

Nov. 3, 1936.

E. R. MYERS

2,059,265

TWO-CARD SORTING MECHANISM

Filed Sept. 27, 1935

5 Sheets-Sheet 1

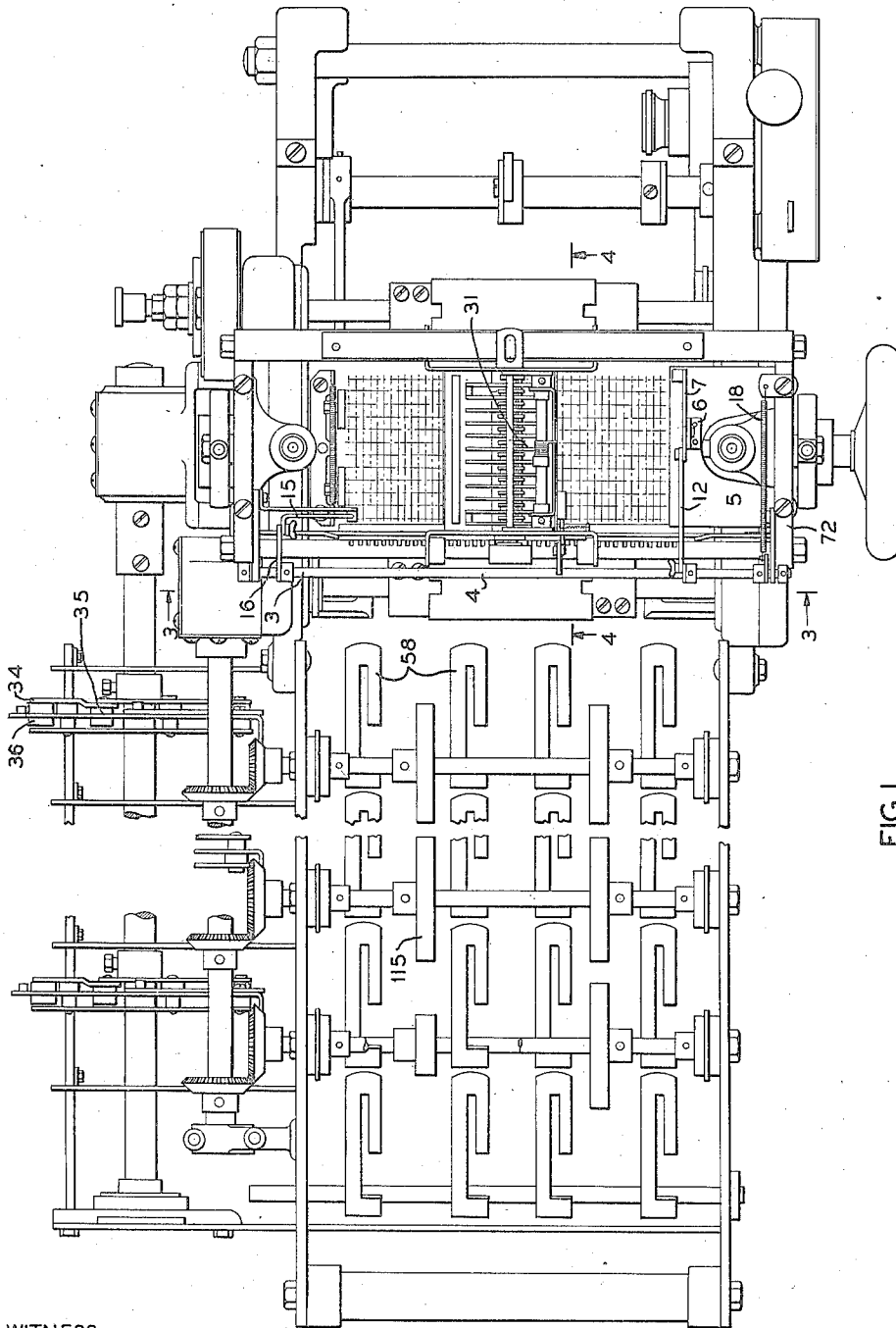


FIG. 1.

