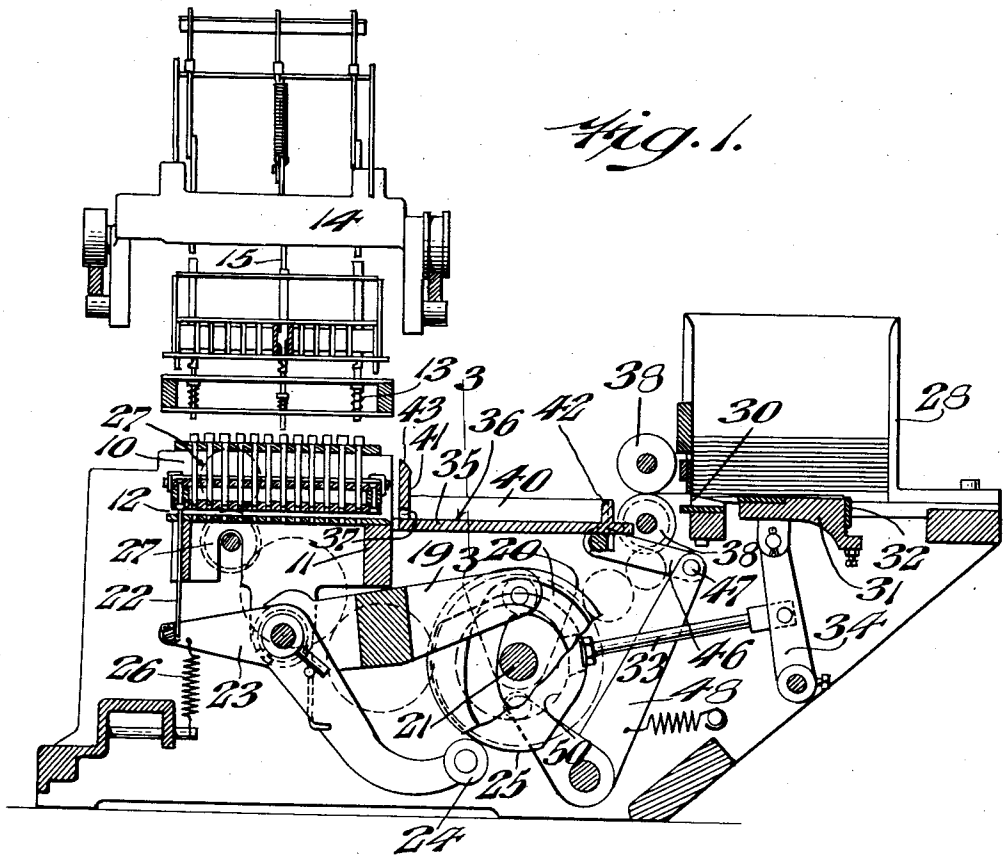
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VISIBLE CARD FEEDING MECHANISM

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Fig. 1.



Inventor

James Last,

By Robert M. Bass.

Attorney

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VISIBLE CARD FEEDING MECHANISM

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Fig. 2.

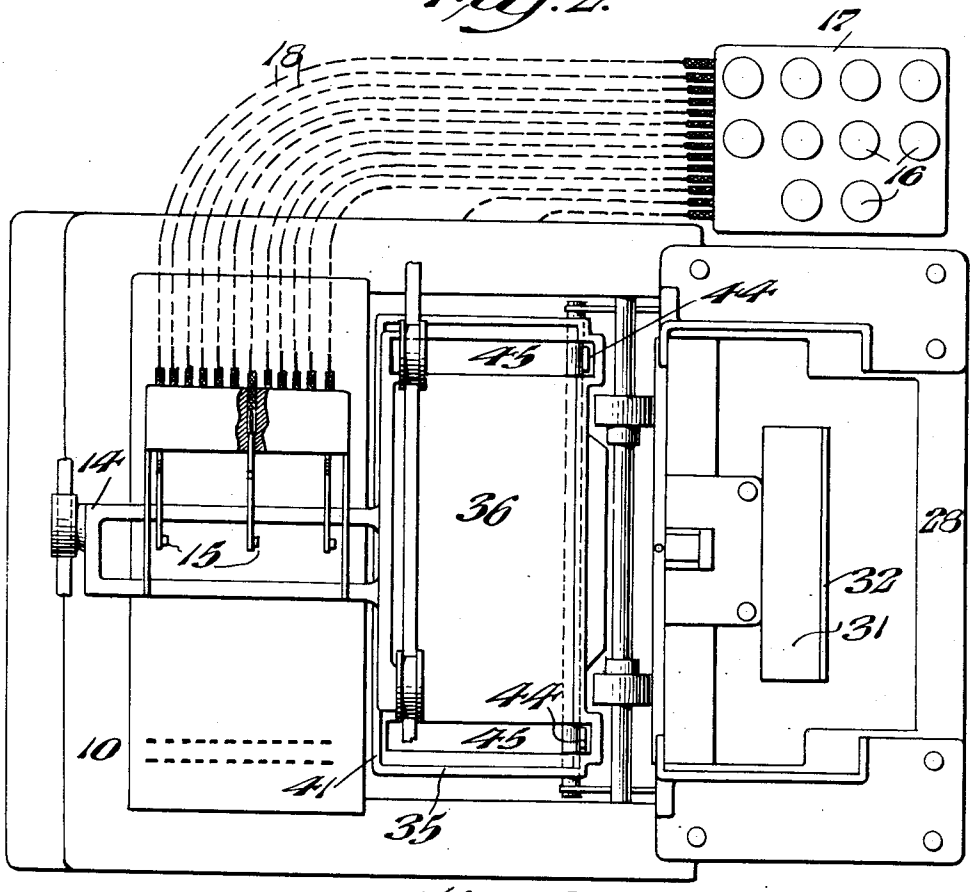
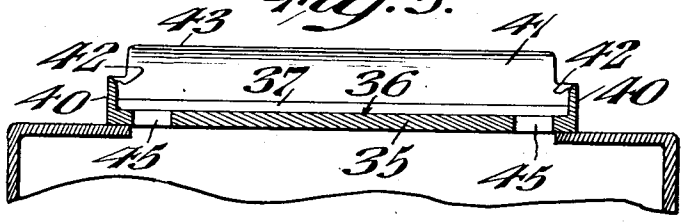


