2) and (3) or section 4A below;*
> *and references in this Act to a patentable invention shall be construed accordingly.*
>
> *Section 2(1)*
> *An invention shall be taken to be new if it does not form part of the state of the art.*
>
> *Section 2(2)*
> *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.*

[3] *L'Air Liquide Societe's Application, 49 RPC 428*

Section 3
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).

16. Further clarification is provided in the case law and the basic test to be applied when assessing novelty is expressed in *General Tire and Rubber*[4]

> *If the prior inventor's publication contains a clear description of, or clear instructions to do or make, something that would infringe the patentee's claim if carried out after the grant of the patentee's patent, the patentee's claim will have been shown to lack the necessary novelty, that is to say, it will have been anticipated.*

17. So, the basic question to be answered with respect to Novelty is whether any of the four disclosures above fall within the scope of protection of the claims of the Patent.

18. The novelty question places another requirement upon prior disclosures, which is that the prior disclosure must enable the skilled person to perform the invention. This issue was not mentioned in the Request but should be discussed as part of this Opinion for completeness. Briefly, I think from reading the four documents D1-D4 that each contains sufficient detail that they would enable the Skilled Person to work what is disclosed therein.

19. The accepted procedure for assessing inventive step is the four step approach set out in *Pozzoli*[5] and I will follow it here.

> *(1)(a) Identify the notional "person skilled in the art"*
> *(1)(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?*

20. Steps 1(a), 1(b) and 2 have been dealt with above under Construction above. The Request has not raised inventive step questions about every feature absent from D1-4 and I will only consider inventive step where it is discussed in the Request or where the Request asserts that a feature is disclosed by D1-4 and in my opinion the feature is not disclosed.

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[4] *General Tire & Rubber Company v Firestone Tyre & Rubber Company Limited, [1972] RPC 457*
[5] *Pozzoli SPA v BDMO SA [2007] EWCA Civ 588*

The Prior Art Cited by the Request

21. The Request lists four documents as the basis for its arguments.

D1 *- GB2126765A – 'Deciphering Apparatus' published 08th September 1982.*

D2 *- 'Interfacing a Perkins Brailler to a BBC Micro' – an article by John Spragg].*

The page footers show this to be from 'microprocessors and microsystems' December 1984 vol 8 no 10 edition, pages 524-527.

D3 *- 'Multi-lingual Input to a Personal Computer Using a Modified Perkins Braille Writer' an article by Paul Blenkhorn, Stephen Pettitt and Gareth Evans.*

The footers show this to be from 'The British Journal of Visual Impairment' from 2001, pages 17-19. The Request states that this is Vol. 19 Issue 1, which would concur with a '19:1' found in the footer and that the article was published in January 2001. The month of publication isn't clearly derivable from the document itself but any 2001 disclosure would be prior to the claimed priority date of the Patent so the particular month of publication has no bearing on the issues dealt with in this Opinion.

D4 *- 'A Modified Perkins Brailler for Text Entry Into Windows Applications' a paper by David Gareth Evans, Stephen Pettitt and Paul Blenkhorn.*

The page headers show this to be from 'IEEE Transactions on Neural Systems and Rehabilitation Engineering' Vol. 10, No. 3, September 2002, pages 204-206. The Request states that it dates from October 2002 rather than September 2002, but both dates are significantly prior to the claimed priority date of the Patent so the discrepancy is not of significance to the issues dealt with in this Opinion.

22. All four documents were published before the claimed priority date of the Patent, 07th May 2010, and therefore form part of the state of the art by virtue of *Section 2(2)* of *The Patents Act 1977* (see *The Law* above). Furthermore, it is not necessary to consider whether the priority claim is valid since it would have no bearing on whether these documents formed part of the state of the art.

23. The Request has helpfully provided references to passages relevant to the claim features, however I will directly reference D1-4 to verify the assertions made in the Request.

Discussion

Independent Claim 1

D1 - GB2126765A

24. **D1** relates to a device intended to capture inputs to a Perkins Brailler (which is an example of a mechanical Braille embosser) and provide an output to a printer [feature A].

