

[54] **CODING KEYBOARD**
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 [22] **Filed: Nov. 14, 1972**
 [21] **Appl. No.: 306,286**

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[30] **Foreign Application Priority Data**
 Dec. 30, 1971 France..... 71.47578

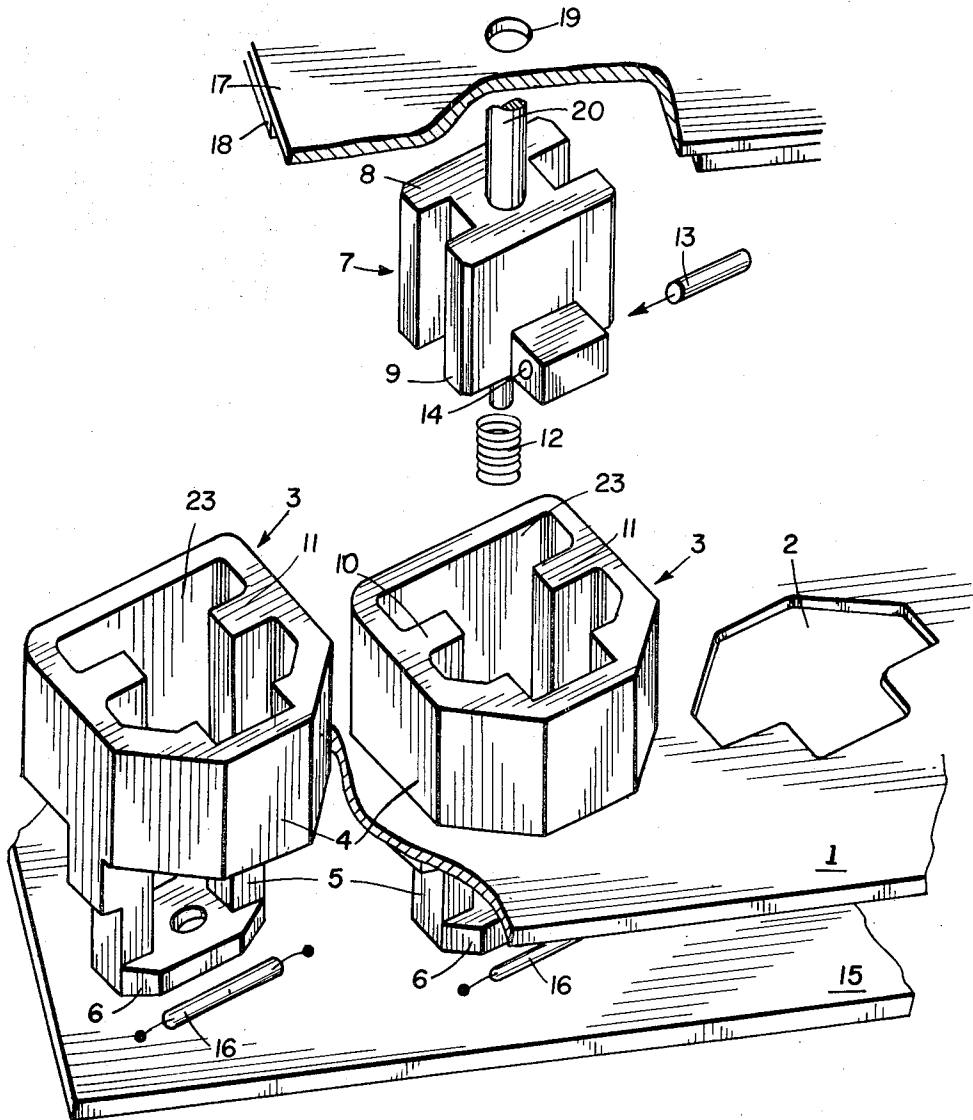
[52] **U.S. Cl.**..... 197/98, 335/205, 340/365 L
 [51] **Int. Cl.**..... B41j 5/08
 [58] **Field of Search**..... 197/98; 340/365; 235/145, 235/146; 335/206, 207, 205; 200/5 A, 159 B; 317/101, 112

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[57] **ABSTRACT**

Coding keyboard for a teleprinter. It comprises a central plate, a lower plate which is a printed circuit panel and an upper plate forming a cover, these three plates being parallel to one another. The central plate has holes in which are inserted push-button guides. Push-buttons may slide in said guides such that, when a key connected to a push-button is lowered, a magnet fixed to the push-button controls the closing of a switch with flexible blades fixed on the upper face of the printed circuit panel.