Fig. 3.



Inventor

James Last,

By Robert M. Barr.

Attorney

Patented Aug. 20, 1929. 1,725,400

UNITED STATES PATENT OFFICE.

JAMES LAST, OF KINGSTON, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO REMINGTON RAND INC., OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

VISIBLE-CARD-FEEDING MECHANISM.

Application filed June 25, 1926. Serial No. 118,510.

The present invention relates to card-controlled machines and equipment related thereto, and more particularly to an improved card feeding mechanism.

In card-controlled and card punching machines, (as well as other machines to which cards are fed) in present day use trouble and delays are caused by the failure of cards to enter the card passage of such machines correctly aligned and consequently being out of register with the analyzing pins there is, in some cases, incorrect analyzing where the machine is a tabulator, wrong punching where the machine is a punch, and often jamming and interruption of the feeding. Also no provision is made in such machines for inspecting the cards or reading the data thereon while the cards are being fed to the machine which is to operate upon them.

Some of the objects of the present invention are to provide an improved card-feeding mechanism for record cards; to provide means for automatically delivering cards to a machine in accurate aligned relation for correct registration in such machine; to provide means whereby each card can be inspected just prior to its delivery to the machine which is to operate upon it; to provide a delayed feeding mechanism for record cards whereby the rate of card travel is varied to cause cards to pass an inspection point so that data thereon can be intelligently seen; to provide means, operative between a card receiving machine and the magazine from which the cards are fed, for rendering each card visible for inspection purposes; to provide means exposing each card of a series of cards to view during the feeding of such cards and automatically interrupting the feed to allow each card to be inspected; and to provide other improvements as will hereinafter appear.

In the accompanying drawings Fig. 1 represents a sectional elevation taken longitudinally of a card punching machine including one form of the present invention; Fig. 2 represents a plan of the same; and Fig. 3 represents a section of the card tray looking toward the left, Figure 1.

Referring to the drawings one form of the present invention is shown as incorporated in a punching machine of the keyboard operated type such for example as illustrated in U. S. Letters Patent, No. 1,307,682, and to which reference may be had for details not here deemed necessary to describe. Generally considered such a machine comprises a field of punches 10 arranged to correspond in number and column placement with the data positions on the card and working through a reciprocatory die 11 which has a passage 12 to receive the cards one at a time. The setting of the punches 10 takes place through set-up lock pins 13 superposed above the punches 10 and selectively set by a travelling carriage 14 containing generally one row of selecting pins 15 which are actuated by the operation of the keys 16 of a keyboard 17. Wires 18 or other suitable means transmit the movement of the keys 16 to the corresponding pins 15.

Operation of the die 11 takes place through the rocking of an arm 19 in timed relation to the cycle by a cam 20 of the main shaft or spindle 21. As customary in such machines, a card stop 22 is provided which rises to stop each card in registered position and falls to release each card after the punching operation, and is raised by a pivoted arm 23 having a roller 24 at one end engaging a cam 25 on the shaft 21, and lowered by a spring 26 stretched to the other end of the arm 23 and serving also to hold the roller 24 in contact with its cam 25. The cards leave the punch passage 12 by reason of the upper and lower feed rolls 27 as will be understood.

In this type of machine, the cards are fed automatically one at a time from a magazine 28, in which they are stacked, by way of a throat gap or slot 30 through the action of a magazine slide 31 and picker knife 32. The slide 31 is arranged to be reciprocated in timed relation by a rod 33 eccentrically actuated from the shaft 21 and connected to a rock arm 34 by which the motion is transmitted to the slide 31.

For the purpose of presenting the cards for inspection prior to entering the punch passage 12, a receiving tray 35 is interposed between the card delivery side of the magazine 28 and the card receiving side of the passage 12, the position of the tray 35 being such that its card supporting surface 36 lies substantially in the plane of the passage 12 so that its card delivery slot 37 registers with the passage 12. The receiving side of the tray 35 is preferably spaced from the

magazine 28 to accommodate a pair of feed rolls 38 by which the cards are fed in the proper direction after leaving the magazine 28.

