

No. 673,154.

Patented Apr. 30, 1901.

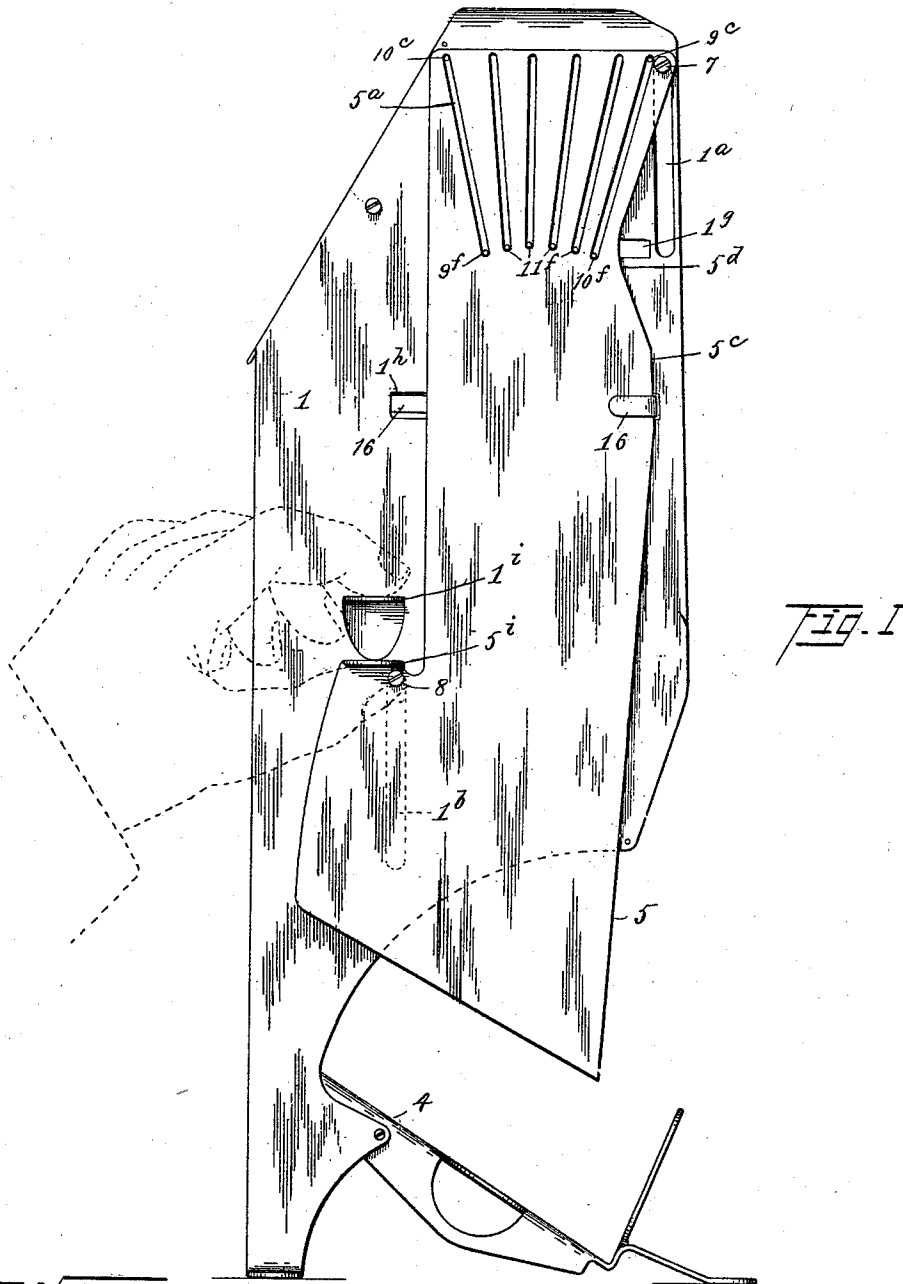
B. F. BELLOWS.

DEVICE FOR SHUFFLING PLAYING CARDS.

