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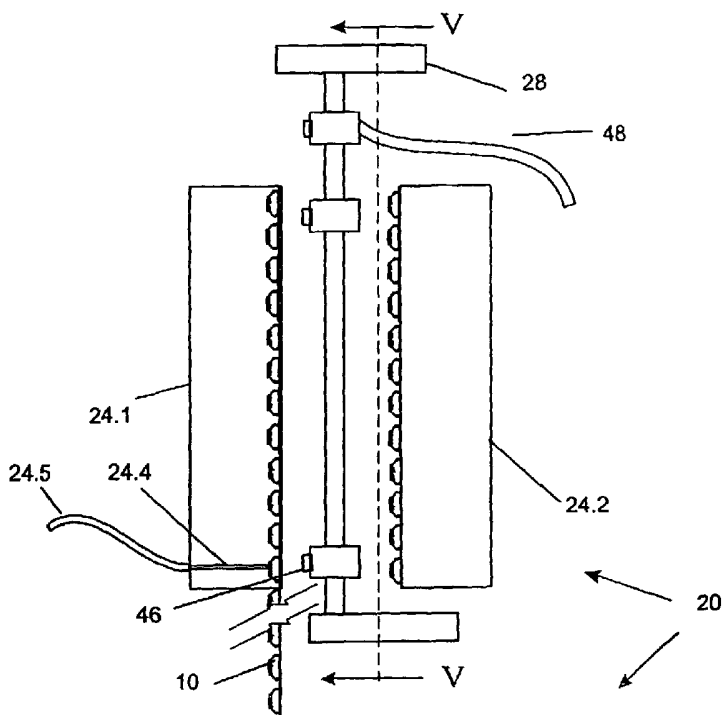
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(54) Title: CONTINUOUS STRING OF KEYBOARD SWITCHES, METHOD AND APPARATUS FOR MANUFACTURING IT; KEYBOARD, METHOD AND APPARATUS FOR ASSEMBLING A KEYBOARD; KEYPAD AND KEYBOARD SWITCH



(57) Abstract: Switches and keyboards, and methods and apparatus for manufacturing same, which may employ an arrangement comprising a plurality of resiliently flexible biasing members (20) that are joined directly to one another, in a substantially side-by-side configuration to form a continuous, flexible string (10) of biasing members.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Internal Application No
PCT/IB 03/01697

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B29C45/00 H01H13/70

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B29C H01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 775 574 A (TAHARA KAZUTOKI ET AL) 4 October 1988 (1988-10-04)	1-5
Y	column 7, line 67 - column 10, line 4; figures 8,10-12,14	6-23
X	US 2002/013990 A1 (YEH CHI-PIN) 7 February 2002 (2002-02-07)	1-5
Y	page 2, paragraph 38; figures 6A-6D,,7	6-23
Y	PATENT ABSTRACTS OF JAPAN vol. 012, no. 229 (M-714), 29 June 1988 (1988-06-29) -& JP 63 027225 A (TDK CORP;OTHERS: 01), 4 February 1988 (1988-02-04) abstract	6-23

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
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- "O" document referring to an oral disclosure, use, exhibition or other means
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- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

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 application No
 PCT/IB 03/01697

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim: No.
Y	DE 37 22 236 A (ROTH FRIEDRICH) 19 January 1989 (1989-01-19) column 2, line 14 - column 3, line 7; figures 2-5 -----	6-23
Y	PATENT ABSTRACTS OF JAPAN vol. 004, no. 143 (M-035), 8 October 1980 (1980-10-08) & JP 55 097940 A (ASAHI CHEM IND CO LTD), 25 July 1980 (1980-07-25) abstract -& DATABASE WPI Section Ch, Week 198036 Derwent Publications Ltd., London, GB; Class A32, AN 1980-63183c XP002255662 -& JP 55 097940 A (ASAHI) 25 July 1980 (1980-07-25) abstract -----	6-23

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 03/01697

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

- 1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

- 2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

- 3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

- 1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

- 2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

- 3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

- 4. No required additional search fees were timely paid by the applicant. Consequently, this international Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-23

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-23

String arrangement of a plurality of directly joined biasing members, method of and apparatus for manufacturing it.

2. claims: 24-44

Method of and apparatus for placing the string on a body.

3. claims: 45-57

Method of and apparatus for separating the end components of a plurality of parallel strings and for placing the separated components into a body.

4. claims: 58-80

Fluid-tight keyboard switch, method of and apparatus for assembling it.

5. claims: 81-110

Switch having a housing to be directly joined to one or more other switch housings.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/IB 03/01697

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			JP	62259314 A	11-11-1987
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