March 21, 1950 C. A. BERGSTEN ET AL 2,501,492

CARD SORTING DEVICE

Filed July 20, 1944 4 Sheets-Sheet 1

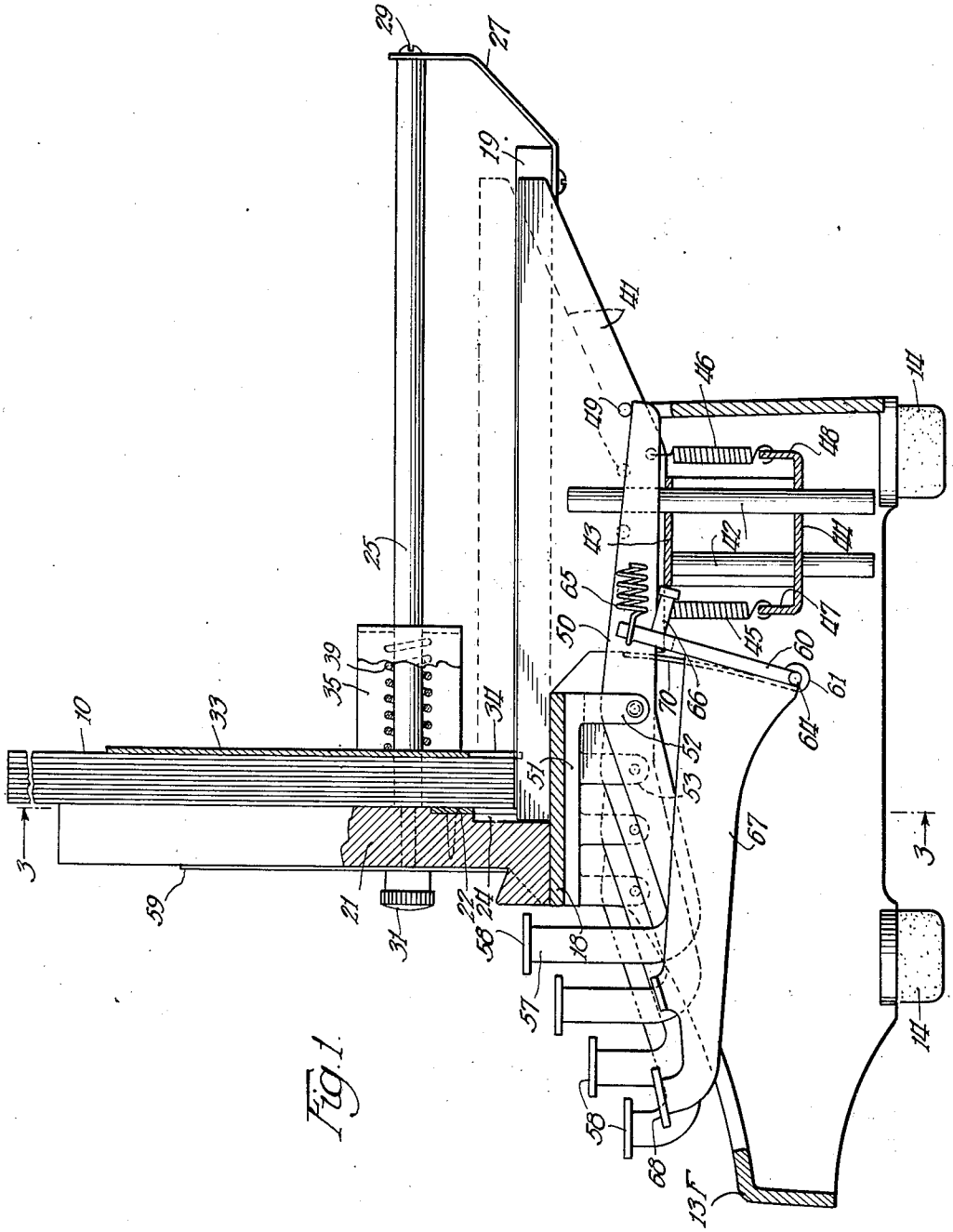


Fig. 1.

