July 16, 1940. H. G. KRUEGER 2,208,459

CARD SHUFFLER

Filed April 17, 1940

FIG. 1.

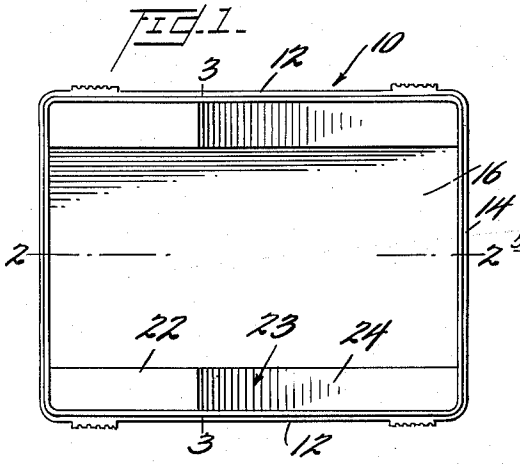


FIG. 4.

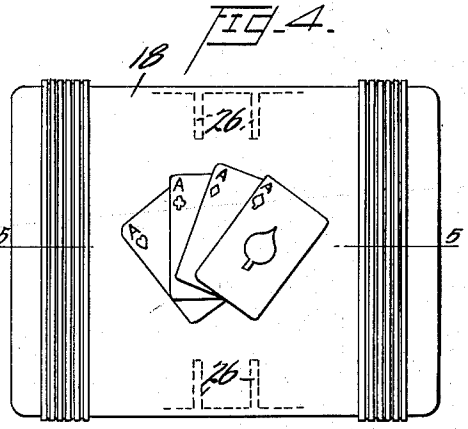


FIG. 2.

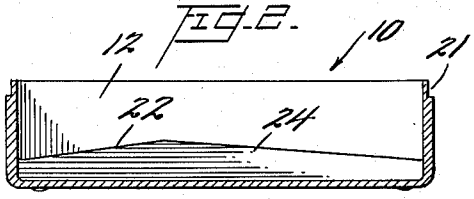


FIG. 5.

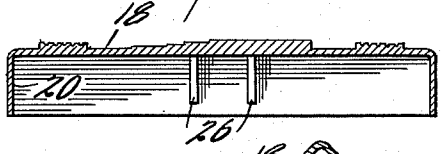


FIG. 3.

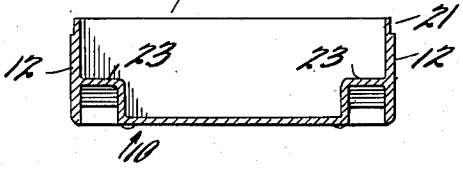


FIG. 6.

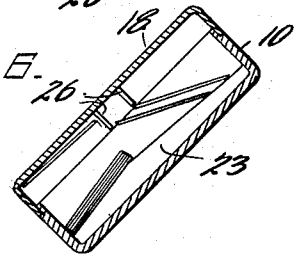


FIG. 7.

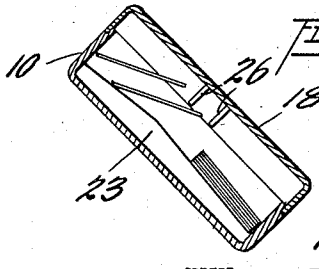


FIG. 8.

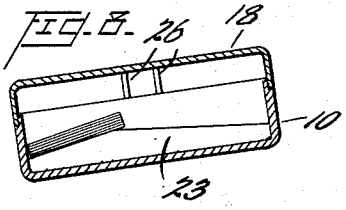
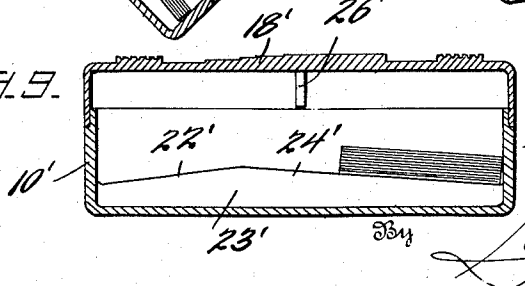


FIG. 9.