WITNESS

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TWO-CARD SORTING MECHANISM

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5 Sheets-Sheet 2

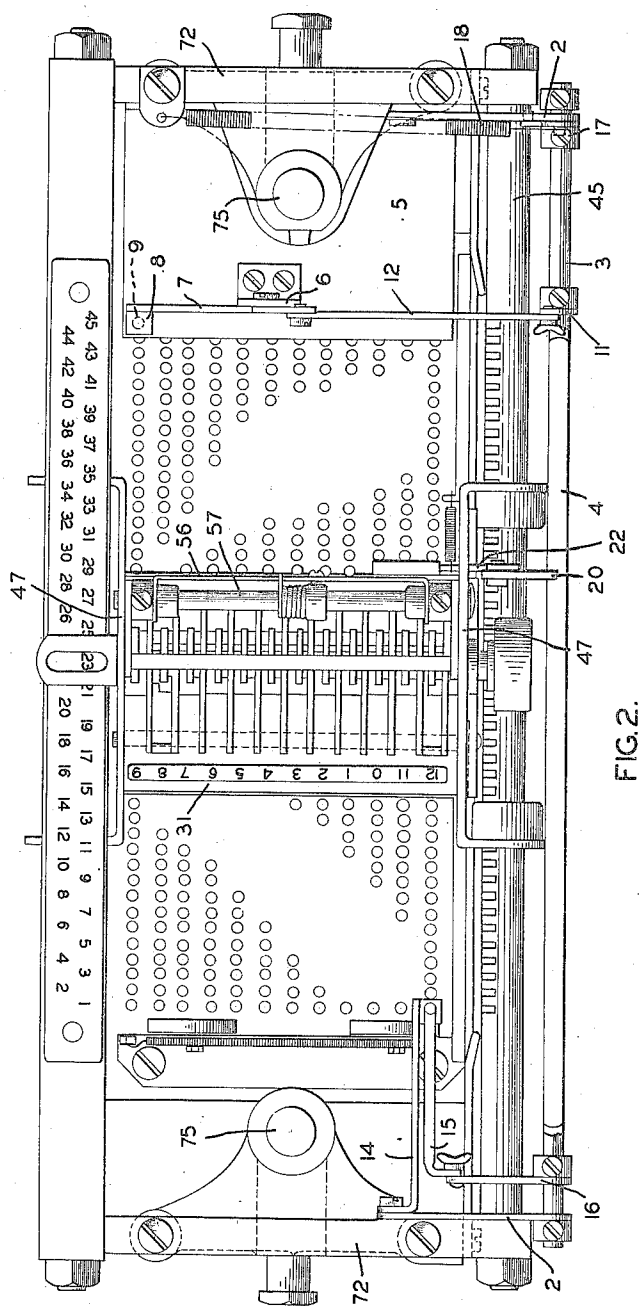


FIG. 2.

