

(21) Application No 9303386.8

(22) Date of filing 19.02.1993

(30) Priority data

(31) 9203859  
9220061

(32) 22.02.1992  
23.09.1992

(33) GB

(71) Applicant

McKechnie UK Limited

(Incorporated in the United Kingdom)

P O Box 8, Leighswood Road, Aldridge, Walsall,  
West Midlands, WS9 8DS, United Kingdom

(72) Inventors

William Walker Kidston  
Roger Michael De'Ath  
Donald Ernest Griffiths

(74) Agent and/or Address for Service

Audrey Knowles & Co  
624 Pershore Road, Selly Park, Birmingham, B29 7HG,  
United Kingdom

(51) INT CL<sup>5</sup>

H01H 13/52 13/14 13/70

(52) UK CL (Edition L)

H1N NPKB NUJA N616 N626 N637 N646 N649  
N654 N664 N705 N740 N854 N872  
B6F FCNK  
U1S S2123 S2215

(56) Documents cited

GB 2208039 A GB 2151405 A GB 2062304 A  
EP 0110094 A1 US 4705925 A US 4536625 A  
US 4366355 A

(58) Field of search

UK CL (Edition L) H1N NBH NUJA  
INT CL<sup>5</sup> H01H 13/52 13/70

(54) Keyboard

(57) A key button structure for a keyboard comprises a base plate 1 having an opening defining a switch site for a push button 3 biased to a raised inoperative position by a resiliently flexible membrane 2 integral with the base plate 1. The base plate 1 may have integral legs 4 for securing to a printed circuit board 21 and integral guide posts 6 to locate and retain the push button 3. Single and multi-button assemblies are disclosed.

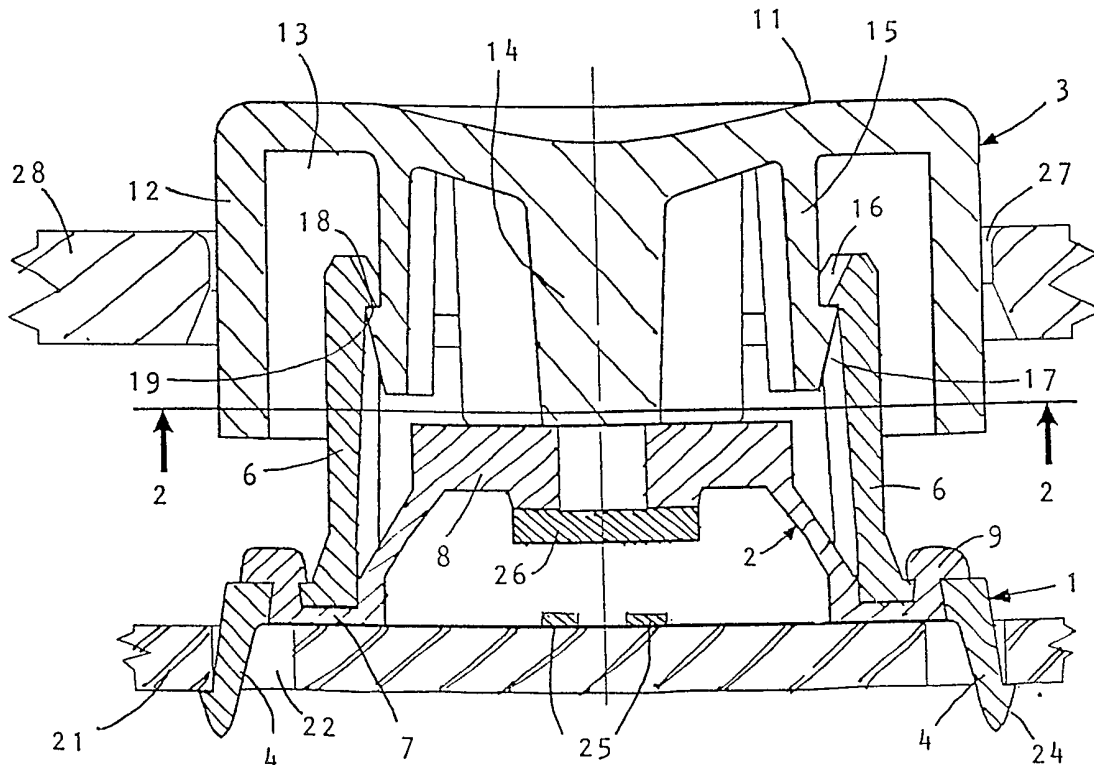


FIGURE 1.

