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FULL-POCKET SIGNALLING DEVICES FOR MACHINES OPERATING WITH RECORD CARDS

Filed March 5, 1959

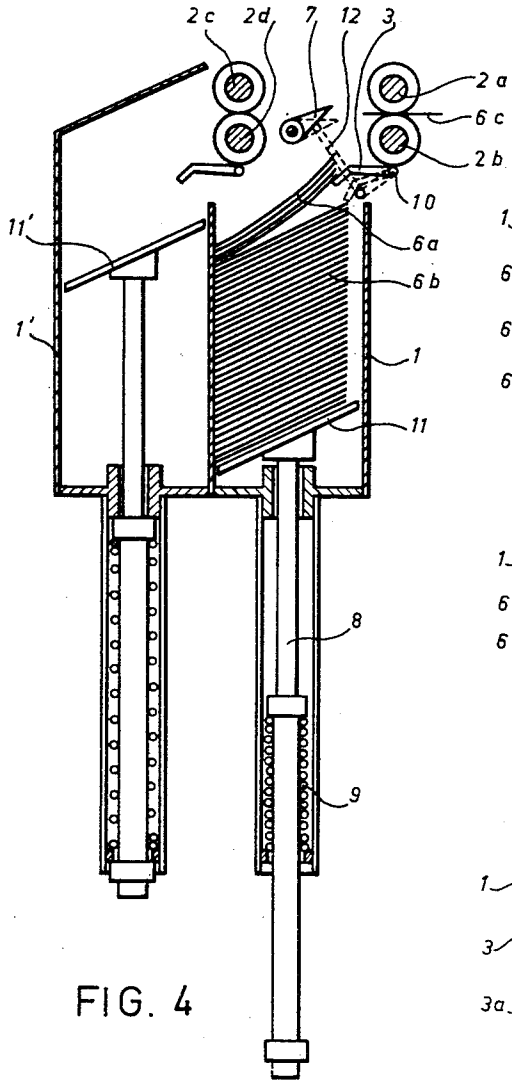


FIG. 4

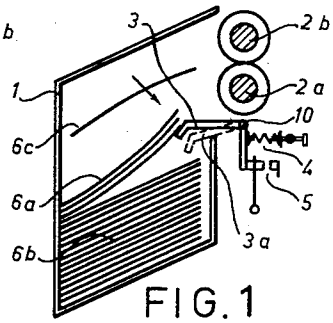


FIG. 1

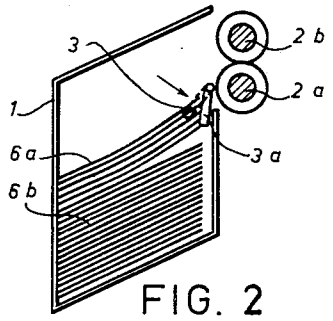


FIG. 2

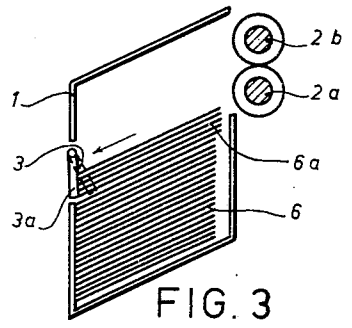


FIG. 3

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FULL-POCKET SIGNALLING DEVICES FOR MACHINES OPERATING WITH RECORD CARDS

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The present invention concerns improvements in full-pocket signalling devices in record card machines.

In record card machines such as tabulators, collating machines, translating machines and the like, the cards are deposited in receiving pockets after having been processed in the machine. Since the capacity of such pockets is limited, full-pocket signalling devices are provided, which devices, when a pocket is full, can either stop the feed of the cards or cause some of the cards accumulated in a full pocket to leave said pocket, or direct the cards intended for the full pocket to another pocket, according to circumstances. Devices of this kind are disclosed, for example, in British Patent No. 126,308, filed on May 1, 1919, in which the cards are advanced one-by-one to the top of the pocket for which they are intended and are vertically stacked one upon the other. The invention is applicable to a card-feeding system of this type, although it is known to form horizontal or oblique stacks of cards or even to feed the stack from below. In the known vertical stacking devices, the cards are generally disposed upon a movable plate balanced by a spring which descends progressively under the action of the weight of the cards. This plate is generally fast with a rod which descends therewith and closes a contact when the weight of the cards reaches a predetermined value. A considerable safety margin must be provided, as a result of which the feeding of cards to a pocket is sometimes stopped when it is far from full. On the other hand, record card machines called office machines are known, in which the pockets are of small height, but the vertical dimension of the machine is increased by the full-pocket signalling device. It must be appreciated that the spring supporting the base cannot be very rigid if it is desired to obtain sufficient precision in the triggering of the signalling device.

The device of the invention is applicable to pockets having a fixed base and to pockets having a movable base. In the former case, it has the advantage that it comprises no device situated below the base of the pocket and is consequently of minimum overall dimensions. In the latter case, it has the advantage of being much more sensitive and precise than the known devices.

The main object of the invention is to provide a full-pocket signalling device in a machine operating with record cards, wherein an electric contact or a mechanical device is set in operation by the weight of the last cards of the stack of cards situated above a predetermined level in the pocket.

The invention will be more readily understood with reference to the following description and to the accompanying drawings, in which:

FIGURE 1 illustrates a device according to the invention in section along a plane parallel to the longer side of the cards,

FIGURE 2 shows a modified construction,

FIGURE 3 shows another modified construction, and

FIGURE 4 shows a device similar to that of FIGURE 1, applied to pockets having a movable base, also as seen in section along a plane parallel to the longer side of the cards.