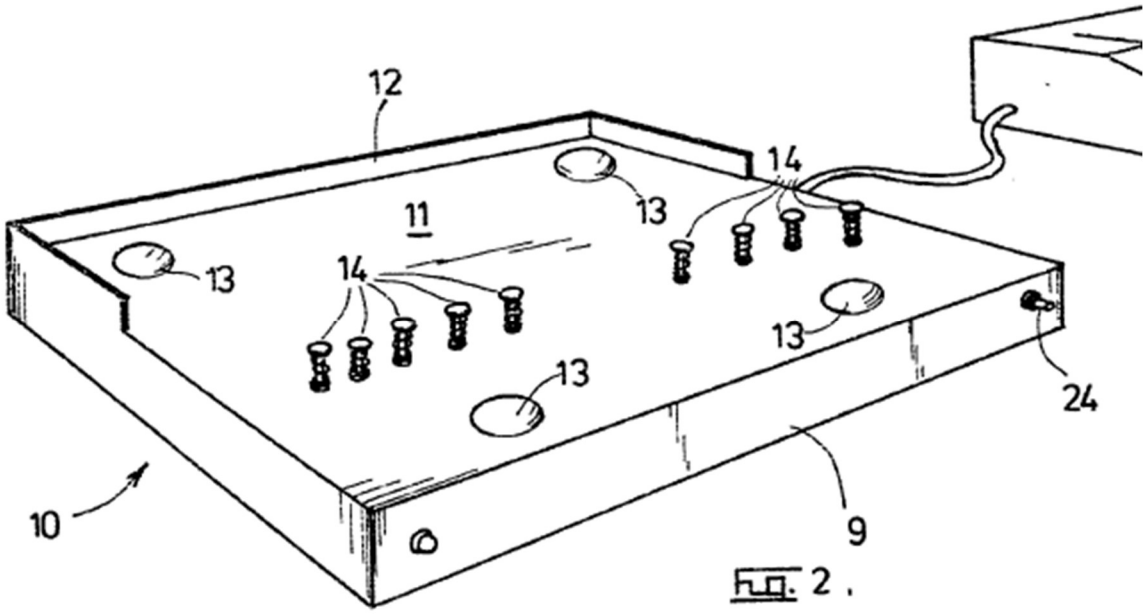


Fig. 2.

25. The primary embodiment of **D1** is a housing 9 intended to sit under the Brailler with push rods 14 extending upwards and intended to be interact with the key linkages of the Brailler (shown in Fig. 2 above and discussed on page 2 lines 62-122). Movement of the push-rod actuates an optical switch (Fig. 4 below) which captures operation of the Brailler keys and the combination of push-rod and optical switch can be considered the sensor in **D1**. The push-rods must extend into the volume of the Brailler to co-operate with the key linkages (otherwise the key linkage would have to move beyond the Brailler volume and would foul on whatever surface the Brailler is mounted on) and can reasonably considered to be within the Brailler [feature B].