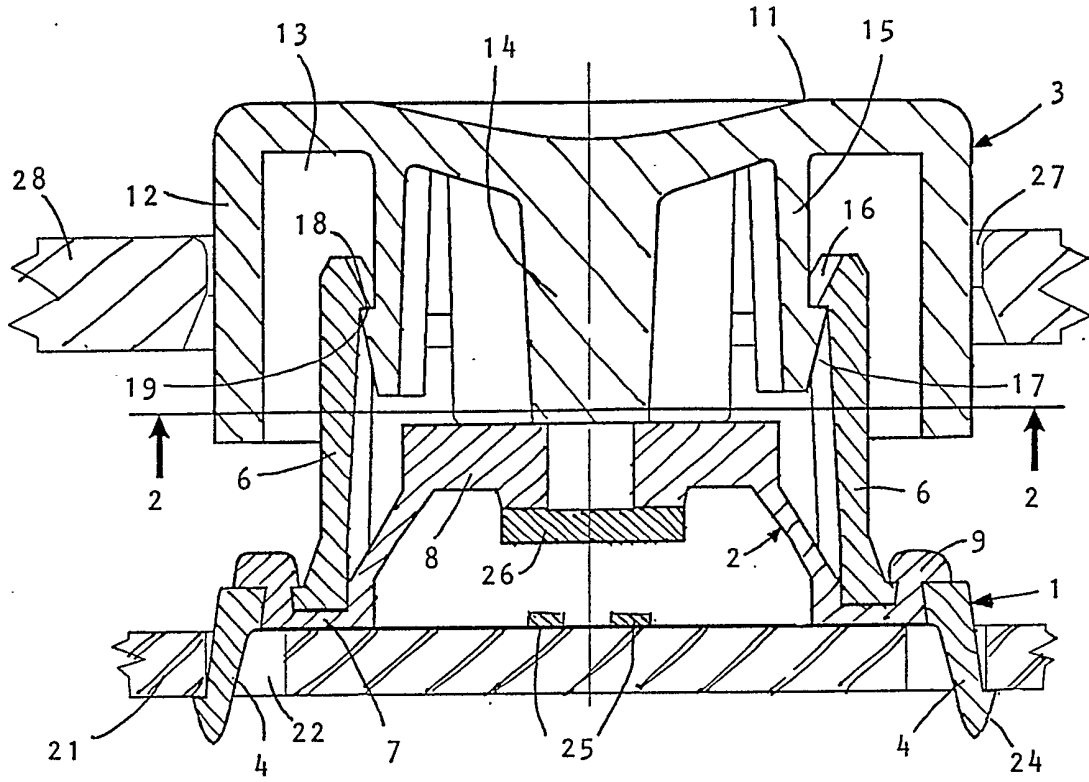


FIGURE 1.

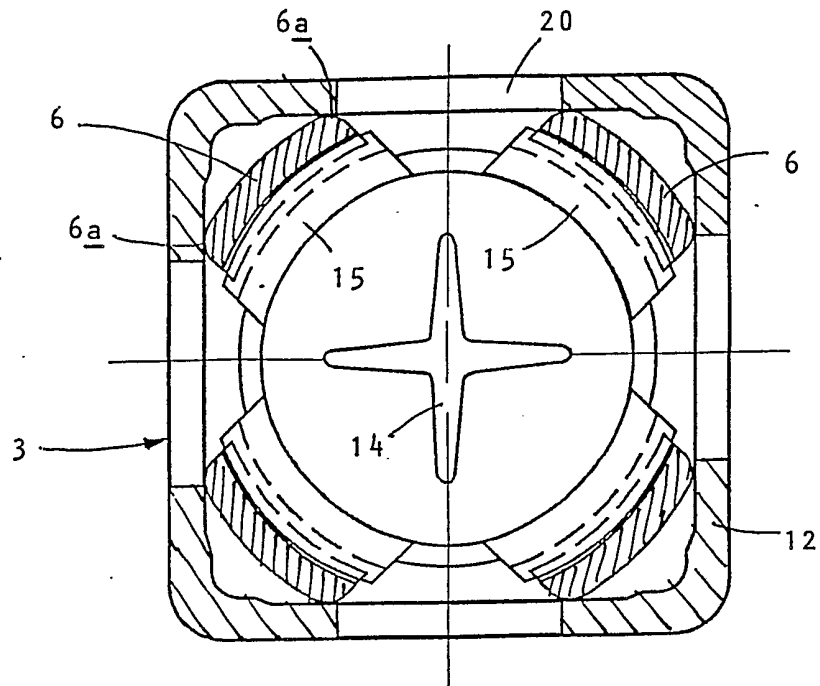


FIGURE 2.

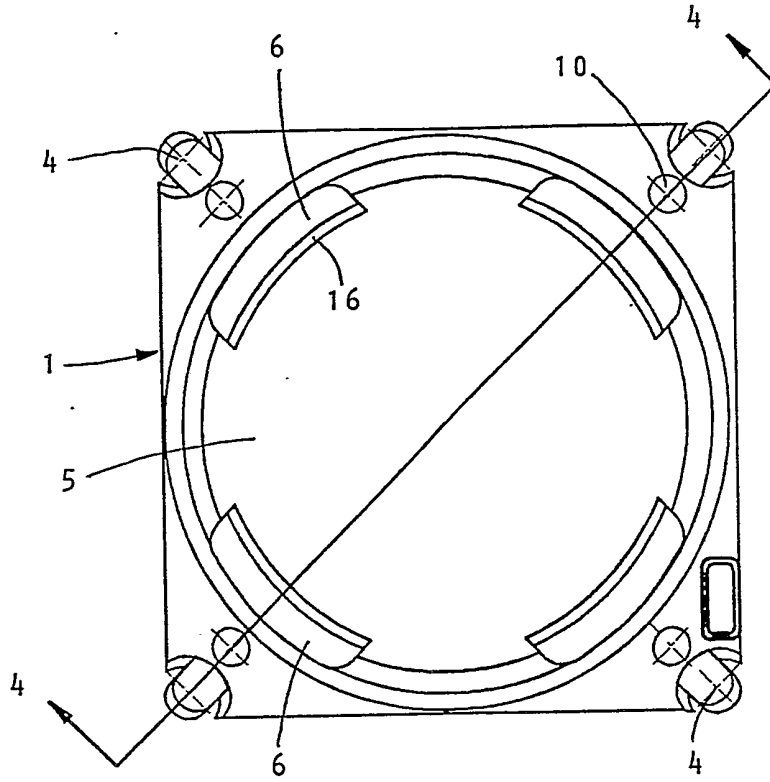


FIGURE 3.

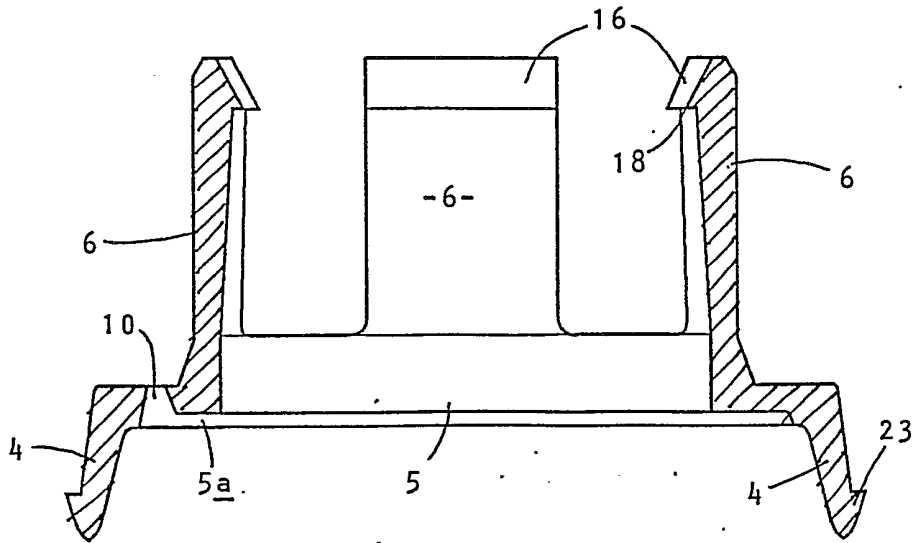


FIGURE 4.