In order to ensure correct alignment of each card as delivered to the passage 12, that is to position the card so that its front or leading edge is at a right angle to its path of travel, the tray 35 is formed with walls 40 on its ends and card receiving side, and with a wall 41 on its card discharge side, the latter extending above the walls 40 to serve as a stop or abutment for the entering cards. The walls 40 and 41 are arranged to conform to the shape of the cards and intercept the surface of the tray to bound a space which is substantially of the same dimensions as the card yet allows the card to seat readily therein. Also the walls 40 slope upwardly and outwardly as shown at 42 with a rather even curvature so that each card is guided and settles naturally into its aligned position upon the tray 35. The upper portion of the wall 41 is likewise sloped as shown at 43 so that the front edge of the card, when it is in more elevated position than the cards usually take, rides down its face to take its correct position.

In the present construction, the plane of delivery of the cards from the feed rolls 38 is slightly above the juxtaposed side wall 40 of the tray 35 in order that the cards, upon leaving the feed rolls 38, can be properly delivered to the tray 35, their projection beyond the tray being prevented by the wall 41.

In order to deliver each card from the tray 35 to the passage 12 of the punching mechanism, a transfer knife 44 is provided to project through slots 45 extending transversely across the bottom of the tray 35 and receives its motion from links 46 connected to a rod 47 which is oscillated by a rocker arm 48 controlled by a cam 50 upon the main shaft 21. In rest position the transfer kuife 44 lies just behind the rear edge of a card in the tray 35 so that its actuation ejects or feeds the card out of the tray.

The operation of the device in the present form of the invention is as follows: the machine is at rest while the operator makes the punch set up by actuating the keys 16 and when this is completed the machine is started to make one revolution of the main shaft 21. The cams on this shaft time the movement of the card stop 22 to locate the card which has been ejected from the tray 35 by the timed action of the transfer knife 44, and the die 11 rises to perform the punching step and falls to allow the discharge of the perforated card. The timing of the transfer knife 44 is such that it reaches its return or rest position near the end of the punching cycle before the next card ejected from the magazine 28 falls face up into inspection position in the tray 35. The operator now reads from the card in the tray and makes a punch set-up in accordance with the information appearing thereon. When this is completed the machine is started and the transfer knife 44 projects the card into the passage 12 where it is gripped by the intermediate feed rolls 27 and brought against the card stop 22 which has been raised to its operating position.

Having thus described my invention, I claim:

1. A card feeding mechanism comprising a magazine for cards, means for feeding said cards from said magazine in the direction of a card machine, and immovably means between said magazine and said machine for temporarily arresting each card for inspection purposes.

2. A card feeding mechanism comprising a card support arranged to expose a card thereon to view, a device for feeding cards one at a time to said support, means rigid with said support for aligning each card, and means operative after said aligning means for ejecting each card.

3. A card feeding mechanism comprising a card support arranged to arrest and expose a card thereon to view, a device for feeding cards one at a time to said support, means on said support for aligning each card at right angles to its path of movement, and means for ejecting each card from said support.

4. A card feeding mechanism comprising a card support arranged to expose a card thereon to view, a device for feeding cards one at a time to said support, a machine having a card registration passage arranged to receive cards from said support, means on said support for aligning each card to accurately register in said passage, and means for feeding each card from said support to said passage.

5. The combination of a machine for operating upon record cards, means for feeding cards successively to said machine, and a device located in the path of said fed cards for solely supporting and exposing each card to view for inspection purposes.

6. In a machine of the class described, the combination with means for feeding a card; of a card arresting and exposing means located in the path of said card and upon which it is fed by said feeding means, and flanges on said arresting and exposing means for confining said card thereon.

7. In a machine of the class described, the combination with card feeding means; of a flat card support upon which cards are fed by said feeding means, and flanges bordering said support, said flanges having their upper edges inclined outwardly to cause the card to settle down on the support against the lower edges of said flanges.

8. In a machine of the class described, the combination with card feeding means; of a flat card support upon which said card is fed by said feeding means, flanges on the sides and the end nearer to the feeding means over which the card is fed, and a relatively higher flange at the far end of the support for arresting the movement of the card as it is fed onto the support.

9. In a record card punching machine including punching mechanism and means for controlling the set-up in the punching mechanism, a card supply magazine, means operable during each cycle of operation of the machine for feeding a card from the supply magazine to a position intermediate of the supply magazine and punching mechanism during one cycle of operation for purposes of inspection of the card between cycles of operation of the machine, and a second feeding means operable during each operation of the machine for feeding said card from said intermediate position into the punching mechanism during the succeeding cycle of operation.

Signed at Kingston, Pa., county of Luzerne, State of Penn'a., this 17th day of June, 1926.

JAMES LAST.

CERTIFICATE OF CORRECTION.

Patent No. 1,725,400. Granted August 20, 1929, to

JAMES LAST.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 81, claim 1, after the word "immovably" insert the word "mounted"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 3rd day of December, A. D. 1929.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.