

Jan. 22, 1957

G. M. WILLIAMS  
CARD SHUFFLER

2,778,643

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2 Sheets-Sheet 1

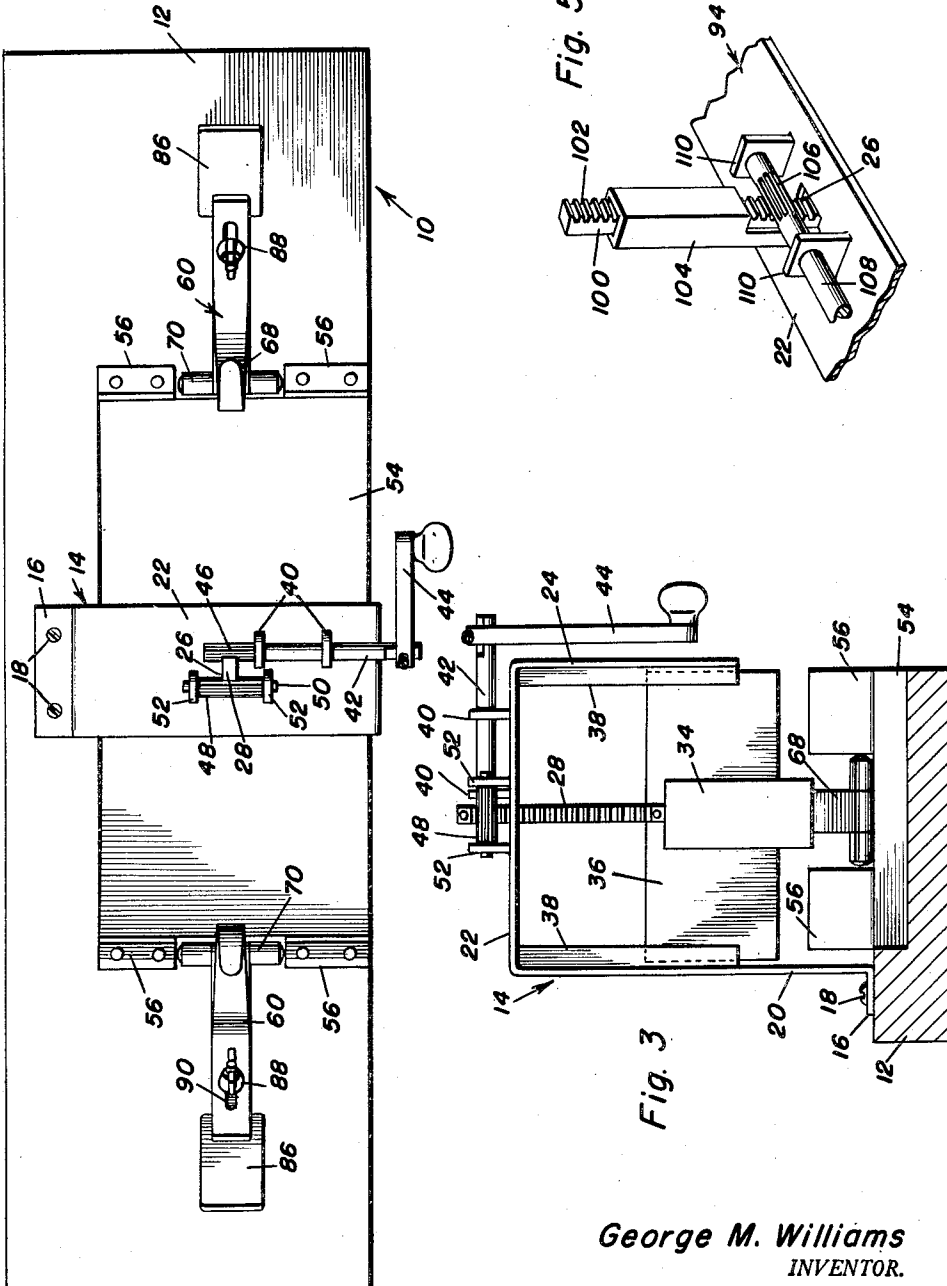


Fig. 1

Fig. 3

Fig. 5

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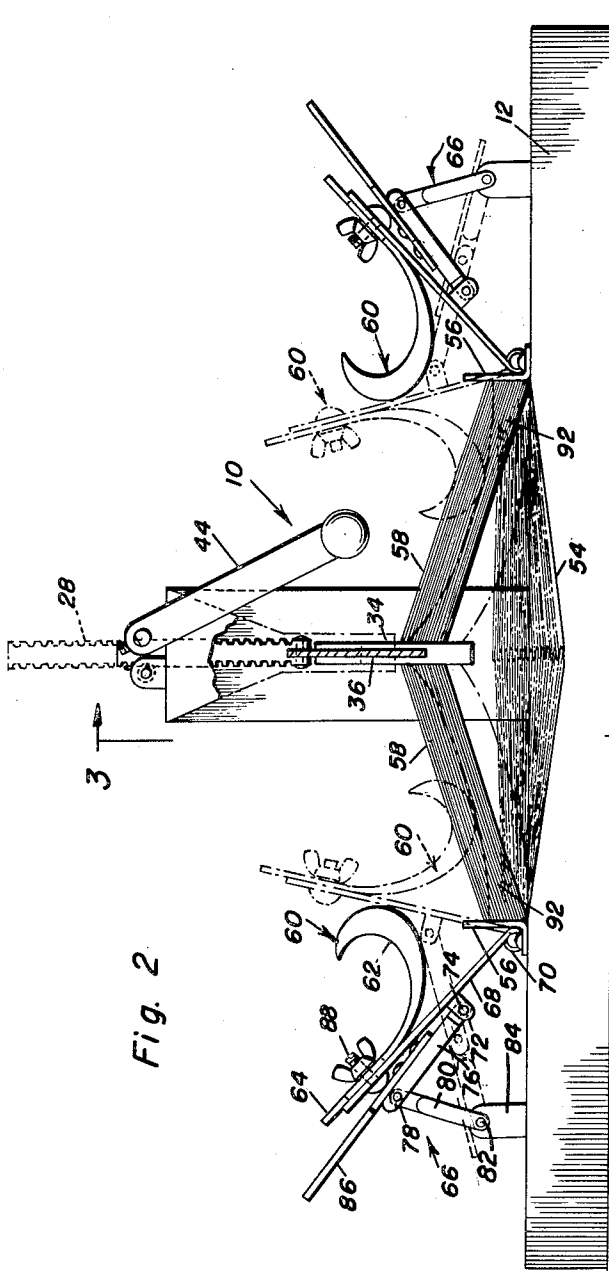


Fig. 2

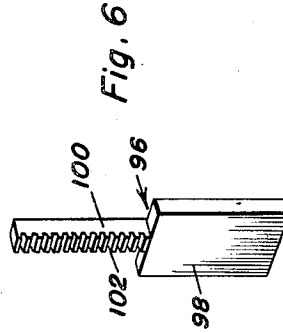


Fig. 6

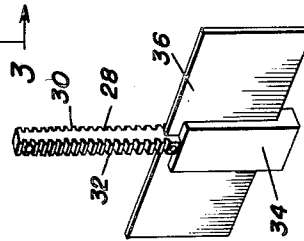


Fig. 4

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**CARD SHUFFLER**

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8 Claims. (Cl. 273-149)

This invention relates in general to improvements in card accessories, and more specifically to a playing card shuffler.

The primary object of this invention is to provide an improved card shuffler which is simple in construction and at the same time efficient in operation.

Another object of this invention is to provide an improved card shuffler which is so constructed whereby it will alternately drop individual cards from a pair of packs of cards so that the cards of the two packs are intermeshed or properly shuffled.

