

Sept. 21, 1937.

E. A. FORD

2,093,555

CARD FEEDING DEVICE

Filed May 28, 1936

2 Sheets-Sheet 1

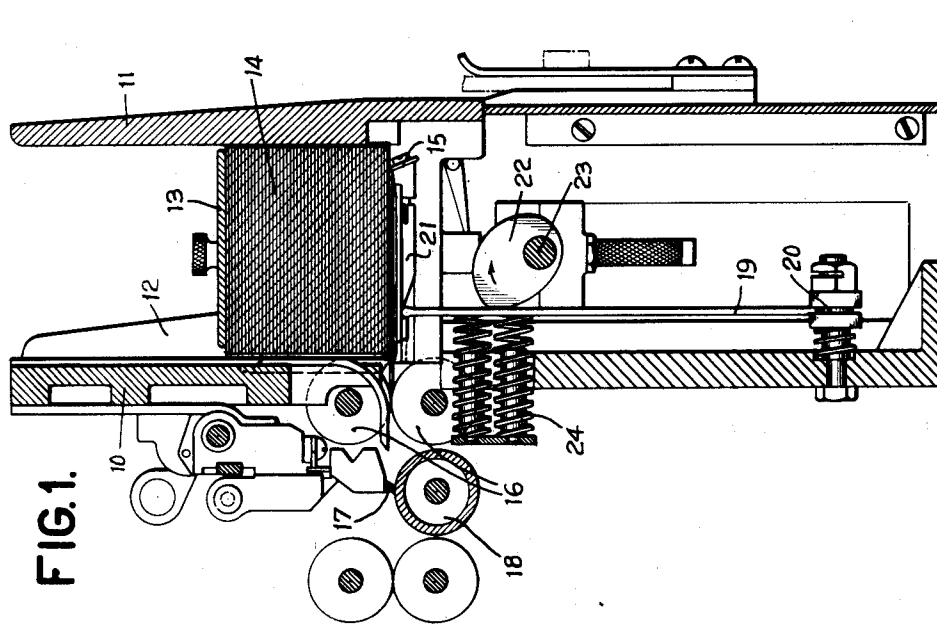
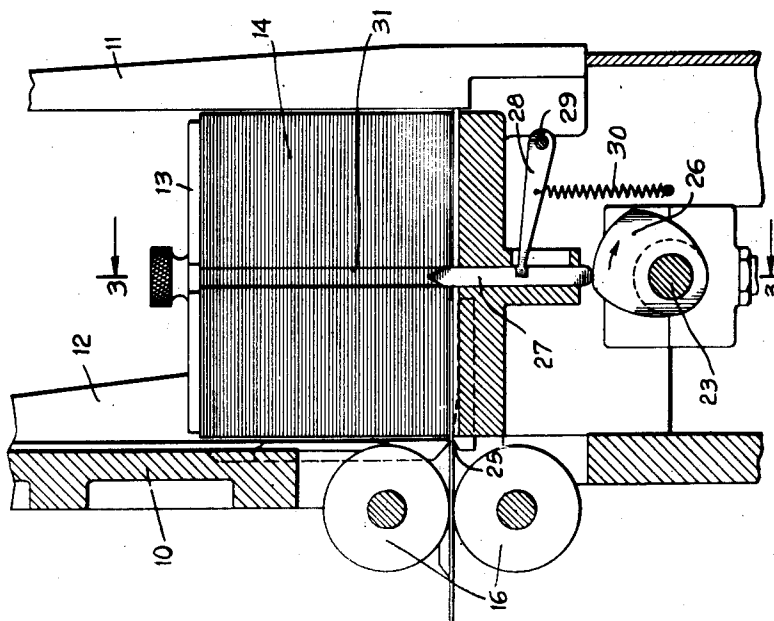


FIG. 2.



INVENTOR
Eugene R. Ford
BY
W. M. Wilson
ATTORNEY

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E. A. FORD

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FIG. 4.

