

# United States Patent

Cassady et al.

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[54] **CARD SORTING DEVICE**

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[52] U.S. Cl. ....273/149 P, 209/110.5, 273/152.1

[51] Int. Cl. ....A63f 1/14

[58] Field of Search .....273/149 P; 209/110.5

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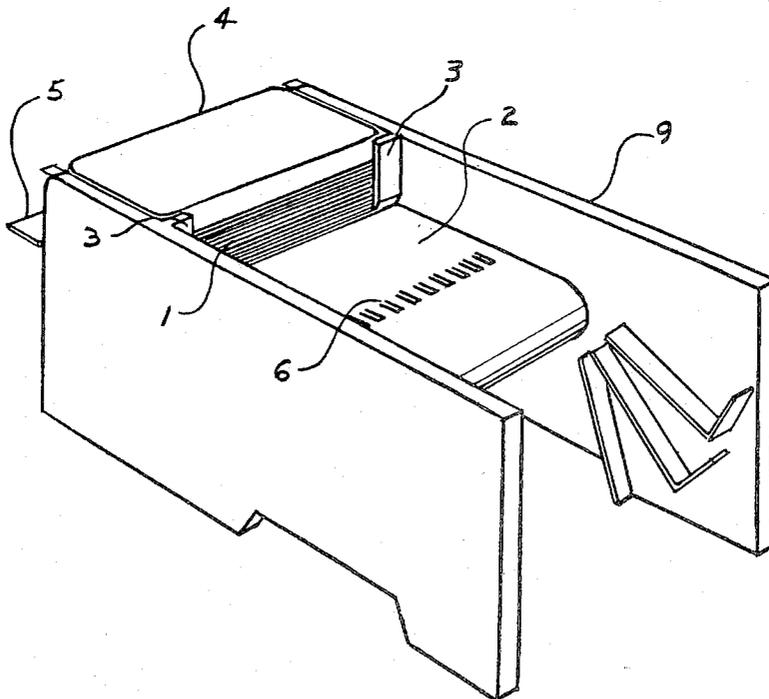
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[57] **ABSTRACT**

Stacked cards may be sorted by providing uniquely located identifying holes in each card and a movable element with tabs that are able to engage selected holes in a card to remove the card from a stack and deliver it to a selected sorting station. Selection is accomplished by a sort controlling means placed between the movable element and the stacked cards. The sort controlling means aligns one tab with one hole of a group on a stacked card. The tab then moves the card to a selected sorting station.