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UNITED STATES PATENT OFFICE

2,208,459

CARD SHUFFLER

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Application April 17, 1940, Serial No. 330,213

4 Claims. (Cl. 273—149)

The present invention relates to card shuffling devices and more particularly to a box structure designed to receive therein one or more decks of playing cards to be shuffled, the box having means associated therewith for shuffling the cards when a reciprocating movement is applied thereto manually.

The principal object of the invention is to provide a box structure of this character by means of which the cards may be efficiently shuffled without requiring the exercise of skill on the part of the operator.

Another object of the invention is to provide a shuffling device which, although it relies upon reciprocating movement bodily for its shuffling effect, possesses no relatively moving parts and which therefore is unlikely to get out of order.

Another object of the invention is to provide a box structure designed to receive and shuffle cards which, after the shuffling operation has been completed, will deliver the cards in a neatly stacked condition.

A still further object of the invention is to provide a device of this character which includes a box body section and a cover section, the two sections cooperating with each other in effecting the shuffling operation and in preventing reversal of any of the cards in the deck during the shuffling operation.

Yet another object of the invention is to provide a shuffling device of this character which will intimately shuffle the cards without scratching, bending or otherwise mutilating the same.

A further object of the invention is to provide a combined container and card shuffling box including a box body of rectangular design having a substantially full bottom, i. e., a bottom which is substantially of full depth throughout the medial regions thereof in order that the box may be utilized in packaging various articles, limited areas of the bottom in the longitudinal side regions thereof being elevated to provide edge supports for the cards to be shuffled and having inclined surfaces by means of which varying components of motion are imparted to the cards when the box is reciprocated during the shuffling operation.

In carrying out the above-mentioned objects, the invention contemplates the provision of a rectangular box-like structure of a size suitable for packaging two decks of cards or other articles, as, for example, articles of personal wear such as belt buckles, tie holders, clasps and the like. The box structure includes a box body having a bottom of substantially full depth in the medial regions thereof and formed with raised longitudinal shelf-like portions presenting inclined supporting surfaces having different inclinations and upon which the edge regions of the cards to be shuffled are adapted to be supported. The box structure also includes a cover on which there are formed interiorly a plurality of abutments, the arrangement being such that as the box containing the cards is manually reciprocated, the inclined supporting planes upon which the edge portions of the cards are supported serve to direct the edge regions of different stacked groups of the cards against the abutments to impede the motion of these groups and allow other groups to be projected beyond the abutments and thus cause the relative order of the groups to be altered. Thus by a relatively few reciprocative movements of the box structure, the cards will become intimately mixed or shuffled.

With these and other objects in view which will become more readily apparent as the following description ensues, the invention consists in the novel constructions, combinations and arrangements of parts shown in the accompanying single sheet of drawings in which:

Figure 1 is a top plan view of a box body constructed in accordance with the principles of the present invention.

Figure 2 is a sectional view taken substantially along the line 2—2 of Figure 1.

Figure 3 is a sectional view taken substantially along the line 3—3 of Figure 1.

Figure 4 is a top plan view of the cover for the box shown in Figure 1.

Figure 5 is a sectional view taken substantially along the line 5—5 of Figure 4.

Figures 6, 7 and 8 are sectional views, diagrammatic in their representation, illustrating the manner in which the box structure is manipulated to shuffle a deck of cards and how the cards may be shuffled therein, and

Figure 9 is a sectional view similar to Figure 2 showing a modified form of card shuffling box.

In all of the above-described views, like characters of reference are employed to designate like parts throughout.

Referring now to Figures 1, 2 and 3, the box body 10 is preferably of rectangular configuration and includes side walls 12, end walls 14 and a bottom 16. A cover (Figures 5 and 6) having a downwardly extending continuous flange 20 is adapted to seat in a recess 21 formed at the open upper end of the body 10 in the rim portion thereof to close the box.

The body 10 and cover 18 may be formed in any suitable manner and of any suitable materials, as, for example, wood, sheet metal, molded plastic compositions and the like. Irrespective, however, of these details in the manufacturing thereof, the essential features of the invention are at all times preserved.