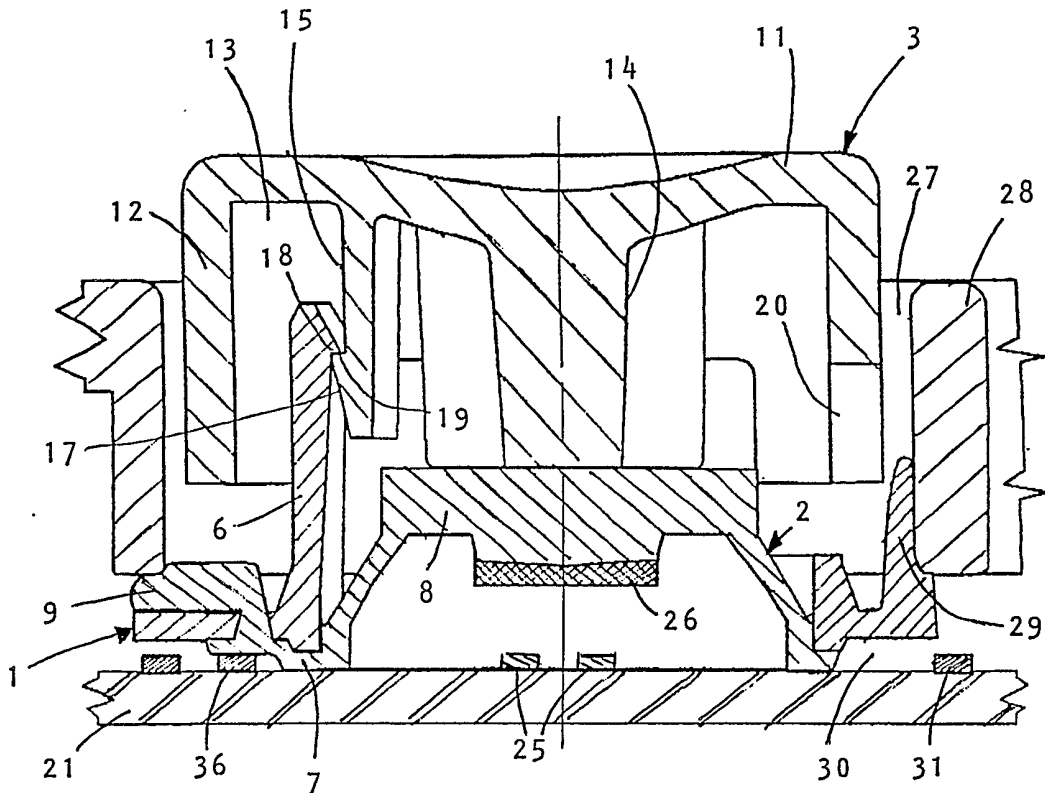


FIGURE 5

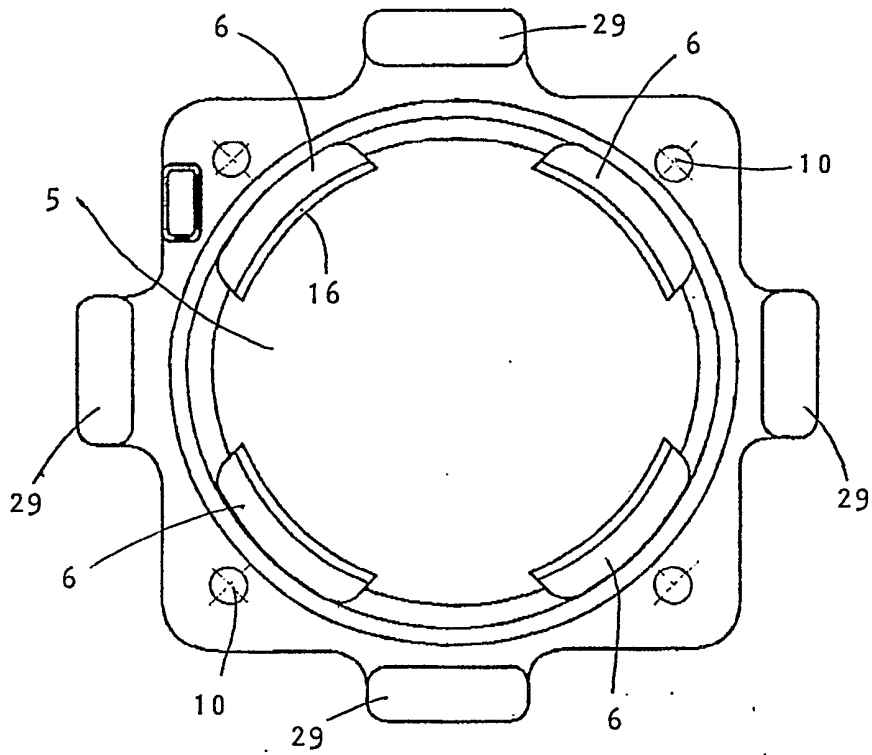


FIGURE 6