Another object of this invention is to provide an improved card shuffling device which is of such a nature that only a simple mechanical operation is necessary to result in the effective shuffling of cards.

A further object of this invention is to provide an improved card shuffler for playing cards, the card shuffler operating on the same principle of a person shuffling a pair of cards by flexing them and releasing them in opposed relation between one's two hands.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a top plan view of the card shuffler which is the subject of this invention and shows the general details thereof;

Figure 2 is an elevational view of the card shuffler of Figure 1 and shows a pair of packs of cards in an initial shuffling position, card clamping fingers of the card shuffler being shown in inoperative position by solid lines and operative position by dotted lines and a shuffle position of the cards being shown by dotted lines;

Figure 3 is a transverse vertical sectional view taken substantially upon the plane indicated by the section line 3-3 of Figure 2 and shows the details of a card shuffling thumb of the card shuffler and the means for operating the thumb;

Figure 4 is a perspective view of the card shuffling thumb;

Figure 5 is an enlarged fragmentary perspective view of an upper portion of a modified form of card shuffler operating mechanism; and

Figure 6 is a perspective view of a modified form of shuffling thumb, the thumb being a part of the modified form of Figure 5.

Referring now to the drawings in detail, it will be seen that there is illustrated in Figures 1 through 4, inclusive, a preferred form of the card shuffler which is the subject of this invention, the card shuffler being referred to in general by the reference numeral 10. The card shuffler 10 includes an elongated rectangular base 12 which has extending upwardly from the central portion thereof a frame which is referred to in general by the reference

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numeral 14. The frame 14, as is best illustrated in Figure 3, includes a mounting flange 16 which is secured to the base along one longitudinal edge thereof by suitable fasteners 18. Formed integral with the mounting flange 16 and extending upwardly therefrom is a supporting leg 20 of the frame 14. Formed integral with the upper end of the supporting leg 20 is a horizontal leg 22 which has connected integrally with the opposite end thereof a depending leg 24.

The horizontal leg 22 includes a central opening 26 which has extending therethrough an upper portion of a rack 28. The rack 28, as is best illustrated in Figure 4, is double sided and includes oppositely directed sets of teeth 30 and 32. Secured to the lower end of the rack 28 is a generally rectangular, relatively thin blade which forms the shuffling thumb 34. Also carried by the lower portion of the rack 28 is a guide plate 36 which will be explained in more detail hereinafter.

As is best illustrated in Figure 3, the frame 14 has secured to the legs 20 and 24 thereof opposed guideways 38. The guideways 38 have extending therebetween and guidingly engaged therein opposite edges of the guide plate 36 so as to limit the movement of the shuffling thumb 34 to a vertical direction only.

Extending upwardly from the horizontal leg 22, as is best illustrated in Figure 1, is a pair of transversely spaced ears 40 which have suitably journaled therein a shaft 42. One end of the shaft 42 extends beyond the frame 14 and has secured thereto a suitable crank 44 for facilitating the rotation of the shaft 42. The opposite end of the shaft 42 is provided with teeth to form a pinion 46 which is engaged with the teeth 30 of the rack 28.

In order to prevent twisting of the rack 26, there is also provided a second pinion 48 which forms a part of a shaft 50 journaled in ears 52. The shaft 50 is disposed in spaced-parallel relation with respect to the shaft 42 and is rotated by the rack 28 in response to vertical movement thereof by the pinion 46.

The central portion of the base 12 underlying the frame 14 is provided with an elongated recess 54 for receiving shuffled cards. The recess 54 is intended to receive therein cards which have been shuffled by the card shuffler 10. Disposed at opposite ends of the recess 54 are stops 56. The stops 56 are so spaced with respect to the thumb 34 that when packs of cards, such as the cards 58 are properly seated on the base 12 prior to being shuffled, other ends thereof are in abutment with the stops 56 and opposed inner ends thereof rest against the thumb 34.