**8 Claims, 5 Drawing Figures**



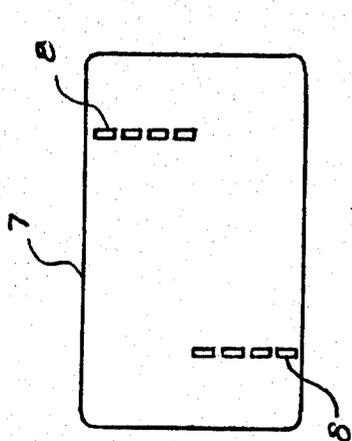


FIG. 2

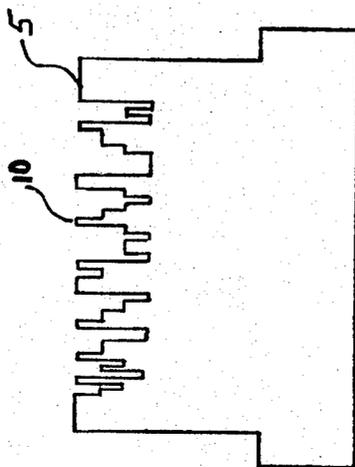


FIG. 3

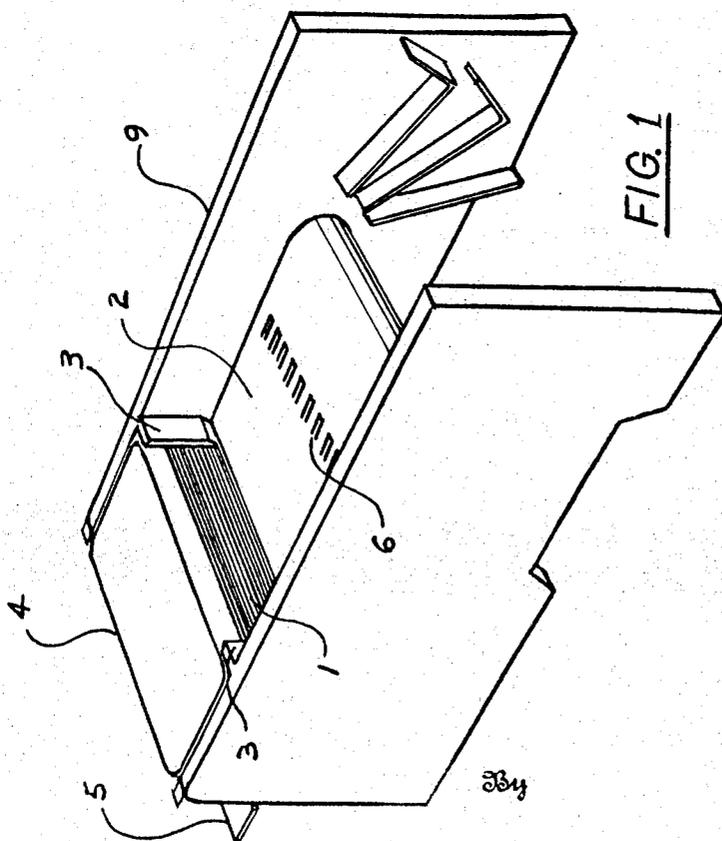


FIG. 1

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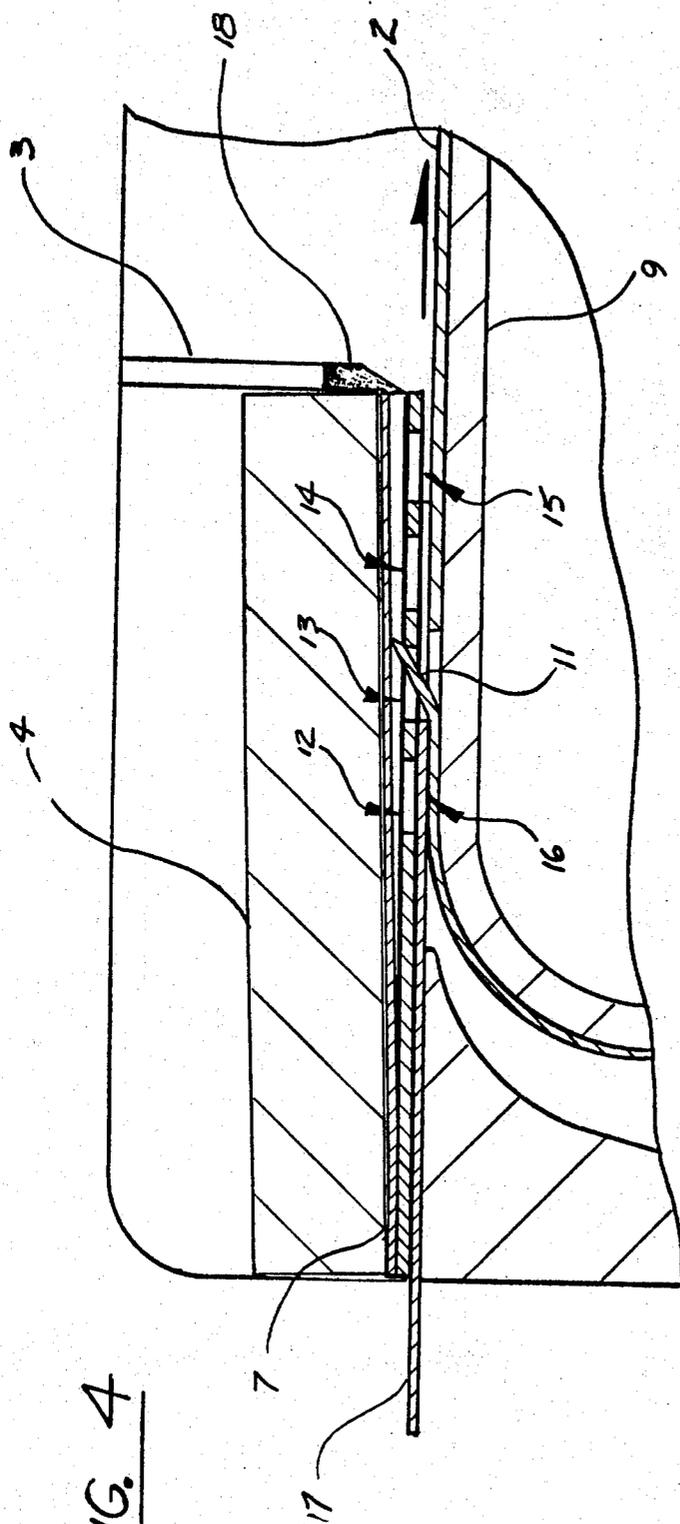


