Sept. 7, 1954 F. H. OGDEN 2,688,489

CARD SHUFFLING DEVICE

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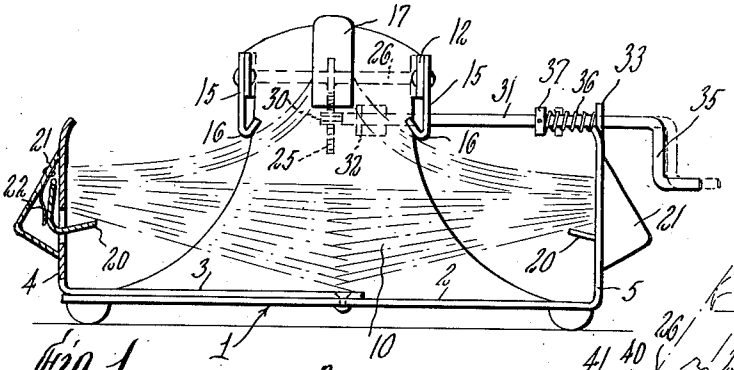


Fig. 1.

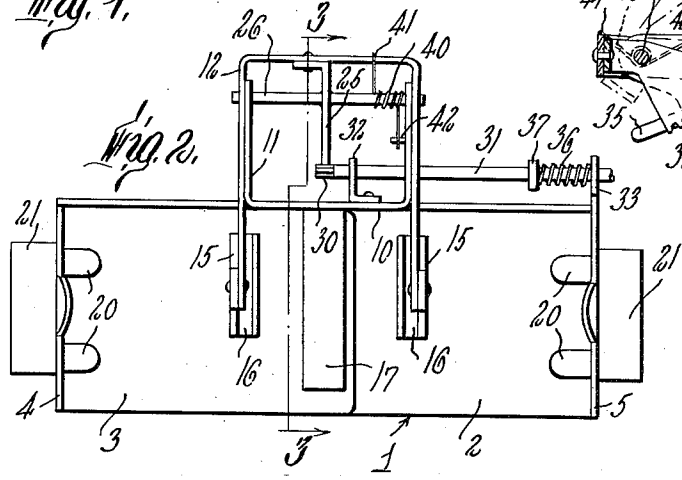


Fig. 2.

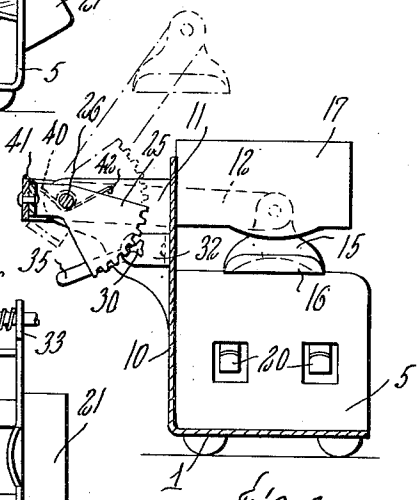


Fig. 3.

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CARD SHUFFLING DEVICE

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3 Claims. (Cl. 273—149)

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This invention relates to card shuffling devices of the type wherein the cards to be shuffled are divided into two groups or packs, the cards of the two groups being supported initially in inclined relation with their adjacent ends resting against an intermediate riffling device from which they are progressively freed in overlapping relation. Such a device is shown, for example, in my applications for United States Letters Patent Serial No. 138,760 filed January 16, 1950, now Patent No. 2,676,020, Serial No. 158,732 filed April 28, 1950, and now abandoned, and Serial No. 188,805, filed October 6, 1950.

Experience with this type of shuffling device has shown that for entirely satisfactory operation the cards should be freed from the riffling device rather slowly so that the cards of the two groups may have time to properly interleave, as otherwise jamming of the cards is likely to occur.

One object of the present invention, therefore, is to provide actuating means which will produce the desired relatively slow riffling action.

A further object is to provide an actuating mechanism which will automatically return to starting position when released.

Still another object is to provide such a mechanism which can be set rapidly to any desired position from which the slow riffling motion may be started.

For a complete understanding of this invention, reference may be had to the accompanying drawings in which

Figures 1 and 2 are front elevational and top plan views, respectively, of a shuffling device embodying the invention.

Figure 3 is a detail sectional view on line 3—3 of Figure 2.

Referring to the drawing, the shuffler comprises a tray 1 formed in two parts having overlapping bases 2 and 3 mounted for motion to bring end portions 4 and 5 toward each other when it is desired to press the two sets of cards which have been shuffled and with their edges in overlapping relation into a single pack.

One of these bases, such as 1, has an upstanding back wall portion 10 upon which is mounted or is formed integral therewith, a U-shaped frame 11 which extends rearwardly. This provides room for the pivotal mounting of a U-shaped element 12, the forward ends of which have pivotally mounted thereon a pair of shoes 15. These shoes 15 have lower widened feet portions 16 which are adapted to rest upon the upper faces of two groups of cards, the inner ends of which are supported on opposite faces of a riffling device

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17 which projects forwardly from the wall 10 and over the bases 2 and 3. The outer ends of the two sets or groups of cards are initially supported on ledges 20 which as are shown in the left hand portion of Figure 1 are pivoted within enclosures 21 projecting outwardly from the end walls 4 and 5 and normally held with their inner ends projecting inwardly from the end walls as by a leaf spring such as 22.

