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PATENTED NOV. 1, 1904.

E. V. BATES.
CARD FEEDING MECHANISM.

APPLICATION FILED MAR. 28, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

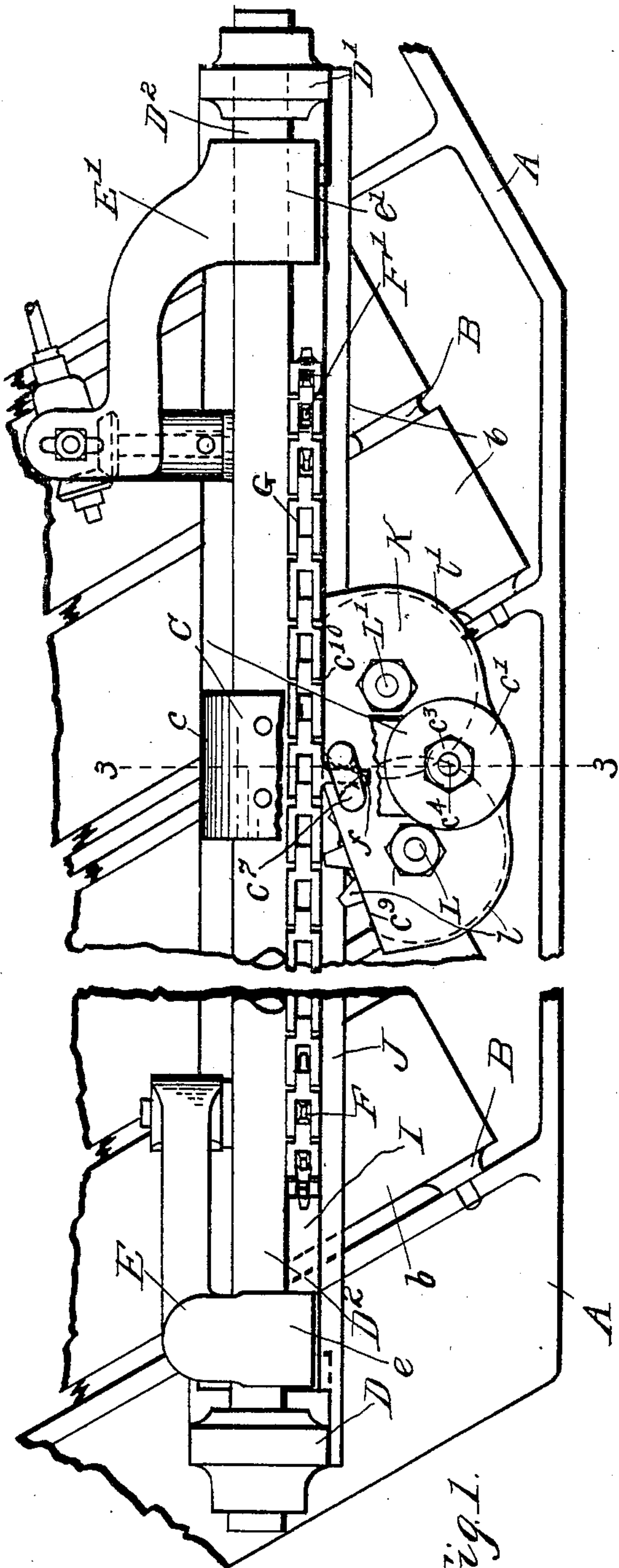


Fig. 1.

Witnesses

Lewis F. Longmore
Grace Crowley.