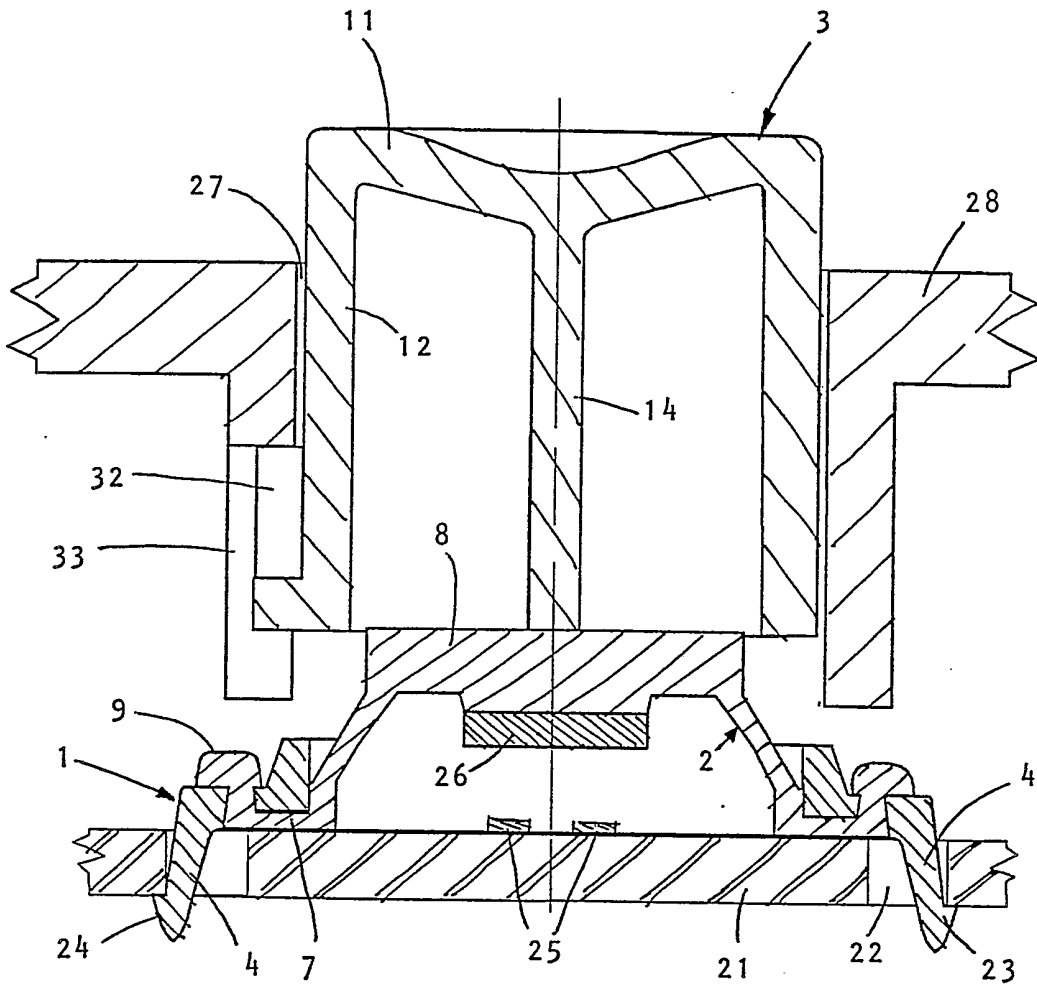


FIGURE 7.

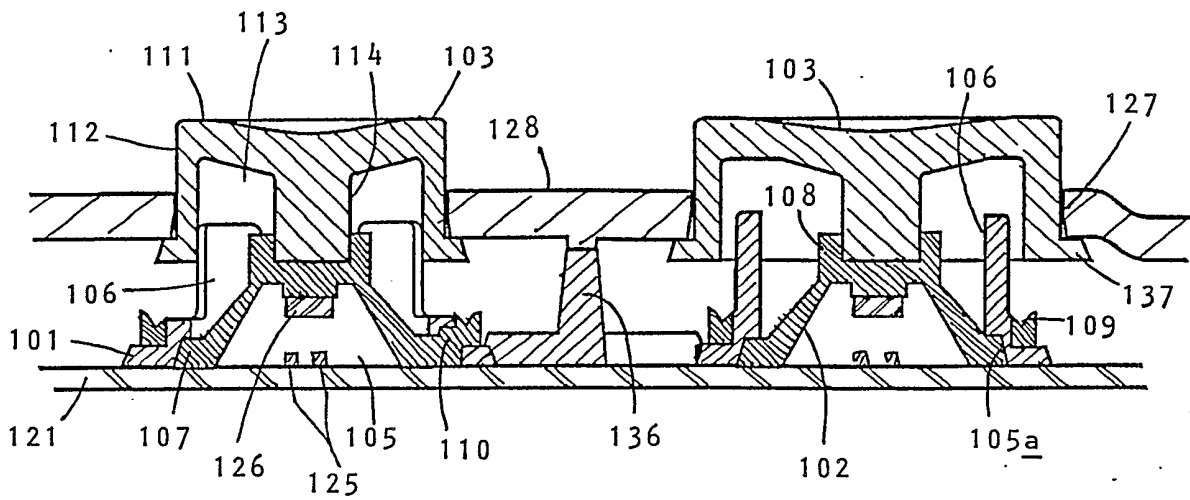


FIGURE 8.