The width of the box body 10, i. e., the distance between the side walls 12, is sufficient to accommodate the width of the average deck of cards while the depth thereof, i. e., the distance between the plane of the cover top 18 and the bottom 16, is somewhat less than the average width of the individual cards and thus in utilizing the structure for shuffling purposes there is no possibility of any of the cards becoming reversed relative to the other cards.

The length of the box body 10 is somewhat in excess of twice the width of the individual cards and thus, during the shuffling operation, the cards or groups of cards which are to be interposed have ample room in which to move past one another in edge-to-edge relationship in assuming their respective positions in the shuffled deck.

The bottom 16 is of full depth in the medial longitudinal regions thereof while the longitudinal edge regions thereof are elevated to provide a pair of shelf portions 23 which are coextensive with the length of the box bottom. The shelf portions 23 are each formed with differently inclined sections 22 and 24, the sections 22 being of less extent than the sections 24 and being of greater inclination. The shelf portions 23 provide a pair of spaced supports upon which the longitudinal edge regions of the cards being shuffled may be supported with the medial regions thereof bridging the shelf regions and remaining elevated from the bottom proper.

The cover 18 is formed or otherwise provided with a plurality of fixed transverse ribs, abutments, or arresting members 26 which are arranged in aligned pairs medially of the cover in spaced relationship and which are adapted to cooperate with the inclined sections 22 and 24 of the shelf portions 23 in effecting the shuffling operation as will presently appear.

Each pair of the sections 22 and 24 provides a stacking section on which the cards to be shuffled may initially be placed as shown either in full lines or in dotted lines in Figure 2. Thereafter when the cover is positioned upon the box body and the structure reciprocated in the same plane or reciprocated and tilted from end to end alternately, i. e., given an oscillating to-and-fro motion, the edge portions of the stacked cards will be projected against the abutments or arresting members 26 as shown in Figures 6 and 7.

Obviously, depending upon the manner in which the box is shaken or reciprocated, various combinations or permutations of the cards will take place within the box structure. It would be impossible to describe all of the possible permutations of cards and groups of cards that may occur when the box is shaken, but, in general, Figures 6 and 7 illustrate a possible arrangement of certain groups of cards that may occur when the box is tilted in opposite directions.

The abutments 26 project downwardly a sufficient distance that when the box is reciprocated in one direction as shown in Figure 6, they will engage and arrest certain uppermost groupings of the stacked deck as indicated at *a* and *b* while other groupings such as are shown at *c* and *d* may pass across the box body unobstructed. When the box is moved in the opposite direction as shown in Figure 7, certain portions of the groupings *c* and *d* may be retarded or arrested by the members 26 while the remaining portions may be returned to their original stacked condition indiscriminately intermixed with the cards of the groups *a* and *b*. During the succeeding movements of the box, the combinations and permutations of the card groupings become innumerable.

When the box is finally brought to an inclined position as shown in Figure 8, the shuffled cards will assume a stacked condition as shown with their edges resting upon the pair of inclined shelf portions 22. Obviously if at the termination of the shuffling operation the box structure is tilted in a reverse direction, the cards will come to rest in a stacked condition with their edges supported on the pair of inclined portions 24.

In Figure 9 a modified form of card shuffling box structure is disclosed. In this form of the invention the essential features of the invention are not materially altered and the box body 10' includes side walls 12', end walls 14' and a bottom 16' which is substantially of full depth throughout both longitudinally and transversely of the structure. A relatively shallow cover 18' having a downwardly extending continuous rim or flange 20' is adapted to seat upon the open upper end of the body 10' with the flange 20' thereof enclosing the rim as shown.

The longitudinal and transverse and vertical dimensions of the box body and cover are substantially the same as the form of body and cover shown in the preceding figures and the bottom is formed with differently inclined sections 22' and 24' upon which the cards to be shuffled are adapted to be supported coextensively. A single abutment 26' extends completely across the cover transversely thereof in the medial regions and is positioned in the path of projection of the various cards as the box is reciprocated.

