March 1, 1932. L. A. LUX 1,847,346

CARD DEALING MACHINE

Filed April 12, 1929

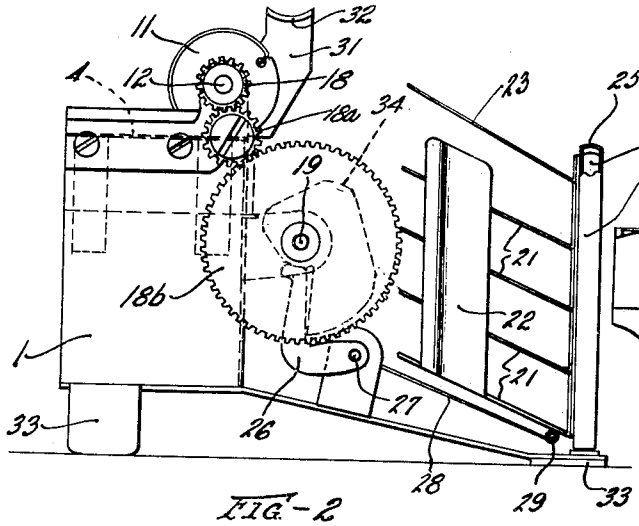

FIG. 2

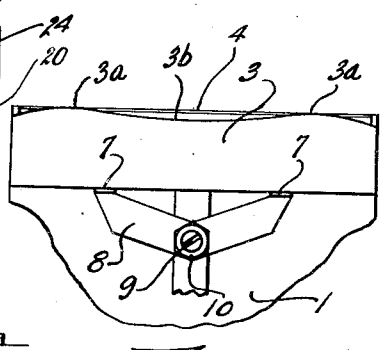

FIG. 4

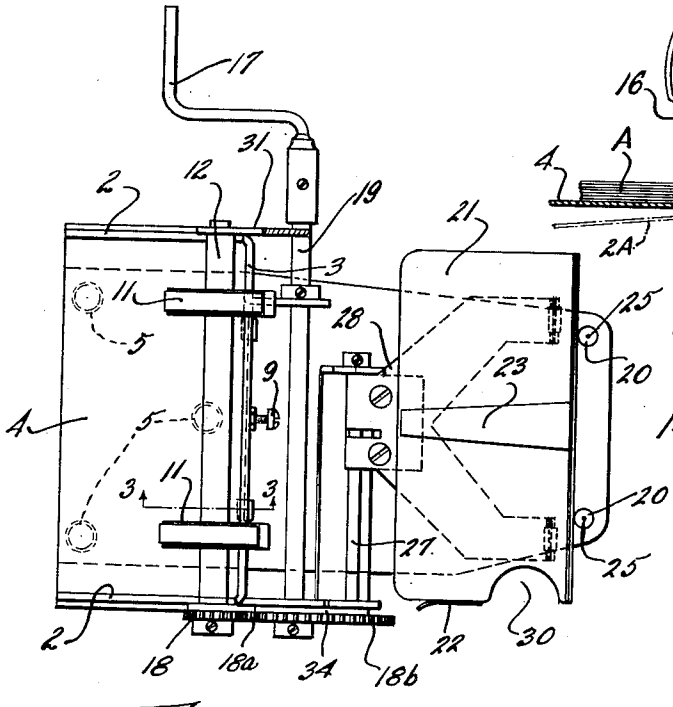

FIG. 1

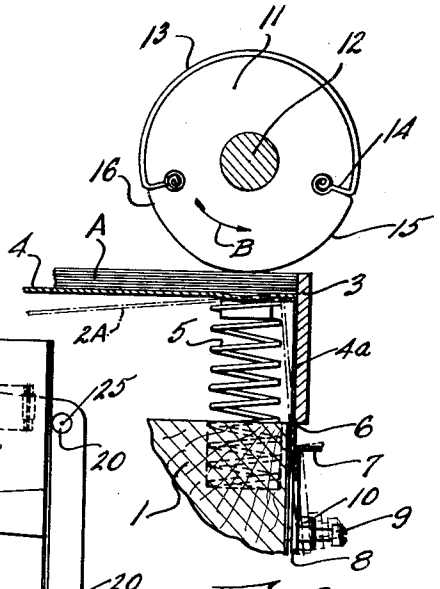

FIG. 3

INVENTOR

LEO A. LUX

BY

Brockett, Hyde, Higley & Mayer

ATTORNEYS

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UNITED STATES PATENT OFFICE

LEO A. LUX, OF LAKEWOOD, OHIO, ASSIGNOR OF ONE-HALF TO HENRY G. TREMMEL, OF SHAKER HEIGHTS, OHIO

CARD DEALING MACHINE

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This invention relates to machines for dealing playing cards, its object being to provide an apparatus which is of relatively simple form and embodies in a portable unit the necessary means for handling a deck of cards and separating it into a number of groups or hands which are individually collected in the compartments of a collecting device or carrier to be available for distribution to the players.