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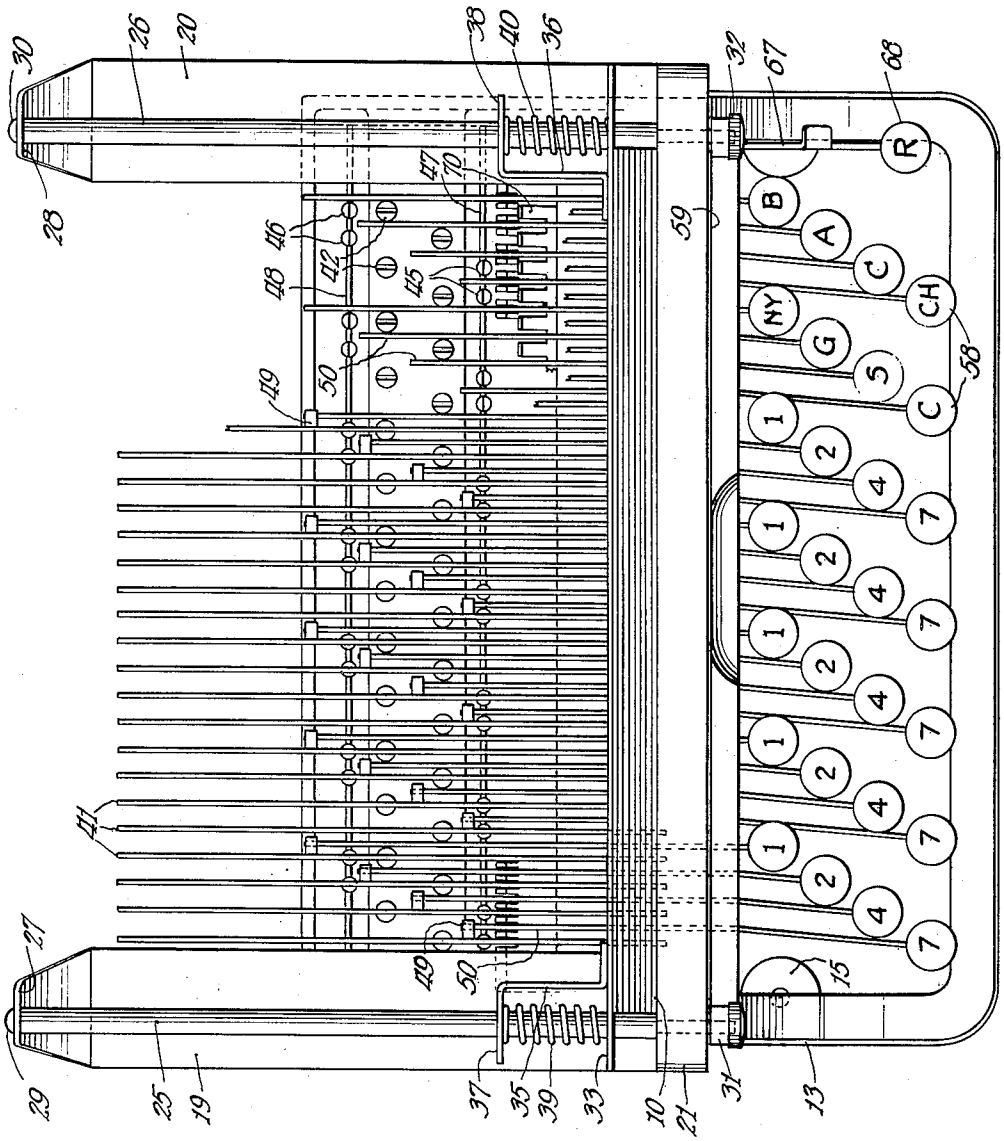