(Application filed Feb. 8, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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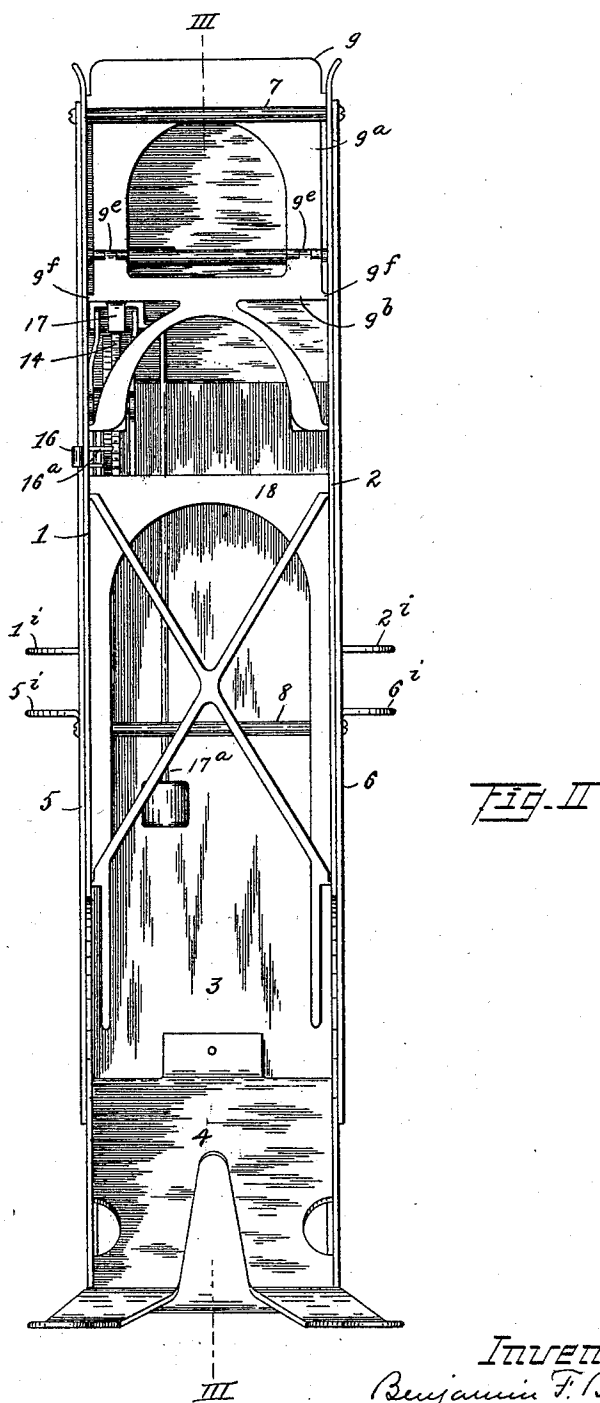
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Witnesses:

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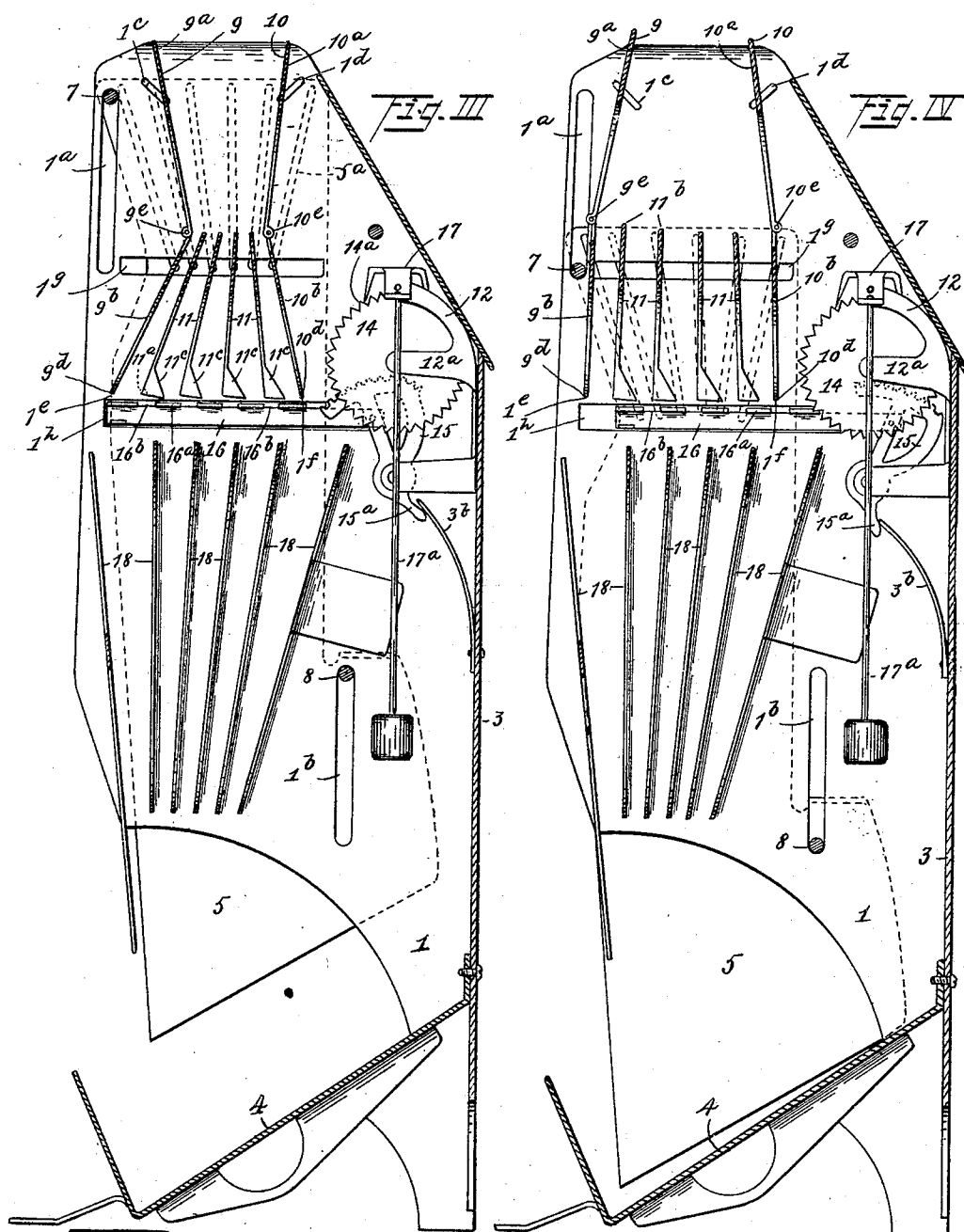
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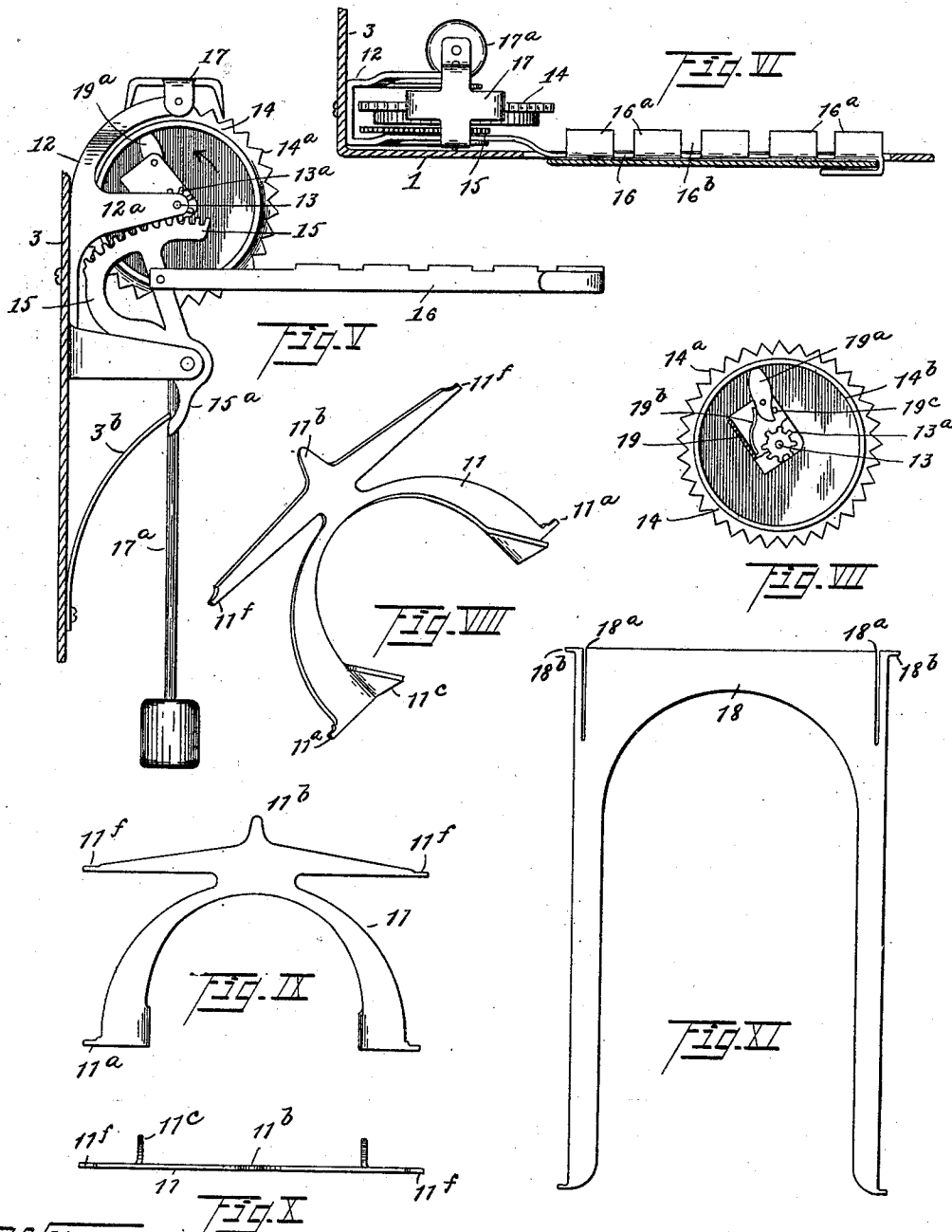
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UNITED STATES PATENT OFFICE.