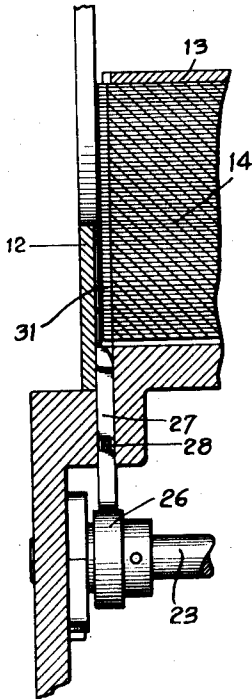


FIG. 3.

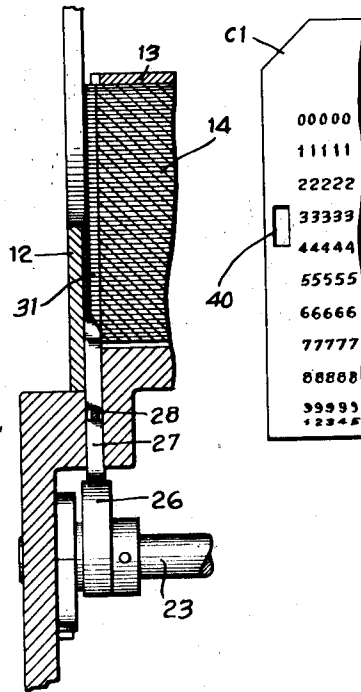


FIG. 6.

FIG. 7.

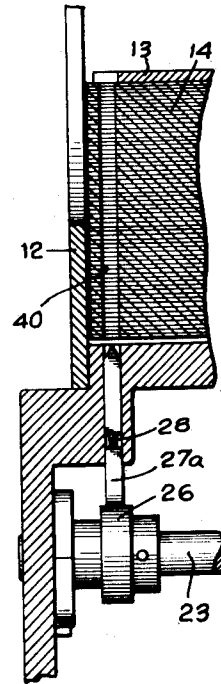
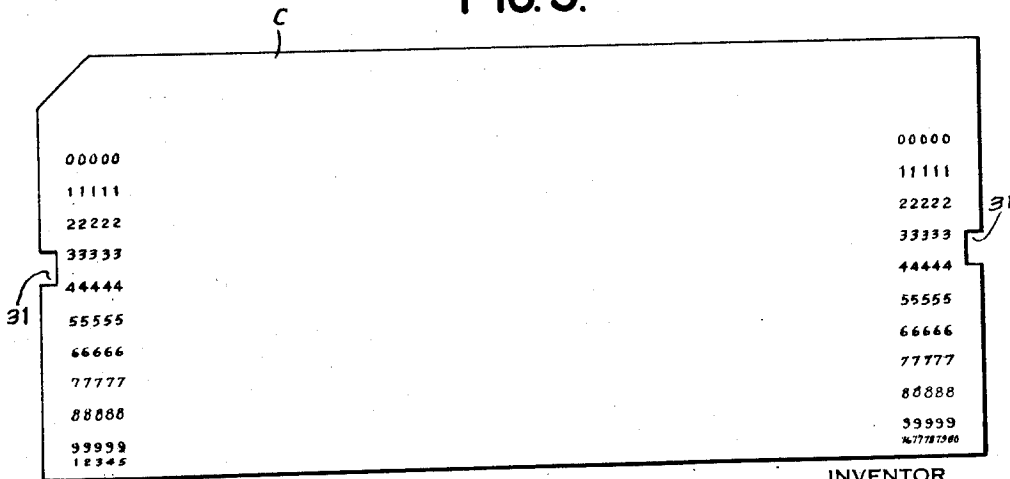


FIG. 5.



INVENTOR

Eugene A. Ford

BY

W. M. Wilson
ATTORNEY

UNITED STATES PATENT OFFICE

2,093,555

CARD FEEDING DEVICE

Eugene A. Ford, Scarsdale, N. Y., assignor to
International Business Machines Corporation,
New York, N. Y., a corporation of New York

Application May 28, 1936, Serial No. 82,226

10 Claims. (Cl. 271-44)

This invention relates to record card feeding devices such as are used in record card sorting, tabulating, and punching machines.

Such machines usually include a magazine in which a stack of cards is placed, and a picker device which feeds the cards, singly, from the bottom of the stack.