Fig. 2

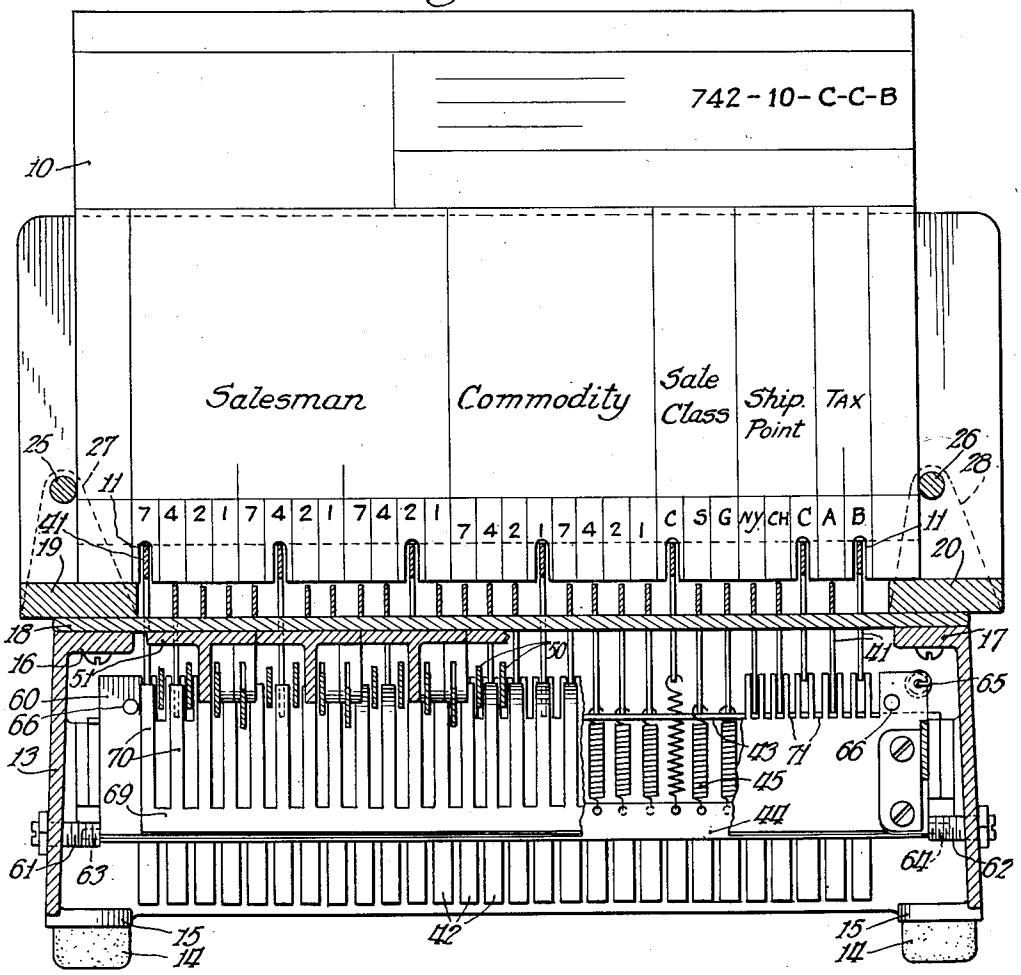
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Fig. 3.