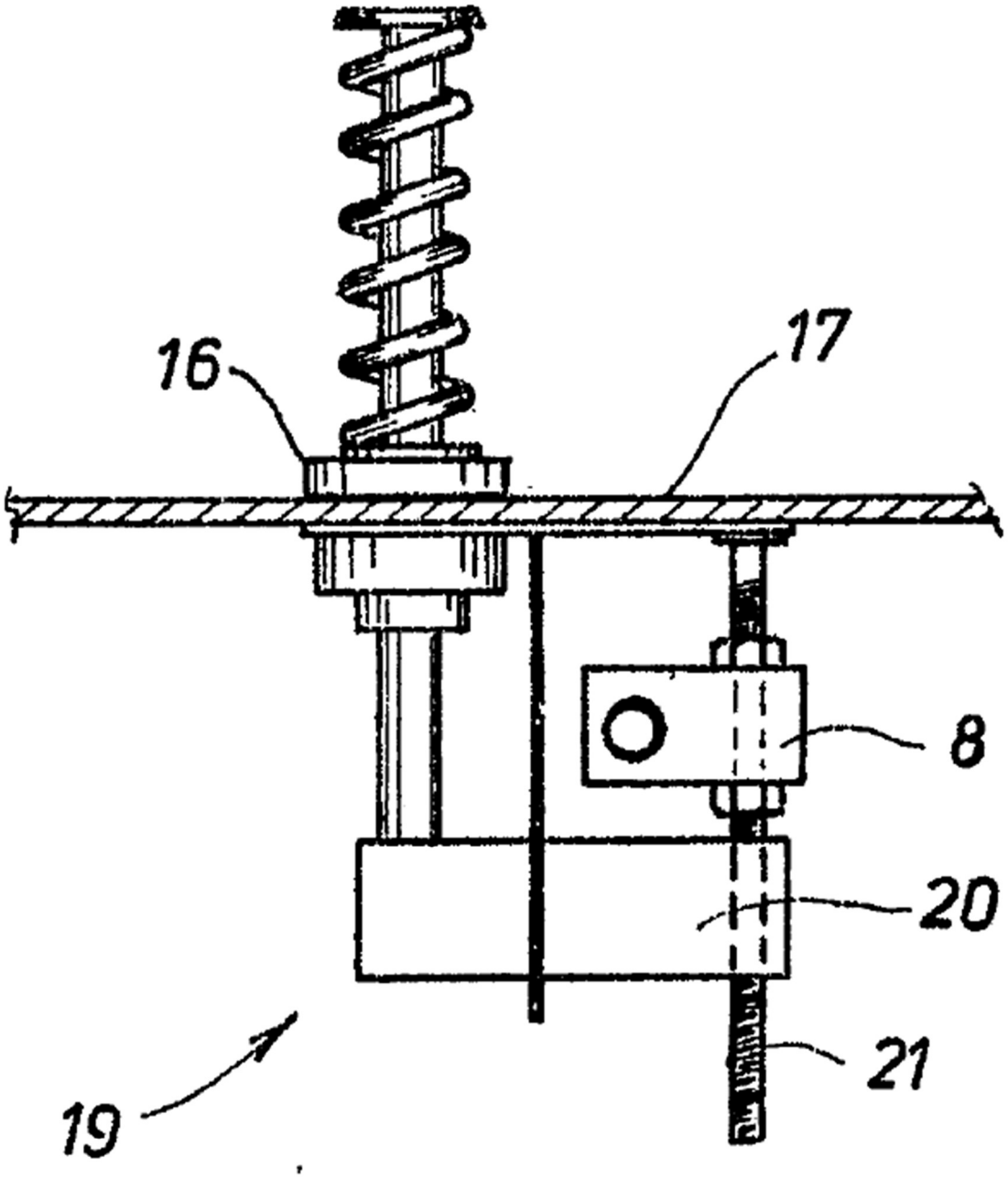


FIG. 4.

26. An alternative embodiment of **D1** mentions mounting electrical sensing means within the Brailling machine (page 1 lines 91-93) but it is not further detailed [alternative for feature B].

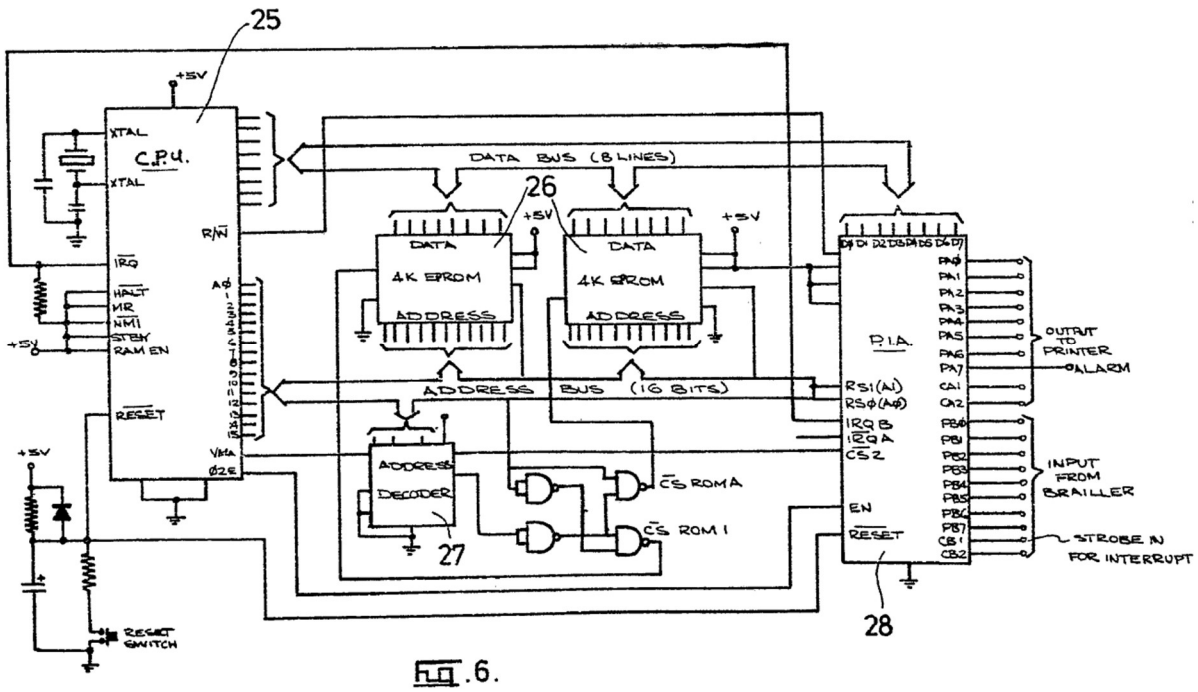


Fig.6.

27. **D1** discloses an output to the printer from the peripheral interface adapter (PIA) (28 in Fig.6) [feature C].

28. **D1** discloses a CPU (25 in Fig. 6) connected to the printer and Brailler via the PIA and a memory (EPROM 26 in Fig. 6) which form programmable interpretation means (page 1 lines 78-84) [features D and E].

