Nov. 22, 1938. H. E. STONEBRAKER 2,137,513

CARD SHUFFLING MACHINE

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Fig. 1

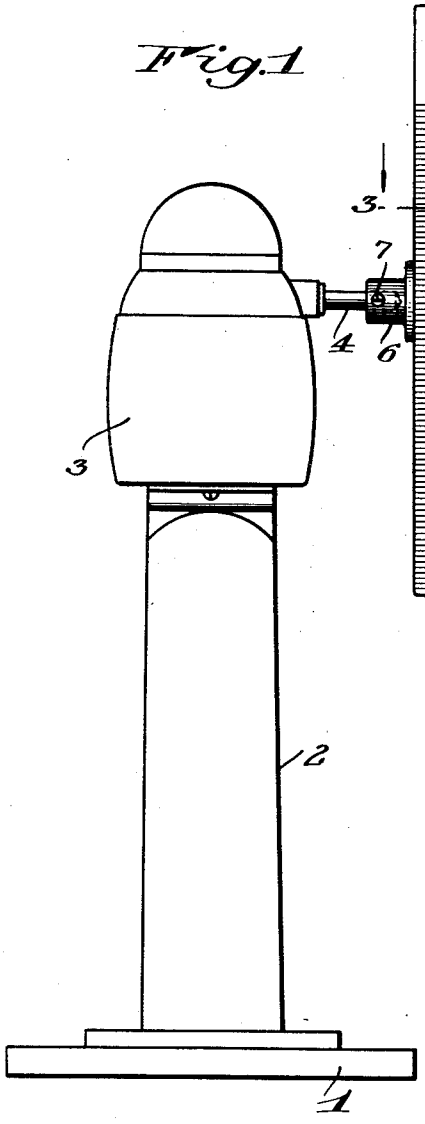


Fig. 2

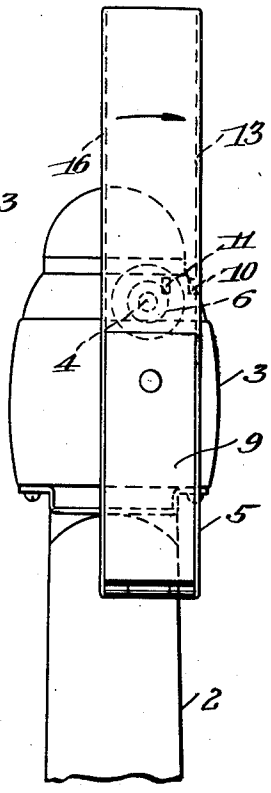
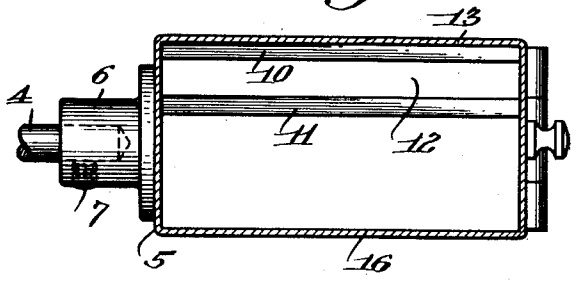


