Feb. 4, 1930. G. TAUSCHEK 1,745,388

FEELING DEVICE FOR MACHINES FOR INTERPRETING PERFORATED CARDS

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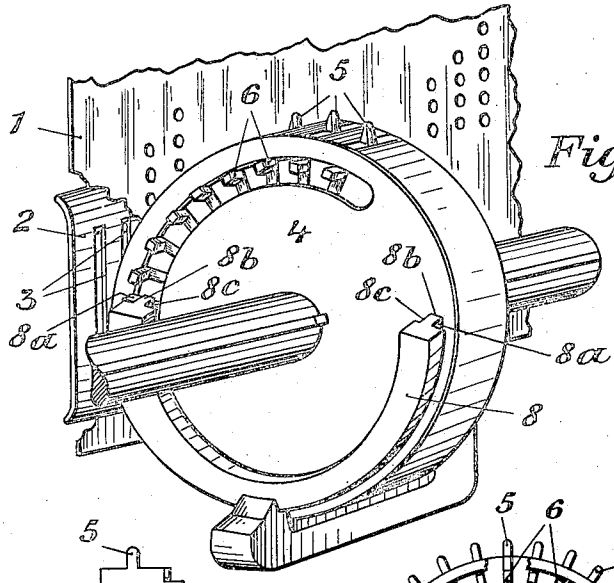


Fig. 1.

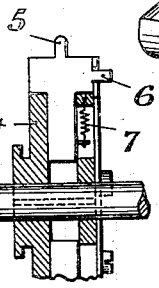


Fig. 2.

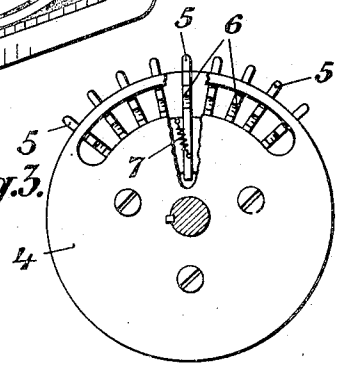


Fig. 3.

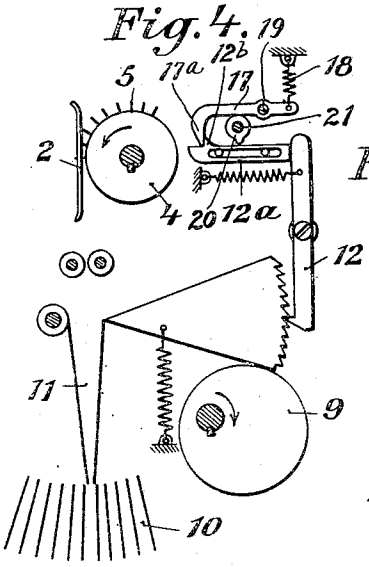


Fig. 4.

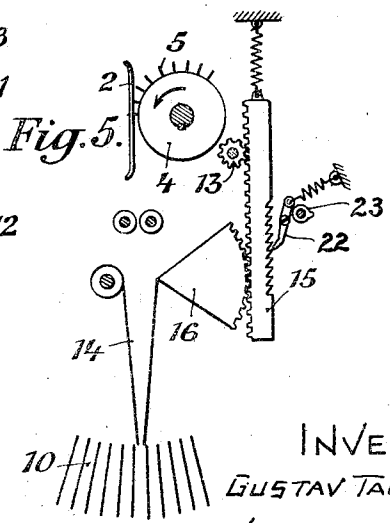


Fig. 5.

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UNITED STATES PATENT OFFICE

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FEELING DEVICE FOR MACHINES FOR INTERPRETING PERFORATED CARDS

Application filed February 9, 1928, Serial No. 253,154, and in Germany February 16, 1927.

My invention relates to a feeling device for interpreting machines for perforated cards, for instance sorting machines, tabulating machines and the like, by means of which feeding or counting mechanisms are controlled in accordance with the holes of the cards.

