

March 24, 1953

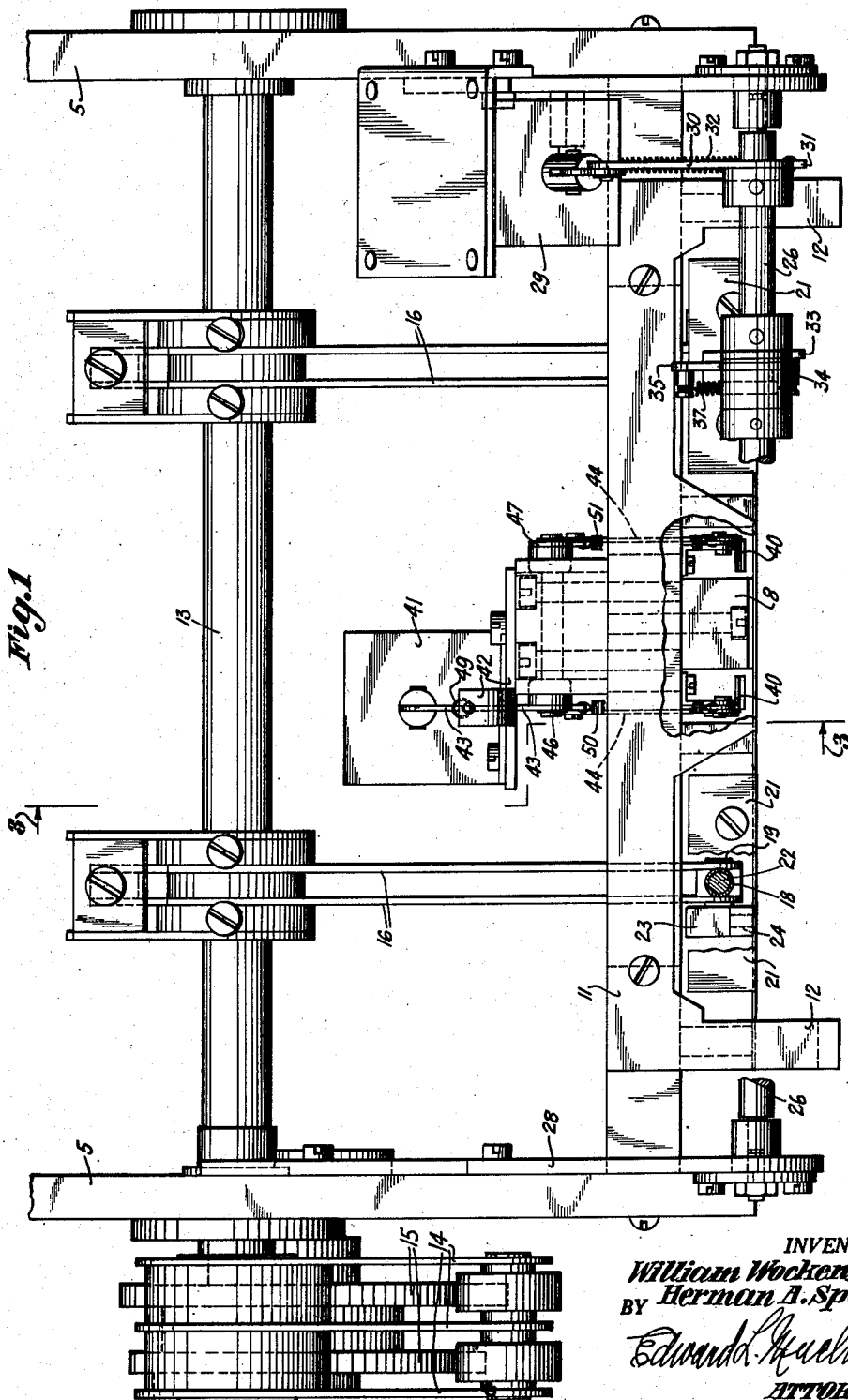
W. WOCKENFUSS ET AL

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STATISTICAL CARD FEEDING MECHANISM

