(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 387 372 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
04.02.2004 Bulletin 2004/06

(51) Int Cl.[7]: **H01H 13/02**, B66B 1/46

(21) Application number: **03425513.3**

(22) Date of filing: **29.07.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

(30) Priority: **31.07.2002 IT MI20020138 U**

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(54) Push-button panels for elevators with pre-connected push-buttons

(57) Push-button panel for elevator systems of the type comprising one or more push-buttons, characterized in that it comprises a plurality of pre-connected push-buttons (P), which are installed on a rigid stand of electric interconnection (SV) constituted by a printed circuit with substantially rectilinear shape; the installation of said pre-connected push-buttons (P) being performed by installing said rigid stand, already equipped with push-buttons, in the elevator and by connecting it to the panel by means of connectors of a common multipolar cable (CS), already preset and tested as well.

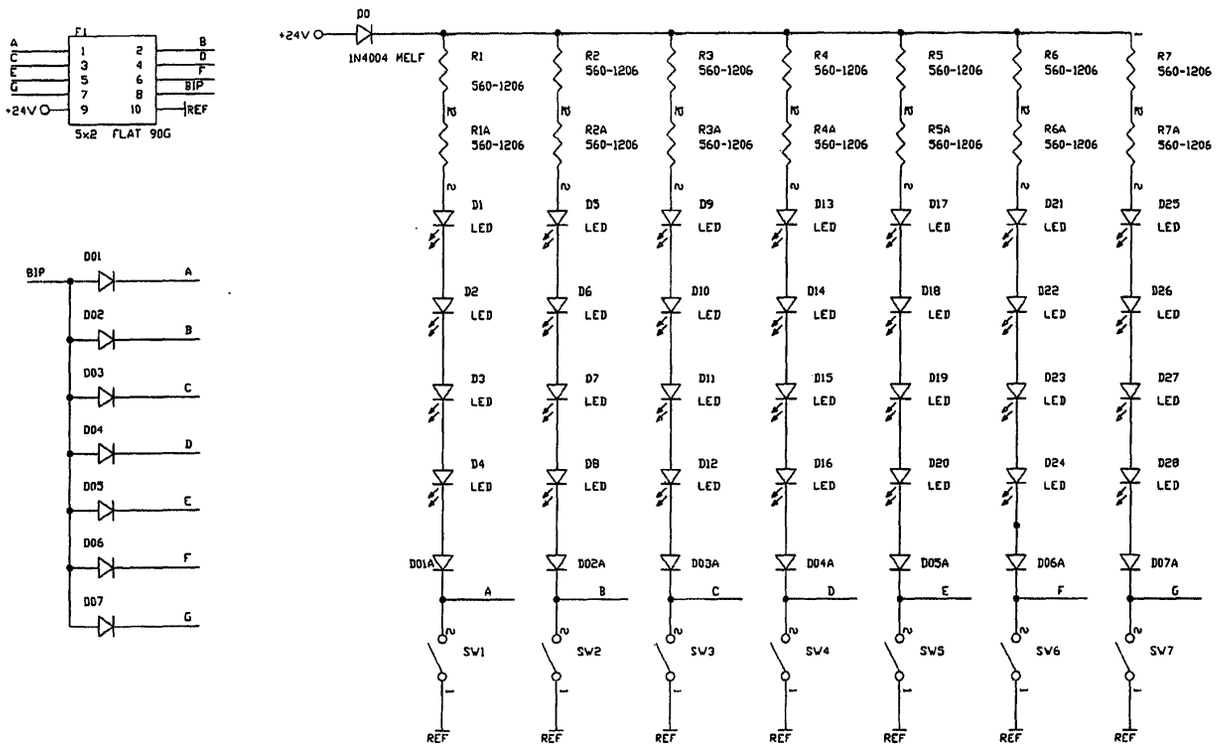

Fig. 6

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Description

[0001] The present invention relates to the field of plant design and installation for elevators and in particular to the implementation of push-button panels for elevators both on the floor and in the lift-cage.

[0002] Currently, the push-button panels are formed by a more or less numerous series of push-buttons, each of them playing a specific function and it is connected to the panel by means of common electric cables.

[0003] It is evident that the installation of these known push-button panels requires the connection of the single wires from each push-button to the panel.