WITNESS

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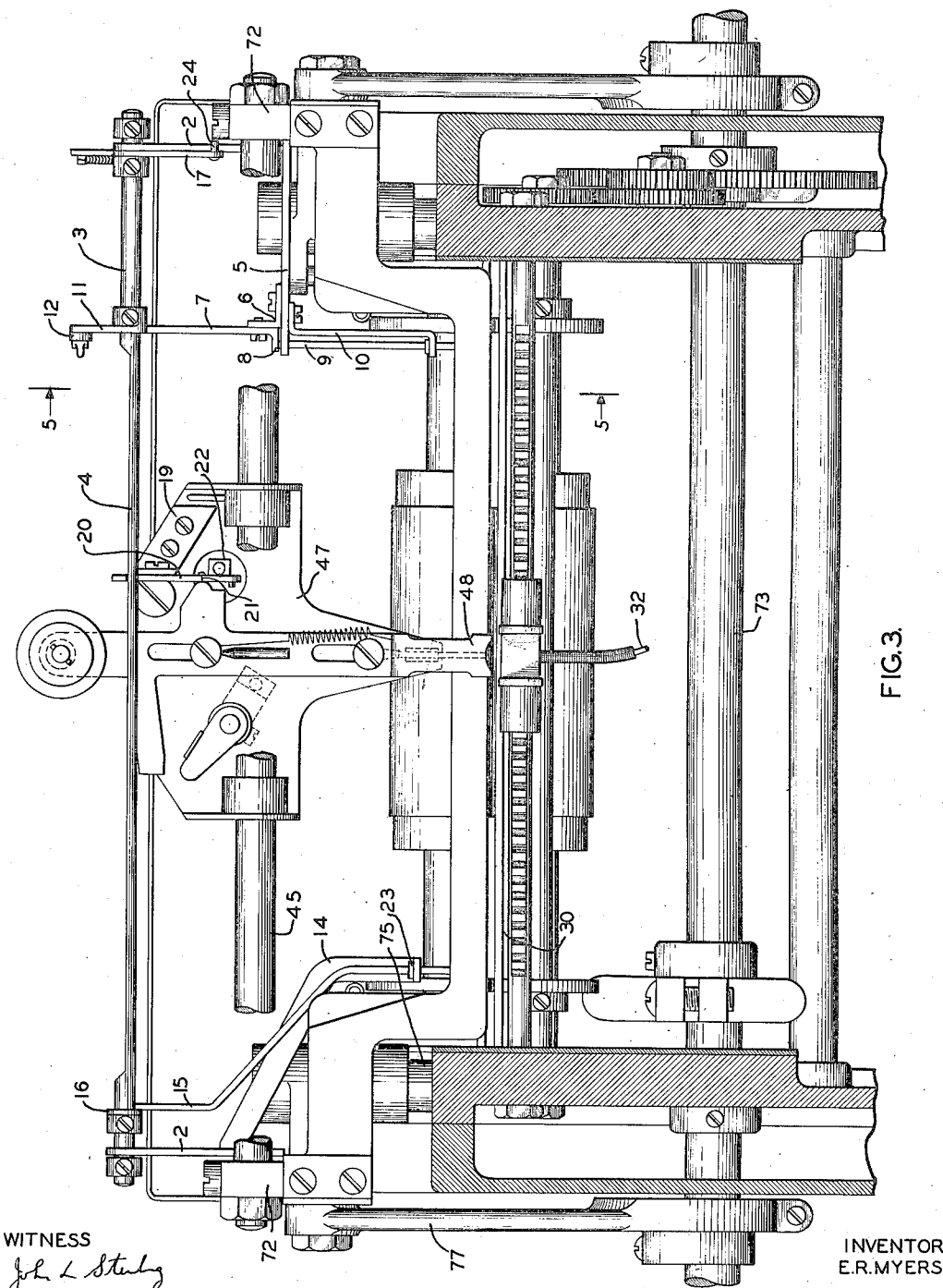
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TWO-CARD SORTING MECHANISM