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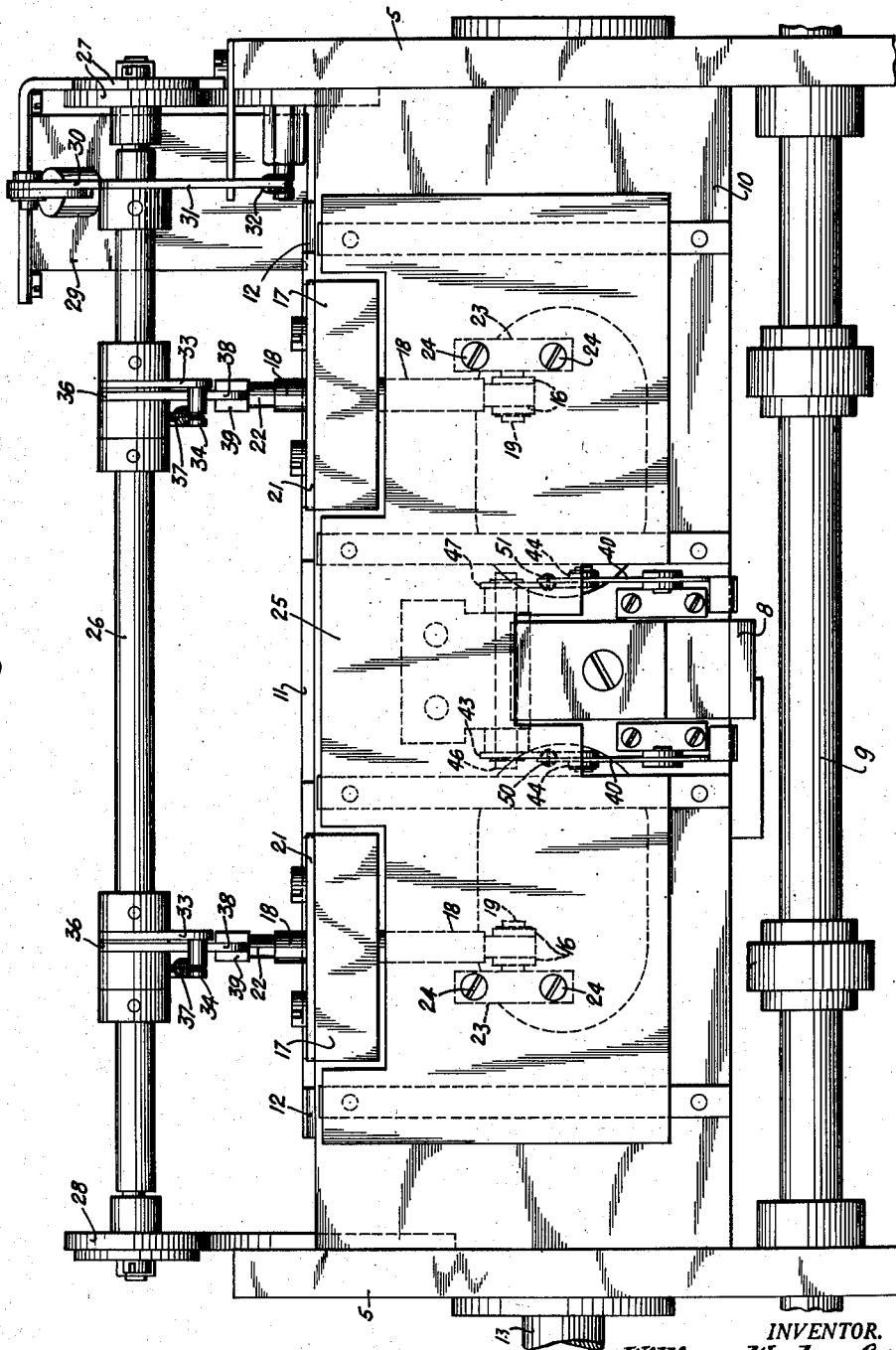
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Fig. 2