Fig. 3



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Fig. 4

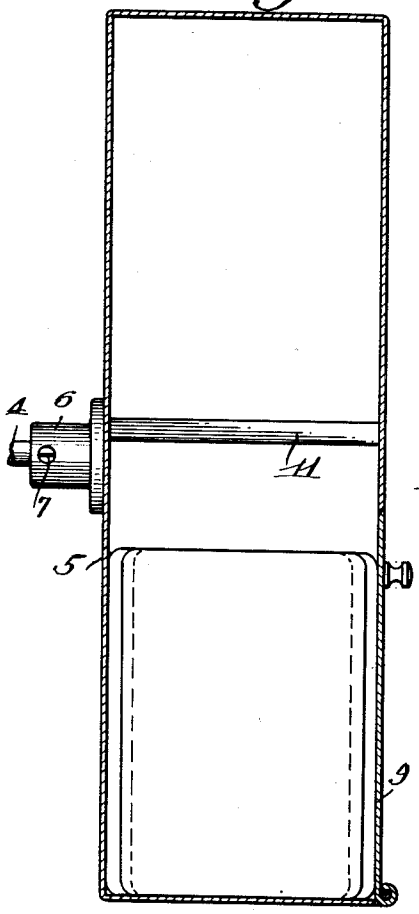


Fig. 7

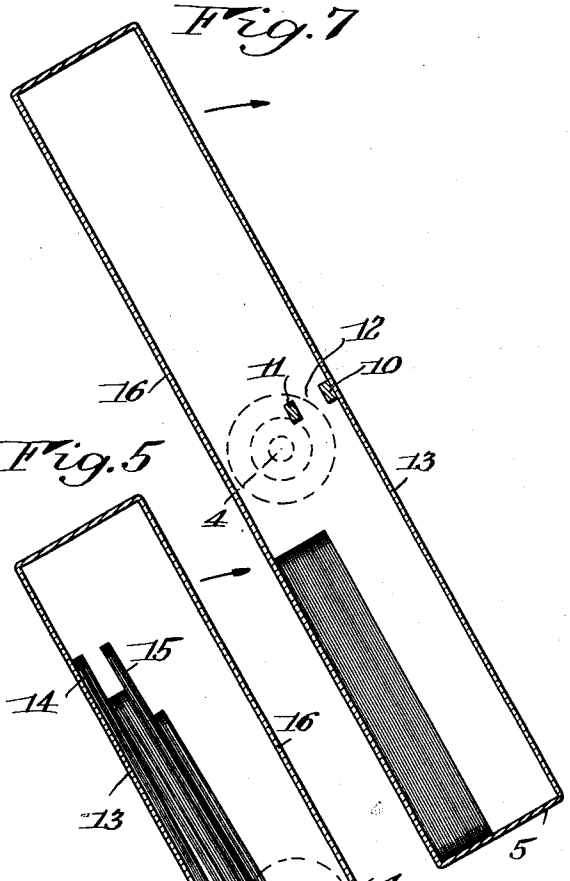


Fig. 5

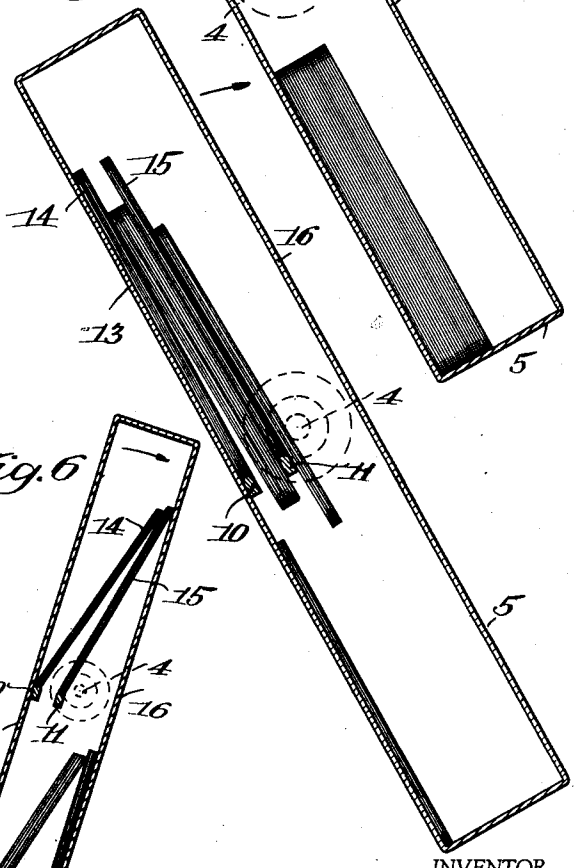


Fig. 8

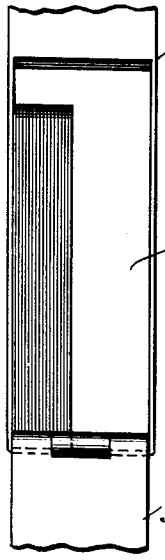


Fig. 6

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UNITED STATES PATENT OFFICE

2,137,513

CARD SHUFFLING MACHINE

Harold E. Stonebraker, Rochester, N. Y.