1 Claim, 7 Drawing Figures



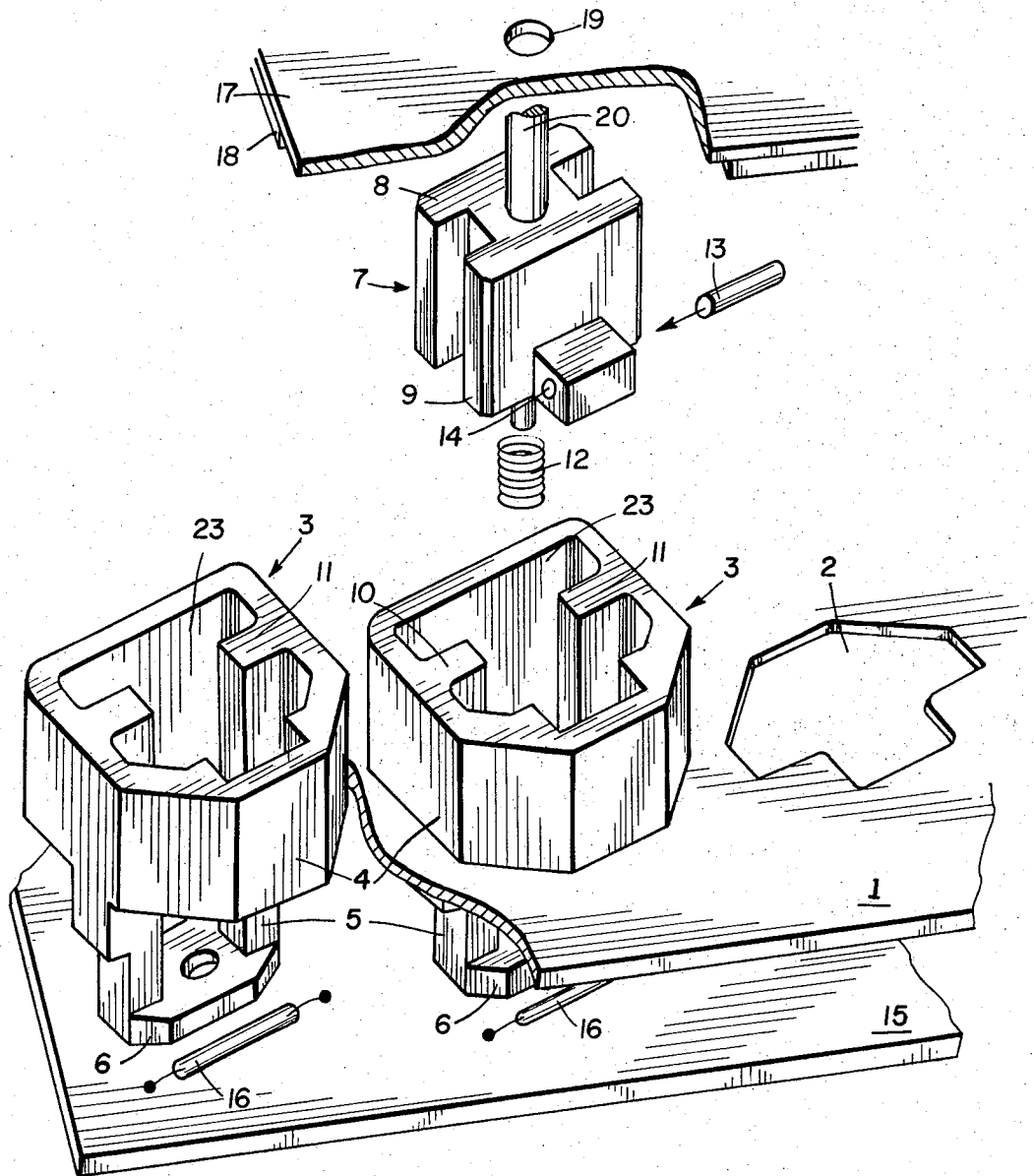


FIG. 1

Fig. 5a Fig. 5b Fig. 5c

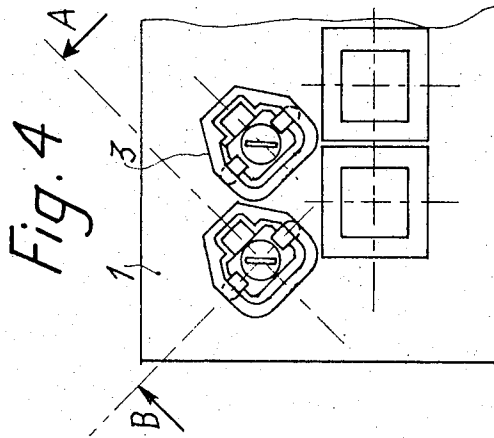
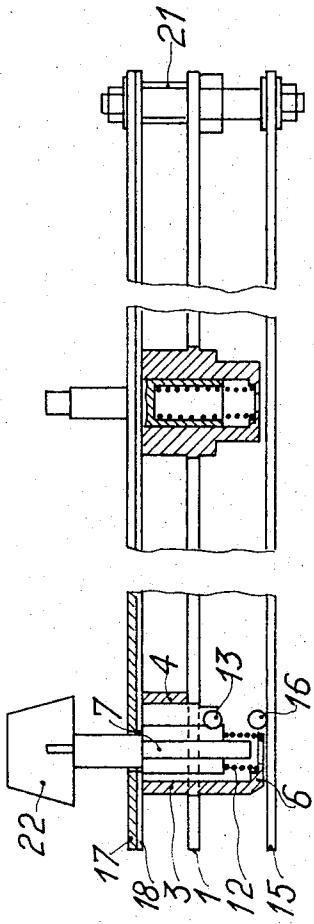


Fig. 2

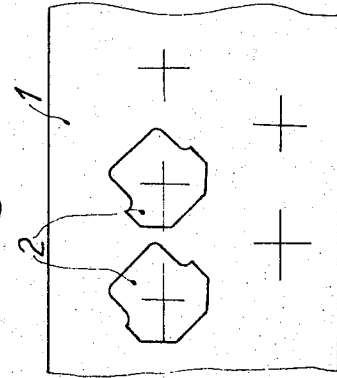
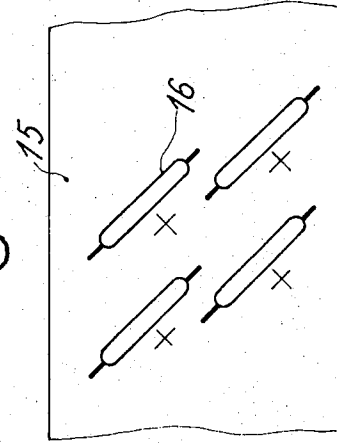


Fig. 3



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CODING KEYBOARD

The present invention has as its object a coding keyboard and more particularly a coding keyboard for a teleprinter.

In present electric typewriters the depressing of a key operates a relay associated with suitable electric or electronic circuits which produce binary coded signals corresponding to a character associated with the said key. The keys are removable elements set in recesses of the keyboard and fixed by suitable means.

The keyboard according to the invention is especially adapted to the case where the circuits and coding and commutation members are mounted on a panel in the form of printed circuits and components set on a face of the said panel. This keyboard comprises a central plate called a shunt plate, a lower plate which is the printed circuit panel and an upper plate forming a cover, these three plates being parallel to one another and held in place by crosspieces. The shunt plate has holes or openings in which are inserted permanently push-button guides. Push-buttons may slide in the push-button guides such that when a key is lowered a magnet fixed to the push-button controls the closing of a switch with flexible blades fixed on the upper face of the printed circuit panel.

The invention will be better understood with reference to the following description and the attached drawings in which:

FIG. 1 represent in perspective the keyboard according to the invention without the push-buttons and a push-button associated with one of the push-button guides;

FIG. 2 represents a plan view of a part of the shunt plate;

FIG. 3 represents the printed circuit plate seen from the fixing side of the switches;

FIG. 4 represents a view in plan of the keyboard according to the invention;

FIG. 5a represents a view of the keyboard according to the invention cut along the plane A of FIG. 4;

FIG. 5b represents a view of the keyboard according to the invention cut along the plane B of FIG. 4;

FIG. 5c represents a view in elevation of the fixing device of the plates.