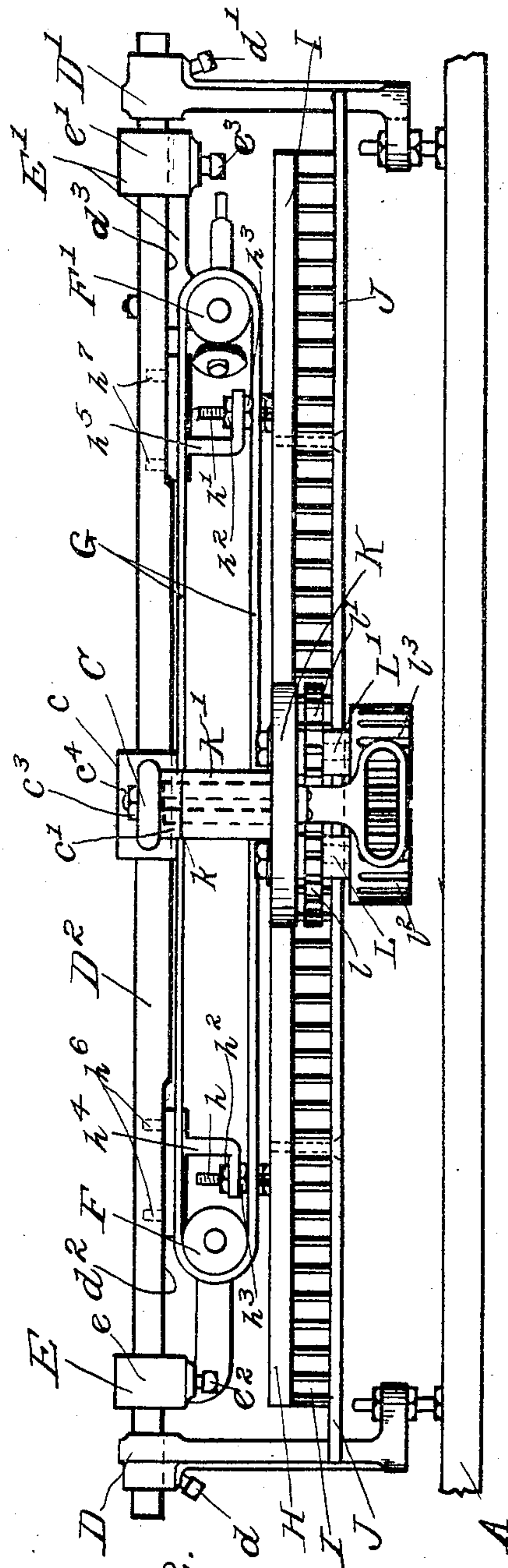


Fig. 2.

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UNITED STATES PATENT OFFICE.

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CARD-FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 773,536, dated November 1, 1904.

Application filed March 28, 1904. Serial No. 200,321. (No model.)

To all whom it may concern:

Be it known that I, EDDO V. BATES, a citizen of the United States, and a resident of Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Card-Feeding Mechanisms, of which the following is a specification.

This invention relates to card-feeding mechanisms which comprise a traveler or sliver-carrier traversing above feed-aprons arranged diagonally to the direction of such traverse, said traveler having a pair of intermeshing gears each provided with a feed-roll, a stationary rack, and means whereby the following gear is always in engagement with said rack, so that the movement of the traveler in either direction causes the sliver pinched between the feed-rolls to move always in one direction.

This invention is similar in some respects to the one described in United States Letters Patent No. 754,189 granted March 8, 1904, to me. In each mechanism I use a belt in the form of an endless sprocket-chain to draw the traveler, and I support the feed-rolls and their intermeshing gears upon a swiveling plate; but in this invention I dispense with the lever shown in same patent as connecting said chain and plate and connect the chain directly to said plate, and inasmuch as the pull of the upper and lower members of the chain is substantially uniform when applied directly to said plate I avoid the necessity of using the pair of sprocket-wheels which are represented in said patent as holding the lower member of the chain in proximity to the upper member of the same. In this application I show how the sprocket-wheel stands and the rack and presser-bar may be supported by the traverse-rail or rail which supports the traveler instead of being supported by a separate rail shown in said patent. By dispensing with one rail I am enabled to lessen the height of the supporting-stand and the traveler, and thus to render the sliver on the feed-aprons more readily visible and accessible from the front of the machine.

It has been usual to provide the body of the traveler with a long vertical shank and a back-

wardly-extending foot and to pivot the swiveling plate to the under side of said foot, as shown in said patent, by a comparatively short vertical bolt, so that when said bolt or the corresponding hole in said plate became worn said plate had a tendency to rock and to throw the gear too high or too low in the rack and to cause the gear to jump out of the rack and to break the sliver. I make the shank of the traveler-body very short, just long enough to support a long pivot for the swiveling plate, and I provide said plate with a long sleeve adapted to turn freely on the part of said pivot below said shank, thus giving a bearing-surface for the plate longer than the distance between the two members of the driving-chain, so that the traverse-pin of said chain is always below the top and above the bottom of said bearing-surface, thus avoiding any tendency to draw said plate out of its normal plane. Heretofore the chain has been connected to the shank or front part of the traveler or, as in said patent, to a lever pivoted on said shank at a distance from the traverse-rail. By connecting the chain, as herein shown, to the free rear end of the swiveling plate the chain may be supported much nearer than heretofore to the traverse-rail and almost under said rail, thus permitting a shortening of the bearing of the traveler on said rail, because the pull of the chain is nearer to said bearing and between the greater part of the weight and said rail and has less tendency to twist said bearing on said rail, the greater weight in front of the chain being partially counterbalanced by the greater friction of the traveler on the traverse-rail.