Application March 25, 1937, Serial No. 133,024

4 Claims. (Cl. 273—149)

This invention relates to a card shuffling machine, and has for its purpose to afford a simple and practical mechanism for quickly and effectively shuffling playing cards or the like.

The invention has for its object to afford a movable container in which cards can be readily positioned, the cards being mixed or shuffled as they fall from one end of the container to the other, as the position of the latter is shifted.

More particularly the invention comprehends a container adapted to be rotated or otherwise actuated to shift its position and cause cards to fall successively from opposite ends thereof, the container having one or more barriers or obstructions in the path of the cards whereby when the latter fall in one direction, certain of the cards are held back, causing an irregular mixing or shuffling, the container being so shaped as to prevent reversal of the position of the cards so that they all continue to face in the same direction as when inserted in the container.

To these and other ends, the invention consists in the construction and arrangement of parts that will appear clearly from the following description when read in conjunction with the accompanying drawings, the novel features being pointed out in the claims following the specification.

In the drawings:

Fig. 1 is a side elevation of one practical embodiment of the invention, the closure to the opening through which the cards are inserted in the container appearing in open position in dotted lines;

Fig. 2 is an end elevation, looking from right to left of Fig. 1, with the supporting pedestal partially broken away;

Fig. 3 is a horizontal sectional view on line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a vertical sectional view through the container, showing the initial position of the cards;

Fig. 5 is a transverse vertical sectional view through the container, showing the position of the cards and container when the latter has nearly completed a half turn from the position shown in Fig. 4;

Fig. 6 is a similar view showing the position of the cards and container when the latter has completed slightly more than a half turn from the position shown in Fig. 4;

Fig. 7 is a similar view showing the position of the cards and container when the latter has nearly completed a full turn from the position shown in Fig. 4, and

Fig. 8 is a side elevation of the container, with the upper portion broken away, showing the closure open and the cards in their initial position.

The invention may be carried out in a variety of ways, and in the construction shown, which is intended merely by way of illustration of one practical adaptation, 1 designates a base provided with a pedestal 2 upon which is suitably mounted an electric motor 3 having a built in gear reduction of any well known form to actuate the driven shaft 4 in a clockwise direction so that the latter will be rotated at a proper speed to effect the desired movement of the container.

It has been found in actual practice that a speed of the driven shaft 4 of from twenty-five to fifty turns per minute will cause effective shuffling of the cards, although it is within the province of the invention to rotate the shaft 4 at any speed that will effect proper gravitation of the cards in the container, or to move the container in other ways than by rotation so as to cause the cards to fall successively from one end to the other.

The container is designated at 5 and may be constructed of metal or other suitable material. It is suitably mounted on the driven shaft 4, as by means of a collar 6 fixed to one wall of the container and held on the shaft 4 by the set screw 7. The container is of a length somewhat greater than twice the length of a playing card, and is of a width somewhat greater than the width of a playing card, while its thickness is preferably equal to or somewhat greater than twice the thickness of a deck of playing cards.

The cards are inserted in the container and removed through an opening in one of its walls, such for example as opening 8, while 9 designates a closure or door which may be hinged as shown, or otherwise constructed, and adapted to be held in closed position by frictional engagement, or in any other suitable manner. It will be understood that the opening and closure through which the cards are inserted or removed may be located in one of the wide walls of the container, instead of in a side wall.

The container is adapted to be turned in a clockwise direction in the construction illustrated, and is provided with means of such a character that when the cards fall from one end of the container to the other, a part are held back, causing a redistribution or change in the relationship of the cards as the container changes position end to end. This is accomplished in the

construction illustrated by a barrier or ledge 10 located adjacent to one wall of the container and extending thereacross, and a second barrier 11 parallel to the first barrier and spaced therefrom, affording a space or slot 12 between the barriers.

