

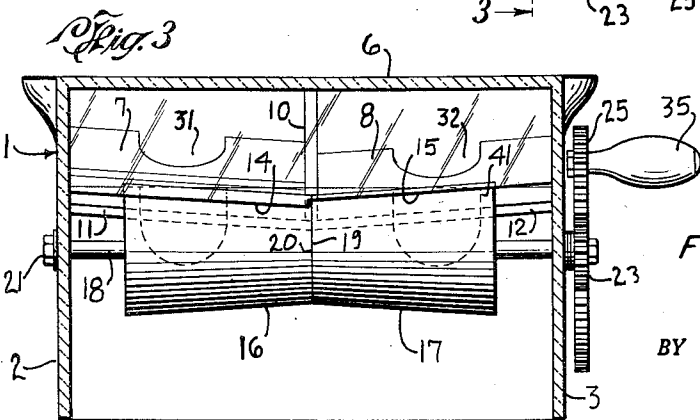
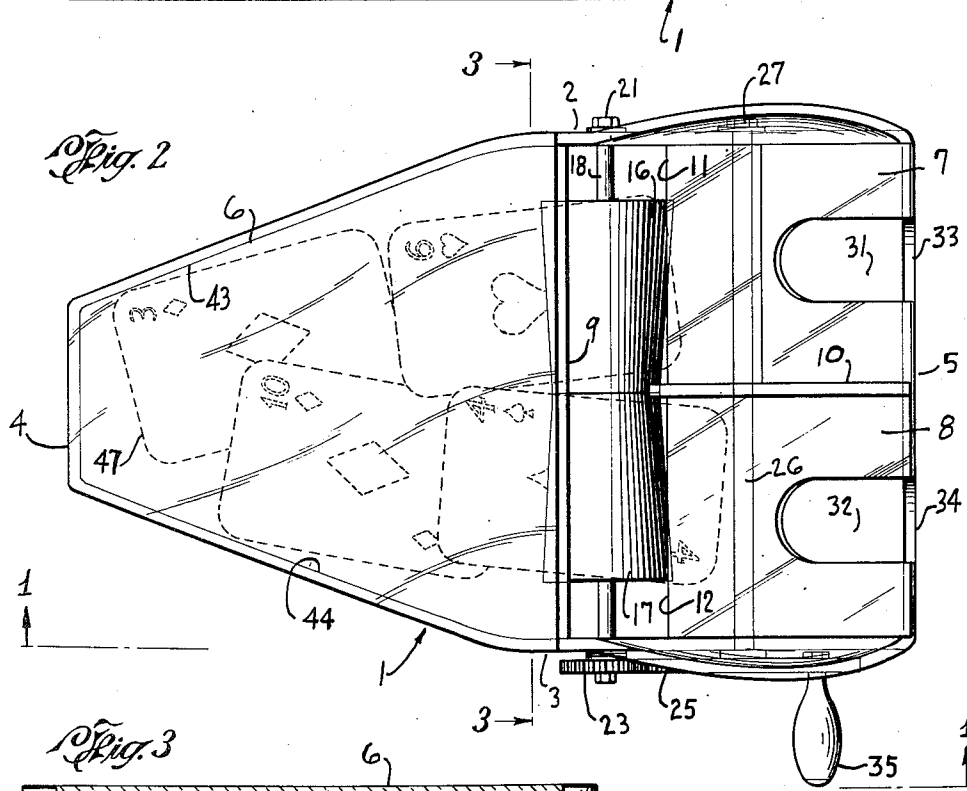
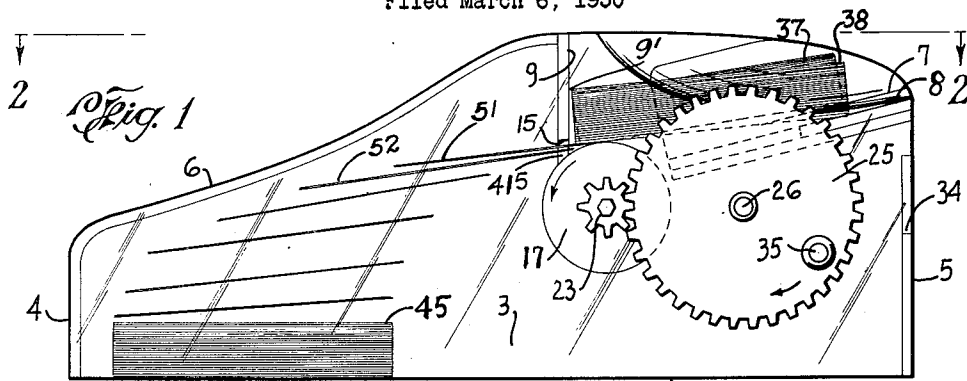
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CARD SHUFFLER