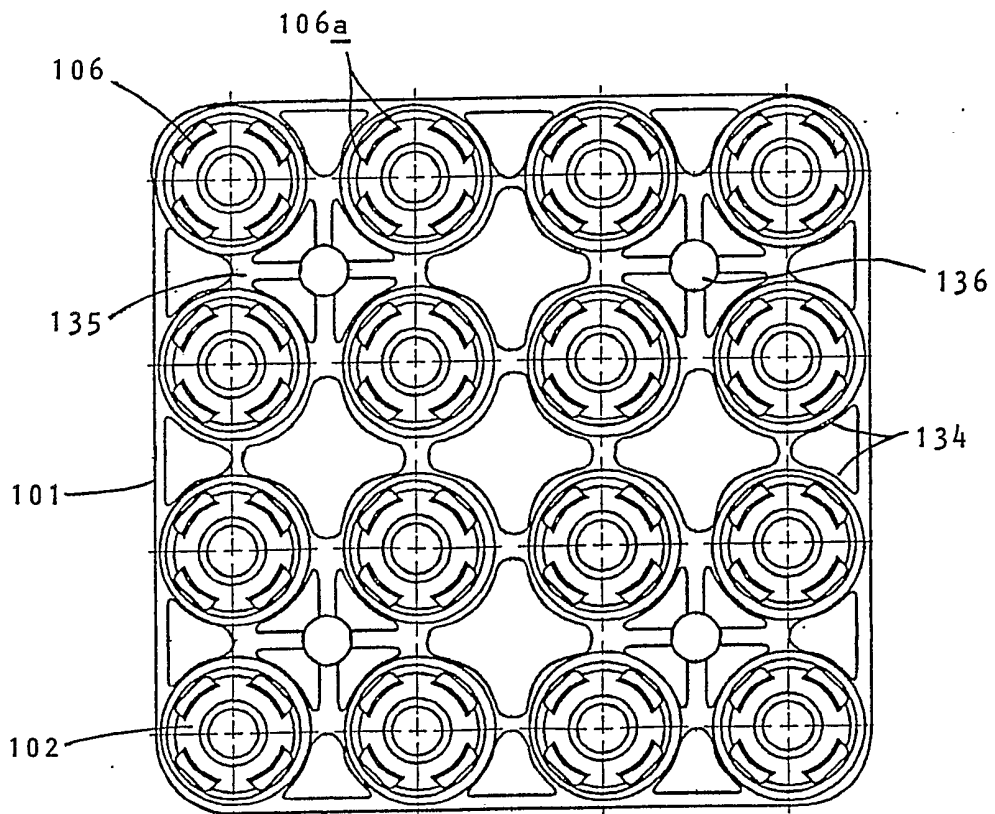


FIGURE 9.

## 01 KEYBOARDS

This invention relates to keyboards for data input devices such as telephones, calculators or the like and in particular, though not exclusively keyboards incorporating a push button switch assembly.

05

It is an object of the present invention to provide a key button structure for a push button switch assembly of simple construction.

10

According to the present invention there is provided a key button structure for a switch assembly comprising a base plate having an opening defining a switch site, and a resiliently flexible membrane integral with the base plate and arranged to provide a return spring function for a push button.

15

Preferably, the base plate has guide means for locating the push button for axial sliding movement towards and away from the base plate.

20

Conveniently the guide means is positioned around the marginal edge of the opening and extends to one side of the base plate for reception in a recess in the underside of the push button.

Advantageously, the guide means comprises a plurality of guide posts uniformly spaced around the marginal edge of the opening in the base plate.

25

In a preferred construction, there are four guide posts for location at respective corners of a square recess in the push button to engage adjoining side walls along the outer corner edges of the guide posts.

30

The push button may be retained in a raised inoperative or rest position under the biasing of the membrane by engagement with the guide means. For example, the push button may have retainer arms engageable with the guide posts. The retainer arms may be releasable for detaching the push button.

01           Alternatively, the push button may be retained in the raised  
position under the biasing of the membrane by engagement with a  
cover or case of the data input device. For example, the push  
05           button may extend through an opening in the case for user  
actuation and be retained by engagement on the underside of the  
case around the opening.

          The base plate may be adapted for securing the key button  
structure to a circuit board or similar substrate to align a  
switch device with the opening in the base plate. For example,  
10           the base plate may have resilient legs for engagement in aligned  
apertures in the circuit board. The legs are preferably  
releasable for detaching the key button structure.

          Alternatively, the base plate may be adapted for securing  
the key button structure to a cover or case of the data input  
15           device prior to assembly to a circuit board or the like to align  
a switch device with the opening in the base plate. For example,  
the base plate may have resilient tongues for engagement in an  
opening in the cover or case through which the push button  
projects for user access.

20           The switch device may comprise a pair of fixed switch  
contacts on the circuit board and a movable contact of  
electrically conductive material secured to the underside of the  
membrane.

          Advantageously, the membrane is arranged to seal the key  
25           button structure relative to the circuit board around the opening  
to protect the switch device from ingress of contaminants.

          In a preferred construction, the membrane is of frusto-  
conical shape having a base seated around the opening on the  
underside of the base plate and a raised platform at the apex  
30           engageable with the push button on the opposite side of the base  
plate.

          Preferably, the base plate has stop means for limiting  
resiliently depression of the push button to lower the movable



01 contact onto the fixed contacts. The stop means is preferably  
formed integrally with the membrane to secure non-releasably the  
membrane and the base plate.

05 In a preferred construction, the base plate is a moulding of  
substantially rigid plastics such as polyphenylene sulphide and  
the membrane is a moulding of elastomer such as silicone rubber  
which is moulded onto the base plate so as to be permanently  
secured thereto.

10 The key button structure may be adapted for one push button  
by the provision of a single opening in the base plate.  
Alternatively, the key button structure may be adapted for  
several push buttons by the provision of a plurality of openings  
in the base plate with each opening having an associated membrane  
integral with the base plate.

15 The invention will now be described in more detail, by way  
of example only, with reference to the accompanying drawings,  
wherein:-

FIGURE 1 is a sectional view of a switch assembly  
incorporating a first embodiment of a key button structure  
20 according to the invention;

FIGURE 2 is a section on the line 2-2 of Figure 1;

FIGURE 3 is a plan view of the base plate of the key button  
structure shown in Figure 1;

FIGURE 4 is a section on the line 4-4 of Figure 3;

25 FIGURE 5 is a sectional view similar to Figure 1 showing a  
modified key button structure;

FIGURE 6 is a plan view of the base plate of the key button  
structure shown in Figure 5;

30 FIGURE 7 is a sectional view similar to Figure 1 showing  
another modified key button structure;

FIGURE 8 is a sectional view of a switch assembly  
incorporating a second embodiment of a key button structure  
according to the invention; and

01            FIGURE 9 is a plan view of the base plate and integral  
membranes of the key button structure shown in Figure 8.

             Figures 1 to 4 of the accompanying drawings show a first  
embodiment of a key button structure in a switch assembly for a  
05            data input device such as a telephone keyboard (not shown).

             The key button structure comprises a plastics base plate 1,  
a resiliently flexible elastomeric membrane 2 and a plastics push  
button 3.

             The base plate 1 is of generally square shape in plan view  
10            having a resilient leg 4 depending from each corner and a  
circular hole 5 at the centre.