In this latter form of the invention, shaking or otherwise reciprocating of the box structure will effect a shuffling operation in a manner similar to the functioning of the box structure shown in Figures 1 to 8, inclusive. The box structure shown in Figure 9 is of slightly greater capacity than that shown in Figures 1 to 8, inclusive, and may be utilized in the packaging of articles incapable of being housed within the latter box structure.

It will be seen from the foregoing description that a deck of playing cards may, by the present invention, be shuffled by players who are unskilled in the art of shuffling cards and that deception on the part of the shuffler is made difficult if not impossible.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawing or described in this specification, as various changes in the details of construction are contemplated within the spirit of the invention. For example, the precise inclinations of the bottom sections 22 and 24 are immaterial as well as is the exact positioning of the abutments 26. It is sufficient that the abutments be positioned in the path of movement of the cards as they leave the inclined planes of the sections 22, 24.

What is claimed is:

1. A card shuffling box including a box body of generally rectangular configuration and having a bottom wall, and a cover for the body having a top wall, said walls being spaced from each other a distance less than the width of a deck of playing

cards to be shuffled, said bottom wall including a central trough-like portion and an elevated shelf portion on each side of the trough-like portion and upon which the opposite longitudinal edge regions of the cards to be shuffled are supported and are adapted to slide, said shelf portions having cooperating pairs of inclined surfaces, the surfaces of each pair occupying substantially a common plane, and a card arresting abutment on said cover offset upwardly from the planes occupied by the inclined surfaces and spaced from said planes a distance less than the thickness of the deck, said abutment being adapted to intercept certain of the cards of the deck and prevent passage of the intercepted cards across the box when the latter is agitated.

2. A card shuffling bo including a box body of generally rectangular configuration and having a bottom wall, and a cover for the body having a top wall, said walls being spaced from each other a distance less than the width of a deck of cards to be shuffled, said bottom wall including a central trough-like portion and an elevated shelf portion on each side of the trough-like portions a d upon which the opposite longitudinal edge r ns of the cards to be shuffled are supported d are adapted to slide, said shelf portions having cooperating pairs of inclined surfaces, the surfaces of each pair occupying a common plane and the planes thereof having different inclinations, and a card arresting abutment on said cover offset upwardly from the planes of the inclined portions and spaced from both of said planes a distance less than the thickness of the deck to be shuffled, said abutment being adapted to intercept certain of the cards of the deck and prevent passage of the intercepted cards across the box when the latter is agitated.

3. A card shuffling box including a box body of generally rectangular configuration and having a bottom wall, and a cover for the body having a top wall, said walls being spaced from each other a distance less than the width of a deck of playing cards to be shuffled, said bottom wall including a central trough-like portion, an elevated shelf portion on each side of the trough-like portion and upon which the opposite longitudinal edge regions of the cards to be shuffled are supported and are adapted to slide, said shelf portions having a pair of cooperating inclined surfaces occupying substantially a common plane, and a spaced card arresting abutment on said cover offset upwardly from the said plane of the inclined portions and spaced from the plane a distance less than the thickness of the deck, said abutment being adapted to intercept certain of the cards of the deck and prevent passage of the intercepted cards across the box when the latter is agitated.

4. A card shuffling box including a box body of generally rectangular configuration and having a bottom wall, and a cover for the body having a top wall, said walls being spaced from each other a distance less than the width of a deck of cards to be shuffled, said bottom wall including a central trough-like portion and an elevated shelf portion on each side of the trough-like portion and upon which the opposite longitudinal edge regions of the cards to be shuffled are supported and are adapted to slide, said shelf portions having pairs of cooperating inclined surfaces, the surfaces of each pair occupying a common plane and the planes thereof having different inclinations, and an aligned pair of card arresting abutments on said cover offset upwardly from the planes of the inclined portions and spaced from said planes a distance less than the thickness of the deck to be shuffled and overlying respective shelf portions, said abutments extending inwardly from the opposite longitudinal edges of the cover and each being of a length equal to the width of the elevated shelf portions which it overlies and being adapted to intercept certain of the cards of the deck and prevent passage of the intercepted cards across the box when the latter is agitated.

HARRIS G. KRUEGER.