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## CARD SHUFFLER

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7 Claims. (Cl. 273-149)

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This invention relates to an improved card shuffler which is adapted to shuffle cards from two parallel extending stacks or decks, so that a card from one stack or deck falls alternately over a card from the adjacent stack or deck in a manner to insure that the two decks are substantially shuffled in one pile.

It is an object of this invention to provide a device for shuffling cards from two parallel extending decks so that the cards from the decks fall alternately into a single pile.

It is a further object of this invention to provide a card shuffler of this class having tapered rollers with the smaller diameters inwardly so that upon rotation the cards from adjacent decks are deflected so that the forward inner corner of one card extends over the forward inner corner of the adjacent card.

It is yet another object of this invention to provide a card shuffler of this class in which the opening in the vertical wall above the roller is wider in front of one deck of cards than it is in front of the other deck, thereby insuring that cards passing through the wider opening fall upon cards passing through the more narrow opening.

It is yet another object of this invention to provide a card shuffler of this class in which the cards in one pile extend downwardly toward their roller at a greater vertical angle than the cards from the other pile, thereby insuring that the cards extending at the lesser vertical angle are deflected by their roller to fall upon the cards extending at the greater vertical angle.

It is yet a further object of this invention to provide a card shuffler of this class in which the trays hold the cards sloped inwardly toward a partition wall between trays, thereby insuring that the inner forward corner of the cards from one tray are deflected by their roller to extend over the inner forward corner of the cards from the adjacent tray.

It is yet another object of this invention to provide a card shuffler of this class in which the frame is tapered into a bow of slightly greater than the area of one card, insuring that the cards deflected in passage through the rollers are further deflected to fall in the bow in a single pile, or shuffled deck.

It is another object of this invention to provide a card shuffler of this class in which the card holding trays have finger slots therein which are joined by finger slots in the vertical wall below the outer edge of the trays so that the decks or cards may be more easily placed in, or taken from, the trays.

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It is still another object of this invention to provide a card shuffler of this class in which tapered rollers on the same shaft rotate with the shaft upon contact between a pinion on the outer end of the shaft and a gear mounted on a shaft to mesh with the pinion.

Other and further objects will be apparent when the specification is considered in connection with the drawings in which:

Fig. 1 is an elevation of the card shuffler taken along line 1-1 of Fig. 2.

Fig. 2 is a plan view of the shuffler taken along line 2-2 of Fig. 1.

Fig. 3 is a sectional elevation taken along line 3-3 of Fig. 2.

The frame 1 of the shuffler comprises the side walls 2 and 3, the bow 4, the rear wall 5, the cowl 6, the trays 7 and 8, the vertical wall 9, and the partition 10. The trays 7 and 8 are inclined or sloped inwardly and downwardly from the side walls 2 and 3 respectively toward the vertical center partition 10 and also from the rear wall 5 toward the inner edges 11 and 12 adjacent the rollers 16 and 17. The vertical wall 9 extends downwardly on one side to terminate at the surface 14, while the wall on the other side terminates at a higher elevation at the surface 15.