A further object of the invention is to improve the mechanism for individually feeding the cards to the collecting device, including the provision of a special form of feeding roller and adjustable means for adapting the apparatus to cards of varying thickness.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawings, which represent one suitable embodiment of the invention, Fig. 1 is a plan view; Fig. 2 is a side elevation; Fig. 3 is a detail sectional elevation, on a larger scale, on approximately the line 3—3, Fig. 1; and Fig. 4 is a detail elevation from the right in Fig. 3.

The apparatus shown in the drawings comprises a suitables frame, marked generally 1, including a rear body portion having two parallel side walls 2, joined by a strap 3, forming a rectangular recess open at the top, in which is mounted a horizontal support for the deck of cards to be dealt, the support shown being in the form of a plate 4 mounted upon a plurality, three being shown, of compression springs 5. The front edge of said plate, just behind the lip or edge of the strap 3, is provided with a depending apron 4*a*, extending along the inner surface of the strap and extending down through a slot 6, between the edge of the strap and an adjacent portion of the base 1. Below said strap the apron is provided with outwardly projecting stop fingers 7 spaced from each other and connected by a depending strap 8 in which is an adjusting screw 9 adapted to be clamped by a lock nut 10. The deck of cards, indicated at A, is laid in place upon the feeding plate 4 and beneath the feeding rollers later to be described, the springs 5 constantly urging it upwardly with a light tension toward the feeding rollers. By screwing up the adjusting screw 9 the entire plate 4 and apron can be slightly tilted about the edge of the base 1 at the slot 6 as a fulcrum, the dotted lines in Fig. 3 showing an exaggerated adjustment thereof. The purpose of this adjustment is to minutely vary the relation of the plate 4, and of the deck supported therein, to the upper edge or lip of the strap 3 over which the cards are fed to the collecting mechanism, and to thereby adapt the machine for accurately handling cards of slightly different thickness.

Above the deck of cards are mounted suitable devices for advancing them to the collecting parts, such as a pair of feed rollers 11 fast with a shaft 12 provided at one end with a small pinion 18 meshing with an intermediate pinion 18*a* driven by a large gear 18*b* on a shaft 19 having an operating handle 17. Rotation of the handle 17 drives the feeding rollers in the direction of the arrow B, Fig. 3. Said rollers contact with the upper surface of the top card, and are provided with suitable friction means for causing the top card to be separated from the deck and fed or advanced across the lip of strap 3.

For convenience, the cards dealt by this machine are collected in separate packs or groups instead of being dealt individually directly upon the playing table. For that reason the feeding rollers are arranged to advance the cards only during a portion of their rotation, the remainder of their rotation being an idle movement to permit the collecting device to advance to position for receiving the next card. As shown, a part of each roller is provided with a friction surface, such as afforded by the rubber band 13, the ends of which are stretched and passed through restricted slots 14 in the roller. This arrangement enables the friction surface to be readily renewed with material ordinarily at hand. The remaining portion of the surface of each roller, indicated at 15, is at approximately the level of the outer surface of the rubber band and is a smooth surface such as metal or the like, but at one end this surface is filed off or reduced to form a hollow depression 16

slightly in advance of that end of the friction surface 13 which first engages the cards.

With the parts in the position shown in Fig. 3, the cards are pressed against the smooth metal surface 15, but the edge of the upper card is held back by the strap 3, and they are so held back while the collecting device to be described moves to a new receiving position for another compartment. When the depression 16, which is fairly short, reaches the cards, the pile rises slightly to expose the edge of the top card and as soon as the advance edge of the friction surface 13 reaches the top card it is flipped or shot forward over the edge of strap 3, but the added height of the friction surface above the depression 16 depresses the rest of the pack and holds the other cards back. The top card is completely ejected at about the following end of the friction surface 13, so that at the full height the smooth surface 15 again slides idly over the back while the collecting device again advances to a new position, and so on.