29. Page 1 lines 62-73 of **D1** describes supplying signals from the means (push-rods and optical switches in the embodiment) actuated by the Braille keyboard to the interpretation means (the arrangement shown in the embodiment of Fig. 6) and coupling the interpretation means to reproduction apparatus (the printer) to provide decipherable non-Braille output [features F, G and H].

30. **D1** discloses all the features specified in claim 1 of the Patent and the system described would fall within the scope of protection of claim 1.

D2 - 'Interfacing a Perkins Brailler to a BBC Micro'

31. **D2** describes a project to modify a Perkins Brailler, which is an example of a mechanical Braille embosser, to provide automatic transcription to a computer screen [feature A].

32. In the *DEVELOPMENT* section, **D2** (page 525 column 2) describes replacing the hardboard base of the Brailler with a Perspex sheet onto which standard miniature lever arm microswitches are mounted via aluminium brackets. This section (page 525, bottom of column 1) also says that the system of levers and cams in the Brailler provides suitable actuation points for switches, making the intent clear. It is not explicitly stated that the switches are within the Brailler. However, it is clear from the context that they must be on the inside of the Perspex base in order to interact with the switches, levers and cams which would put them within the Brailler [feature B].

33. The switches are connected to the 6522 port of a 6505 processor [feature D] based BBC Micro computer via a multi-conductor parallel cable.

34. The *Machine code input routine* subsection describes capturing switch operations detected at the parallel port for each Braille cell and storing them in a buffer [features F and G].

35. Then the *Transcription software* subsection takes cells from memory, transcribes them and writes the transcription to a screen and filing system. For multiple cell inputs the system identifies punctuation points and attempts to find combinations of Braille cells between the punctuation points. This operation is likely attempting to find and expand the abbreviations discussed previously in the *BRAILLE STANDARDS* section. Such a system will produce an output corresponding to an individual Braille cell where that cell is not part of a multi-cell abbreviation [features C and H].

36. The *CURRENT STATE OF DEVELOPMENT* section of **D2** states that the program performing the above operations can be run from an EPROM or loaded from disc [feature E].

37. **D2** discloses all the features specified in claim 1 of the Patent and the system described would fall within the scope of its protection of claim 1.

D3 - 'Multi-lingual Input to a Personal Computer Using a Modified Perkins Braille Writer'

38. In its *Introduction* **D3** refers back to **D2** and notes that the computer used there, the BBC Micro, was obsolete and had been replaced in schools by PCs. D3 therefore intended to replicate the system of D2 using a Microsoft Windows PC [Feature A].

39. In the section *Modified Perkins Brailler* (page 17 column 2), **D3** discloses fitting a printed circuit board (PCB) below the base cover of the Brailler. The PCB has an optical transmitter-receiver pair for each key (key depression is detected by the key breaking a light beam between the transmitter and receiver) and electronics to convert the optical receiver output into a serial port format. Later in the section (page 18 column 1) it is noted that the PCB provides signals about each individual keystroke to the PC. As with **D1** and **D2** it is implicit that the motion of the levers of the mechanical Brailler will be within its volume and thus the optical transmitter-receivers must be within the Brailler in order for the keystrokes to break the light beam [feature B].

40. The Request notes that it is implicit that the PC will be executing software stored in memory on a processor. I think that this is commonly known and can accept that specifying a PC implicitly discloses the use of processors and memory [features D and E].

41. In the section *Transcription Software* D3 states that the PC software can take either Contracted or Uncontracted Braille input and insert corresponding text into a software application, for example a word processor [feature C]. Specifically, the software takes a sequence of key down and key up signals for each key and translates them into a character. The key down/up signals must implicitly have come

from the optical receivers [feature F]. D3 describes going directly from key down/up signals to characters, however the raw characters before conversion must have a one to one correspondence with Braille cells [feature G].

42. As with **D2**, **D3** converts sequences of characters into a final text output, presumably detecting and expanding any Braille abbreviations, and (as with **D2**) any character which is not part of an abbreviation will be output as is [feature H].