The rollers 16 and 17 are mounted on the shaft 18 and both are tapered inwardly so that the smaller diameters 19 and 20 are substantially in contact centrally of the frame. A suitable nut and washer 21 is installed on the end of the shaft 18 outwardly of the wall 2 and the pinion 23 is mounted on the other end of the shaft 18. The gear 25 is mounted on the shaft 26 to mesh with the pinion 23, and this shaft 26 extends through the frame 1, and has the nut and washer 27 on the other end thereof.

Slots 31 and 32 are provided in the trays 7 and 8 respectively and adjoining slots 33 and 34 of similar size are provided in the vertical wall 5. The slots 31, 32, 33, and 34 are of sufficiently ample horizontal cross-sectional area to permit a thumb of above average size to be inserted thereinto. Such slots facilitate the manual handling of the cards so that they may be more easily placed in, or taken out of, the trays.

In operation piles or decks of cards are placed in the trays 7 and 8, and the handle 35 on the gear 25 is rotated in a clockwise direction as shown in Fig. 1. This rotates the pinion 23 in a counterclockwise direction. The decks of cards 37 and 38, as shown in Fig. 1, rest at the rear on the trays 7 and 8 respectively and at their forward ends they rest respectively on the rollers

16 and 17 with their upper forward corners stopped against the vertical surface 9' of the wall 9.

As the rollers 16 and 17 are both tapered inwardly, upon rotation they tend to deflect the inner forward corner of the cards inwardly from normal card position. This tendency to deflect is further abetted by the fact that the trays 7 and 8 are inclined or sloped inwardly toward the partition 10. The trays 7 and 8 are also sloped toward the rollers 16 and 17 and the tray 7 is inclined toward such rollers at a greater vertical angle than the tray 8. Thus the cards in this tray pass over the roller 16 and are pointed downwardly at a greater angle than are the cards which pass over the roller 17. This feature tends to insure that the cards from the tray 8 fall over the cards from the tray 7. An additional fact favoring this tendency is the provision of a wider slot or opening 41 above the roller 17, by virtue of the vertical wall 9 above this roller being terminated at a higher point than such wall is terminated above the roller 16. This feature accommodates the cards from the tray 8, which are pointed downwardly upon passing over the roller at a lesser vertical angle than are the cards from the tray 7. This can be understood if Fig. 1 is considered, the view of which is taken along line 1-1 of Fig. 2. The deck 33 is on the near side and rests in the tray 8 which is sloped from the rear wall 5 toward the wall 9 at a lesser vertical angle than the tray 7 on the far side. Thus the two card decks, as shown, rest at different inclinations and the card 51 discharged from the tray 8 passes across the plane of the vertical wall 9 at a slightly higher elevation than and without interference to the card 52 discharged in a path of lesser incline from the tray 7. The vertical wall 9 should extend downwardly and terminate as near the rollers as possible to locate the decks as they diminish in height on being fed forward by the rollers, and yet must permit ample card passage space therebeneath. Because of angle difference, the card passage slot between the terminal edge 15 and the roller 17 needs to be wider than that provided under the terminal edge 14 and above the roller 16.

As the deflected cards pass through the rollers the outer forward corners thereof contact the inside surfaces 43 and 44 and are further deflected by such surfaces to fall in a single pile of cards 45 in the bow 4, as shown in Fig. 1. The bow of necessity must be just slightly greater in area than a card, and wider in transverse width than a card.

As shown in the drawings, the material employed for the frame 1 of this invention should preferably be of some transparent material, as transparent plastic, so that the card players may observe the shuffling of the cards. In this manner this invention accomplishes a utilitarian purpose, while at the same time it amuses the watchers by permitting them to observe the speed and accuracy with which the cards are shuffled.

Broadly this invention considers an improved card shuffler in which the sloping of the trays at different vertical angles in the direction of the rollers; the sloping of the trays downwardly toward a central partition between trays; the provision of a wider opening above the roller in front of the lesser sloped tray; and the provision of rollers with smaller diameters inwardly; all combine to insure that the cards from the trays alternately fall one upon the other.