             Upstanding from the base plate 1 adjacent to each corner are  
four guide posts 6 uniformly spaced around the marginal edge of  
the hole 5.

15            The flexible membrane 2 is of frusto-conical shape having an  
annular base 7 that seats around the hole 5 in a counterbore 5a  
on the underside of the base plate 1, and a platform 8 at the  
apex centrally positioned between the guide posts 6 on the  
opposite side of the base plate 1.

20            The membrane 2 is moulded onto the base plate 1 and has  
formed integrally therewith on the upper surface of the base  
plate 1 at each corner, four pads 9 connected to the base 7 of  
the membrane 2 through respective orifices 10 in the base plate 1  
to secure non-releasably the membrane 2 and base plate 1.

25            The button 3 is of square shape in plan view comprised of a  
top wall 11 and dependent side walls 12 defining a square  
recess 13 open to the underside in which the guide posts 6 are  
received.

             Each guide post 6 is positioned adjacent to a respective  
30            corner of the recess 13 and, as best shown in Figure 2, has  
radiused outer corner edges 6a engageable with adjoining side  
walls 12 of the button 3 to locate the button 3 for axial sliding  
movement relative to the base plate 1 and prevent the button 3  
tilting or rocking on the guide posts 6.

01           The line contact between the corner edges 6<sub>a</sub> of the guide  
posts 6 and side walls 12 of the button 1 facilitates axial  
sliding movement with minimum frictional resistance. Frictional  
05           resistance may be further reduced by the selection of the  
plastics materials for the base plate 1 and button 3.

          Depending from the top wall 11 of the button 3 within the  
recess 13 are a centre post 14 of X-shape in transverse section  
that seats on the platform 8, and four retainer arms 15 uniformly  
10           spaced around the centre post 14 on the inside of the guide  
posts 6.

          The guide posts 6 and retainer arms 15 have opposed internal  
and external chamfer faces 16 and 17 respectively that extend  
from the free ends and terminate in respective undercut  
15           ledges 18,19.

          The chamfer faces 16,17 co-operate to displace the guide  
posts 6 and retainer arms 15 radially for push fitting the  
button 3 on the guide posts 6 until the ledges 18,19 engage with  
a snap action to retain the button 3 on the guide posts 6 in a  
20           raised inoperative or rest position under the biasing of the  
flexible membrane 2.

          Cut-outs 20 in the side walls 12 of the button 3 provide  
access between adjacent guide posts 6 for insertion of a suitable  
tool (not shown) to release the retainer arms 15 for removing the  
button 3 if required for repair, replacement, etc.

25           The key button structure above-described provides a sub-  
assembly for securing to a flat substrate such as a printed  
circuit board 21 by inserting the dependent legs 4 of the base  
plate 1 through aligned apertures 22 in the board 21.

          Each leg 4 has a foot 23 with an external ramp face 24 that  
30           co-operates with the marginal edge of the aperture 22 to displace  
the leg 4 radially until the foot 23 engages the underside of the  
board 21 with a snap action to retain the key button structure on  
the board 21.

01           The key button structure may be detached from the board 21  
if required for repair, replacement etc by releasing the feet 23  
and withdrawing the legs 4 through the apertures 22.

05           Aligned with the hole 5 in the base plate 1 is a switch  
device comprising a pair of fixed contacts 25 on the board 21 and  
a movable contact 26 of electrically conductive material on the  
underside of the platform 8 that is spaced above the fixed  
contacts 25 in the inoperative or rest position of the button 3.

10           The movable contact 26 is lowered to engage and connect  
electrically the fixed contacts 25 by manual depression of the  
push button 3 against the biasing of the membrane 2 which  
provides a spring function to return the button 3 to the  
inoperative or rest position on releasing the button 3.

15           The base 7 of the membrane 2 seals the key button structure  
relative to the board 21 around the hole 5 to protect the switch  
device from ingress of contaminants, and the pads 9 limit  
resiliently depression of the button 3 for user comfort and to  
protect the switch device from excessive user actuation force  
applied to the push button 3.

20           The data input device will typically have a plurality of  
separate key button structures secured to the circuit board 21 as  
above-described for performing different functions with each  
button 3 arranged to project through an opening 27 in an outer  
cover or case 28 for user access. The different functions may be  
25 identified by suitable indicia on exposed surfaces of each  
button 3, for example the top wall 11.

30           As will be appreciated, the number and position of the key  
button structures can be adapted for different applications as  
desired in a simple manner facilitating assembly of a wide range  
of keyboards having different arrays of buttons using a common  
key button structure.

Referring now to Figures 5 and 6, a modified key button  
structure is shown in which like reference numerals are used to  
indicate parts corresponding to the first embodiment.

01           The key button structure provides a sub-assembly for  
securing to the outer cover or case 28 by four resilient  
tongues 29 upstanding from the marginal edges of the base plate 1  
on each side. The tongues 29 are a push fit in and frictionally  
05 engage the inner end of the opening 27 in the case 28 to locate  
and retain the key button structure for subsequent assembly of  
the case 28 onto the printed circuit board 21.

          When assembled, the key button structure is loaded against  
the board 21 by engagement of the case 28 with the corner pads 9  
10 at the inner end of the opening 27 so that the base 7 of the  
membrane 2 seals the key button structure relative to the  
board 21 around the hole 5 and the cut-outs 20 in the side walls  
of the button 3 provide clearance for the tongues 29 on  
depression of the button 3 to actuate the switch device.

15           By securing the key button structure to the case 28, the  
area of the circuit board 21 that can be utilised for circuit  
connections is increased as compared with the first embodiment in  
which the key button structure is secured to the board 21.

          Additionally, as shown in Figure 6, the membrane base 7 is  
20 arranged to raise the underside of the base plate 1 above the  
board 21 providing a clearance space 30 in which solder  
contacts 31 may be arranged thereby increasing further the area  
for making electrical contacts. This has advantages where  
available space is limited, for example for manufacture of small  
25 size keyboards having a plurality of closely arrayed push  
buttons.

          Another modified key button structure is shown in Figure 7  
in which like reference numerals are used to indicate parts  
corresponding to the first embodiment.