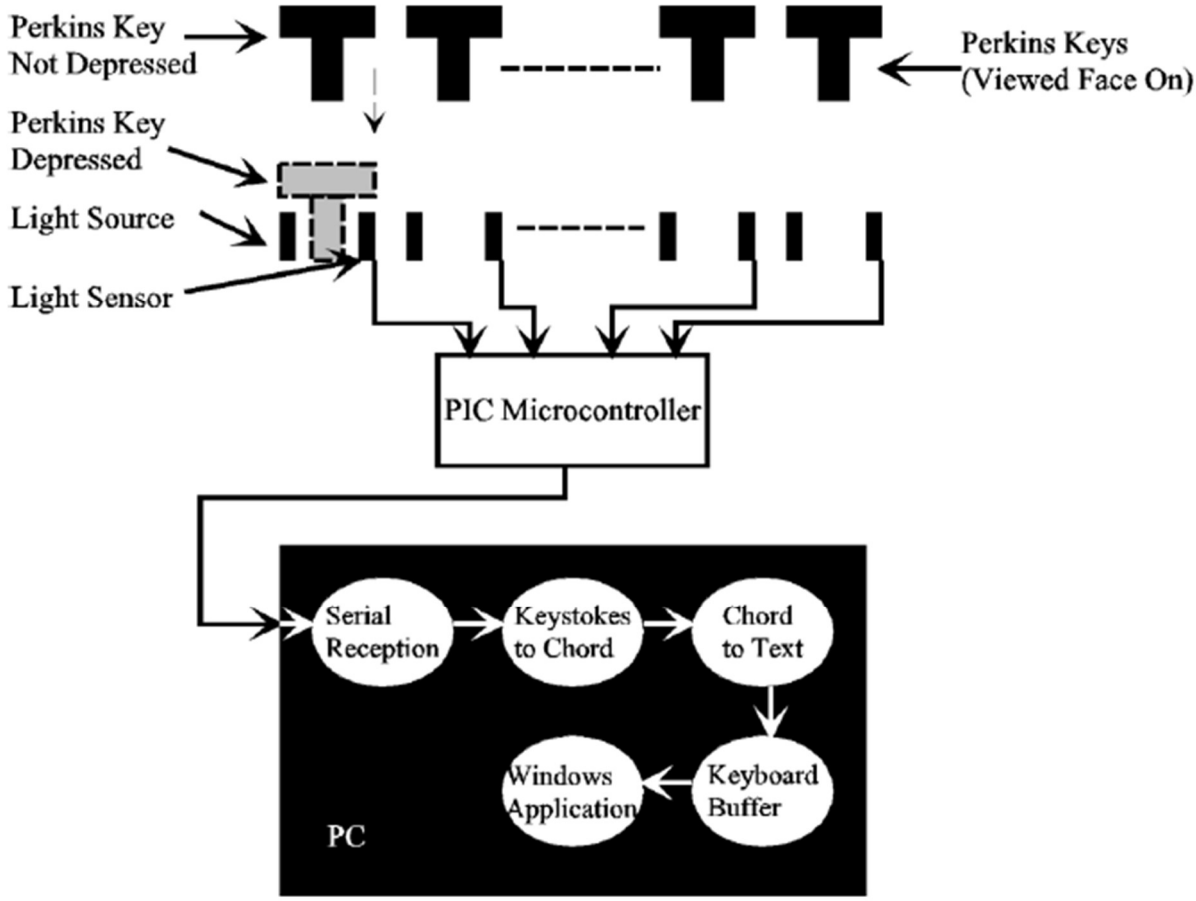
43. **D3** discloses all of the features specified in claim 1 of the Patent and the system described would fall within the scope of protection of claim 1.

D4 - 'A Modified Perkins Brailler for Text Entry Into Windows Applications'

44. **D4** is a paper describing modifying a Perkins Brailler to connect to a PC by the same authors as **D3** [feature A].

45. In *Section III A Electronic Circuit Board* **D4** states that nine infrared light source/sensor pairs are placed on a circuit board such that depressing a Brailler key will break the beam between the source and sensor. The sensor output feeds a PIC microcontroller also mounted on the circuit board which produces serial port outputs corresponding to each key being depressed and released. The arrangement is shown in Fig. 2 of **D4** below. It is not explicitly stated that the sensors are within the Brailler but it would appear from the Fig. 2 that this would be the case once the circuit board is attached to the Brailler [feature B].

46. The overall system of **D4** is shown in Fig. 1 below.



47. The microcontroller serial output is fed into a PC which will implicitly include a processor and memory running the system's software [features D and E] following the same reasoning discussed under **D3** above.

48. From *Section III A* and Fig. 1 it is clear that the signals from the sensors are fed into the PC software [feature F].

49. *Section III B PC-Based Software* and Fig. 1 describe how the keystroke information is translated into Braille characters/chords, which are Braille cells given alternative nomenclature [feature G].

50. The Braille chords are further translated to resolve Braille abbreviations, but characters which are not part of an abbreviation will be output as is via a keyboard buffer to some application running on the PC [features C and H].

51. **D4** discloses all of the features specified in claim 1 of the Patent and the system described would fall within the scope of protection of claim 1.

Dependent claims.