In all these Figures the same elements bear the same reference numerals.

In FIG. 1 a metal shunt plate 1 is provided with a certain number of openings 2 (FIG. 2) in which are inserted removable guide members or push-button guides 3 made of plastic material provided with inner cavities 23. Each push-button guide has a projecting upper part 4 and a lower part 5 forming a foot and bounded at the bottom by a horizontal base 6 having the form of a perforated plate. In each cavity of each push-button guide there may be inserted a push-button 7 shown in FIG. 1. This push-button on which is fixed a key cap 22 (FIG. 5a) has two parts 8 and 9 in the form of plates which may slide on both sides of the projecting parts 10 and 11 of the push-button guide in the cavities 23. An opposing spring 12 placed at the centre of the push-button permits of bringing this latter to its initial position when it has been driven in. This push-button has in addition a magnet 13 fixed to the inside of a cylindrical recess 14. This keyboard also has a printed circuit plate 15 (FIG. 3) on the upper face of which are located switches 16 controlled by the magnets of the

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push-buttons and which, in the example selected, are relays with flexible blade contacts of the type known by the name "Reed relay."

As indicated in FIG. 1 these relays 16 are constituted by a glass tube hermetically sealed at each end filled with a controlled atmosphere having in the sealed axis two flexible blades, one at each end, made of magnetic metal which overlap partly in the middle of the tube without touching. There are provided as many relays 16 as there are magnets 13. There is also provided an upper plate 17 forming a cover and provided with holes 19 into which pass the control rods 20 of the push-buttons 7. This upper cover plate prevents the push-buttons from escaping from their guide under the opposing action of the springs 12. A bearing plate 18 made of rubber is glued on to the lower part of the plate 17. The three plates, 1, 15 and 17 are parallel and connected rigidly to one another at well determined intervals by crosspieces 21 (FIG. 5c).

The operation of this keyboard is as follows. At rest the push-buttons are held in place by the upper plate 17 and the springs 12 are slightly compressed. The magnets 13 are all in the plane of the shunt plate 1 so that all the induction lines of these magnets are short-circuited. These magnets cannot therefore in this position excite the relays 16.

The pressing in of a push-button causes the corresponding magnet to descend until the magnet comes into the immediate vicinity of the corresponding relay 16 well below the shunt plate. The relay 16 is then actuated and its contacts close until the moment of release of the pressure on the said push-button which returns to its original position under the action of the spring 12, that is to say, in a position in which the magnet 13 returns to the plane of the shunt plate which permits the contacts of the relay to open.

FIG. 5a represents the push-button guide 3 and the push-button 7 slightly pressed in, the magnet 13 of the push-button being already slightly below the shunt plate 1. It will also be clearly seen in this Figure that the spring 12 is supported on the flat base 6 of the push-button guide 3.

The push-button guide may, for example, be of Rilsan (Trade Name) reinforced with glass fibre and the push-button of a plastic material such as Hostaform (Trade Name).

What I claim is:

1. A keyboard switch assembly comprising:
pushbuttons;
a central metal plate provided with sets of openings;

removable pushbutton guide members each in the form of a hollow member defining two separate cavities separated by a bridging member adapted to be operatively inserted in said openings of said central plate;

both of said cavity portions in each of said guide members being capable of receiving one of said pushbuttons and each of said cavity portions having a bottom;

a restoring spring inserted in the guide member between the bottom and the pushbutton;

an upper plate cover having sets of openings in alignment with metal plate sets of openings therein holding said pushbuttons in place;

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a printed circuit plate having relays on one of its faces, said relays being controlled by said pushbuttons;
crosspieces separating said printed circuit plate, said metal plate and said plate cover;
a magnet carried on each pushbutton which, in the position of rest of the pushbutton is located in the

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vicinity of the said central plate; and, each pushbutton being pressed in and sliding in the cavity of the corresponding guide member so that the magnet of this pushbutton comes into the vicinity of a corresponding relay fixed on the printed circuit plate and thereby excites this relay.

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