No. 636,749. Patented Nov. 14, 1899.

J. M. BOWDEN.

CARD SHUFFLING MACHINE.

(Application filed Apr. 6, 1899.)

(No Model.)

FIG. I.

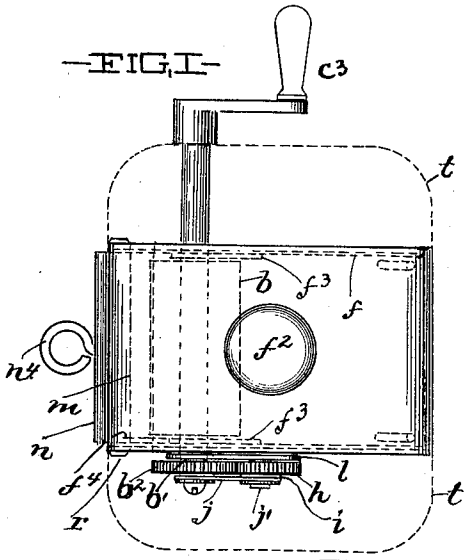


FIG. III.

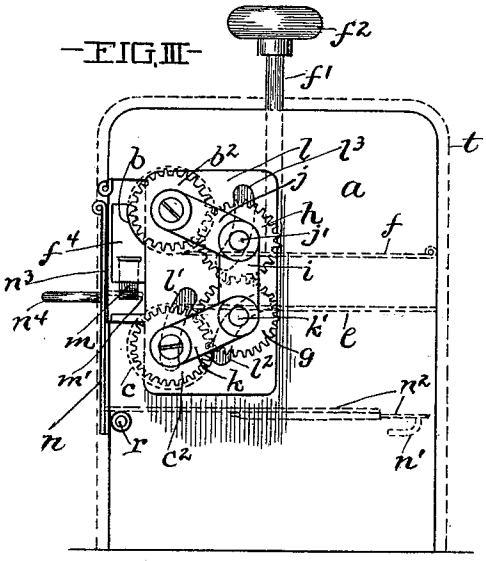


FIG. II.

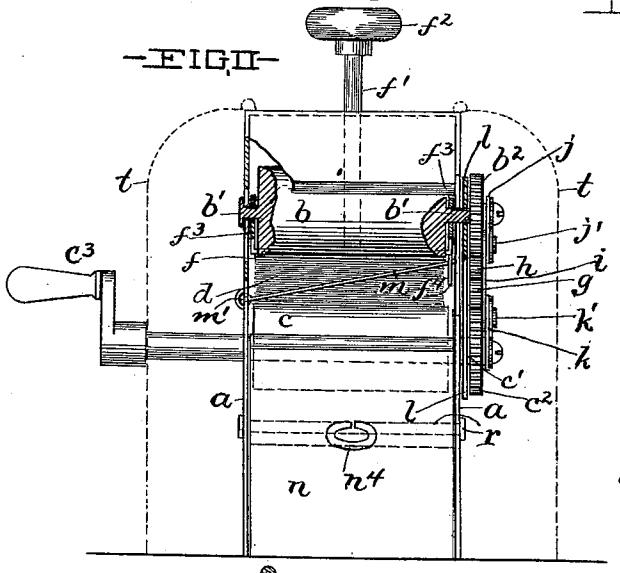
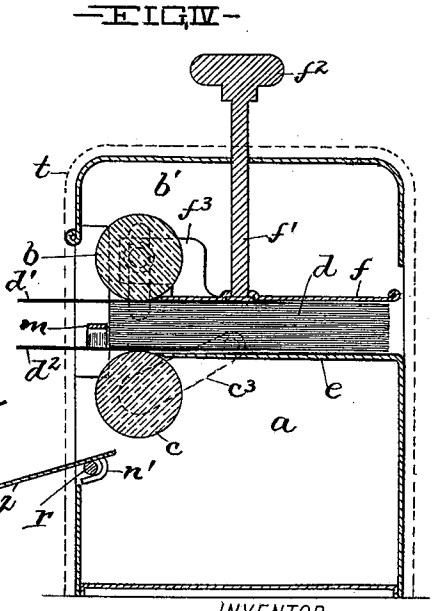
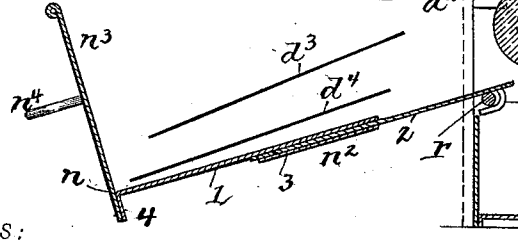


FIG. IV.