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5 Sheets-Sheet 3



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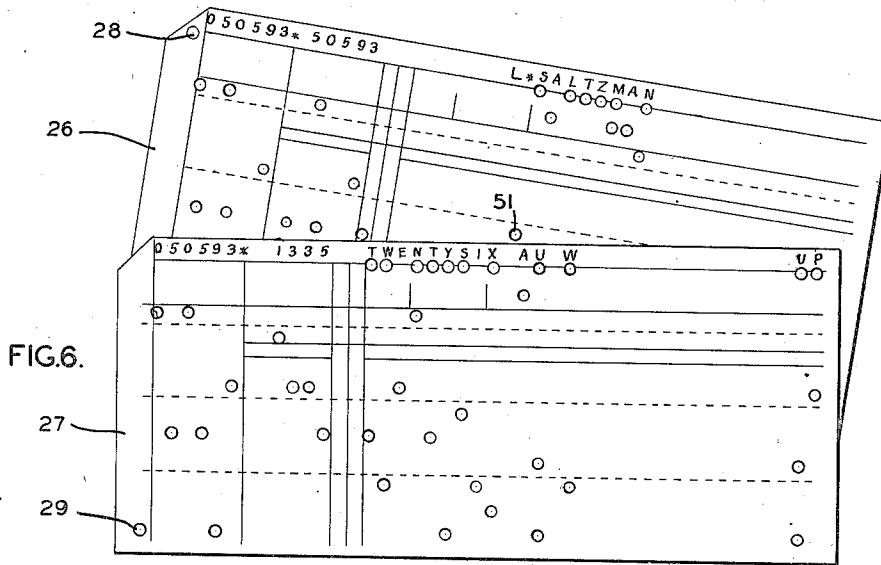
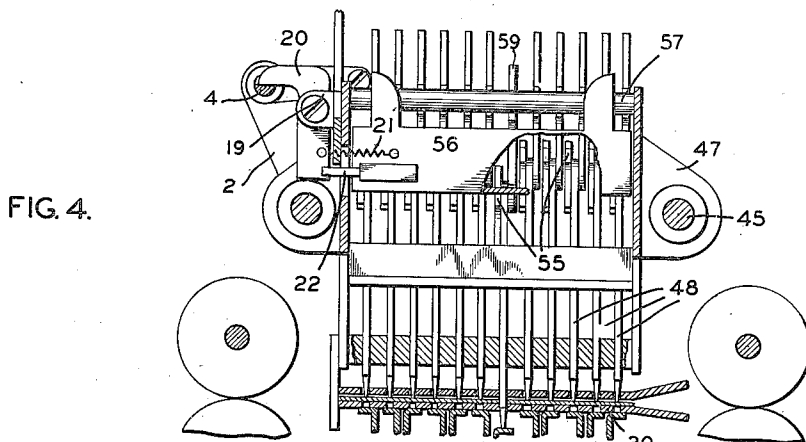
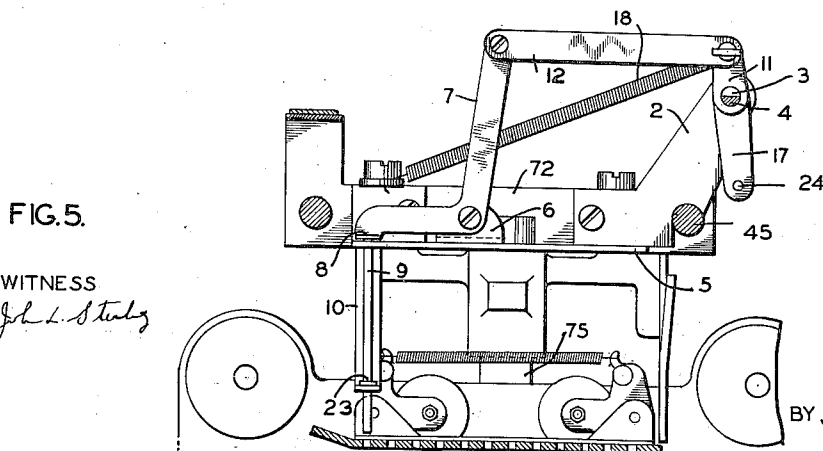
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TWO-CARD SORTING MECHANISM