BENJAMIN F. BELLOWS, OF CLEVELAND, OHIO, ASSIGNOR TO THE BELLOWS NOVELTY COMPANY, OF MINNESOTA.

DEVICE FOR SHUFFLING PLAYING-CARDS.

SPECIFICATION forming part of Letters Patent No. 673,154, dated April 30, 1901.

Application filed February 8, 1901. Serial No. 46,531. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. BELLOWS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Device for Shuffling Playing-Cards; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, constituting a part of this application.

My invention relates more particularly to that class or type of devices above referred to wherein the cards having been irregularly introduced at the top thereof in a series of compartments are allowed to gradually fall through the same in a manner to effect a complete and rapid shuffle. Previous to my invention attempts have been made to produce an operative machine of this class, but in no instance have such attempts embodied the principle or fundamentally utilized the features of my present invention. In all such inventions from the nature of their construction some feeding apparatus is requisite and the number of compartments into which the cards are introduced as an essential preliminary to the shuffle is necessarily limited and to a degree that renders the result obtained of but little if any value. As will appear hereinafter, my device, on the other hand, relies upon and utilizes gravity alone for all movements of the cards and is of such character that a preliminary separation of the pack, whereby the efficiency and incalculability of the shuffle is insured, may be carried to any reasonable extent, all this by a simple, inexpensive, and convenient arrangement that calls for but slight manipulation either to introduce the cards or to accomplish their shuffle.