In the known electrically acting feeling devices the card is passed between an electrically conducting surface and an electrically conducting feeler. When the feeler drops into a hole of the card a circuit is closed energizing an electro-magnet which governs or effects the control operations.

In the well known mechanically acting feeling devices a frame or box, carrying pins, is used which is lowered upon the card brought to rest in a suitable position underneath said box, the feelers meeting solid portions of the card being arrested, whereas the feelers situated above the holes in the card pass through the card and through a matrix plate arranged below the card, these feelers then forming the stops for the control means.

In the first mentioned method the card need not be arrested underneath the electrically acting feelers, but electric control devices necessitate in most cases the use of direct current. In connection with the mechanically acting feeling devices, even when driven by an electromotor, any kind of current may be used, but these devices have the great disadvantage that the card must be brought to rest underneath the feeler box which substantially reduces the effect of the machine.

The object of the present invention is to provide a machine which combines the advantages and obviates the disadvantages of the above described feeling devices; in other words, to provide a machine in which the cards to be felt are moved continuously and in which either direct or alternating current may be used.

In the accompanying drawing one embodiment of the device according to the invention is shown by way of example.

Fig. 1 is a perspective view of the new device. Figs. 2 and 3 are detail views, and Figs. 4 and 5 are details which show the cooperation of the feeling device and the other members of the interpreting machine.

The perforated card 1 to be interpreted is moved by any well known means (not shown) and passes to a supporting plate 2 provided with longitudinal slots 3 corresponding to the rows of holes in the card. A cylindrical feeler casing 4 is journalled in front of the supporting plate 2 in such a manner, that its axis is parallel to the plate 2 and transverse to the slots 3 in this plate. The cylindrical feeler casing 4 rotates in synchronism with the card feeding device. In one half of the circumference of the feeler casing 4 radially shiftable feeler fingers 5, one for each hole possible in one row of holes of the card, are arranged. The card is fed continuously and the movements of the card feeding device and of the feeler casing are so timed, that the first feeler finger always meets that point of the card at which the first hole of the corresponding row would be arranged. Each of the feeler fingers 5 is provided with a lateral projection or nose 6 which projects through the side wall of the casing 4. A spring 7, or an electro-magnet or the like, tends to hold the point of each of the feelers extended through the circumferential wall of the casing 4. The feelers 5 are, during the rotation of the casing 4, moved over the card 1 which itself is moved with the same rate of speed as the casing 4. If now the one or the other feeler 5 meets a hole in the card it drops into this hole. In case, however, the feelers do not meet a hole they are forced back into the casing 4 against the action of the corresponding springs 7. In both positions the feelers 5 are fixed by means of a fixed rail 8, projecting into the path of the noses 6 of the feelers 5. The rail 8 has the shape of a segment and is non-rotatably arranged concentrically to the axis of the feeler casing 4. The noses 6 of the feelers 5 slide along the rail 8. The rail 8 has an annular groove 8^a, facing the edge of the casing 4 and confined towards the interior by an annular projection or rib 8^b to which connects an annular groove 8^c, facing the center of the casing 4. The groove 8^a is engaged by the noses 6 of those feelers 5 which have been passed through holes in

the card and therefore are in a position to act as control members. These feelers are held in this position during the time they slide along the rail 8. The noses 6 of the feelers 5 forced back by solid portions of the card 1 are radially displaced towards the center of the casing 4 so far, that they engage the interior groove 8^c of the rail 8, that is to say, grip behind the annular projection 8^b. These feelers 5 are, during the time they slide along the rail 8, held in this position in which they are inactive for the control operation.

The devices described may be used for the feeling of such cards in which one hole only at a certain place of the row is provided for each number value as well as for cards in which the number of consecutive holes in one row corresponds to the value of the number to be represented.

Fig. 4 shows, by way of example, the use of the invention in connection with a card sorting device, employing cards perforated according to the one-hole-system.