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5 Sheets-Sheet 4



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TWO-CARD SORTING MECHANISM

Filed Sept. 27, 1935

5 Sheets-Sheet 5

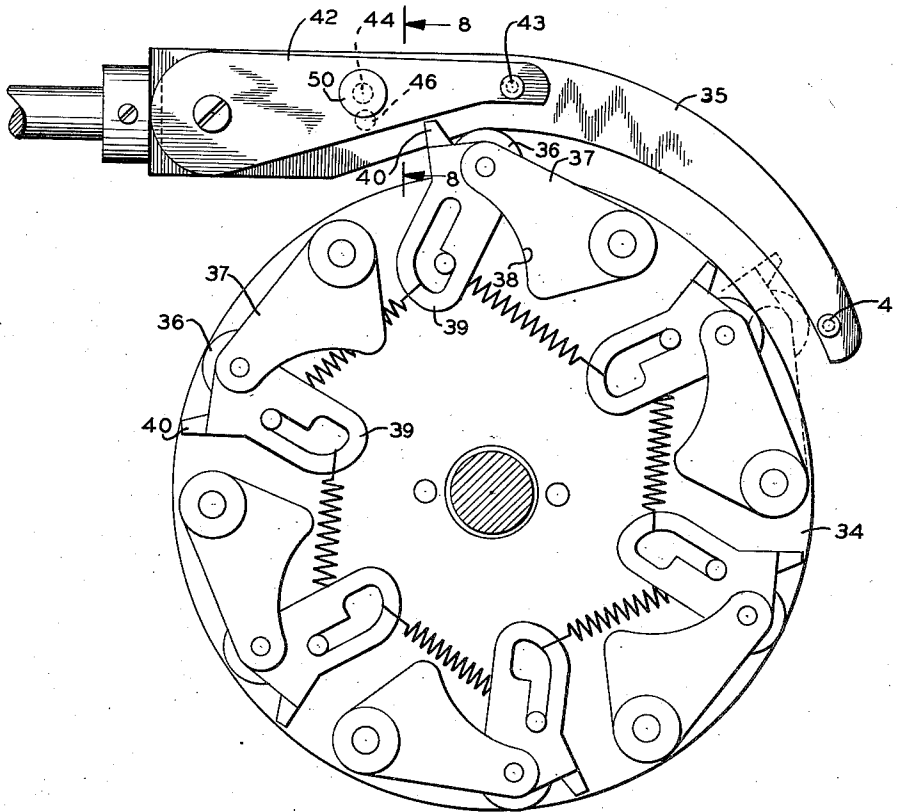


FIG. 7.

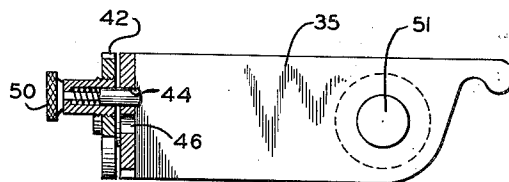


FIG. 8.

WITNESS

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UNITED STATES PATENT OFFICE

2,059,265

TWO-CARD SORTING MECHANISM

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Application September 27, 1935, Serial No. 42,372

4 Claims. (Cl. 209—110)

This invention relates to machines for sorting perforated cards and more particularly to an improvement therein for permitting the sorting into the same group of a plurality of cards containing interrelated data.

Heretofore sorters have been adapted to sense and sort perforated cards in accordance with certain specific data contained therein. These cards were sorted singly into pockets in a manner well known in the art and fully described and illustrated in the patent to W. W. Lasker, 1,476,161. In this patent an adjustable sensing head is positioned over a particular column of the card and the cards are then routed or sorted into pockets in accordance with the perforations in the selected column of the card.

It is the principal object of this invention to provide a device which will operate in conjunction with a sorter similar to that described in the above mentioned patent for causing cards containing interrelated matter to be routed to the same pocket. For example a name card containing a person's name, and a second card containing said person's home address may be routed to the same pocket although the data contained in the column being sensed may not be the same.

A further object is to provide a device which is simple in construction and efficient in operation.

A more clear conception of the operation, construction and further objects of the invention may be had from the following specification taken in conjunction with the accompanying drawings in which:

Fig. 1 is a plan view of a sorter showing the proposed device.

Fig. 2 is an enlarged top view of the card sensing mechanism disclosing the invention in detail.

Fig. 3 is a cross section through 3—3 on Fig. 1 showing the invention in side elevation.

Fig. 4 is a cross section through 4—4 on Fig. 1 showing an end view of the sensing head.

Fig. 5 is a cross section through 5—5 of Fig. 3 showing one end of the carriage and a portion of the invention in side elevation.

Fig. 6 discloses a name and an address card punched for use with the proposed device.

Fig. 7 discloses a timing disk and gate operating arm for use with the invention.

Fig. 8 is a detail cross section through 8—8 of Fig. 7.

In view of the fact that a detailed description of the construction and operation of a sorter of this character may be had from the above men-

tioned patent only a short description of the operation thereof is thought necessary at this time.

The machine comprises a sensing chamber 30, a pin controlled sensing head 31, the pins 48 of which are adapted to sense and penetrate perforations in the card thereby operating pin members located below the sensing chamber. These pins (not shown) are adapted to operate triggers which control cam rollers 36 carried on timing disks 34 by Bowden wires 32. The trigger disks are rotated in synchronism with feed rolls 115 so that a trigger sets a cam roller 36 to cause the opening of a card gate 58 just prior to the time that a card reaches the pocket selected.