FIG. 4

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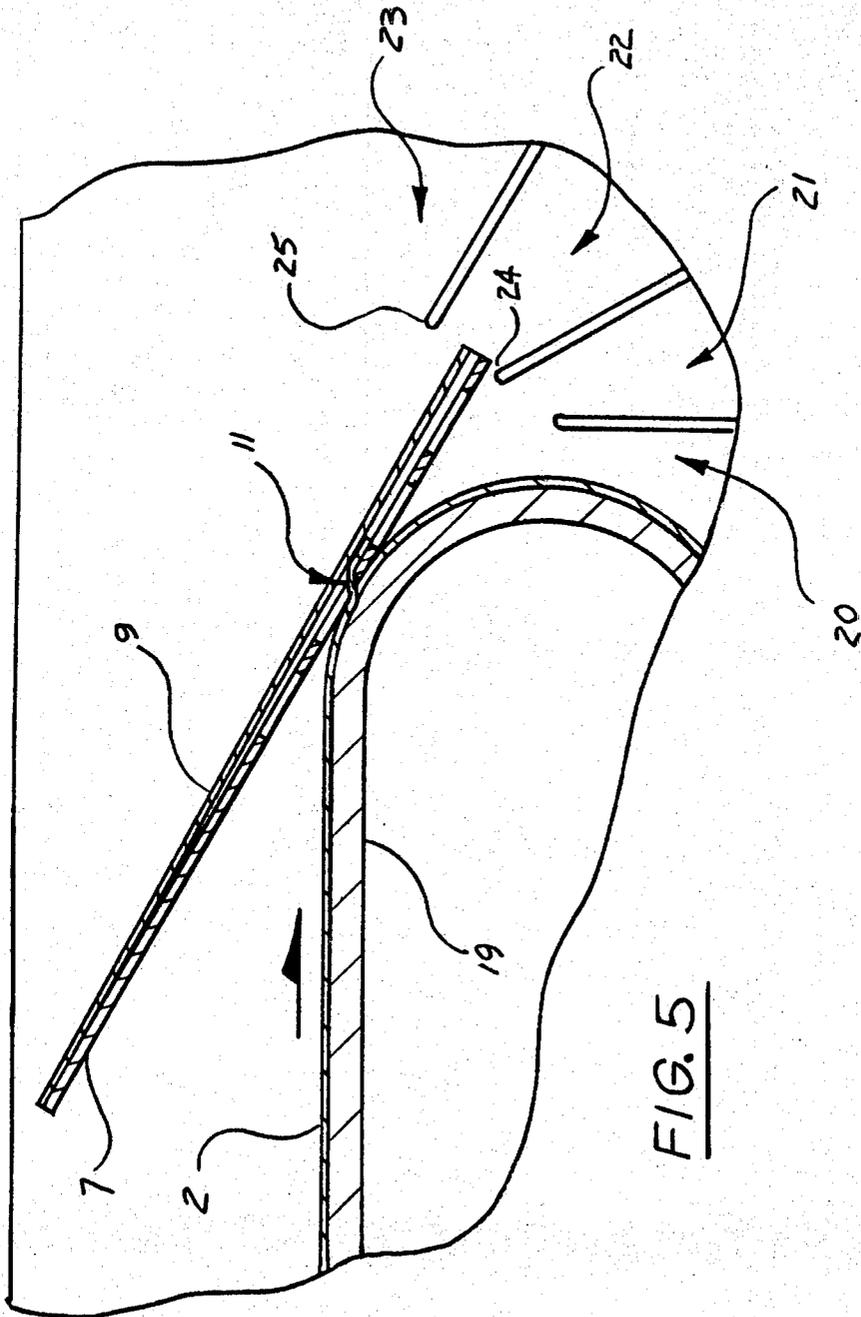