It is necessary that each card be in an exact position at the time it is acted upon by the picker to insure that the mechanical operation of the picker will be properly carried out. As a card is advanced from the bottom of the stack, frictional contact will cause a slight advance of the second card which is an undesirable consequence as the picker when about to feed such second card by engaging its trailing edge, may thus at times reach beyond the second card and tend to also engage the third card with resulting mutilation of the cards. This is especially so where the cards have already been run through the various machines a considerable number of times and have been subjected to much handling so that the edges with which the picker cooperates are no longer as square or firm as those of new cards.

It is accordingly one of the objects of the present invention to provide an aligning device which will engage and hold the second and subsequent cards against frictional advance by the first card and will return such cards to proper starting position if any such advance has taken place before the cards are engaged by the device.

In one form of the invention the aligning device comprises a pair of accurately located gauge pins which cooperate with rectangular notches on opposite sides of the record cards. By providing aligning edges within the outline of the card, such edges are preserved against damage resulting from handling and the gauge pins may cooperate with all sides of the notches to adjust the cards laterally as well as in the direction of travel.

In another form of the invention a rectangular opening is provided in each card which is set in from the edge and which conforms in outline to the gauge pin. There is thus provided a means to accurately align record cards wherein the aligning edges are protected against abuse.

Another object of the invention is to provide an improved and simplified card aligning mechanism wherein a common gauge pin will effect alignment in transverse directions.

Further and other objects and advantages will be hereinafter set forth in the accompanying specification and claims, and shown in the drawings, which by way of illustration show what is now considered to be the preferred embodiment of the invention.

In the drawings:

Fig. 1 is a cross sectional view of the card

picker and its driving mechanism for a sorting machine.

Fig. 2 is a cross sectional view of the gauge pin and its operating instrumentalities.

Fig. 3 is a further view of the gauge pin looking in the direction of lines 3-3 of Fig. 2.

Fig. 4 is a view similar to Fig. 3 with the gauge pin in lowered position.

Fig. 5 is a view showing a card with aligning notches.

Fig. 6 is a fragment of a card showing a modified form of aligning opening within the outline of the card.

Fig. 7 is a detail of the gauge pin for cooperating with the opening in the card of Fig. 6.

For purposes of illustration and explanation I have shown my invention as applied to the card sorting apparatus disclosed in my Patent No. 1,772,180, granted August 5, 1930.

The cards are placed in a magazine comprising a front wall 10, rear guides 11 and side guides 12 which form a rectangular receptacle whose dimensions are greater than those of the cards so that the latter may be readily inserted. The customary weight 13 is placed on top of the stack.

The cards are fed from the stack 14 by the picker 15 to the first set of transport rolls 16 (Fig. 1) which convey the cards to and by the analyzing brush 17 and contact roller 18. According to the location of the perforation in the card column passing brush 17 the card is thereafter transported to one of a number of appropriate sorting pockets.

The picker 15 is carried by a frame 21 which is mounted for horizontal reciprocation in the frame of the machine and is actuated by a lever 19 which is pivoted at its lower end upon an adjustable bearing block 20. Frame 21 has a slot which receives the upper end of lever 19.

A cam 22 carried by the constantly operating drive shaft 23 serves, in conjunction with springs 24, to oscillate lever 19 and thereby reciprocate the picker 15 to advance the lowermost card of the stack through the throat 25 which is adjusted to permit passage of but a single card. All of the above is fully described in my prior patent already referred to.

Secured to shaft 23, near each end thereof, is a cam 26 which serves to elevate a gauge pin 27 positioned in a suitable slot in the frame of the machine. An arm 28, pivoted at 29 has its free end in engagement with pin 27 and under the influence of a spring 30 causes the pin to follow the contour of cam 26 as the latter rotates.

The upper extremity of pin 27 is tapered in one direction as shown in Fig. 2 and in the other direction as shown in Fig. 3 for the purpose of engagement with the edges of slots 31 of card C (Fig. 5) to align the several lowermost cards prior to each picking operation. The pickers 15

project upwardly into the card magazine a distance sufficient to feed the lowermost card as long as the rear edges of the cards are in alignment. But the movement of the lowermost card as it is advanced, tends to carry along the next adjacent card due to the frictional contact therewith. If this second card remains in displaced position and if the third card has a slight downward curvature at its rear edge, such edge may overlie the edge of the second card sufficiently to be engaged by the picker on its next stroke. The picker will thus attempt to feed two cards through a throat adjusted to receive only one or it will damage the feeding edge of the third card.