A detailed description of the construction of the sensing head having been given in the above patent, only those parts which enter into the operation of the present device will be described herein using in so far as is possible the same reference numerals for designating similar parts in the description of the patent.

The sensing head (Figs. 3 and 4) comprises a pair of plates 47 forming a box which contains twelve sensing pin members 48. The plates 47 are slidably mounted on horizontal bars 45. Each of the pin members 48 has a shoulder 55 adapted to cooperate with a bail member 56 which is pivotally mounted on a shaft 57 mounted in the side frames 47. The horizontal bars 45 are secured in end brackets or heads 72 to which are pivotally secured arms 77 the arm being caused to oscillate by cams carried on drive shaft 73. The head members are mounted on posts 75 on which the whole sensing carriage is raised and lowered with relation to the sensing chamber 30.

When the sensing head is lowered and one of the sensing pins 48 finds a perforation in the card it continues on down whereas the other pins are elevated by the card until such time as the latch bar or bail 56 moves in over the latching shoulder 55 of the selected pin and under those of the unselected pins (Fig. 4). Further downward travel of the head causes the bail 56 to force the pin 48 down causing the operation of the Bowden wire 42 thereby operating its associated trigger which in turn sets a cam roller 36 operating the selected card gate. Up to this point the above described operation and construction is well known in the art.

The novel feature of this device is to cause one card containing, for instance, an address to follow one containing a name or any similar combination. The name card 26 is punched with a serial number 50593 and a name L Saltsman, while address card 27 is punched with the same

serial number and an address 1335 Twenty Six Av. W. Now, if, for instance, it is desired to sort a group of cards as to alphabet i. e. all cards containing a surname beginning with "S", it is obvious that the address card would not go into the same pocket, due to the fact that the corresponding column in the address card does not contain an "S" but an "x". It is obvious that it is quite desirable, once name and address cards are together, that they be kept together while the cards are being sorted.

In order to do this, control holes are punched in the cards which are adapted to be sensed by the new device thereby causing the sorter to route the two cards into the same pocket. A control hole 23 for a name card is punched in the 12 position of the first column whereas a control hole 23 is punched in the 9 position of the first column of an address card.

The new device comprises a pair of plates 2 (formed as shown in Figs. 2 and 5), which are secured to the head frame members 72. The plates 2 form bearings for a rock shaft 3 having a squared or cam portion 4. Also secured to one of the frames 72 is a plate 5 having secured to or formed thereon a bracket 6 adapted to provide a pivot point for an L shaped arm 7. This arm has a foot or lug 8 formed on the short leg thereof which cooperates with a sensing pin 9 positioned over the "9" position of the 45th column. Secured to the underside of plate 5 is a bracket 13 which acts as a guide for pin 9. Secured to shaft 3 is a short arm member 11 which is operatively connected to the upper or long leg of arm 7 by a link 12. The connection between the link 12 and the arm 11 is formed by a wing nut to enable the disconnection of these members at will as will be described hereinafter.

Secured to the plate 2 at the left hand of Fig. 2 is a bracket 14 formed as shown in Fig. 3, which is adapted to position a sensing pin 15 over the "12" position of the first column. This sensing pin is operatively connected to rock shaft 3 by an arm 16 secured thereto. The sensing pin 15 is pivotally connected to the arm 16 by a winged nut to permit easy disconnection of these parts and removal of pin 15 for reasons hereinafter made apparent.

Secured to the right end of shaft 3 as shown in Fig. 3 is an arm 17 (Fig. 5) having a limit pin 24 which is adapted to contact with the underside of plate 2 and thereby limit the rotation of shaft 3. Secured between the frame 72 and arm 17 is a tension spring 18 which is adapted to maintain pins 9 and 15 in their operative position. Each of the pins has a limit collar 23 formed thereon which prevents the pins being forced into the path of cards being fed in and out of the card chamber.