52. Since **D1-D4** disclose all the features of claim 1 it is appropriate to consider the dependent claims.

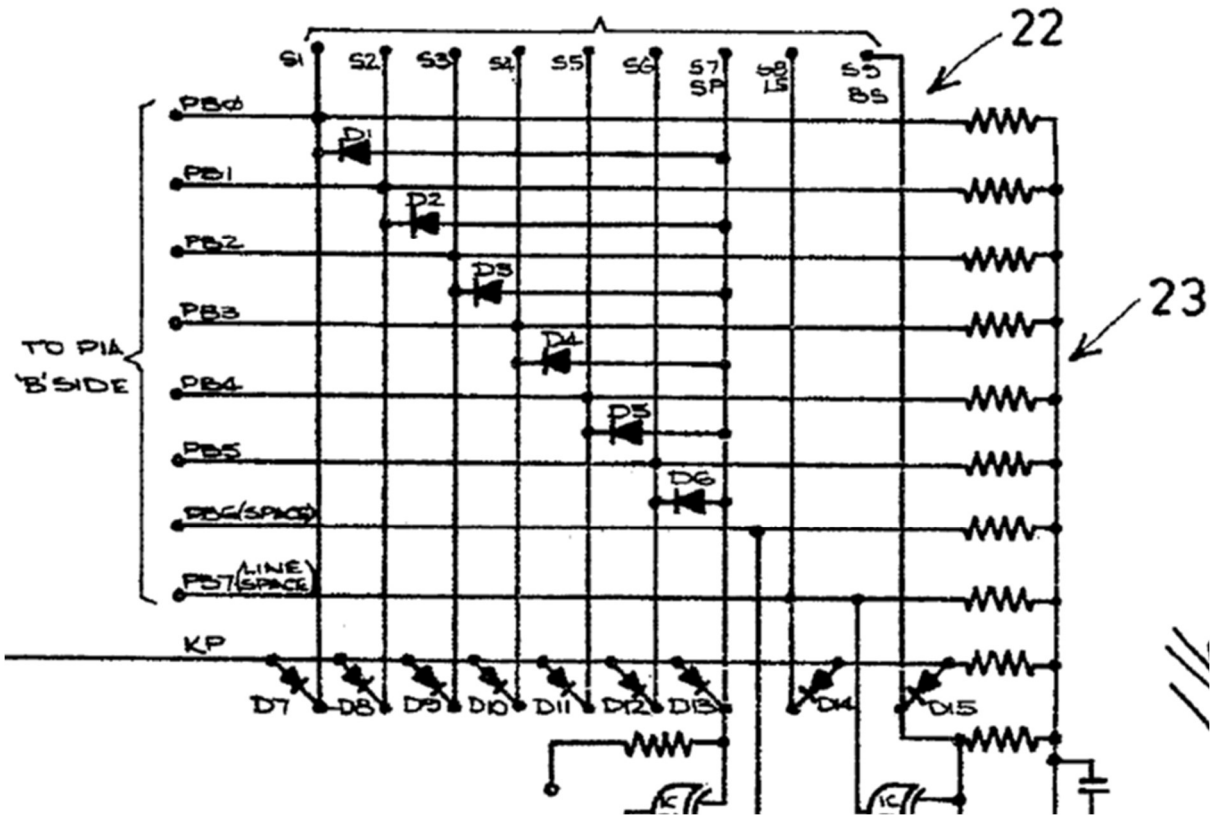
> ***Claim 2*** *- The device of* ***claim 1****, wherein the memory further stores instructions that, when executed by the processor, further cause the*

processor to:
interpret the signal as a letter, number, symbol, or punctuation mark.

53. Braille cells represent letters, numbers, symbols and punctuation marks therefore **D1-D4** implicitly disclose the feature of claim 2.

> ***Claim 3*** *- The device of* ***claim 1****, wherein the memory further stores instructions that, when executed by the processor, further cause the processor to:*
> *determine that the first Braille cell has been entered.*
>
> ***Claim 4*** *- The device* ***of claim 3****, wherein the memory further stores instructions that, when executed by the processor, further cause the processor to:*
> *determine that keys of the mechanical Braille writer corresponding to the first Braille cell have been depressed or reset.*
>
> ***Claim 5*** *- The device of* ***claim 3****, wherein the memory further stores instructions that, when executed by the processor, further cause the processor to:*
> *determine that an embosser head of the mechanical Braille writer has been advanced or a space key has been depressed.*
>
> ***Claim 6*** *- The device of* ***claim 3****, wherein the memory further stores instructions that, when executed by the processor, further cause the processor to:*
> *determine that a predetermined period of time has elapsed since a key of the mechanical Braille writer has been depressed or reset.*
>
> ***Claim 7*** *- The device of* ***claim 6****, wherein the predetermined period of time is 10 ms, 20 ms, 50 ms, 100 ms, or 500 ms.*

54. Fig. 7 of **D1** shows the circuit connected to sensors detecting key depression and a portion is reproduced below.



55. From Fig. 7 and the associated description (page 3 line 11 to line 76) depressing a first key S1-9 will activate an output PB0-7 to the PIA of Fig. 6 (see discussion relating to claim 1 above) and the KP (key pressed) line. The key pressed line feeds a delay circuit (shown in another part Fig. 7 not reproduced) which outputs a strobe signal telling the computer section shown in Fig. 6 to read the lines PB0-7. This is described on page 3 lines 41-49.