[0004] Such operations are very expensive in terms of manpower costs and furthermore it is difficult to control the validity of the connections implemented between each push-button and the related connections to the panel, which usually are entrusted to the simple clamping of the corresponding clamps.

[0005] Therefore, the main object of the present invention is to provide a push-button panel constituted by a plurality of pre-connected push-buttons, which are installed on a rigid stand of electric interconnection constituted by a printed circuit with substantially rectilinear shape. The assembly of said push-buttons on the printed circuit, which is mechanically resistant, preferably takes place in the factory where also control tests are performed.

[0006] For the installation, said pre-connected push-buttons are assembled in the elevator and connected to the panel by means of the connectors of a common multipolar cable, already preset and tested as well.

[0007] A better understanding of the invention will occur with the following detailed description and by referring to the enclosed figures which illustrate a preferred embodiment by way of example and not for limitative purpose.

[0008] In the drawings:

figure 1 shows a push-button panel of known type with the push-buttons connected by means of single cables;
figure 2 shows the rear face of a push-button panel of an elevator car wherein pre-connected push-button panels according to the invention are installed;
figure 3 shows a pre-connected push-button panel whereon the push-buttons to be assembled on the front have not yet been installed;
figure 4 shows the push-button panel of fig. 3 with the installed push-buttons;
figure 5 is a detail of fig. 3;
figure 6 illustrates the electric diagram of the system in case of push-button panels with seven push-buttons.

[0009] By referring to the figures 2 and 3, the push-button panel which is described comprises only one printed circuit board whereon all the push-buttons P and signallings which up to now have appeared as separately connected single members are grouped and fastened (fig. 1) .

[0010] Advantageously, according to a peculiar feature of the present invention, this solution allows to connect the push-buttons P by utilizing a single multipolar cable, of the type commonly available on the market, instead of single electric cables for each connection and each call contact.

[0011] It is to be noted that in this way it is advantageously possible to preset the push-button panels in the factory or in the laboratory with the possibility of easily performing checks and tests and then proceeding with the installation in the elevator system by simply fixing the push-button panels in the related seats and by connecting them to the electric control panel with the multipolar cable mentioned above, thus providing the maximum guarantee for a correct and safe electric connection between the connection contacts and the electric control panel.

[0012] The pre-connected push-button panel which is described is preferably formed by only one vetronite board SV wherein the circuits necessary to send and/or receive the signals of the elevator (fig. 3, 4) are obtained.

[0013] Alternatively, it is possible to provide more boards equipped with push-buttons P and respectively connected to the panel on the lift-cage top with related multipolar cables.

[0014] For each single push-button P in the board SV there are provided, respectively: a contact mechanism MC, diodes D and resistances R for the LEDs' operation (fig. 5, 6). According to the present invention, in case the contact mechanism is not present, it is also possible to utilize the push-button as signaller.

[0015] The single board is connected to the control panel preferably by means of only one "standard" cable CS (fig. 2). The mobile part of the push-button, which controls the sending of the signal, is fastened to the board by means of a simple frontal snap assembly.

[0016] From what said sofar, iL is evident that the invention allows a much easier assembly of the various parts than the known apparatuses since the installer has only to connect the standard plat cable CS to the board by means of a multipolar connector, in this way possible errors which could occur in case each single contact be connected by means of common electric wires are also avoided.

[0017] The present invention has been described and illustrated in a preferred embodiment thereof, but it is evident that any person skilled in the art could apply technically equivalent modifications and/or replacements, without departing from the scope of the present industrial invention.

Claims

1. Push-button panel for elevator systems of the type comprising one or more push-buttons, **characterized in that** it comprises a rigid stand of electric interconnection (SV) constituted by a printed circuit with substantially rectilinear shape whereon a plurality of pre-connected push-buttons (P) is installed; the installation of said pre-connected push-buttons (P) being performed by installing said rigid stand, already equipped with push-buttons, in the elevator and by connecting it to the panel by means of the connectors of a common multipolar cable (CS), already preset and tested as well.

2. Push-button panel according to the preceding claim, **characterized in that** said rigid printed circuit board (SV), whereon all the push-buttons (P) and the signallings are grouped and fastened, further comprises the electronic components for the operation of the push-buttons themselves.