WITNESSES:

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JOHN M. BOWDEN, OF LORAIN, OHIO.

CARD-SHUFFLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 636,749, dated November 14, 1899.

Application filed April 6, 1899. Serial No. 711,989. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. BOWDEN, a resident of Lorain, Ohio, have invented certain new and useful Improvements in Card-Shuffling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in card-shuffling machines; and it consists in certain features of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is a top plan of a machine embodying my invention. Fig. II is a left-hand side elevation relative to Fig. I. Fig. III is a right-hand side elevation relative to Fig. II. Portions are broken away and in section in Fig. II to more clearly show the construction. Fig. IV is a central vertical section illustrating the operation of the machine.

The machine illustrated comprises two upright standards *a a*, arranged a suitable distance apart, and two parallel horizontal feed-rolls *b* and *c*, that are arranged the one above the other between the said standards. The lower roll *c* is supported from the standards *a a*, and the upper roll *b* is shiftable vertically to accommodate the interposition of a pack *d* of cards between the two rolls. The pack of cards that requires shuffling is placed upon a horizontal plate or table *e*, that is rigid with and arranged between standards *a a* at the receiving side of the rolls and extends close to and is slightly below but almost flush with the top of the lower roll. Another horizontal plate or follower *f* is arranged above table *e* and movable vertically. Plate or follower *f* is provided with an upwardly-extending stem *f'*, that at its upper end terminates in a knob or handle f^2. Member *f* is provided with arms or brackets f^3, that support the upper feed-roll, whose trunnions *b'* are journaled in the said brackets, and the bottom of the said feed-roll is slightly below member *f*. Member *f* and its load constitute a weight that holds the pack of cards downwardly upon the lower roll *c* and maintains frictional engagement between the lowermost card of the pack and the said roll, and the said weight holds the upper roll *b* downwardly upon the top of the pack of cards and maintains frictional engagement between the upper roll and the pack's uppermost card, so that one or more cards are fed from the top as well as from the bottom of the pack during the rotation of the rolls in the required direction. One of the rolls, and the lower and non-adjustable roll in the case illustrated, is provided at one end with a crank c^3 for operating the same, and the crank-bearing roll is operatively connected at its other end in any approved manner with the upper and adjustable roll.

The operative connection between the two rolls comprises, preferably, the following: The crank-bearing roll has its trunnion *c'* operatively provided with a spur-gear c^2, whose axis is coincident with the axis of the roll, and a diametrically-corresponding gear b^2 is operatively connected with the adjacent end of and has its axis coincident with the companion and adjustable roll, and two intermediate gears *g* and *h* mesh with each other and mesh with the gear c^2 and the gear b^2, respectively. A link *i* connects the two intermediate gears together at the axes of the gears. The said intermediate gears are arranged at one side of the roll-gears, the one above the other, and consequently the link *i* extends up and down. The upper intermediate gear at its axis is connected by a link *j* with the gear of the adjustable roll at the latter's axis. The lower intermediate gear is connected at its axis by a link *k* with the gear of the lower roll at the latter's axis. By this construction it is obvious that the operative connection between the rolls is maintained during the movement of the upper roll toward and from the lower roll, and both rolls are driven simultaneously during the operation of the machine, but in opposite directions, respectively, as required.

Preferably link *k* is journaled upon the trunnion *c'* of the lower roll, as shown in Fig. III. Link *j* is journaled upon the adjacent trunnion *b'* of the upper roll. An upright plate *l* is journaled upon the said trunnion *b'* and extends around the trunnion *c'* and affords more or less bearing and guidance for the pins *j'* and *k'*, that pivotally connect the

link i with the links j and k, respectively. Plate l has three slots l', l^2, and l^3, (see Fig. III,) engaged by trunnion c', pin k', and pin j', respectively, and the curvature or trend of the said slots is such as to accommodate the shifting of the shiftable parts during the elevation of the upper roll preparatory to the introduction of a pack of cards into the machine and during the diminution of the pack between the rolls during the shuffling operation.

To avoid the possibility of feeding too many cards at one time from the pack of cards, I provide a stop-forming bar m at the discharging side of and a short distance from the rolls and arranged diagonally of the space occupied by the central portion of the pack of cards. In fact, the bar m is so arranged relative to the space occupied by the pack of cards that it shall obstruct the passage of all the cards except one, two, or three cards from the top of the pack and a corresponding number of cards from the bottom of the pack. The unobstructed upper card or cards are fed over the bar m by the upper roll, and the unobstructed lower card or cards are fed by the lower roller below the said bar. The said bar at one end is fulcrumed, hinged, or pivoted horizontally and transversely of the bar, as at m', to one of the standards a and at its other end is connected with a lug or flange f^4, formed upon the plate or follower f, so that in any elevation or position of the upper roll relative to the lower roll the bar m will have the arrangement required to stop the passage of all but the limited number of cards desired to be fed at a time from the pack of cards.