The collecting device for the separate groups of cards may be of any suitable form, such as a rotatable turntable with a plurality of pockets or compartments distributed around its circumference. In the arrangement shown, however, the collecting device is a light sheet metal frame including two tubes or sleeves 20 connected by a series of sheet metal shelves 21 fastened together by a strengthening plate 22. The shelves 21 are inclined and in the arrangement shown are four in number, providing four compartments, the upper one of which is provided with a finger or guard 23. The tubes 20 slide upon posts 24 attached to the base and said tubes may be closed at their upper ends and provided with small leak ports 25 so that in effect they act as dashpots to cushion the fall of the collecting unit. To operate said unit the gear 18*b* is provided with a suitable cam 34, with which cooperates the foot end of a lever 26 connected to a shaft 27 mounted in brackets of the frame and provided with a bifurcated arm 28, the two portions of which are provided with tubular rollers 29 underlying the bottom shelf 21.

The gearing is so arranged and proportioned as to provide timed relation between the cam 34 and the feeding rollers 11. Cam 34 may be a simple snail form cam, so that upon rotation of the shaft 19 the cam 34 uniformly raises the collecting unit at such a rate of speed that during its complete upward movement four cards (in the form shown) are advanced by the feeding rollers and lodge one each on each of the four shelves. As the end of the cam is reached the lever foot passes beyond it and the collecting unit drops to its lowermost position, its fall being cushioned by the dashpot effect, whereupon the operation proceeds as before with a series of four cards fed by the feeding rollers and distributed one into each of the four compartments. In the arrangement shown the cam is a four-step cam, so that the feeding unit is raised by three successive movements with a dwell after each lift, one card being delivered to each compartment during the dwell period. With the uniform snail cam the rising movement of the collecting unit is uniform and the cards are delivered to the compartments while the unit is in motion.

Preferably, the several shelves of the collecting unit are provided at one end with recesses 30, in alinement with each other, into which a finger can be inserted to push the groups of cards endwise along the shelves so that they can be readily removed from the unit. Also, the frame may be provided with a bracket 31 having a horizontal concave extension 32 extending laterally across the frame upon which the fingers of the left hand may be pressed to hold the unit down while the dealing operation proceeds. The frame may also be mounted upon suitable cushions, such as the rubber feet 33.

The upper edge of the strap 3 may be straight, but preferably is curved or recessed when viewed in elevation, as in Fig. 4, to present two or more upwardly extending humps 3*a* and an intervening shallow recess 3*b*, the humps 3*a* forming a skeleton edge which merely engages the top card at two points instead of along its entire edge. Therefore, even if the pack contains one card which is bent or sprung out of a flat plane, the feeding device will function successfully, particularly because the two spread hold-back points on the feeding lip or strap 3 prevent any liability of turning or twisting the card while being advanced, as is the case when the card is being held back only along its center.

The apparatus is suitable for dealing the cards of an entire deck into four groups, as in auction bridge, or a deck of forty-three cards may be dealt into four hands of ten each, leaving three on the feeding shelf 4, as in the game of Five Hundred, and also may be used in other ways.

What I claim is:

1. Apparatus of the class described, comprising a frame provided at one end with a magazine, and a feeding roller to which cards are presented from said magazine, a multiple compartment receiver at the other end of said frame, said receiver being movably mounted to present each of its compartments to the feeding roller, an operating shaft, gearing connecting said shaft and feeding roller, and cam mechanism actuated by said shaft for moving said receiver.

2. Apparatus of the class described, comprising a frame provided with a card receiving magazine having a feeding lip, a movable follower therein for advancing cards to said lip, yieldable advancing means for said follower, means for adjusting said follower to

vary the presentation of the cards to said lip, and a feeding roller to which the cards are presented flatwise and arranged when actuated to move the leading card past said lip.

3. A feeding roller for card dealing machines, having two spaced recesses adapted to receive the ends of a strip of friction material and a depression adjacent one only of said recesses.

4. Apparatus of the character described in claim 2, in which said feeding lip is curved back and forth to present spaced holding portions to the card edge.

5. Apparatus of the class described, comprising a card holding magazine provided with a movable follower, card feeding means to which said follower presents the cards in said magazine, an actuator for said card feeding means, a multiple compartment receiver to which the cards are delivered by said feeding means, and cam means having a series of lobes increasing in height and followed by a full drop for presenting the several compartments repeatedly in the same order to the feeding means.

6. Apparatus of the class described, comprising a feeding roller, means for presenting a stack of cards flatwise thereto, said feeding roller having smooth and friction surfaces for engaging the flat surface of the leading card, and a holding lip over which the cards are fed, the smooth surface of the roller being progressively and circumferentially reduced in height to enable the stack to feed flatwise toward the roller axis to present the next card beyond the holding lip.

In testimony whereof I hereby affix my signature.

LEO A. LUX.