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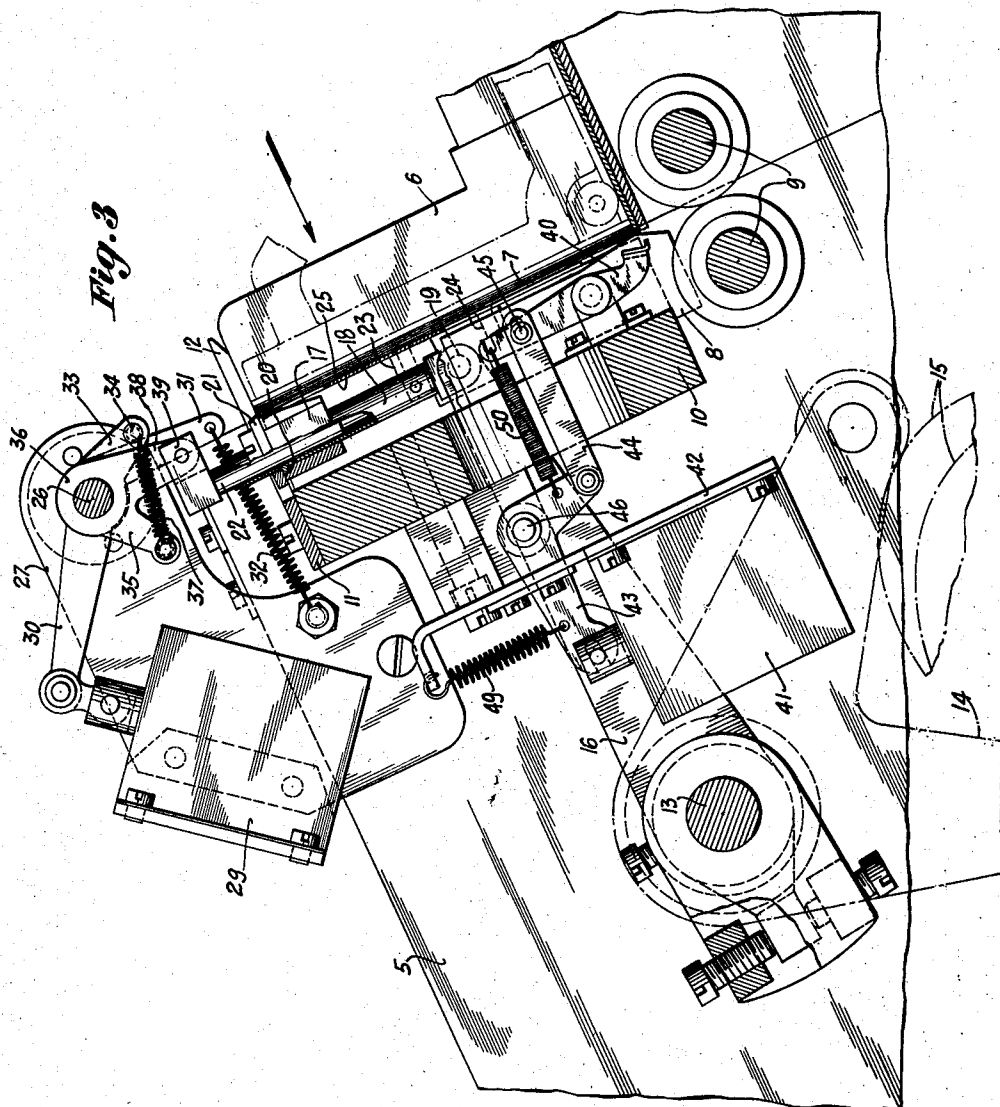
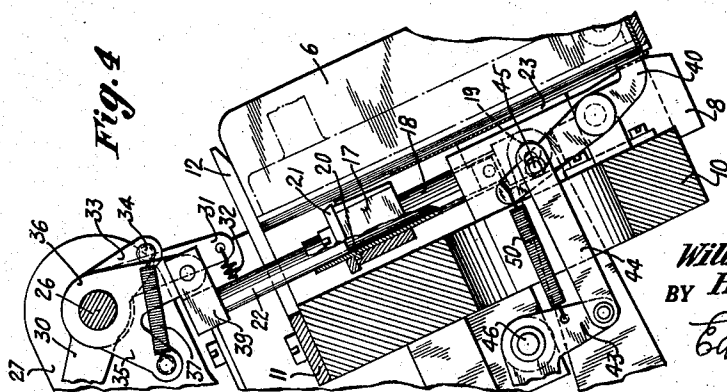
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STATISTICAL CARD FEEDING MECHANISM