30           The key button structure is comprised of base plate 1 and  
membrane 2 releasably secured to the circuit board by the  
dependent legs 4 of the base plate 1 and the push button 3 is  
slidably mounted in the opening 27 of the outer case 28. The

01 push button 3 is retained in the raised position under the  
biassing of the membrane 2 by engagement of an external  
projection 32 in an axial guide slot 33 in the opening 27.

Referring now to Figures 8 and 9, a switch assembly  
05 incorporating a second embodiment of a key button structure is  
shown in which like reference numerals in the series 100 are used  
to indicate parts corresponding to the first embodiment.

The base plate 101 has an open grid structure comprised of a  
square array of sixteen uniformly spaced circular holes 105  
10 defined by ring elements 134 with interconnecting webs 135

Uniformly spaced around the marginal edge of each hole are  
four guide posts 106 upstanding from the base plate 101 on which  
a respective push button 103 is located for axial sliding  
movement.

15 Each button 103 is of square shape in plan view having a top  
wall 111 and dependent side walls 112 defining a square  
recess 113 open to the underside in which the guide posts 106 are  
received.

Each guide post 106 is positioned adjacent to a corner of  
20 the recess 113 and has radiused outer corner edges 106a  
engageable with adjoining side walls 112 of the button 103 to  
locate the button 103 for axial sliding movement relative to the  
base plate 101 and prevent the button 103 tilting or rocking on  
the guide posts 106.

25 Each hole 105 is provided with a resiliently flexible  
elastomeric membrane 102 of frusto-conical shape having an  
annular base 107 that seats around the hole 105 in a  
counterbore 105a on the underside of the base plate 101, and a  
platform 108 at the apex centrally positioned between the guide  
30 posts 106 on the oppodite side of the base plate 101.

Each membrane 102 is moulded onto the base plate 101 and has  
formed integrally therewith on the upper surface of the base  
plate 101, an annular pad 109 encircling the associated guide

01 posts 106 and connected to the base 107 of the membrane 102  
through orifices 110 in the base plate 101 to secure  
non-releasably the membrane 102 and base plate 101.

05 Upstanding from the base plate 101 adjacent to each corner  
are four pillars 136 for locating and securing the base plate 101  
to an outer case 128 having a matching array of sixteen  
openings 127 aligned with the buttons 103.

10 Each button 103 is retained on the guide posts 106 in a  
raised inoperative or rest position projecting through the  
aligned opening 127 under the biasing of the associated  
membrane 102 by engagement of an external flange 137 with the  
underside of the case 128 around the opening 127. Alternatively,  
each button may be retained in the raised position by engagement  
with the guide posts, for example by retainer arms similar to the  
15 first and second embodiments.

The key button structure secured to the case 128 is  
assembled onto a printed circuit board 121 to align each hole 105  
in the base plate 101 with a respective switch device comprising  
a pair of fixed switch contacts 125 on the board 121 and a  
20 movable contact 126 secured to the underside of the platform 108  
that is spaced above the fixed contacts 125 in the rest position  
of the associated button 103.

25 The switch devices are selectively actuatable by depression of  
the appropriate push button 103 to lower the movable contact 126  
onto the fixed contacts 125 against the biasing of the  
associated membrane 102 which provides a spring function for  
returning the button to the inoperative position on releasing the  
button 103.

30 The key button structure is sealed relative to the board 121  
around each hole 105 by the base 107 of the associated membrane  
to prevent ingress of contaminants and excessive actuation forces  
are cushioned by engagement of the button 103 with the pad 109  
for user comfort and to prevent damage to the switch contacts  
125, 126.

01 By using a common base plate for a plurality of buttons, the  
key button structure can be adapted for different applications by  
changing the buttons. It will be understood that the number and  
position of the openings in the base plate may be altered to  
05 provide any desired array of buttons for a given application.

In the above-described embodiments, the base plate 1,101 is  
conveniently a moulding of substantially rigid plastics such as  
polyphenylene sulphide onto which the elastomeric  
membrane(s) 2,102 is/are moulded to form an integral spring unit  
10 for the button(s) 3,103. Suitable elastomers for the  
membrane(s) 2,102 include silicone rubber and each push  
button 3,103 is conveniently a moulding of substantially rigid  
plastics such as acrylonitrile butadiene styrene.

It will be understood that the invention is not limited to  
15 the embodiments above-described. For example, the actuation  
portion of each push button may be rectangular or any other shape  
as desired such as circular or oval. Thus, in the above  
embodiments, an actuation portion of the desired shape may be  
provided by an upstand on the top wall of the button arranged to  
20 project through the opening in the case.

The base plate may be of rectangular or other suitable shape  
and/or the opening(s) may be of circular or other suitable shape  
as desired for a given application.

The base plate may have a plurality of guide posts or other  
25 suitable guide means associated with each opening for axially  
locating the push button(s) with optional co-operating formations  
for retaining the push button(s) in a raised position under the  
biasing of the associated membrane. Where the base plate is  
provided with guide posts, the number and arrangement may be  
30 chosen to suit the size and shape of the opening(s) in the base  
plate and/or the recess in the button.

The base plate may be adapted for securing to the board or  
case by any suitable means. Where the base plate is provided



01 with resilient legs, tongues or similar formations, the number  
and arrangement may be chosen to suit the size and shape of the  
base plate. The formations may retain the base plate by self-  
latching or friction engagement with the board or case as  
04 desired.

The membrane(s) may be permanently secured to the base plate  
by any suitable formations providing a mechanical key between the  
membrane(s) and the base plate. Alternatively, or additionally,  
moulding of the membrane(s) onto the base plate may be controlled  
10 so that the the membrane(s) bond to the base plate.

The key button structure may be arranged for actuation of  
any suitable switch device aligned with the hole(s) in the base  
plate and the invention is not limited to the exemplary switch  
device above-described.

15 It will be appreciated that the integral spring unit formed  
by the base plate and membrane(s) has advantages for manufacture  
of keyboards incorporating the invented key button structure.  
Thus, the number of separate components for assembly is reduced  
and a common spring unit may be used with different push  
20 button(s). Where provided, the internal guide means positively  
locates the push button throughout its travel and enables the  
overall height to be reduced to a minimum producing a compact  
assembly suitable for a wide range of applications with optional  
retention of the push button(s) on the guide means providing  
25 further assembly benefits.