By means of the changes above referred to the mechanism is simplified and the weight and cost of the same and the power required to drive the same are greatly lessened.

Said invention consists in the devices and combinations hereinafter described and claimed.

In the accompanying drawings on two sheets, Figure 1 is a plan of my improved card-feeding mechanism; Fig. 2, a front elevation thereof; Fig. 3, a vertical section on the line 3 3 in Fig. 1 through the center of the traveler; Fig. 4, a rear elevation of the

traveler with parts of the chain, traverse-bar, rack-bar, and presser-plate; Fig. 5, a plan of the swiveling plate, showing a feed-roll gear in engagement with the rack-bar.

5 The frame A, apron-rolls B, and aprons b are or may be all of the usual construction, arrangement, and operation, and, as shown in said patent, said aprons being arranged to travel diagonally to the path of the traveler
10 or sliver-carrier C, hereinafter described. The supplementary frame is represented as consisting of two uprights D D' and a single horizontal rail D² instead of the two or more heretofore used to connect said uprights. Said
15 rail D² is the traverse-rail or rail which supports or guides the traveler C and is arranged at an angle with the aprons b in the usual manner, said rail being held in holes in said stands D D' by set-screws $d d'$, which turn in said
20 stands and thrust against said rail. The rail D² is represented in this application as supporting the brackets E E', on which turn the sprocket-wheels F F', these brackets being provided with sleeves $e e'$, which encircle said
25 rail and which are held at a suitable distance from each other, as by set-screws $e^2 e^3$, which turn in said slivers against said rail. The brackets E E' are represented as extending inward from the sleeves $e e'$ behind the trav-
30 erse-rail D² and parallel therewith at such a distance from said rail as to allow the part c of the traveler which engages and nearly surrounds said traverse-rail to pass freely between said brackets and rail. Usually the sprocket-
35 wheel brackets E E' have been supported on one or more intermediate rails placed above the rack-bar I and presser-plate J or on said presser-plate, which is sometimes a part of the supplementary frame and is cast or otherwise
40 rigidly secured to the stands D D'. The construction herein shown is sufficiently rigid and much lighter than that heretofore used. The traverse-rail D² also sufficiently supports the weight of the so-called "supporting-bar" H,
45 rack-bar I, and presser-plate J, all of which are substantially as shown in said patent, except that the ends of the presser-plate are extended in front of the stands D D' and bear upon the front of said stands to obviate any
50 tendency of the traveler and other parts supported by said traverse-rail to swing by their weight backward under said rail and to take the strain off from the set-screws $d d'$. Said supporting-bar H, rack-bar I, and presser-
55 plate J may be connected to each other, as shown in said patent—that is, the bars H and I are rigidly secured to each other—and the presser-plate may be adjustable toward and from the rack-bar by means of bolts and nuts
60 shown in said patent, but forming no part of this invention.

The supporting-bar H is supported and its height is varied by adjusting-screws $h h'$, secured thereto and extending loosely up
65 through stands $h^4 h^5$, which are bolted at $h^6 h^7$

to the under side of the traverse-rails D², nuts $h^2 h^3$ turning on said bolts above and below the horizontal lower parts of said stands. The under side of the traverse-rail D² is flattened near its ends at $d^2 d^3$ to afford a suitable sur-
70 face for the attachment of the stands $h^4 h^5$ and to receive the thrust of the set-screws $d d' e^2 e^3$.

The traveler-body is usually provided with a sleeve or sleeves which entirely surround the traverse-rail D²; but I have shown in Fig. 75
3 a traveler-bearing c^4 , which nearly surrounds said rail, but has a longitudinal slot d^5 on its under side of sufficient width to allow said bearing to pass the stands $h^4 h^5$ without touch-
80 ing them and to permit said stands to be placed at a distance from each other less than the length of the traverse of said traveler, as is necessary properly to support the bars H and I and the presser-plate without sagging.

The vertical front part or shank c' of the
85 traveler C instead of extending nearly down to the supporting-bar H, I have shown as reaching slightly below the traverse-rail. In this shank I secure a long vertical pivot-rod c^2 by means of a nut c^3 , turning on the thread-
90 ed upper end c^4 thereof, against the top of the traveler, said rod having a shoulder c^5 , which bears against the lower end of said shank c' .