The barrier 10 may be suitably fixed to the adjacent wall of the container by welding or otherwise, or formed integral therewith, and the barrier 11 is maintained in the position shown by having its ends extending to and permanently attached to the opposite walls of the container at the ends of the barrier 11. The width of the barriers 10 and 11 and of the slot 12 may be varied, and it has been found in practice that successful results are obtained when the barriers 10 and 11 are approximately one-eighth of an inch wide and the slot or opening 12 approximately five-sixteenths of an inch wide. As a result, a portion of the cards are retained on the barriers 10 and 11 while a portion fall through the opening or slot 12 and on the opposite side of the barrier 11, when the cards are above the latter and moving downwardly.

The motor is provided with a suitable switch, not shown, and the switch may be operated to stop the motor when the container is in the position shown in Fig. 4 with the opening 8 preferably at the bottom. The cards are inserted in the position shown in Fig. 4, and the door 9 is closed, whereupon the motor is started. As it turns in a clockwise direction, the cards initially rest against the wall 13, see Fig. 5, and as the latter moves upwardly, the cards start to slide downwardly in the container by gravity. In Fig. 5, a few cards are shown in the bottom of the container, these having already passed beyond the outer barrier 11, and two additional groups of cards are shown falling on both sides of the barrier 11, while the groups of cards indicated at 14 and 15 are held back by their engagement with the barriers 10 and 11. These two groups of cards remain in the upper end of the container resting upon the barriers 10 and 11, and as the container turns further in a clockwise direction, the upper ends of the cards last mentioned fall over against the wall 16, as shown in Fig. 6.

As the container turns further around, reversing its ends, the cards which have previously fallen downwardly as already described slide by gravity along the wall 16 to the opposite end, as shown in Fig. 7, mixing with the cards retained at that end by the barriers 10 and 11 in an indiscriminate fashion, falling on both sides of and in between said cards irregularly. As the container turns further in a clockwise direction from the position shown in Fig. 7, the cards fall over against the opposite wall 13 and the operation already described is repeated, and continued until the cards are thoroughly shuffled. The number of rotations of the container required for a thorough intermingling of the cards may depend upon the speed of turning, and it has been found that with an average speed of about thirty to forty turns per minute, approximately sixty turns of the container are sufficient to bring about effective shuffling.

While the construction herein shown embodies a container in which the cards slide endwise, it will be apparent that the container may be constructed so that its width will be slightly greater than the length of a card, while the length of the container would be slightly greater than twice the width of the card. The cards would then be positioned in the container with their long dimension crosswise and would slide laterally instead of endwise, but the principle of operation would be the same as that already described.

While the invention has been described with reference to the details of construction herein shown, it is susceptible of various modifications without departing from the underlying principles of the improvement, and this application is intended to cover any changes or departures that may come within the intent of the invention or the scope of the following claims.

I claim:

1. A card shuffling machine comprising a rotary container having parallel straight side walls, a barrier located against one of said side walls of the container and a second barrier spaced from the first barrier and affording an opening therebetween through which cards can fall, the said barriers including relatively wide card supporting surfaces in the same horizontal plane at right angles to said side wall, and the opposite side wall being free of any barrier to permit unobstructed movement of the cards therealong.

2. A card shuffling machine comprising a rotary container having parallel straight side walls, a barrier located against one of said side walls intermediate the ends and a second barrier spaced from the first mentioned barrier, said barriers having card supporting surfaces in the same horizontal plane and affording an opening therebetween through which cards can fall while some of the cards are retained by said barriers on both sides of said opening against movement, the opposite wall of the container being unobstructed between its ends to permit free movement of the cards.

3. A card shuffling machine comprising a rotary container having parallel straight side walls, means within the container adjacent to one of said side walls for preventing gravitation of cards on both sides of the central cards of a deck and permitting gravitation of the central cards of the deck from one end to the other as the container is rotated, the opposite wall of the container being unobstructed to permit free movement of cards therealong from one end to the other as the container is further rotated.

4. A card shuffling machine comprising a rotary container having straight parallel side walls, a narrow barrier against one of said side walls and a second narrow barrier spaced from the first named barrier and parallel thereto, said barriers having relatively wide card supporting surfaces in the same plane at right angles to said side wall and acting to retain two spaced groups of cards as the container is rotated while a central group of cards passes through the opening between the barriers, the opposite side wall of the container being free of any barrier to permit unobstructed movement of cards therealong.

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