Other benefits and adavantages of the invention will be  
apparent to those skilled in the art and the invention is deemed  
to include all modifications and variations within the scope of  
the appendant claims.

01 Claims:

1. A key button structure for a switch assembly comprising a base plate having an opening defining a switch site, and a resiliently flexible membrane integral with the base plate and  
05 arranged to provide a return spring function for a push button.
2. A key button structure according to Claim 1 wherein the base plate has guide means for locating the push button for axial sliding movement towards and away from the base plate.
3. A key button structure according to Claim 2 wherein the  
10 guide means is positioned around the marginal edge of the opening and extends to one side of the base plate for reception in a recess in the underside of the push button.
4. A key button structure according to Claim 3 wherein the guide means comprises a plurality of guide posts uniformly spaced  
15 around the marginal edge of the opening in the base plate.
5. A key button structure according to Claim 4 wherein there are four guide posts for location at respective corners of a square recess in the push button to engage adjoining side walls along the outer corner edges of the guide posts.
- 20 6. A key button structure according to any one of Claims 2 to 5 wherein the push button is retained in a raised inoperative or rest position under the biasing of the membrane by engagement with the guide means.
7. A key button structure according to Claim 6 as dependent on  
25 Claim 4 or Claim 5 wherein the push button has retainer arms engageable with the guide posts.
8. A key button structure according to Claim 7 wherein the retainer arms are releasable for detaching the push button.
9. A key button structure according to any one of Claims 1 to 5  
30 wherein the push button is adapted to be retained in a raised position under the biasing of the membrane by engagement with a member having an opening through which the button projects for user actuation.

- 01 10. A key button structure according to any one of the preceding  
Claims wherein the base plate has attachment means for securing  
to a carrier.
11. A key button structure according to Claim 10 wherein the  
05 attachment means comprise a plurality of resilient formations  
integral with the base plate.
12. A key button structure according to Claim 11 wherein the  
formations are adapted for self-latching engagement with the  
carrier.
- 10 13. A key button structure according to Claim 11 or Claim 12  
wherein the formations are releasable for detaching the base  
plate from the carrier.
14. A key button structure according to any one of  
Claims 11 to 13 wherein the base plate is rectangular and the  
15 formations comprise a dependent leg at each corner.
15. A key button structure according to any one of Claims 11  
to 13 wherein the base plate is rectangular and the formations  
comprise an upstanding tongue on each side.
16. A key button structure according to any one of the preceding  
20 Claims wherein the membrane is arranged to seal around the  
opening in the base plate.
17. A key button structure according to Claim 16 wherein the  
membrane is of frusto-conical shape having a base seated around  
the opening on the underside of the base plate and a raised  
25 platform at the apex engageable with the push button on the  
opposite side of the base plate.
18. A key button structure according to any one of the preceding  
Claims including stop means for limiting resiliently depression  
of the push button against the biasing of the membrane.
- 30 19. A key button structure according to Claim 18 wherein the  
stop means is formed integrally with the membrane to secure non-  
releasably the membrane and the base plate.

01 20. A key button structure according to any one of the preceding  
Claims wherein the base plate has a plurality of openings  
defining switch sites for a plurality of push buttons, and each  
05 opening being provided with a resiliently flexible membrane  
integral with the base plate to provide a return spring function  
for the associated push button.

21. A key button structure comprising a base plate having an  
opening defining a switch site, guide means integral with the  
base plate and extending to one side thereof around the marginal  
10 edge of the opening, a push button located and retained on the  
guide means for axial sliding movement towards and away from the  
opening, a resiliently flexible membrane integral with the base  
plate and biasing the push button to a raised inoperative  
position, and said base plate having integral attachment means  
15 for securing to a carrier.

22. A key button structure according to Claim 21 wherein the  
base plate has a plurality of openings defining a plurality of  
switch sites for a plurality of push buttons.

23. A key button structure according to any one of the preceding  
20 Claims wherein the base plate is made of plastics and the  
membrane(s) is/are made of elastomer.

24. A key button structure substantially as hereinbefore  
described with reference to Figures 1 to 4 of the accompanying  
drawings.

25 25. A key button structure substantially as hereinbefore  
described with reference to Figures 1 to 4 of the accompanying  
drawings as modified by Figures 5 and 6 or Figure 7 of the  
accompanying drawings.

26. A key button structure substantially as hereinbefore  
30 described with reference to Figures 8 and 9 of the accompanying  
drawings.

27. A keyboard for a data input device comprising a key button  
structure according to any one of the preceding Claims.

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

GB 9303386.8

**Relevant Technical fields**

(i) UK Cl (Edition L ) H1N (NBH, NUJA)

(ii) Int Cl (Edition 5 ) H01H 13/52, 70

**Search Examiner**

MR P CORBETT

**Databases (see over)**

(i) UK Patent Office

(ii)

**Date of Search**

6 MAY 1993

Documents considered relevant following a search in respect of claims 1-27

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2208039 A (HARBORO RUBBER) See Figure 8	1,16,20, 23,27
X	GB 2151405 A (KOKOKU RUBBER) See Figure 6	1,9,16, 17,20,23, 27
X	GB 2062304 A (CASIO) See Figure 4	1,2,10, 16,20,27
X	EP 0110094 A1 (RUF) See Figure 1	1,2,5, 10-13,21
X	US 4705925 (VERMEULEN) See Figure 1	1-3, 10-13, 21,23
X	US 4536625 (BEBIE) See Figure 8	1,2,20, 27
X	US 4366355 (OELSCH) See Figure 2	1,9,16, 20,27



Category	Identity of document and relevant passages	Relevant to claim(s)

### Categories of documents

**X:** Document indicating lack of novelty or of inventive step.

**Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.

**A:** Document indicating technological background and/or state of the art.

**P:** Document published on or after the declared priority date but before the filing date of the present application.

**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

**&:** Member of the same patent family, corresponding document.

**Databases:** The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).