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UNITED STATES PATENT OFFICE

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STATISTICAL CARD FEEDING MECHANISM

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11 Claims. (Cl. 271-44)

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This invention relates to improvements in statistical card machines and has particular reference to a card feeding mechanism therefor.

An object of the invention is to provide an improved mechanism wherein the feeding of cards, seriatim, from a stack may be interrupted during the continuous operation of said mechanism.

Another object is to provide for the shifting of a continuously operable card picker member between inoperative and operative positions with respect to cards to be fed thereby while said member is being operated.

A further object is to control the feed of cards from a stack by moving a stop into the path of a card to positively prevent its feed while the picker member is being continuously driven in its inoperative position, and by retracting said stop from said path when said picker member is rendered operative to feed the cards.

A still further object is to mount the continuously operated card picker member for rotative movement upon the first of two telescoping elements, and to reciprocally drive the first element relative to the second element and mount the same and said picker member for movement, under control of said second element, to and from operative position relative to cards to be fed.

The above and other objects will appear more clearly from the following detailed description when taken in connection with the accompanying drawings which illustrate a preferred embodiment of the inventive idea; but it is to be expressly understood that said drawings are employed merely to facilitate the description of the invention as a whole and not to define the limits thereof, reference being had to the appended claims for this purpose.

In the drawings:

Fig. 1 is a top plan view, partly broken away, of a card feeding mechanism constructed in accordance with the invention and with the card magazine removed;

Fig. 2 is a front elevation of said mechanism, looking in the direction of the arrow in Fig. 3;

Fig. 3 is a transverse section taken substantially on the line 3-3 of Fig. 1, showing a portion of the card magazine with the card picker member of the mechanism in its operative position and a card stop coacting therewith in its inoperative position; and

Fig. 4 is a fragmentary view similar to Fig. 3 showing the card picker member and stop in the reverse position of that shown in Fig. 3.

Generally, the feed mechanism is disposed between the side plates 5 which support the card

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magazine 6 from whence cards are fed, seriatim, through the throat formed by the block 8 to the feed rollers 9 that convey the cards to the usual card analyzer. Extending between and secured to the side plates adjacent the delivery end of the magazine is a supporting casting 10 to the upper edge of which is fastened a plate 11 having forwardly extending card guide fingers 12 at each end thereof under which the cards pass as they approach the feed position.

The drive for the feed mechanism to be presently described includes an oscillatory shaft 13 journaled in the side plates 5 and operated by the follower members 14 mounted on one end of the shaft and engaged with the complementary cams 15 driven from any suitable source of power (not shown). The oscillation of said shaft is imparted to two sets of operating levers 16 which extend forwardly through openings in the casting 10 and are connected at their forward ends to the feed mechanism to continuously reciprocate the two picker heads 17 forming a part of said mechanism.