Secured to the rear side plate 47 is a bracket 19 (Figs. 3 and 4) on which is pivotally mounted an L shaped latch member 20, the upper arm of which contacts the squared portion 4 of rock shaft 3. The arm is held in contact with the squared portion by a tension spring 21. The lower leg of latch 20 is adapted to limit the forward movement of the latch bar 53 due to a pin 22 secured thereto.

Only one of the pins 9 or 15 is used for a particular type of sorting. If the machine is to be set for causing an address card to follow a name card, pin 9 is disabled by removing the wing nut connecting link 12 and arm 11, and the link 12 and arm 7 are folded back until the long arm of 7 and the link 12 lie on the plate 5. If the pin 15

is to be disabled as well, for instance while using

the machine for normal sorting, the wing nut connecting pin 15 to the arm 16 is removed, thereby permitting the removal of the pin.

In order to insure that the pocket selected by the first card will remain open until the following card can have time to reach the selected pocket, the card gate operating arm 35 must be longer than that heretofore in use.

Figs. 7 and 8 show an enlarged detail of a timing disk 34 and the new gate operating arm 35 in their operated position. The timing disk contains a number of pivotally mounted arms 37 carrying cam rollers 36 pivoted thereon. The arms 37 are formed with a cam face 38 which is adapted to cooperate with the Bowden wire operated trigger for operating the card gate, mentioned above and described in detail in the patent to Lasker. Pivotally mounted with each of the rollers 36 is a pin guided locking member 39 having a resetting lug 40 formed thereon. Pin 41 projecting from arm 35 is adapted to cooperate with lug 40 for resetting the operated roller after two cards have been admitted to the pocket. To permit the machine to be used for normal or single card sorting an arm 42 is pivotally mounted on arm 35 and carries a projecting pin 43 similar to pin 41 for resetting an operated cam roller after one card has been admitted to the selected pocket. Two holes 44 and 46 are provided in arm 35 in one of which a spring pressed pin 50 is adapted to be positioned for positively locating the arm 42 with respect thereto.

In Fig. 7 the arm 42 is shown in the inoperative position with the pin 50 positioned in the hole 44. When it is desired to place the arm 42 in the operative position the pin 50 is withdrawn and the arm 42 lowered until the pin 50 can be positioned in hole 46. With the arm 42 in this position the pin 43 is in the path of lug 40 thereby resetting the operated cam roller 36 after one card has been selected.

As this device is for keeping two cards containing related data together, it is assumed that, when they are punched up, they are filed together. An easy and efficient method of giving a visual check for correct pairing is to use cards of the same color for similar data. For instance, with name and address cards the name card may be white or buff and the address card blue. By fanning or riffling the cards an operator may determine at a glance whether the cards are in their correct sequence or not.

In order to more clearly describe the operation of the machine, a series of functions will be described. A department store, using tabulators for billing, punches up name and address cards each of which contains an account number (Fig. 6). As these cards are punched, they are filed away in pairs. If, however, through error or accident they should become separated, they may be grouped again by sorting to the account number. In order to do this, first the name cards are selected by account number and the address card rejected by removing or disabling the control pin 15.

The sensing head is then set up to sense a series of account numbers appearing in one column and the cards are placed in the machine face up. When a name card enters the sensing chamber, the head descends and the pin 9, not finding a hole 23 in the 9 position, is moved upward rocking the shaft 3 clockwise (Fig. 5), thereby camming latch 20 out of the path of pin 22. This permits the latch bar 53 to lock whichever one of the pins 43 that has passed through the

card and thus route it to a particular pocket. When an address card enters the sensing chamber and the pin 9, finding a hole 29, passes through the card, the shaft 3 is not rocked and latch 20, being in the path of pin 22, the bail 56 is prevented from operating. With bail 56 unoperated a pocket will not be selected and the card is routed to the reject pocket.

When the above operation is complete, the control pin 9 is disabled and the address cards are removed from the reject pocket and run through the machine in a normal manner being routed to the pocket in accordance with their account numbers.

If it is desired to sort name and their associated address cards to the first letter of a surname, i. e., "S", the paired cards are inserted in the machine face up with the name card on the bottom and the sensing head is set up over the column containing the first letter of the name and the pins are adjusted to select only perforations corresponding to the letter "S".