FIG. 5

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## CARD SORTING DEVICE

This invention relates to and has for its object the sorting of cards.

The invention shall be described in this specification in relation to the game of Bridge wherein it is desirable to control the distribution of 52 playing cards, 13 to each of four players. It is well known to those skilled in the game how distribution affects the character of the play. It should be noted, however, that the invention is not limited to card games but may be applied to the task of sorting any cards which can be constructed according to this specification. Moreover, the invention is not limited to the form herein shown, although this form is particularly advantageous for specific application to card games by reason of simplicity and economy.

In accordance with the object of sorting playing cards for the game of Bridge, the invention provides a set of 52 playing cards each having gripping means on the face side, a housing supporting a platen over which is motor driven a continuous belt, and a set of sort-controlling cards, each having a profiled edge similar to a key.

FIG. 1 is an isometric view of the invention showing each of the aforementioned elements except for the motor the details of which are not important to this specification.

FIG. 2 is a face view of a playing card; the indicia is omitted for clarity.

FIG. 3 is a face view of a sort controlling card.

FIG. 4 is a partial sectional view of FIG. 1 showing the co-operation of the card gripping means, belt gripping means and sort-controlling card.

FIG. 5 is a partial sectional view of FIG. 1 showing the relation between the sorting ways or pockets and the location of the gripping means.

Referring to FIG. 1 the card set 1 is arranged into a deck and stacked face down on the belt 2. Ribs 3 on the housing 9 prevent the cards from moving along with the belt 2. A weight 4 is placed on the deck to hold it firmly to the belt 2. A sort-controlling card 5 is chosen from a set and inserted between the belt 2 and card set 1. The belt 2 has 52 tabs 6 spaced across its width at various intervals along its length.

Referring to FIG. 2, each card 7 has a series of four holes 8. The holes are duplicated on both halves of the card so the card may be inserted into the machine either way, thus there are eight holes in each card. In order to conceal the identity of the cards as might be revealed by the unique location of the series of holes 8, the cards have a back lamination 9 as seen in FIG. 5. The holes are used for gripping the cards so the back lamination is bonded at the edges only to allow access of gripping means to the gripping holes. From the back side each card looks ordinary and cannot be distinguished one from another.

Referring to FIG. 3, the sort-controlling card 5 has a profiled edge similar to a key with 52 teeth 10. A given tooth 10 aligns with a particular series of holes 8 in a particular playing card and also aligns with one of the 52 tabs 6 on the belt 2 when the sort-controlling card 5 is inserted in the housing 9. The sides of the housing serve to guide the belt as well as align the aforementioned elements. The teeth 10 are cut to three different lengths and, as will be shown later, the length of the teeth control the sort or distribution.