In order to provide a proper shuffling action, it has been found necessary to flex the central portions of the cards 58 downwardly as indicated by the dotted line positions of the cards 58 in Figure 2. In order to accomplish this, there is provided at each side of the thumb 34 intermediate the associated stop 56 and the thumb 34 a finger 60. Each of the fingers 60 is generally J-shaped in outline and includes a lower hook portion 62 and an upper shank portion 64. The hook portion 62 has the smoothly curved underside thereof compressibly engageable with the uppermost card 58 of its associated pack of cards so as to depress the central portions of the cards 58 to flex them.

Each of the fingers 60 is carried by a suitable linkage which is referred to in general by the reference numeral 66. The linkage 66 includes a plate 68 hingedly secured to the base 12 as at 70. Carried by the underside of the plate 68 is an ear 72 which has pivotally connected thereto as at 74 a link 76. The link 76 has pivotally connected to the opposite ends thereof as at 78 a second link 80. The second link 80 is pivotally connected as at 82 to an ear 84 extending upwardly from the base 12 and rigidly secured thereto.

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From the foregoing, it is readily apparent that the linkage 66 is of such a nature that the associated finger 60 may be easily moved to inoperative position such as shown by solid lines in Figure 2. In order to facilitate the movement of the finger 60 to its dotted line position in Figure 2, there is provided an operating plate 86 which is secured to the link 76 as an extension thereof. When the operating plate 86 is depressed, the links 76 and 80 are moved to positions slightly past dead center so as to lock the linkage 66 with the thumb 60 being in a card depressing position, such as illustrated by dotted lines in Figure 2.

In order to accommodate packs of cards 58 of different thicknesses, the shank 64 of each of the fingers 60 is adjustably secured to its associated plate 68. This is accomplished by a releasable fastener 88 which is received in an elongated slot 90 in the shank 64.

When it is desired to shuffle a deck of cards 58, the deck is divided into substantially even packs, such as the packs 92 illustrated in Figure 2. The two packs 92 are positioned against the stops 56 with their upper portions in opposed relation on opposite sides of the thumb 34, the thumb 34 being in its lowered position. Then the individual cards 58 of the packs 92 are flexed by engaging the packs 92 with the fingers 60. When this has been accomplished, the cards 58 are shuffled by turning the crank 44 which results in the thumb 34 being raised. As the thumb 34 moves vertically, the lowermost card 58 on each of the packs 92 is alternately released so that as the cards 58 drop into the recess 54, they will be in slightly overlapped alternating relation. The two packs 92 are then pulled out of the recess 54 and pushed together so as to form a single pack or deck of cards.

Although a single shuffling operation will be sufficient to properly mix the cards as well as normally accomplished by the average card player, if it is desired to more thoroughly shuffle or mix the cards, the shuffling operation described above may be repeated as often as desired. Also, it may be advisable to mix the cards by simple or multiple cutting operations so as to change their sequence when shuffled.

Referring now to Figures 5 and 6, it will be seen that there is illustrated a slightly modified form of card shuffler which is referred to in general by the reference numeral 94. The card shuffler 94 differs mainly in the construction of the thumb assembly which is referred to in general by the reference numeral 96. The thumb assembly 96 includes a thumb 98 which has generally the same proportions as the thumb 34. Extending upwardly from the thumb 98 and properly secured thereto is a rack 100. The rack 100 differs from the rack 28 inasmuch as it is provided with teeth 102 along one side thereof only.

Referring now to Figure 5 in particular, it will be seen that the horizontal leg 22 has secured to the upper surface thereof a vertically extending sleeve 104. The sleeve 104 is in vertical alignment with the opening 26 formed in the horizontal leg 22. Suitably guided in the sleeve 104 and extending therethrough is the rack 100. Engaged with the teeth 102 of the rack 100 are teeth of a pinion 106. The pinion 106 is formed on a drive shaft 108 suitably journaled in ears 110 extending upwardly from the horizontal leg 22 in spaced relation with respect to the sleeve 104. Although there has not been illustrated means for turning the drive shaft 108, it will be understood that the end thereof not shown will be provided with a suitable crank, such as the crank 44.