Said heads 17 and their mountings are similarly constructed and therefore a description of one will suffice, it being understood that they are operated in unison. Each head is rotatively supported on the upper end of a sleeve member 18 which constitutes a drive for the head and the lower end of which is pivotally connected at 19 to one set of operating levers 16 for limited movement toward and away from the cards 7 or, in other words, laterally with respect to the direction of reciprocation of the head so that it may be shifted between operative and inoperative positions, as shown in Figs. 3 and 4. To support the head 17 on the upper end of the sleeve 18 for movement therewith, the latter is flanged at 20 and the usual picker knife 21 is secured to the top of said head and engaged with said flange. The head 17 is guided in its reciprocation, both when in its operative and inoperative positions, by the guide rod 22 which telescopes within the sleeve 18, and said rod is controlled, in a manner to presently appear, to shift said head between said positions while the same is in operation. A block 23, which carries the pivot 19 for the sleeve 18 and reciprocates with the latter, also has secured thereto at 24 a card supporting plate 25 that constantly engages the lowermost card 7 and moves with the head 17 so as to reduce friction as said cards are stripped from the stack.

The mechanism for controlling the lateral movements of the two heads 17 between operative and inoperative positions will now be described.

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This mechanism comprises a rock shaft 26 supported in brackets 27 and 28 secured to the side plates 5, and said bracket 27 also has fastened thereto a solenoid 29 the operation of which may be controlled, by any desired circuit, to rock said shaft 26 and thereby accomplish the shifting of the picker heads 17 from inoperative to operative positions, or vice versa. The core of the solenoid is joined to one end 30 of a lever secured on the shaft 26, the other end 31 of said lever being connected by a retractile spring 32 to the bracket 27 so as to rock the shaft 26 clockwise, when the solenoid 29 is de-energized, to shift the parts to the position of Fig. 4 wherein the picker heads are reciprocated in their inoperative positions. Secured to the shaft 26 directly above each picker head is an arm 33 carrying a pin 34 connected, by a spring 37, to one arm 35 of a bell crank 36 loose on said shaft. The lower extremity of the other arm 38 of said bell crank is pivotally connected to a head 39 secured to the upper end of the guide 22 so that motion transmitted to the bell crank 36 will be imparted to the head 39 to shift the guide rod 22 and, consequently, the head 17 between the inoperative and operative positions thereof. When the solenoid 29 is energized to move the heads 17 to their operative position of Fig. 3, the counterclockwise rotation of the shaft 26 will cause the arm 33 associated with each picker head to move in a similar direction and thus, through the tension spring 37, exert a pull upon the connected arm 35 of the bell crank 36 to turn the same on the shaft 26 so that the head 39 and guide 22 will be moved forwardly toward the cards with the result that each guide 22 will shift its associated head 17 to engage the latter with the bottom card of the stack, whereupon reciprocation of the heads will strip said card and feed it to the rollers 9. After the head 17 is engaged with the card, each arm 33 has a slight additional movement which spaces its pin 34 from the adjacent edge of the arm 38 of said bell crank 36, as shown in Fig. 3, and this additional movement places the spring 37 under sufficient tension so that it will have a tendency to constantly urge the picker head 17 in the direction of the card and thus permit it, by reason of its rotative movement on the sleeve, to accommodate itself to any possible slight curvature in the card which it contacts so as to assure proper engagement of the picker knife 21 with the top edge of the card preparatory to feeding the same downwardly.

Upon de-energization of the solenoid 29, the spring 32 becomes effective to rock the lever 30, 31 and the shaft 26 clockwise and this movement is also imparted to the arms 33 secured on said shaft so that the pins 34 will re-engage the arms 38 and rock the bell cranks 36 in the same direction to shift the guides 22 of the two picker heads 17 to the position of Fig. 4 wherein said heads will continue their reciprocation in an inoperative position so as not to feed cards from the magazine.