> *Data must be valid on all input lines before the interrupt strobe is sent to the computer section, thus a small delay must be developed to ensure that all keys for a particular character are active before the interrupt. The trim pot on pin 7 of the integrated circuit 1C1 sets this delay, the speed at which this system may be operated will depend to some extent on the ability of the operator to activate multiple key operations simultaneously.*

56. Then at page 3 lines 60-65 operation of the SPACE key is discussed.

> *As the brailler SPACE key is activated 125 mechanically within the brailler by the action of any or all data keys 1 to 6, steps are taken in the software to correct the unwanted SPACE data, SPACE being valid only when SPACE AND SPACE ONLY is active.*

57. From these sections it can be seen that **D1** determines that a Braille cell has been entered using the strobe signal (claim 3), determines that keys have been depressed using the PB0-7 lines (claim 4), determines that the SPACE key has been depressed (claim 5) and determines a predetermined time delay of the first key to be depressed (which falls within the scope of ‘a key’) (claim 6). Thus, **D1** discloses the features

specified in clams 3-6.

58. **D1** specifies that the time delay it uses relates to an operator's ability to activate multiple keys simultaneously, rather than specifying particular time periods as specified in claim 7. The Request asserts that the claimed time delays would be discovered by trial and error and are thus obvious. Absent evidence of how quickly operators can activate multiple keys or any Observations to challenge the Request I think that it is plausible that at least the 500ms time period would be reached by trial and error investigation of operator abilities as the Request asserts. However, I think that some of the shorter time period options specified in claim 7 (10ms, 20ms and 50ms) would require implausible levels of operator coordination. Nonetheless one of the alternatives listed in claim 7 being obvious is sufficient to think that claim 7 would be obvious in light of **D1**.

59. **D2-D4** appear to operate in similar ways when determining that a cell has been input, so I will discuss them together.

60. The operation can be most clearly understood from *Section III A* of **D4**. This discusses the rules of Braille key operation and indicates that the Space key is interlocked with the 6 dot keys such that it is also depressed when any of the dot keys is depressed. Thus, it would seem to be the case that the down/up cycle of the Space key is what advances the embossing head to the next cell. This cycle may be accompanied by none, some or all of the Dot keys being depressed to produce a space or a Braille cell. Thus, any dot key which is depressed at some point between consecutive Space down and Space up events will be part of the same Braille cell.

61. Whilst not explicitly stated, I think it is the case that **D4** is using these rules to analyse the sequence of key down/up events received by the computer and determine which cells result from the key event sequence.

62. **D3** does not discuss key depression rules in the same detail as **D4.** However, **D3** signals key up/down events in a similar fashion and the interlocking of the Space and Dot keys appears to be a feature of the mechanical Brailler and would thus hold for **D3** even if it is not explicitly stated. Hence, I think **D3** would operate in the same manner as **D4**.

63. **D2** uses a parallel rather than a serial connection and so operates slightly differently, however this passage from the *Machine code input routine* section suggests that the system captures all key depressions made until none remain, which would correspond to the final Dot/Space key being released, before loading the amalgamated result into a buffer.

> *If the space bar alone has been pressed, then a zero is put into the buffer and the pointer is incremented. If, however, any of the other keys have been pressed the routine performs a logical OR with the contents of the input register and a zero-page location, until the input register is empty. The contents of the zero-page location are then loaded into the buffer and the buffer input pointer is incremented.*

64. Thus **D2**-**D4** determine that a Braille cell has been entered via a lack of depressed keys (claim 3), determine that Braille keys have been depressed or reset (claim 4)

and determine that a Space key has been depressed (claim 5) and **D2**-**D4** disclose the features of claims 3-5.

65. The Request argues that a time delay is implicit in D2-D4 to allow for differences in the times at which keys are pressed. However, I think that because D2-D4 determine that a cell's input has ended by detecting a key up event such a delay is not necessary. Thus, I do not think that **D2**-**D4** either disclose or render obvious the features specified in claim 6.

> ***Claim 8*** *- The device of* ***claim 1****, wherein the plurality of sensors comprise at least one of Hall-effect sensors, capacitive switches, mechanical switches, and optical sensors.*
>
> ***Claim 9*** *- The device of* ***claim 1****, wherein the plurality of sensors transmit the signal to the processor in response to detection of a magnetic field exceeding a threshold.*
>
> ***Claim 10*** *- The device of* ***claim 1****, wherein the plurality of sensors transmit the signal to the processor in response to detection of an optical signal falling below a threshold.*

66. **D1**, **D3** and **D4** use optical sensors disclosing that alternative feature of claim 8.