FIGURE 1 illustrates a pocket **1** having a fixed base, rollers **2***a* and **2***b* for the conveyance of the cards, a lever **3** movable about the pin **10** and bent over at one end, a compressed spring **4**, a contact **5** open when the lever **3**

occupies the position illustrated in unbroken lines, sets of cards **6***a*, **6***b* and one card **6***c*. The arrow indicates the direction of the pressure of the cards on the lever **3**. The card **6***c* is illustrated in the position which it occupies on leaving the rollers **2**. The first cards fall into the bottom of the pocket **1** on leaving the rollers **2** after having temporarily borne against the curved portion of the lever **3**. Each card taken separately is too light to pivot the lever **3**. These cards thus form the set **6***b*. The succeeding cards bear on the bent-over portion of the lever **3**, but remain in contact with the said lever by virtue of the fact that their end opposite to the end bearing on the lever **3** rests on the set of cards **6***b*. These cards thus form a set of cards **6***a* as illustrated in the figure. When the number of cards of this set reaches a predetermined value, the lever **3** rocks under the weight of the said set of cards and takes up the position **3***a*. At the same time, the contact **5** closes and causes, for example, the stopping of the feeding of the cards. An aperture (not shown) is formed in the side of the pocket to enable the cards of the set **6***b* to be manually or automatically removed. The set of cards **6***a* then falls into the bottom of the pocket, whereby the lever **3** is enabled to return to its initial position. The contact **5** opens and the feeding of the cards is thus restarted.

In FIGURE 2, the lever **3** is shown in chain lines in its initial position, the spring **4** and contact **5** not being shown. The said lever **3** is more obliquely oriented in relation to the walls of the pocket than in FIGURE 1.

In FIGURE 3, the lever **3** shown in chain lines in its initial position is situated in the neighbourhood of that wall of the pocket **1** which is further from the rollers **2***a* and **2***b*. The last cards bear on the said lever in a direction parallel to the base of the pocket as initiated by the arrow.

FIGURE 4 illustrates a device according to the invention which is particularly adapted to permit the feeding of a further, empty pocket when the preceding pocket is full. The pockets **1** and **1'** in question have removable bases **11** and **11'**. The base **11**, for example, is fast with a rod **8** supported by a spring **9**. The purpose of the spring **9** is here to permit a progressive downward movement of the base **11** as the cards are fed into the pocket **1**. The pressure exerted by the spring **9** on the rod **8** and the base **11** should preferably be adjusted in such manner that the upper level of the cards remains at a constant height or at least descends only slightly as the cards are fed. When the base **11** reaches the end of its travel, as illustrated in the figure, the upper level of the cards rises and the last cards of the stack remain in engagement with the upper portion of the lever **3**. The corresponding set of cards **6***a* therefore bears on said lever and, when a certain number of cards is reached, causes the said lever to rock about its pivot pin **10** so as to bring it into the position shown in chain lines. At the same time, the flap **7** is drawn downwards by the rod **12** connected to the lever **3**, so that the following cards, on leaving the rollers **2***a* and **2***b*, are guided towards the rollers **2***c* and **2***d* and thereafter directed towards the pocket **1'**.

Many modifications are possible within the scope of the invention. More especially, the lever **3** may be replaced by a device adapted to be shifted with a translational movement under the pressure of the last cards of the stack, for example a rod connected to a spring, or more generally it may be replaced by any mechanical member provided with a return device and disposed above the pocket, so that the cards above a certain level bear on the said member and cause it to move, so that the said member in turn actuates the control device provided. This control may be such that the flap is lowered by a rapid movement.

I claim:

1. In a record card machine, in combination: a card receiving pocket having an inclined base with a lower edge and an upper edge, and a vertical side wall which intersects said base along said lower edge; a card feeding means for sequentially directing cards in the pocket towards said wall in a direction approximately parallel to the base of said pocket, said feeding means having an outlet in a vertical plane which intersects said base along said upper edge; an organ movable from a first to a second position against the action of a return device, when it is subjected to a predetermined effort in a parallel direction to the base, said organ in its first position protruding from said wall, inside said pocket, downwardly extending from a point located at a distance from said base approximately equal to the distance between said base and said outlet of the feeding means, and in its second position being closer to said wall than in the first position; whereby cards which are first fed into the pocket fall down under said organ and come to rest with an edge bearing on said wall, whereas cards which are fed after a card has come to rest immediately under said organ, come to rest with an edge bearing on said organ and exert an effort upon said organ in a parallel direction to said base so as to urge said organ into its second position, a movement of said organ from its first to its second position thus indicating that a predetermined number of said last-mentioned cards have been fed into the pocket.

2. In a record card machine, in combination: a card receiving pocket having an inclined base with a lower edge and an upper edge, and a vertical side wall which intersects said base along said lower edge; a card feeding means for sequentially directing cards into the pocket towards said wall in a direction approximately parallel to the base of said pocket, said feeding means having an outlet in a vertical plane which intersects said base along said upper edge; an organ movable from a first to a second position against the action of a return device, when it is subjected to predetermined effort in a parallel direction to the base, said organ in its first position protruding from said wall, inside said pocket, downwardly extending from a point located at a distance from said base approximately equal to the distance between said base and said outlet of the feeding means, and in its second position being closer to said wall than in the first position, the arrangement being such that each card fed into the pocket, on leaving the feeding means, imparts a thrust to said organ in a parallel direction to the base and that cards which are first fed into the pocket fall down under said organ and come to rest with an edge bearing on said wall, whereas each of the cards which are fed after a card has come to rest immediately under said organ, comes to rest with an edge bearing on said organ, the effort to be exerted on said organ to bring it from its first position to its second position being equal to the total effort which is exerted by a predetermined number of cards resting with an edge bearing on said organ plus the thrust imparted by a card fed into the pocket, whereby said organ moves from its first to its second position on arrival of a card after the pocket has been filled up to a predetermined level.

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