The address pin 15 and the roller restoring pin 43 are disabled in the manner described above and the machine started. The name card 26 being on the bottom, it is fed first into the sensing chamber 39 and the carriage descends due to the action of the eccentric arms 77. The sensing pins 48 and name pin 9 enter the card wherever perforations occur. Of the pins 48, the "4" position pin passes through the perforation 51 and the "12" position pin passes through the perforation 54. The 12 position pin has been disabled in the sensing head, however, so that only the 4 pin is effective. The remainder of the pins are forced up by the card or have been previously disabled. At the same time the pin 9, not finding a perforation 29 in the "9" position, is pushed upward rocking shaft 3 and camming latch 20 out of the path of pin 22. This permits latching bail 56 to move in and latch the "4" pin 48 in its operative position. As the carriage descends further the trigger for the #4 pocket is set and one of the cam rollers 36 on the disk 34 corresponding thereto is operated. The carriage is raised and the parts are restored to normal and the name card is fed out on to the rollers 115. As the card passes the "3" pocket and nears the "4" pocket the timing disk 34 reaches the position shown in Fig. 7 and the card gate 58 is opened admitting the name card to the pocket. Due to the fact that trip pin 43 has been disabled, the roller 36 remains operated and holds the gate 58 open.

In the meantime the address card 27 has been fed into the sensing chamber and the carriage descends as before with the exception that sensing pin 9 now finds a perforation 29 and passes through. Due to this fact the shaft 3 is not rocked and the arm 20 remains in the path of pin 22 and the selected pin 48 is not locked down, therefore, no pocket is selected. When the card 27 is fed out of the sensing chamber, it follows card 26 into the #4 pocket due to the fact that the gate is maintained open as the roller 36 has moved to the position indicated in dotted lines on Fig. 7. As the roller passes the end of the arm 35 the pin 41 resets the cam roller through its action against lug 40.

When it is desired to sort to a certain address, the cards are pre-sorted, to position the address card on top and are then placed in the machine face down. The sensing pin 9 is disabled and pin 15 made operative. The operation of the machine is the same as that described above with the exception that the sensing pin 15 finds perforation 28 in the name card and no pocket selection is made and the name card follows the address card into the selected pocket.

It is apparent from the above that this device may be adapted for other operations than those described herein and is not limited to any particular system of operation.

While I have described what I consider to be a highly desirable embodiment of my invention, it is obvious that many changes in form could be made without departing from the spirit of my invention, and I, therefore, do not limit myself to the exact form herein shown and described, nor to anything less than the whole of my invention as hereinbefore set forth, and as hereinafter claimed.

What I claim as new and desire to secure by Letters Patent, is:

1. In a machine of the class described, analyzing mechanism, comprising a plurality of sensing pins, a bail adapted to lock said pins in operative position, a latch device for rendering said bail inoperative, a rock shaft having a cam-face adapted to operate said latch device and additional sensing means for controlling said rock shaft.

2. In a machine of the class described, analyzing means for detecting a characteristic of a card, a receiving station for cards, a timing disk containing a plurality of cam rollers for controlling a gate operating mechanism for opening said receiving station to receive a card, setting means actuated by said analyzer for setting said cam rollers, a second card having different characteristics and containing a control hole, a sensing pin associated with said analyzer for disabling said analyzer under control of said control hole and an extended arm in said gate operating mechanism for maintaining said station open to receive said second card.

3. In a machine of the class described, analyzing means, a receiving station, a gate operating mechanism for said station comprising a timing disk having cam rollers selectably mounted thereon, said rollers cooperating with a gate actuating arm, means on said arm for resetting said rollers after two or more cards have entered said station and an adjustable arm pivotally mounted on said actuating arm, said arm in its operative position being adapted to reset said rollers after one card has entered said station.

4. In a machine of the class described, analyzing mechanism, comprising a plurality of sensing pins, a bail adapted to lock said pins in operative position, a latch device for rendering said bail inoperative, a rock shaft having a cam face adapted to operate said latch device, and a sensing pin for selectively controlling said rock shaft, said pin being operatively connected thereto.

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