67. In **D3** and **D4** depressing keys breaks light beams disclosing the feature of claim 10.

68. In **D1** a flag which normally interrupts a light beam is moved out of the beam when a key is depressed, triggering the key pressed and strobe signals to the processor. Whilst this is the opposite of the feature of claim 10, inverting the mode of operation would function equivalently and I think would be an obvious modification of **D1**.

69. **D2** uses microswitches, which are mechanical in nature, disclosing that alternative feature of claim 8.

70. None of **D1-D4** disclose the use of sensors employing a magnetic field. The Request asserts that such sensors (e.g. Hall effect or reed) fall within the common general knowledge of the Skilled Person and would be obvious alternatives. This assertion appears plausible and in the absence of Observations contradicting the Request I am prepared to accept it. On that basis claim 9 would be obvious in light of **D1-D4**.

> ***Claim 11*** *- The device of* ***claim 1****, wherein the memory further stores instructions that, when executed by the processor, further cause the processor to:*
> *send the signal corresponding to the first Braille cell to memory for storage.*
>
> ***Claim 12*** *- The device of* ***claim 1****, wherein the memory further stores instructions that, when executed by the processor, further cause the processor to:*
> *produce an audio signal corresponding to the first Braille cell; and send the audio signal to the output system.*
>
> ***Claim 13*** *- The device of* ***claim 1****, wherein the output system comprises at*

least one of a visual display and an audio system.

Claim 14 *- The device of* ***claim 1****, wherein the output system comprises at least one of an LCD screen, speaker, printer, cathode ray tube monitor, storage device, and teletypewriter.*

71. **D2** writes its output to a filing system, **D3** and **D4** write their outputs to keyboard buffers, disclosing the feature of claim 11.

72. **D1** does not explicitly send the cell signal to memory, as specified in claim 11. The Request asserts that where **D1** discusses a speech synthesiser output speaking words the Braille cells must implicitly stored in memory. I do not think, based on the limited information, that an arrangement not using a memory can be ruled out, therefore I do not think that the use of a memory is implicit. However, the use of memories and buffers is commonplace in the art I think that the use of a memory in the text to spoken word and other output methods would be obvious to the Skilled Person.

73. **D1** discloses providing text to speech audio outputs (page 2 lines 33-41) (claims 12 and 13) and output to a printer (claim 14).

74. **D2** outputs transcribed words to a screen (claims 13 and 14).

75. In its *Introduction* **D3** discusses screen, printer, text to speech as being known prior types of output of similar systems. The *Transcription Software* Section of **D3** itself is intended to output text into arbitrary software applications (e.g. a Word Processor) but doesn't specify that the application would be displayed on a screen or similar. Fig. 2 of **D3** might be showing a Brailler with a screen output but the reproduction is not clear enough to say this with sufficient certainty. The Request asserts that use of the known output systems discussed in the *Introduction* when implementing D3 are implicitly disclosed. However, I do not think that **D3** actually discloses the use of these outputs and I think it is fairer to say that using those outputs would be obvious to the Skilled Person reading **D3** (claims 12-14).

76. In *Section II Other Work-Modifications to Perkins Braillers* of **D4** screen, printer and text to speech outputs of other systems are discussed. In *III B PC Based Software* **D4** states that text is output to an 'appropriate application (the active window)' which implies a screen output (claims 13 and 14). For similar reasons to **D3** I think that the use of known prior art outputs when implementing D4 would be obvious rather than implicitly disclosed (claims 12-14).

Claim 15 *- The device of* ***claim 1****, wherein the device is configured to be coupled to the mechanical Braille writer.*

77. All of **D1-D4** are configured to be coupled to mechanical Braille writers, disclosing the feature of claim 15.

Opinion

78. Summarising the discussion above, it is my opinion that:

Document D1 anticipates claims 1-6, 8 and 12-15 of the Patent and claims 7 and 9-11 of the Patent lack an inventive step over D1.

Document D2 anticipates claims 1-5, 8, 11 and 13-15 of the Patent and claim 9 of the Patent lacks an inventive step over D2.

Document D3 anticipates claims 1-5, 8, 10-11 and 15 of the Patent and claims 9 and 12-14 of the Patent lack an inventive step over D3.

Document D4 anticipates claims 1-5, 8, 10-11 and 13-15 of the Patent and claims 9 and 12 of the Patent lack an inventive step over D4.

Application for review

79. Under section 74B and rule 98, the proprietor may, within three months of the date of issue of this opinion, apply to the comptroller for a review of the opinion.

Owen Wheeler
Examiner

NOTE

This opinion is not based on the outcome of fully litigated proceedings. Rather, it is based on whatever material the persons requesting the opinion and filing observations have chosen to put before the Office.