During the reciprocation of the heads 17 in their inoperative position it is desirable to positively prevent feed of the cards from the magazine which might otherwise occur by reason of the continuous reciprocation of the supporting plate 25 in contact with the bottom card of the stack. For this purpose there is provided two stop members 40 each pivotally mounted adjacent its lower end upon the casting 10 and movable into and out of the path of the bottom card in the magazine. When the solenoid 29 is energized for the feed of said cards said stops are

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adjusted to their inoperative position of Fig. 3, and when said solenoid is de-energized said stops are adjusted to their operative position of Fig. 4. This adjustment of the stops is accomplished by a solenoid 41 mounted upon a bracket 42 secured to the casting 10 and having its core connected to one end of a lever 43 the other end of which is joined to a link 44 having a pin and slot connection 45 with the upper end of one of the pivoted stops 40 which, in the illustration, is the one shown in Fig. 3. The lever 43 is secured to one end of a rock shaft 46 supported at the rear of the casting 10 and the other end of said shaft has fixed thereon an arm 47 to which is connected a link 48 like the link 44 and similarly connected to the other stop 40. With this construction, motion imparted to the lever 43 to operate the stop 40 shown in Fig. 3 is also transmitted through the shaft 46 to likewise control the other stop 40.

Energization of the solenoid 41 is controlled by any desired circuit and occurs simultaneously with the energization of the solenoid 29. When so energized, the solenoid 41 rocks the lever 43 and arm 47 counterclockwise and through the links 44 and 48, adjusts the stops 40 to their inoperative position. A spring 49 connecting the lever 43 with the bracket 42 is placed under tension by the energization of the solenoid 41 and upon de-energization thereof acts to rock the lever 43 and arm 47 clockwise. Tension springs 50 and 51 (Fig. 1) connecting the lever 43 and arm 47 with the upper ends of the stops 40 act, upon de-energization of solenoid 41, to assist in the movement of the stops to their operative position beneath the lower edge of the bottom card in the stack and thus prevent any possibility of it being fed from the magazine while the picker heads are reciprocating in their inoperative positions.

What is claimed is:

1. Record card feeding mechanism comprising two telescoping members one reciprocating relative to the other and also mounted for pivotal movement, a card picker member having inoperative and operative positions relative to cards to be fed, said picker member being carried by the first named telescoping member for reciprocation therewith, means to continuously reciprocate said first named and card picker members in both positions of the latter member, and means to actuate said other telescoping member to move said first named member about its pivot to thereby adjust said picker member from inoperative to operative position during reciprocation thereof.

2. Record card feeding mechanism comprising two telescoping members one reciprocating relative to the other and also mounted for pivotal movement, a card picker member having inoperative and operative positions relative to cards to be fed, said picker member being carried by the first named telescoping member for reciprocation therewith and also having a rotative movement with respect thereto while in its operative position, means to continuously reciprocate said first named and card picker members in both positions of the latter member, and means to actuate said other telescoping member to move said first named member about its pivot to thereby adjust said picker member from inoperative to operative position during reciprocation thereof.

3. Record card feeding mechanism comprising two telescoping members one reciprocating relative to the other and also mounted for pivotal movement, a card picker member having inoperative and operative positions relative to cards

to be fed, said picker member being carried by the first named telescoping member for reciprocation therewith, means to continuously reciprocate said first named and card picker members in both positions of the latter member, means to actuate said other telescoping member to move said first named member about its pivot to thereby adjust said picker member from inoperative to operative position during reciprocation thereof, a card stop having an operative position when said picker member is reciprocating in its inoperative position, and means to withdraw said stop from operative position when said picker member is in its operative position.

4. Record card feeding mechanism comprising a continuously reciprocable card picker member having operative and inoperative positions relative to the cards to be fed thereby, said member including a head engageable with a card to be fed during reciprocation of said member when it is in operative position and having a rotative movement enabling said head to turn under the influence of a curvature in a card engaged thereby, a guide on which said head reciprocates and about which it has rotative movement, means to reciprocate said picker member, a rock shaft and means to rock the same, a member loose on said shaft and joined to said guide, and a connection between the last named member and said shaft effective when said shaft is rocked to shift said guide and head laterally relative to the direction of reciprocation of the picker member from one of its positions to the other.