The operation of the machine is as follows: referring to FIG. 4, the belt 2 is driven by a motor in the direction of the arrow, and as the belt advances all tabs 6 attempt to project upwardly. Only one particular tab aligns with the series of holes 8 of this one particular card and that tab 11 enters the first hole of the series 8 that is available to it. In this example, the first available hole 13 is the second of the series. The first hole 12 is covered by a particular tooth 16 of a particular sort-controlling card 17. As the belt 2 continues to advance the tab 11 penetrates between the laminations of card 7 to grip the card and slip the card from the bottom of the deck beneath wipers 18 mounted on the ribs 3. The wipers stop the next card from sticking to the moving card. Referring to FIG. 5, the belt continues to advance in the direction of the arrow carrying with it card 7 gripped by tab 11. The card 7 is carried over the edge of the platen 19 which is part of the housing 9 and a portion of the card cantilevers outwardly over the ways or pockets 20, 21, 22, and 23 that serve as sorting stations. In this case, since the card 7 is selectively gripped at the second hole 13, the card cantilevers far enough to extend over the lip 24 of the second pocket 22 but not far enough to touch the lip 25 of the first pocket 23. Thus the card is carried over the edge of the platen and delivered into the second selected pocket 22. Had the sort-controlling card exposed the first hole 12 (FIG. 4) of the series 8 the card would have been delivered to the first pocket 23. The teeth 10 of the sort-controlling card are cut to lengths to cover the first, second or third hole of the series depending upon where the particular card should be delivered. Thus a hand can be predetermined and a key cut to specification to yield a given distribution. The key can be made of inexpensive material and discarded after its particular hand has been played. The number of possible keys is limited only by the number of possible Bridge hands.

We claim:

1. A card sorting system comprising a set of cards, a series of gripping means uniquely located on each card of the set, a movable element having a series of gripping means, means for locating said set of cards in stacked relation adjacent said element, means for moving said element past said cards, said gripping means being so located on said element such that a selected one of said element gripping means can grip any one of the gripping means of the most adjacent card to remove said card from the stack, code means adapted to be interposed between the element and the most adjacent card, said code means determining the particular gripping means on the most adjacent card which is gripped by the element gripping means, and means cooperating with said card and element gripping means and responsive to the particular card gripping means engaged by the element gripping means to effect the discharge of a card to a selected sorting station.

2. A card sorting system comprising:

- a set of cards,
- a series of gripping means uniquely located on each card of said set,
- a movable element having a series of tab means,
- means for locating said set of cards in stacked relation adjacent to said movable element,
- means for moving said movable element relative to said stacked cards,

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said tabs being located on said movable element such that a selection of said tabs can grip a selection of said gripping means of the most adjacent card to remove said adjacent card from said stacked cards, sort controlling means adapted to be inserted between said movable element and said most adjacent card of said set of stacked cards, said sort controlling means determining the particular gripping means on said most adjacent card to be gripped by a tab on said movable element, and sorting station means responsive to said particular gripping means gripped by said tab to direct said most adjacent card to a selected sorting station.

3. The sorting system of claim 2 wherein said gripping means is a series of holes aligned parallel to the direction of relative movement between said movable element and uniquely positioned across said card perpendicular to said direction of relative movement according to the particular designation of said card.

4. The sorting system of claim 3 wherein said particular hole for selecting a sorting station is one of said holes aligned in the direction of said relative movement.

5. The sorting system of claim 4 wherein said sort controlling means includes means effective to determine said particular hole in the direction of said relative movement to be engaged by said tab.

6. The sorting system of claim 2 wherein said movable element is a continuous belt adapted to move relative to said stacked cards.

7. The sorting system of claim 3 wherein said sorting station are pockets and the selection of a particular hole limits the amount of relative movement between said adjacent card and said movable element.

8. The sorting system of claim 2 wherein said sorting stations cooperate with said cards and said tabs as determined by said sort controlling means to direct a stacked card to a selected sorting station.

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