To enable those skilled in the art to which my invention relates to make and use a device or machine embodying the same, I will now proceed to more fully explain my invention, referring by numerals to the accompanying drawings, which form part of this specification, and in which I have shown the invention as carried out in one of several possible forms to which it lends itself.

In the drawings, Figure I is a side eleva-

tion of the left side of the machine. Fig. II is a front view of the machine. Fig. III is a horizontal vertical section on line III-III of Fig. II or through the middle of the machine and shows the parts in position to receive the pack of cards before the shuffle. Fig. IV is a similar section showing the position of the parts after the cards have passed through the machine and have been thoroughly shuffled, as hereinafter fully described. Fig. V is a detail side view of the escapement mechanism used in the machine. Fig. VI is a plan view of said escapement. Fig. VII illustrates in detail a friction-clutch used in connection with the escapement. Fig. VIII is a perspective view of one of the partitions used separating the pack. Fig. IX is a front view of one of said partitions. Fig. X is a plan view of same. Fig. XI is an elevation of one of the guides in the lower part of the machine. Similar characters of reference designate similar parts throughout the drawings and specification.

The machine is preferably made of sheet metal and can be made in innumerable designs and will lend itself to elaborate ornamentation without impairing the efficiency of the machine for its intended purpose. A plain and simple design is illustrated in the drawings, as it is best suited to a clear description of the construction and operation of the machine.

The body of the machine consists of the two sides 1 and 2 and the back 3 and is preferably formed up of one piece of metal and is provided at its base with a receptacle 4 for the cards after they have been shuffled. A frame is mounted on the exterior of the sides of the body. Said frame is made up of the two curtains 5 and 6, joined together by rods 7 and 8, which pass through vertical slots 1^a and 1^b in the side 1 and corresponding or registering slots in the side 2. This frame is adapted to slide up and down through the field of the vertical slots, and thereby furnish the primary means for operating the machine, as will hereinafter be explained in the description of the operation of the machine. The upper part of the machine, which for

convenience of description will be called the "mouth," is provided with two lips, which are each made up of two pieces 9^a 9^b and 10^a 10^b. These lips are counterparts of each other, and therefore the description of one will answer the description of the other. The part 9^a has trunnions 9^c on both sides thereof, near the top, and the part 9^b has trunnions 9^d on both sides, near the bottom, the two parts 9^a and 9^b being hinged together by the hinges 9^e. The lip 10 is provided with like trunnions 10^c and 10^d and hinges 10^e. The trunnions 9^c have their bearings in the slanting slots 1^c in the side 1 and a corresponding slot in the side 2, near the front, and the trunnions 10^c have their bearings in the slanting slot 1^d in the side 1 and a corresponding slot in the side 2, near the back of the machine. The lower trunnions 9^d and 10^d have their bearings in the sides 1 and 2, at the points 1^e and 1^f in side 1 and corresponding points in side 2. Pivoted in the sides 1 and 2, between the hinged lips 9 and 10, are a series of partitions 11, provided with suitable trunnions 11^a, which have their bearings in the sides 1 and 2 in line with the pivoted points 1^e and 1^f on the side 1 and in line with the corresponding points on the side 2. In the machine illustrated there are four of the said partitions, which divide the throat or receiving-receptacle of the machine into five compartments. The lower portions 9^b and 10^b of the hinged lips 9 and 10 and the partitions 11 are provided with extensions 9^f, 10^f, and 11^f, respectively, which pass through horizontal slots 1^e in the side 1 and corresponding slots in side 2 and enter radiating slots 5^a in the curtains 5 and 6.