5. Record card feeding mechanism in accordance with claim 14, characterized by said head making contact with a card when said picker member is shifted to its operative position, and said last named member loose on said shaft having further movement relative to said shaft under control of said connection to further shift said guide and head in the direction of said card and to permit of rotative movement of said head about said guide when said head engages a curved card.

6. In a machine of the class described having a magazine adapted to receive cards in stacked relation, the combination of a continuously reciprocable card picker movable relative to the stacked cards between an active position to feed cards and an inactive position for continued reciprocation without card feeding, a guide upon which and relative to which said picker reciprocates, said guide being movable relative to the stacked cards to effect said relative movement of said card picker with respect to the stacked cards, means operable to move said guide to locate said picker in said active position, and means operable to move said guide to locate said picker in said inactive position.

7. Record card feeding mechanism of the type having a magazine adapted to receive cards in stacked relation, comprising a card picker, a guide member upon which said picker is mounted for reciprocation, means for continuously reciprocating said picker, and means for moving said guide member and said picker together selectively toward and from the cards to be fed to locate said picker in an active card-engaging position to feed the cards seriatim or an inactive position away from and out of engagement with the cards while said picker is continuously reciprocated.

8. Record card feeding mechanism of the type having a magazine adapted to receive cards in stacked relation, comprising a card picker, a

guide member upon which said picker is mounted for reciprocation, means for continuously reciprocating said picker, means for moving said guide member and said picker together selectively toward and from the cards to be fed to locate said picker in an active card-engaging position to feed the cards seriatim or an inactive position away from and out of engagement with the cards while said picker is continuously reciprocated, and stop means normally positioned out of the card-feeding path of the cards being fed and while said picker is reciprocating in its active position and movable into the card-feeding path of the cards upon movement of said picker to its inactive position and while said picker is reciprocating in its inactive position.

9. Record card feeding mechanism of the type having a magazine adapted to receive cards in stacked relation, comprising a head member, card picker element carried by said head member, a guide member, means for mounting said head member on said guide member for both reciprocation and oscillation about the axis of reciprocation, means for continuously reciprocating said head member and its said picker element, and means for moving said guide member together with said head member and picker element relative to the cards to be fed to locate said picker element in either an active card-engaging position to feed the cards seriatim on each reciprocation of said head member or an inactive position away from and out of engagement with the cards while said head member and picker element are continuously reciprocated.

10. Record card feeding mechanism of the type having a magazine adapted to receive cards in stacked relation, comprising a head member, card picker element carried by said head member, a guide member, means for mounting said head member on said guide member for both reciprocation and oscillation about the axis of reciprocation, means for continuously reciprocating said head member and its said picker element, means for moving said guide member together with said head member and picker element relative to the cards to be fed to locate said picker element in either an active card-engaging position to feed the cards seriatim on each reciprocation of said head member or an inactive position away from and out of engagement with the cards while said head member and picker element are continuously reciprocated, and stop means movable into the card-feeding path as said picker element is moved to its inactive position and movable out of the card-feeding path as said picker element is moved to its active, card-feeding position.

11. Record card-feeding mechanism of the type having a magazine adapted to receive cards in stacked relation, comprising a pair of spaced card picker members disposed on either side of center of said cards, a guide member for each of said picker members upon which the associated picker member is mounted for both reciprocation and oscillation about the axis of reciprocation, means for continuously reciprocating said picker members together, means for moving said guide members and associated picker members as a unit selectively toward and from the cards to be fed to locate said picker members in an active card-engaging position to feed cards seriatim or in an inactive position away from and out of engagement with the cards while said pickers are continuously reciprocated, and resilient means operative in the active position of

said picker members for resiliently urging said picker members against said cards to cause the picker members to rotate on said guide members so as to align themselves with the face of the card in feeding position.

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