The shoes 15 are intended to be pressed against the top faces of the cards in the two groups supported between the riffling device 17 and the supports or shoulders 20 and to be pressed downwardly so that the lower cards of the packs can be freed substantially alternately from the riffling device to fall downwardly into interleaved relation as shown in the dash and dot lines of Figure 1. In order that this interleaving may be properly effected, it is important that the cards be moved away from the riffling device evenly and rather slowly, as otherwise the cards of the two packs may jam, which prevents proper interleaving.

In the drawing the mechanism for accomplishing this slow pressure comprises a gear segment 25 secured to the presser frame 12, the pivot 26 for the frame 12 also passing through this segment 25 and providing a bearing within the U-shaped member 11.

Normally meshing with the gear segment 25 is a pinion portion 30 of a shaft 31 which is suitably journaled in bearings 32 and 33. This pinion portion 30, as shown, has three teeth so that turning of the shaft 31 will rock the segment 25 at a relatively slow rate. The outer end of the shaft 31 is formed as an actuating crank 35. It is desirable that the pressure device may be pushed down against the cards to start the shuffling action without delay, and for this purpose provision is made for withdrawing the pinion 30 from engagement with the segment. The shaft 31 is therefore mounted for axial as well as turning motion, and a coil spring 36 surrounding the shaft 31 and bearing between a collar 37 fixed thereto and the bearing 33 acts to normally hold the shaft 31 in the axial position where it is in mesh with the teeth of the segment 25. However, it can be withdrawn by the operator against the pressure of the spring 36, whereupon the presser frame 12 may be swung downwardly into engagement with the cards in shuffling position.

It is also desirable that prior to shuffling the presser frame be withdrawn to facilitate the positioning of the cards to be shuffled and for this purpose a coil spring 40 is shown as coiled about the pivot shaft 26, one end of the coil spring 40,

as at 41, engaging the frame 12 and the other end engaging a fixed pin 42. This spring is so disposed as to normally lift the presser frame out of contact with the cards and back out of the way. However, when the shaft 31 is withdrawn axially so that the presser frame is free, it may be tilted forwardly and downwardly into starting position with the shoes 16 engaging the top faces of the card packs, whereupon the operator may permit the spring 36 to return the shaft 31 into operative relation to the segment so that by turning the crank handle 35 the presser frame may be swung downwardly to perform the desired shuffling action. When this has been completed, the operator may withdraw the shaft 31 out of engagement with the segment, whereupon the spring 40 will lift the presser frame out of the way so that by moving the end walls 4 and 5 toward each other, the shuffled cards may be pushed endwise into a single pack, the presser frame being then out of position as in the dotted line position of Figure 3 ready for the insertion of two other groups of cards for shuffling.

From the foregoing description it will be seen that slow operative connections are interposed between the actuating shaft and the presser frame whereby a considerable number of complete rotations of the shaft is necessary to produce the desired shuffling action so that too rapid motion of the presser frame cannot be produced.

From the foregoing description of an embodiment of this invention it will be evident to those skilled in the art that various changes and modifications may be made without departing from its spirit or scope as defined in the appended claims.

I claim:

1. A card shuffler comprising a tray having a base and upstanding ends and a back member, a riffling element projecting forwardly from said back member, means carried by said ends for supporting the outer ends of two groups of cards, the inner ends of which may engage opposite sides of said riffling element with said cards lying in an inwardly and upwardly inclined position thereagainst, a downwardly movable pressing element engageable with the top cards of each group and actuable to press the inner ends of said cards past said riffling element, a rotary shaft journaled in said tray and having an end portion positioned to be grasped and turned, and slow operative connections between said shaft and said pressing element, said operative connections including a pinion portion of said shaft and a toothed segment operatively connected to said pressing element, said shaft being mounted for motion to bring said pinion portion into or out of engagement with said segment.

2. A card shuffler comprising a tray having a base and upstanding ends and a back member, a riffling element projecting forwardly from said back member, means carried by said ends for supporting the outer ends of two groups of cards, the inner ends of which may engage opposite sides of said riffling element with said cards lying in an inwardly and upwardly inclined position thereagainst, a downwardly movable pressing element engageable with the top cards of each group and actuable to press the inner ends of said cards past said riffling element, a rotary shaft journaled in said tray and having an end portion positioned to be grasped and turned, and slow operative connections between said shaft and said pressing element, said operative connections including a pinion portion of said shaft and a toothed segment operatively connected to said pressing element, said shaft being mounted for axial motion to bring said pinion portion into or out of engagement with said segment.

3. A card shuffler comprising a tray having a base and upstanding ends and a back member, a riffling element projecting forwardly from said back member, means carried by said ends for supporting the outer ends of two groups of cards, the inner ends of which may engage opposite sides of said riffling element with said cards lying in an inwardly and upwardly inclined position thereagainst, a downwardly movable pressing element engageable with the top cards of each group and actuable to press the inner ends of said cards past said riffling element, a rotary shaft journaled in said tray and having an end portion positioned to be grasped and turned, slow operative connections between said shaft and said pressing element, said operative connections including a pinion portion of said shaft and a toothed segment operatively connected to said pressing element, said shaft being mounted for axial motion to bring said pinion portion into or out of engagement with said segment, and yielding means operatively connected thereto tending to hold said pinion portion in engagement with said segment.

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