In this case always one feeler 5 only passes through a hole of the card and is thereby brought in the active position. The distributor 11 is moved by means of the cam disc 9, over the sorting compartments 10 in synchronism with the feeding movement of the card in such a manner, that its discharge end will be above the compartment corresponding to the hole of the card felt off just in the moment in which the feeler 5 passed through this hole abuts against the transfer slide 12^a, whereby the hopper is fixed by the drop pawl 12, so that the card drops into this compartment. If, for instance, a card is in the row to be felt off characterized with "5", i. e. has a hole at the place of the card field corresponding to the number 5, the fifth feeler will, during the feeling off of the card, pass through this hole, whereas the other feelers are forced back into the feeler casing and are held in this position. The movement of the distributor 11 is so timed, that the distributor will be above the fifth compartment, when the operative fifth feeler reaches and so displaces the transfer slide 12^a, that the pawl 12 drops into and fixes a toothed segment provided at the distributor. The distributor remains in this position until by means of it the card has dropped into the compartment in question. Fig. 4 shows the distributor 11, drop pawl 12 and transfer slide 12^a in this fixed position, while the feelers already move over and feel the next card.

The distributor mechanism is held in selected position and automatically released therefrom as follows. After the slide 12^a has been forced to the right (Fig. 4) by one of the fingers 5, a hook 17 takes a position with its nose 17^a behind the nose 12^b of the slide 12^a. The hook 17 is acted upon by a tension spring 18 and is pivotally mounted on the frame of the machine by means of a pin 19. A shaft 21 carrying a cam disk 20 is positioned between the hook 17 and the slide 12^a and is rotated in synchronism with the feeler casing 4.

After the passage of the card the eccentric 9 swings the distributor back to its initial position. During this return the cam disk 20 lifts the hook 17 and causes disengagement of the noses 17^a and 12^b, so that the slide 12 is actuated by its spring. The mechanism is then in position to feel and distribute a new card.

Fig. 5 illustrates a modification of this sorting device using cards perforated in accordance with the multiple-hole-system, i. e. cards having a number of holes in one row equal to the value of the number to be represented. In this case as many feelers 5 pass through the card as holes are provided in the row to be felt off. All these feelers are fixed in the operative position and act upon the toothed wheel 13 which is turned for a number of teeth corresponding to the number of active feelers. The distributor 14 is moved by means of the rack 15 and the toothed segment 16 fixed to the distributor 14, into position over the sorting compartment corresponding to the perforation. The rack 15 is held in selected position by means of a spring-pressed pawl 22 and is released at the proper time by a cam disk 23 which is rotated in synchronism with the cylinder 4.

What I claim is:

1. In a feeling device for machines for interpreting perforated cards, in combination, a rotatable cylindrical casing, feeler fingers mounted in said casing and adapted to co-operate with the perforated cards, means for resiliently bringing said feelers into contact with each perforated card, said feelers being forced back into the casing upon engagement with a solid portion of the card and passing through such card upon registering with a perforation therein, and means for holding the feelers during operation in the position in which they have been brought by the perforation of the card, so that they may perform control operations, said holding means comprising a fixed element having annular grooves therein, and noses on said feelers adapted to co-operate with said grooves.

2. In a feeling device for machines for interpreting perforated cards, in combination, a rotatable cylindrical casing, feeler fingers mounted in said casing and adapted to co-operate with the perforated cards, means for resiliently bringing said feelers into contact with each perforated card, said feelers being forced back into the casing upon engagement with a solid portion of the card and passing through such card upon registering with a perforation therein, and means for holding the feelers during operation in the position in which they have been brought by the perforation of the card, so that they

may perform control operations, said holding means consisting of a fixed rail arranged concentrically to the said feeler casing and provided with an annular groove facing the edge of the said casing, a second annular groove facing the center of said casing and an annular rib between the two said grooves, and noses on said feelers adapted to co-operate with said grooves and rib to be held by the latter in the one or the other position into which they have been brought by the card being interpreted.

In testimony whereof I have affixed my signature.

GUSTAV TAUSCHEK.