3. Push-button panel according to any of the preceding claims, **characterized in that** it is preset and assembled in the factory or in the laboratory before the installation in the elevator system, performing appropriate checks and control tests, thus providing the maximum guarantee for a correct and safe electric connection between the connection contacts and the electric control panel.

4. Push-button panel according to any of the preceding claims, **characterized in that** it provides at least a vetronite board (SV) wherein the circuits necessary to send and/or receive the signals of the lift are obtained and whereon the push-buttons (P) and/or the signallings are fastened.

5. Push-button panel according to any of the preceding claims, **characterized in that**, for each single push-button (P), in the board (SV) there are provided, respectively: a contact mechanism (MC), diodes (D) and resistances (R) for the LEDs' operation.

6. Push-button panel according to the preceding claim, **characterized in that**, in case the contact mechanism is not present, the push-button is utilized as signaller.

7. Push-button panel according to any of the preceding claims, **characterized in that** the single board (SV) is connected to the control panel by means of only one "standard" cable (CS).

8. Push-button panel according to any of the preceding claims, **characterized in that** the mobile part of each push-button (P), which controls the sending of the signal, is fastened to the board (SV) by means of a simple frontal snap assembly.

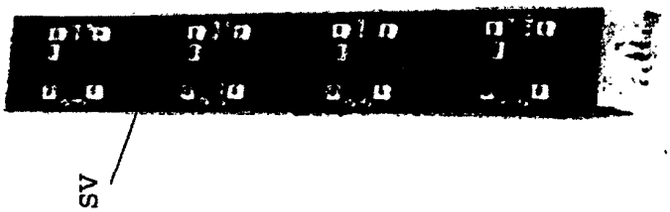

Fig.3

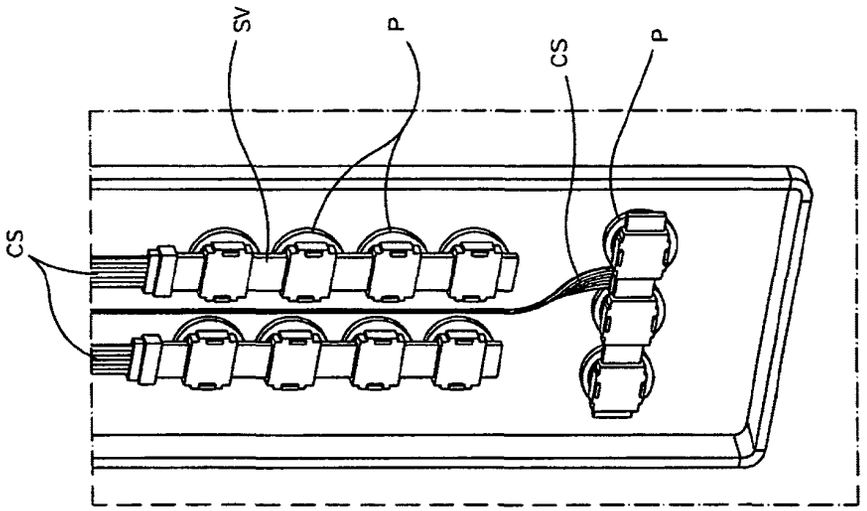

Fig. 2

PRIOR ART

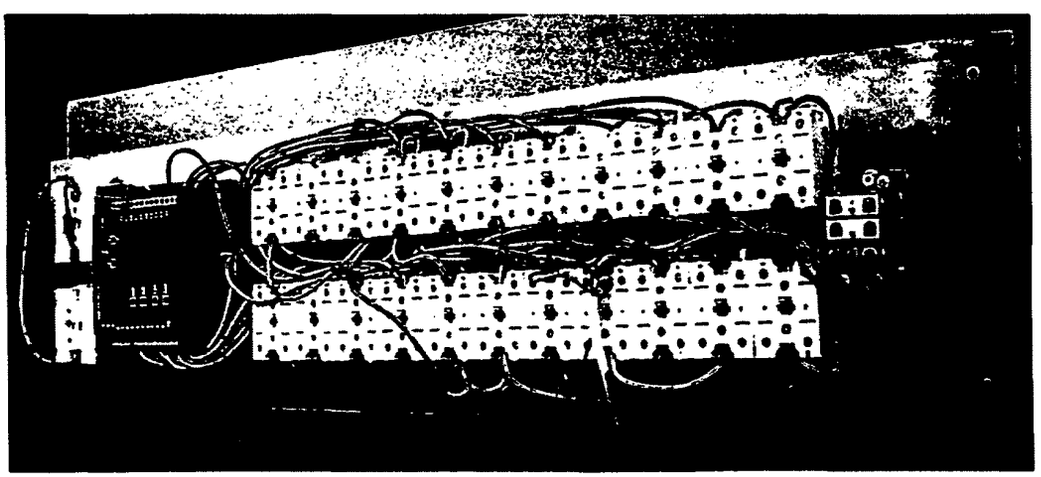

Fig. 1

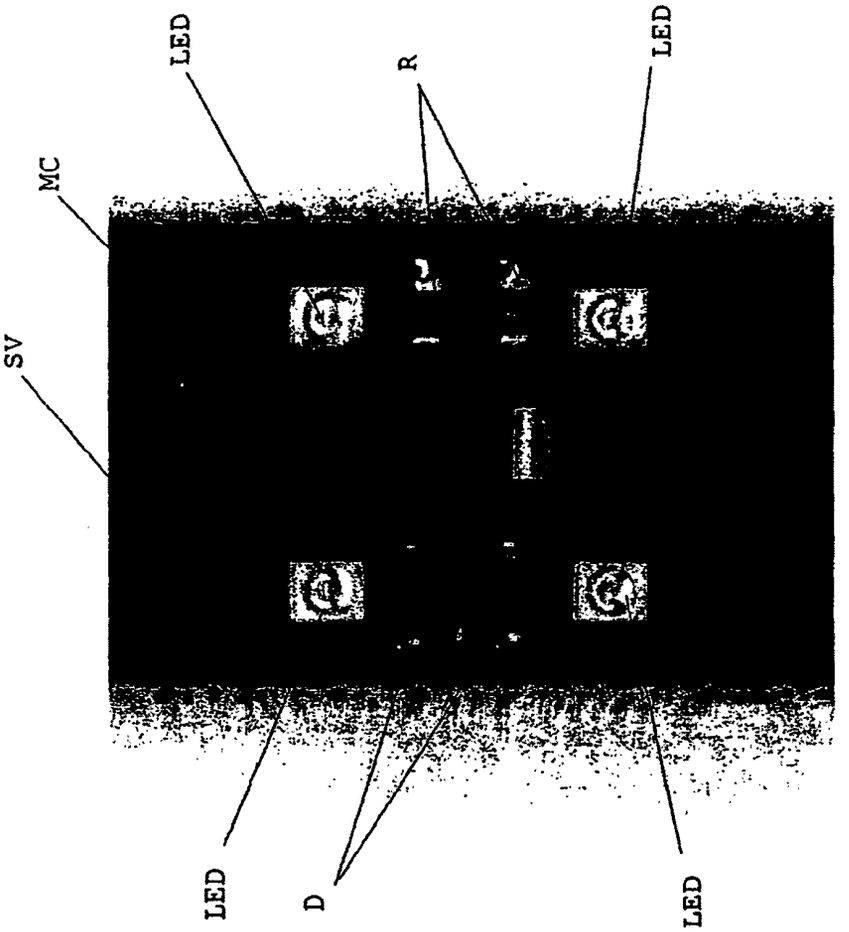

Fig. 5

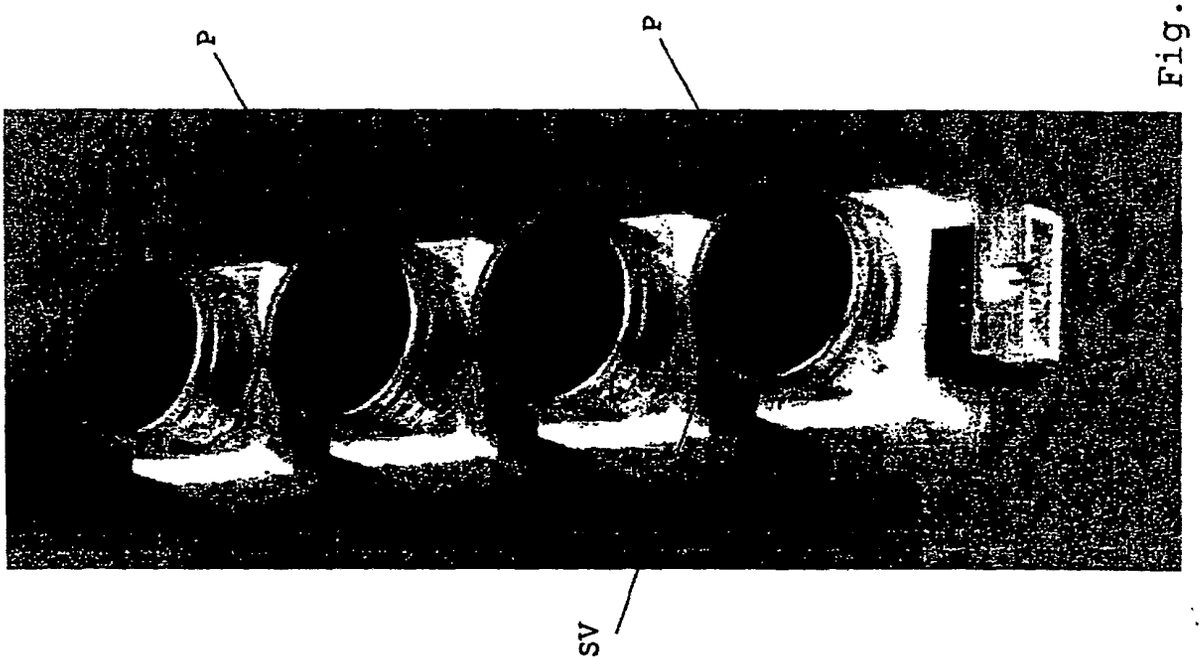

Fig. 4

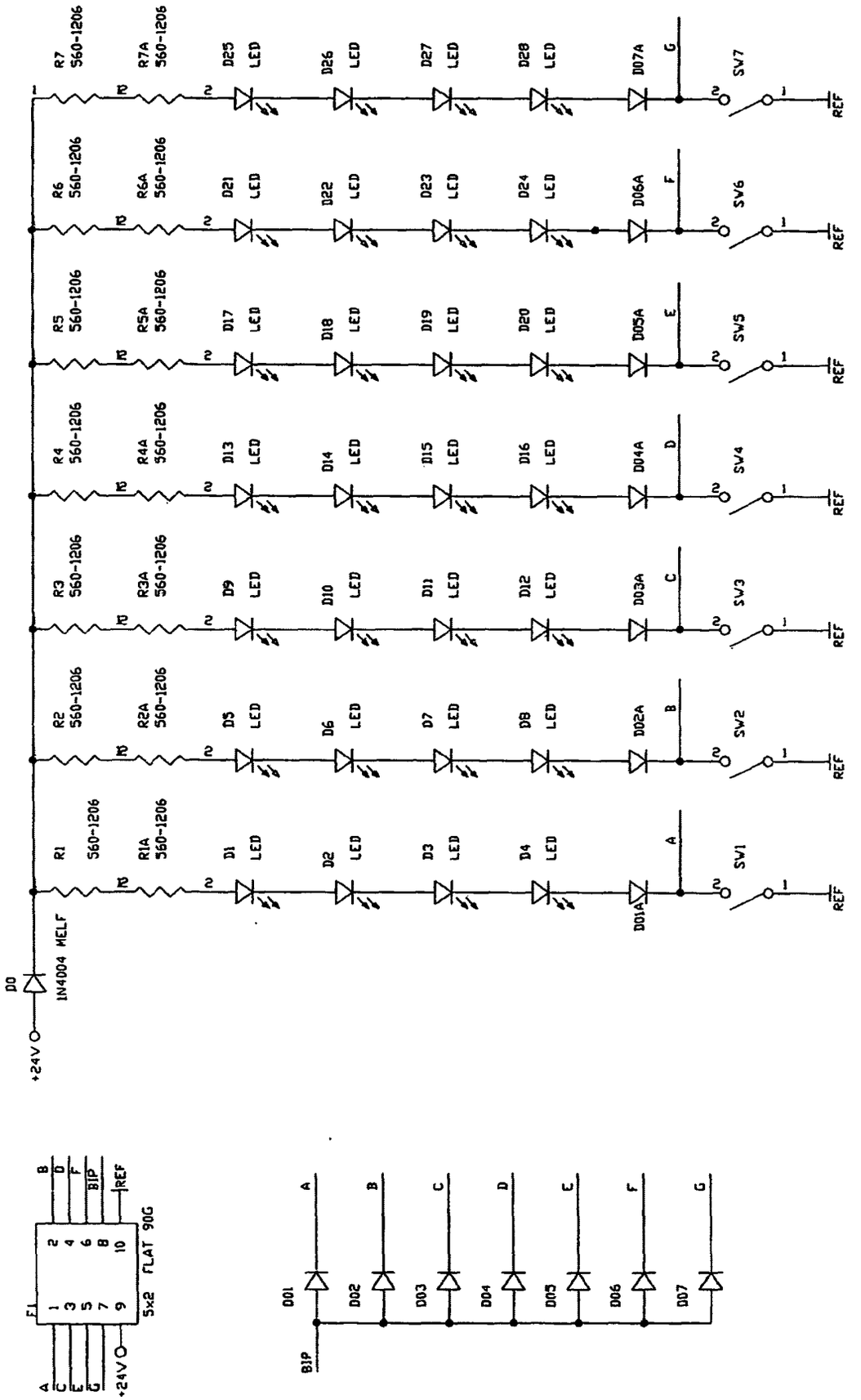
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Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5513