The swiveling plate K is provided at its front end with a long vertical sleeve K', which
95 has a turning fit on the rod c^2 , the upper end of said sleeve k being held against the lower end of the shank c' by an enlarged head c^6 on the lower end of said rod c^2 . The plate K is provided at the middle of its rear edge with
100 a vertical projection c^7 , having a vertical slot c^8 , which receives the traverse-pin or driving-pin f , which projects from the sprocket-chain G, driven by the sprocket-wheels F F' in the
105 usual manner, the wheel F' being positively driven by any usual means. The swiveling plate is provided with the usual vertical longitudinal plane surfaces $c^9 c^{10}$, which meet at the angle c^{11} at the back of said plate and rest
110 one at a time against the front of the supporting-bar H.

The swiveling-plate K carries studs L L', on which gears $l l'$ and feed-rolls $l^2 l^3$ turn freely, said gears engaging each other and
115 engaging one at a time the rack-bar I, said feed-rolls being arranged to extend under the presser-plate in the usual manner.

It is obvious that when the machine is in operation the rear gear (according to the di-
120 rection in which the traveler may be moving) will be in engagement with the rack and that the rear surface $c^9 c^{10}$ of the swiveling plate will be against the supporting-bar and that when the movement of the traveler is reversed it will only be after the plate K has been
125 swiveled on the traveler-body, because the traveler is connected to the chain g only through the medium of the swiveling plate.

An arc-shaped slot c^{13} in the top of the ver-
130 tical sleeve K', which receives a pin c^{12} in the

bottom of the shank c' , is intended to limit the swiveling movement of the plate K, the ends of said slot striking against said pin more effectually to prevent said plate from chattering or swinging about the following rear corner thereof away from and against the supporting-bar H.

I claim as my invention—

1. The combination of a traveler-body, suitable guiding means therefor, a traveling belt or chain, a plate swiveled on said body and directly engaged by said chain, a pair of gears carried by said plate and engaging each other, a pair of feed-rolls each rotating with one of said gears and a rack normally engaging the following one of said gears.

2. The combination of a traveler-body, suitable guiding means therefor, a traveling belt or chain provided with a pin, a plate swiveled on said body and provided with a slot engaged by said pin, a pair of gears carried by said plate and engaging each other, a pair of feed-rolls, each rotating with one of said gears, and a rack normally engaging the following one of said gears.

3. The combination of a traveler-body having a shank, suitable guiding means for said traveler-body, a pivot-rod carried by said shank, a plate having a bearing adapted to swivel on said rod, a traveling belt or chain engaging said plate at all times below the upper end and above the lower end of said bearing, a pair of gears carried by said plate and engaging each other, a pair of feed-rolls each rotating with one of said gears, and a rack into engagement with which the following one of said gears is moved by the swiveling of said plate.

4. In a card-feeding mechanism the combination of a rail, a traveler having a bearing nearly surrounding said rail but open below said rail, means for causing said traveler to traverse on said rail, stands secured on said

rail and arranged to be passed by said traveler when said traveler is caused to traverse on said rail, a rack supported by said stands, a pair of gears carried by said traveler and one at a time engaging said rack, and a pair of feed-rolls, each rotary with one of said gears.

5. In a card-feeding mechanism the combination of a rail, a traveler having a bearing on said rail, brackets surrounding said rail and each extending toward each other to a point between the limits of the traverse of said traveler, at a sufficient distance from said rail to allow said bearing to pass between said rail and said brackets, wheels supported on said brackets within the limits of said traverse, a traveling belt or chain connecting said wheels, connecting means between said belt or chain and said traveler, feed-rolls carried by said traveler and means of operating said feed-rolls.

6. The combination of a traveler-body, a plate swiveled thereon, a pin carried by one of said parts and entering an arc-shaped slot, with which the other of said parts is provided, to limit the swiveling movement of said plate on said body, means of supporting and guiding said body, a supporting-bar, said plate having rear surfaces which one at a time bear against said bar, a traveling belt or chain connected to said plate, feed-rolls carried by said plate and means for operating the same.

7. In a card-feeding mechanism, a traveler-body, means for supporting and guiding the same, a plate, adapted to swivel on said body, delivery-rolls carried by said plate, means of driving said roll, and a traveling belt or chain directly engaging said swiveling plate.

In testimony whereof I have affixed my signature in presence of two witnesses.

EDDO V. BATES.

Witnesses:

ALBERT M. MOORE,
LOUIS M. WHITNEY.