The machine is provided also with a shiftable two-sided V-shaped receptacle n for receiving the cards that are delivered by the feed-rolls. This receptacle in its receiving position (shown in Fig. IV) is arranged transversely of the card-delivering side of the machine and adapted to rest upon the card-table at which cards are played and upon which the machine is placed. A cross-bar r extends between and is supported from the standards a a below and at the card-delivering side of the rolls. Bar r is arranged to be engaged by a hook n', formed upon the upper end of the wall n^2 of receptacle n. Wall n^2 is narrower than the space between the standards and can be slid upon the bar r into the said space and is when the machine is not in use slid into the said space, as shown in the first three figures, and in this position the other wall n^3 of the receptacle abuts the standards a a. Part n^3 is provided upon its outer side with a knob or handle n^4, and part n^2 is composed, preferably, of two pieces 1 and 2, capable of sliding upon each other to render the part extensible. The hook-bearing piece 2 is slidable within a sleeve 3, formed upon the piece 1, and the receptacle is provided externally at the junction of its two parts or sides with a shoulder 4, arranged to engage and actuate piece 2 when piece 1 has been slid upon piece 2 preparatory to sliding piece 2 inwardly between the standards a a.

In Fig. IV two cards d' d^2 are shown being fed from the pack of cards and two cards d^3 and d^4 are shown delivered to the receptacle n. It is obvious that when two cards are being fed simultaneously from a pack of cards from the top and bottom of the pack, respectively, in the manner indicated the card fed from the bottom of the pack will drop into the receptacle below the card fed from the top of the pack, and consequently by my improved machine cards drop into the receptacle from the bottom and top of the pack alternately and are thoroughly shuffled when the transfer of the pack from between the rolls to the receptacle is completed.

I would remark also the standards a a are preferably covered with caps t, whose outline is shown by dotted lines.

What I claim is—

1. A card-shuffling machine comprising two suitably-operated feed-rolls arranged one above and shiftable toward and from the other; a table arranged at the receiving side of the rolls, in position to deliver a pack of cards from it to and between the rolls, and means for obstructing the feed of all the cards of a pack of cards interposed between the rolls except the limited number desired to be fed at a time from the pack.

2. In a card-shuffling machine, the combination with the stationary portion of the machine, and two suitably-operated feed-rolls arranged to feed cards simultaneously from the top and bottom of a pack of cards placed between them; of a vertically-tilting stop-forming bar arranged at the delivering side of the rolls and between the top and bottom and diagonally of the space occupied by the pack of cards, which bar is supported from the machine's stationary portion and is connected to and tiltable with the shifting of the upper roll and has such arrangement relative to the rolls that it shall form a stop or abutment for all of the cards of the pack except the limited number desired to be fed at a time from the pack.

3. In a card-shuffling machine, the combination of two feed-rolls arranged one above and shiftable relative to the other; such an operative connection between the rolls as will render the rolls capable of turning simultaneously but in opposite directions, respectively, and remaining operatively connected with each other during the shifting of the upper roll relative to the lower roll, and means for positively limiting the number of cards capable of being fed from between the rolls at one time.

4. In a card-shuffling machine, the combination with two suitably-operated feed-rolls arranged one above the other; a table arranged at the receiving side of the rolls slightly below the top of the lower roll; a vertically-shiftable plate or follower above the table and carrying the upper roll, and means for ob-

structing the feed of all cards of a pack of cards interposed between the rolls except the limited number desired to be fed at a time from the pack.

5. In a card-shuffling machine, the combination with the stationary portion of the machine, and two suitably-operated feed-rolls arranged to feed cards simultaneously from the top and bottom of a pack of cards placed between them; of a stop-forming bar arranged at the delivering side of the rolls and diagonally of the space occupied by the pack of cards, which bar is hinged, pivoted or fulcrumed at one end to the stationary portion of the machine, and connected, at its opposite end, with the upper roll, and has such arrangement, relative to the rolls, that it shall form a stop or abutment for all of the cards of the pack except the limited number desired to be fed at a time from the pack.

6. A card-shuffling machine comprising two standards arranged a suitable distance apart, a two-sided V-shaped receptacle having the arrangement and dimensions required to render it capable of being slid into the space between the standards, and means for holding a pack of cards and feeding a limited number from the pack at a time to the aforesaid receptacle.

Signed by me at Cleveland, Ohio, this 6th day of March, 1899.

JOHN M. BOWDEN.

Witnesses:
C. H. DORER,
A. H. PARRATT.