In the interior of the machine, rigidly attached to the back 3, is a housing 12, having two ears 12^a, in which is mounted a shaft 13. A pinion 13^a is rigidly attached to the shaft 13 between the ears 12^a, and an escapement-wheel 14, provided with teeth 14^a, is loosely mounted on said shaft between the ears. A segmental rack 15 is mounted in suitable bearings below the shaft 13 and is in mesh with the pinion 13^a. The segmental rack 15 has a depending tongue 15^a, against which constant forward pressure is exerted by the spring 3^b, attached to the back 3. Pivotally attached to the segmental rack 15 is a bar 16, which extends forward through a horizontal slot 1^b in the side 1 and is bent outward and back over the edge of the curtain 5. An escapement 17, provided with a pendulum 17^a, is mounted above the escapement-wheel 14 and adapted to engage the teeth 14^a of said wheel. The bar 16 is provided with a series of inwardly-projecting shelves 16^a, corresponding in number to the number of compartments in the throat of the machine. Guides 18 are inserted in the machine below the bar 16 and are arranged at suitable angles to direct the fall of the cards onto the receptacle 4 in such a manner that they will not

clog the machine, but will fall in an even pile on said receptacle. For convenience and economy in assembling it is preferable to provide the guides 18 with slits 18^a, so that the lugs 18^b may be sprung into registering perforations in the sides 1 and 2.

The sides 1 and 2 are provided with outward-extending ears 1ⁱ and 2ⁱ and the curtains 5 and 6 with similar ears 5ⁱ and 6ⁱ.

Having now described the construction of the machine, except in some minor details which will be brought out farther on, I will now describe the operation.

The sliding frame is first raised to the position shown in Figs. I and III by grasping the ears 1ⁱ and 5ⁱ or 2ⁱ and 6ⁱ, as most convenient, between the thumb and finger and pressing them together. This movement carries the bar 16 forward, owing to said bar being bent over the front edge of the curtain 5 and following the contour of the edge, which is extended forward at 5^c. The bar 16 is carried forward until the shelves 16^a are directly under the compartments in the throat of the machine. The forward movement of the bar imparts a partial revolution to the segmental rack 15 against the resistance of the spring 3^b. The segmental rack being in mesh with the pinion 13^a causes the shaft 13 to revolve. When the sliding frame has been raised to the limit allowed by the vertical slots 1^a 1^b in the side 1 and their corresponding slots in side 2, the machine is set ready to receive the pack of cards to be shuffled. The pack is then inserted in the mouth of the machine and rests on top of the partitions 11. The tongues 11^b, entering the pack, divide it into five parts. The frame is next pushed down to the position shown in Fig. IV, and the hinged lips 9 and 10 and the partitions 11, being guided by the radiating slots 5^a, are by this movement caused to spread and assume a substantially upright position as the extensions 9^f, 10^f, and 11^f enter said radiating slots. The cards then drop by gravity onto the shelves 16^a, the openings 16^b being shielded by the inward flanges 11^c on the partitions. The segmental rack being under constant pressure of the spring 3^b has a tendency at all times to draw the bar 16 back and is free to do so when the frame is pushed down, owing to the inward curve 5^d of the forward edge of the curtain 5. As the bar 16 is drawn back the shelves 16^a are withdrawn from under the cards in the five compartments in the throat of the machine and they are allowed to drop by gravity through the openings 16^b. If the segmental rack under pressure of the spring were allowed to withdraw the shelves suddenly or without any restraint, the machine would clog and be inoperative. It is therefore necessary that the withdrawal shall be gradual and allow the cards to drop from the different compartments one at a time. This is provided for by a clutch of any suitable kind, which will allow the shaft 13 to revolve freely when the bar is being carried forward,