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 6 227 335 B1 (LAMB MILES P ET AL) 8 May 2001 (2001-05-08) * page 5, column 2, line 27 - page 6, column 4, line 38; figure 4 *	1-3,7,8	H01H13/02 B66B1/46
Y		4-6	
X	DE 44 36 050 A (WOLFGANG SCHAEFER GMBH ELEKTRO) 11 April 1996 (1996-04-11) * page 2, column 2, line 4 - page 4, column 6, line 49; figure 1 *	1-3,7,8	
X	EP 0 803 461 A (KONE OY) 29 October 1997 (1997-10-29) * page 2, column 2, line 7 - page 3, column 3, line 40; figure 1 *	1-3,7,8	
Y	US 2002/056571 A1 (CANOVA ANTONIO) 16 May 2002 (2002-05-16) * page 6, paragraph 26; figure 1 *	4	
Y	US 5 477 942 A (SANDHU SURJIT S ET AL) 26 December 1995 (1995-12-26) * page 5, column 4, line 4-18 *	5,6	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H01H B66B
A	JP 61 287673 A (TOKYO SHIBAURA ELECTRIC CO) 18 December 1986 (1986-12-18) * figures 6,7 *	5,6	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	16 October 2003	Mäki-Mantila, M

CATEGORY OF CITED DOCUMENTS

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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16-10-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6227335 B1	08-05-2001	NONE	
DE 4436050 A	11-04-1996	DE 4436050 A1	11-04-1996
EP 0803461 A	29-10-1997	FI 98965 B	30-05-1997
		CN 1182948 A	27-05-1998
		DE 69717903 D1	30-01-2003
		EP 0803461 A2	29-10-1997
		ES 2184916 T3	16-04-2003
		JP 3041250 B2	15-05-2000
		JP 10067473 A	10-03-1998
		US 5889240 A	30-03-1999
US 2002056571 A1	16-05-2002	IT FI970023 A1	17-08-1998
		DE 69803664 D1	14-03-2002
		DE 69803664 T2	24-10-2002
		DK 974249 T3	06-05-2002
		EP 0974249 A1	26-01-2000
		US 6401332 B1	11-06-2002
		ES 2170477 T3	01-08-2002
		WO 9836625 A1	20-08-1998
US 5477942 A	26-12-1995	AT 177065 T	15-03-1999
		CA 2128447 A1	13-02-1995
		DE 59407866 D1	08-04-1999
		EP 0638508 A1	15-02-1995
JP 61287673 A	18-12-1986	NONE	

EPO FORM P0459

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