When the sleeve 104 is utilized for guiding the rack 100, the necessity for the guide plate 36 and the guideways 38 is eliminated. Accordingly, these members may also be eliminated. The elimination of the guideways 38 also permits the elimination of the depending leg 24 and as much of the horizontal leg 22 as desired.

From the foregoing description of the present invention, it is readily apparent that there has been devised an

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extremely simple device which may be easily operated by anyone and which at the same time is so designed whereby it effectively shuffles cards as near possible as feasible in a single simple shuffling operation.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A mechanical card shuffler comprising a base, a central mechanical thumb mounted intermediate ends of said base for vertical movement, fingers carried by said base on opposite sides of said thumb for clamping packs of cards to said base with edges in flexed engagement with said thumb, means for selectively moving said thumb upwardly from said base from between said cards.

2. A mechanical card shuffler comprising a base, a central mechanical thumb mounted intermediate ends of said base, fingers carried by said base on opposite sides of said thumb for clamping packs of cards to said base with edges in flexed engagement with said thumb, means for selectively moving said thumb upwardly from said base from between said cards, said fingers being supported by linkage carried by said base, means for locking said linkage to retain said fingers in card flexing positions.

3. A mechanical card shuffler comprising a base, a central mechanical thumb mounted intermediate ends of said base for vertical movement, fingers carried by said base on opposite sides of said thumb for clamping packs of cards to said base with edges in flexed engagement with said thumb, means for selectively moving said thumb upwardly from said base from between said cards, fixed card stop means carried by said base in cooperation with said fingers to restrain movement of cards away from said thumb.

4. A mechanical card shuffler comprising a base, a central mechanical thumb mounted intermediate ends of said base for vertical movement, fingers carried by said base on opposite sides of said thumb for clamping packs of cards to said base with edges in flexed engagement with said thumb, means for selectively moving said thumb upwardly from said base from between said cards, said thumb being in the form of a relatively thin, vertically disposed blade.

5. A mechanical card shuffler comprising a base, a central mechanical thumb mounted intermediate ends of said base, fingers carried by said base on opposite sides of said thumb for clamping packs of cards to said base with edges in flexed engagement with said thumb, means for selectively moving said thumb upwardly from said base from between said cards, said means including a rack connected to said thumb, a gear supported by said base engaging said rack.

6. A mechanical card shuffler comprising a base, a central mechanical thumb mounted intermediate ends of said base, fingers carried by said base on opposite sides of said thumb for clamping packs of cards to said base with edges in flexed engagement with said thumb, means for selectively moving said thumb upwardly from said base from between said cards, said means including a rack connected to said thumb, a gear supported by said base engaging said rack, said gear being crank operated.

7. A mechanical card shuffler comprising a base, a central mechanical thumb mounted intermediate ends of said base, fingers carried by said base on opposite sides of said thumb for clamping packs of cards to said base with edges in flexed engagement with said thumb, means for selectively moving said thumb upwardly from said base from between said cards, a card receiving pocket formed in said base for receiving shuffled cards, said

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pocket having sloping bottom sections and being of a maximum depth below said thumb.

8. A mechanical card shuffler comprising a base, a mechanical thumb mounted intermediate ends of said base, fingers carried by said base on opposite sides of said thumb for clamping packs of cards to said base with edges in flexed engagement with said thumb, means for selectively moving said thumb upwardly from said base from between said cards, said fingers being supported by linkage carried by said base, said linkage being lockable to retain said fingers in card flexing positions, said fingers being adjustably secured to said linkage to accommodate various thicknesses of packs.

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