but which will lock the said shaft to the escapement-wheel when the bar starts on its backward trip. The clutch shown in the drawings is a simple form of friction-clutch, which answers the purpose. It consists of a frame 19 attached to the shaft 13. Pivoted in the frame 19 is a dog 19^a. A light spring 19^b presses against the rear of the dog 19^a. It will readily be seen that when the segmental rack is pulled forward and the shaft revolved in the direction of arrow in Fig. V the clutch will revolve freely with the shaft; but when the action is reversed the dog 19^a will engage the interior of the rim 14^b of the escapement-wheel 14 owing to the resistance-pin 19^c, against which the forward part of the dog 19^a presses. The locking of the shaft 13 to the escapement-wheel 14 brings into action the escapement, which will regulate the withdrawal of the shelves from beneath the cards and allow them to drop one at a time until they have all dropped from the several compartments, as the distance of travel of the bar 16 is sufficient to allow the openings 16^b to pass under all the cards in the compartments. The cards after dropping from the compartments are guided by the guides 18, which are arranged at just the proper angle to direct the cards so that they will strike the inclined receptacle 4 and form themselves into a regular pack. The escapement is so timed and the pitch of the guides 18 and receptacle 4 so arranged that the cards in their journey from the compartments to their final place of rest on the receptacle will not interfere or pile up and clog the machine, which they would do if the bottom edge of one card should strike the top edge of another. When the cards have all passed through the machine, the loop on the forward end of the rod 16, coming in contact with the curved edge 5^d of the curtain 5, will stop the machine. During the shuffling of the cards or while they are passing through the machine and being received on the receptacle 4 the front of the machine being open the backs of the cards and the operation of the machine may be seen, and thus satisfy those who may be skeptical that there is no trickery about the machine, at the same time the curtains 5 and 6 being down, as shown in Fig. IV, prevents any view of the face of the cards and the locating of the position of any card in the shuffled pack. After the machine comes to a rest and the shuffled pack is lying on the receptacle 4 it is necessary, in order to readily remove the pack, to raise the sliding frame, which action, as hereinbefore stated, sets the machine ready for the next shuffle.

Of course many modifications of the construction above described may be made in design or details without departing from my invention in its broader scope. Thus, for instance, although I have shown a special clutch in connection with an escapement and spring, which together automatically withdraw the

support from the cards when the latter are resting thereon in their several compartments, nevertheless the main principle of my invention is not to be limited to such special form of clutch or particular combination of spring, segmental rack, pinion, and escapement movement. Any means of actuating the said supports and withdrawing the same, as required, may be employed, and this, too, although, as by the substitution of some hand-power, like a crank-shaft provided with suitable gearing, the movement referred to loses its automatic character, the controlling idea of the invention as a whole being to introduce the pack into compartments in a substantially upright position and by gradually withdrawing the support on which they rest to allow the cards to freely fall from the several compartments to a common receptacle or assemblage-point.

Having now so fully explained my novel construction that those skilled in the art can make and use it, either in the form shown or under some modification thereof, what I claim as new, and desire to secure by Letters Patent, is—

1. In a card-shuffling device an upright receptacle in combination with a series of pivoted partitions whereby a series of compartments are formed, means for oscillating said partitions, apertures at the bottom of said compartments for the escape of the cards and suitable means for opening and closing said apertures, substantially as described.

2. In a card-shuffling device, the combination of an upright card-receiver at the top thereof provided with a series of partitions, the said partitions and the rear and forward walls of said receptacle being movably connected to said device at their lower portions together with suitable means for causing said partitions and walls to move toward each other about their bearings or connections to said device, and suitable means for opening and closing the bottoms of the compartments in said receptacle formed by said partitions, substantially as shown and described.

3. In a card-shuffling device, an upright card-receptacle at the top thereof having a series of partitions arranged therein, said partitions being movably connected to said device at their lower portions and forming a series of compartments whereby the pack is divided, means for causing said partitions to move from each other about their bearings or connections to said device, a suitable support arranged beneath said compartments and means for gradually withdrawing said support, substantially as shown and described.

4. In a card-shuffling device, a series of compartments arranged at the top thereof, said compartments being formed by pivotally-movable partitions and provided with apertures at the bottom of the same for the escape of the cards, means for oscillating said partitions, a card-receiver below said compartments ar-

ranged at a proper angle to direct the cards
as they fall thereon into an assembled posi-
tion in said receiver, rigid guides arranged
intermediate the apertures and said receiver
5 whereby the cards upon their escape through
the apertures are directed to the floor of the
receiver, and suitable means for opening and

closing said apertures, substantially as shown
and described.

BENJAMIN F. BELLOWS.

In presence of—

WM. H. KEES,

L. F. GRISWOLD.