Accordingly, the pins 27 are timed to move upwardly in the card notches 31 just after the trailing edge of the card being advanced has passed the pins. If any displacement has taken place in the second card pins 27 will effect realignment and will also hold the cards against further frictional displacement as the lowermost card continues its advance.

At the same time, if the cards have suffered any transverse displacement the pins 27 will also effect realignment in such direction.

Figs. 6 and 7 show the card C1 with a perforation 40 which is set in from the card edge and which cooperates with a gauge pin 27a whose cross sectional dimensions are the same as those of the perforation 40. Any displacement either in the direction of travel of the card or transversely thereto will thus be promptly corrected upon the rising of pin 27a into perforation 40 and feeding of the cards will take place for each card from a position of accurate alignment.

As the magazine proper must have sufficient clearance to permit easy insertion of a stack of cards, one or more of the cards may be slightly askew and this condition also will be corrected automatically by the gauge pins 27 or 27a so that parallelism will obtain between the short edges of the card and the line of travel.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In a machine of the class described, a feeding mechanism for record cards comprising a picker, means to move said picker to feed record cards in one direction and means to positively shift said records in the opposite direction and also transversely thereto to bring said cards into positive alignment before the picker engages the record card to feed the same in the first mentioned direction.

2. In a machine of the class described, a feeding mechanism for record cards comprising a picker, means to move said picker to feed record cards in one direction and means to positively shift said records in either direction and also transversely thereto to bring said cards into positive alignment before the picker engages the record card to feed the same in the first mentioned direction.

3. In a machine of the class described, a feed-

ing mechanism for record cards comprising a picker, means to move said picker to feed record cards in one direction and means to positively swing said records parallel to said direction and also shift said records in the opposite direction to bring said cards into impositive, parallel alignment before the picker engages the record card to feed the same in the first mentioned direction.

4. In a machine of the class described, a feeding mechanism for record cards comprising a picker, means to move said picker to feed record cards in one direction and means to positively shift said records in both the opposite and transverse directions and hold said cards in shifted position until the picker moves to advance a record in the first named direction.

5. In a machine of the class described, a magazine for records, a picker, means for reciprocating said picker to feed records singly from a definite starting position in said magazine and means including a camming member and an operating cam therefor synchronized with the movement of the picker, operative during the advance of a card by said picker for positively aligning the next card to be fed in said starting position and holding the card in position until the first card has been completely advanced.

6. In a machine of the class described, a feeding mechanism for record cards having aligning notches in opposite edges thereof, a picker, means to move the same into engagement with a third edge of said cards to feed the same in one direction and means engageable in said aligning notches to bring said cards into positive alignment before the picker engages the record card to feed the same in the first mentioned direction.

7. In a machine of the class described, a feeding mechanism for record cards having aligning openings in opposite edges thereof, a picker, means to move the same into engagement with a third edge of said cards to feed the same in one direction and means engageable in said aligning openings to bring said cards into positive alignment before the picker engages the record card to feed the same in the first mentioned direction.

8. A record card for controlling a machine of the class described, having columns of data receiving index positions and a pair of oppositely located cuts arranged outside the data receiving positions to control the accurate alignment of the said columns in the machine.

9. A record card for controlling a machine of the class described, having columns of data receiving index positions, and a pair of oppositely located rectangular openings lying between the data receiving columns and the edges of the card, said opening being coextensive with a plurality of index positions and parallel to the said columns.

10. In a machine of the class described, a feeding mechanism for record cards comprising a picker, means to move said picker to feed record cards in one direction and means including a pair of like camming members disposed on opposite sides of the records to positively shift said records in the opposite direction and also transversely thereto to bring said cards into positive alignment before the picker engages the record card to feed the same in the first mentioned direction.

EUGENE A. FORD.