What is claimed is:

1. A card shuffler including, a frame, a shaft mounted in said frame, co-axially extending, tapered rollers on said shaft with their smaller diameters inwardly and substantially in contact, means to rotate said shaft, means adapted to support adjacent decks of cards at different vertical angles and with the bottom card of each deck in contact with said rollers so that rotation of the rollers moves the bottom cards from the support means and moves the forward corners of the cards inwardly so that a card from the deck supported at the lesser vertical angle tends to fall upon an adjacent card from the deck supported at the greater vertical angle, said frame being tapered into a bow to tend to deflect said cards from adjacent support means inwardly to tend to insure that said cards fall alternately into a single stacked pile.

2. A card shuffler including a frame, a shaft mounted in said frame, co-axially extending, tapered rollers on said shaft with their smaller diameters inwardly and substantially in contact, means to rotate said shaft, means adapted to support adjacent decks of cards with the bottom cards in contact with said rollers, said support means including a tray adjacent each roller, said trays also being adjacent to each other and sloped downwardly and inwardly of said frame toward one another and sloped downwardly and inwardly of the frame toward said rollers at vertical angles different to one another so that the forward corner of a card sloped at the greater angle will tend to fall beneath the adjacent forward corner of the adjacent card sloped at the lesser angle, said support means also including a vertical wall in said frame above said rollers presenting card passage slots above the rollers, that slot for the passage of a card sloped at the lesser vertical angle being vertically larger than the other slot.

3. A card shuffler including, a frame, rotatable means mounted in said frame, means in said frame adapted to support adjacent decks of cards at different vertical angles with the bottom cards in contact with said rotatable means, said support means including a vertical wall in said frame above said rotatable means with a wider opening above said rotatable means confronting the deck of cards sloped at the lesser vertical angle to tend to insure that upon rotation of said rotatable means cards passing through the wider opening will fall on top of cards passing through the more narrow opening.

4. A card shuffler including, a frame, a rotatable means mounted therein comprising, a pair of co-axially extending, tapered rollers with their smaller diameters inwardly of said frame, a pair of support means sloped inwardly of said frame and adjacent to each other and sloped downwardly toward said rotatable means at different vertical angles so that the forward corner of a card sloped at the greater angle will tend to fall beneath the adjacent forward corner of the adjacent card sloped at the lesser angle.

5. A card shuffler including, a frame, a rotatable means mounted therein comprising, a pair of co-axially extending, tapered rollers with their smaller diameters inwardly of said frame, a pair of support means adjacent to each other and sloped inwardly of said frame and sloped downwardly toward said rotatable means at different vertical angles so that the forward corner of a card sloped at the greater angle will tend

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to fall beneath the adjacent forward corner of the adjacent card sloped at the lesser angle, said frame being tapered into a bow of slightly greater area than a single card into which the cards may fall as a stacked deck.

6. A card shuffler including, a frame, a rotatable means mounted therein comprising, a pair of co-axially extending, tapered rollers with their smaller diameters inwardly of said frame, a pair of support means adjacent to each other and sloped inwardly of said frame and sloped downwardly toward said rotatable means at different vertical angles so that the forward corner of a card sloped at the greater angle will tend to fall beneath the adjacent forward corner of the adjacent card sloped at the lesser angle, said support means having finger slots in the sloped portions and said frame having adjoining finger slots in the vertical wall thereof so that cards may be easily placed on said sloped portions.

7. A card shuffler including, a frame, a rotatable means mounted therein comprising, a pair of co-axially extending, tapered rollers with

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their smaller diameters inwardly of said frame, a pair of support means adjacent to each other and sloped inwardly of said frame and sloped downwardly toward said rotatable means at different vertical angles so that the forward corner of a card sloped at the greater angle will tend to fall beneath the adjacent forward corner of the adjacent card sloped at the lesser angle, said support means having a vertical wall extending between the sloped portions to separate the cards.

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