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Fig. 4

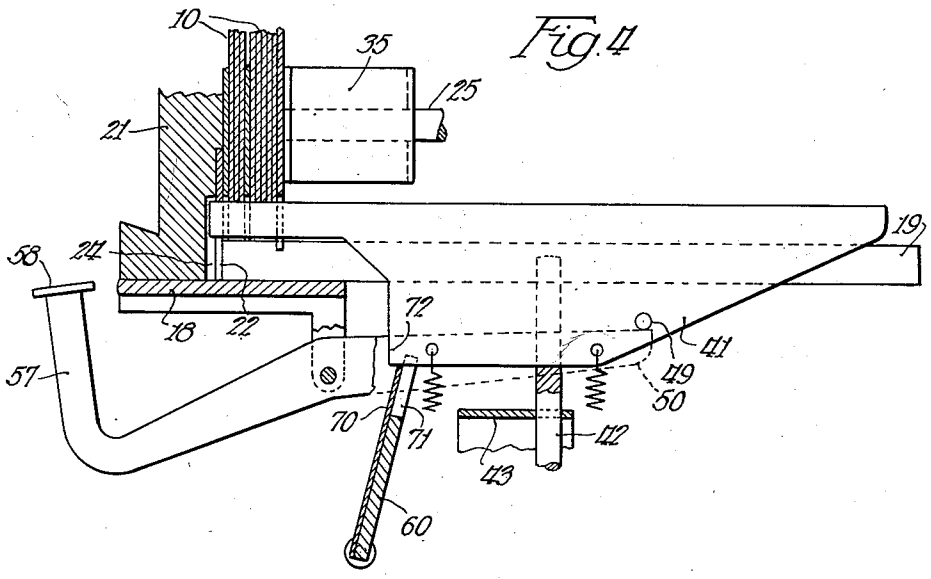


Fig. 5

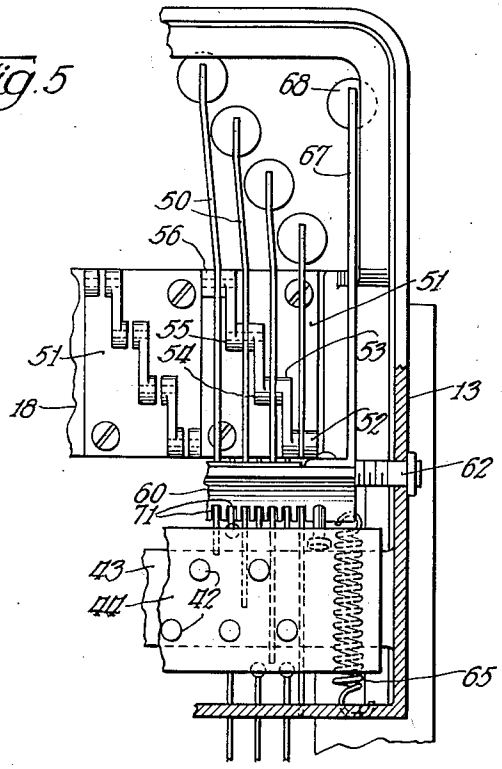


Fig. 6

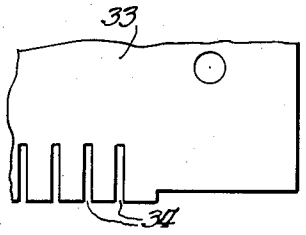
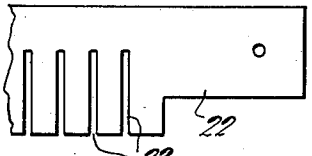


Fig. 7



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UNITED STATES PATENT OFFICE

2,501,492

CARD SORTING DEVICE

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Application July 20, 1944, Serial No. 545,846

3 Claims. (Cl. 129—16.1)

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The present invention relates to card sorting devices of the type wherein an operator may, by the manipulation of suitably designated keys, separate one card or a plurality of cards from a large group in accordance with sorting designations provided on the cards. Card sorting devices of this character are particularly useful in selecting cards that have to be kept and used from time to time for various record and index purposes.

It is the principal purpose of this invention to provide a selective card sorting device of the character referred to wherein the operation of the sorting keys results in the removal or lifting of the unwanted cards, leaving only those desired in their original position.

It is also a purpose of this invention to provide a mechanism of this character with a simple operating means whereby the sorting keys or bars are individually locked in actuated position but may all be released instantly at the end of the sorting by one single movement.

It is a further purpose of this invention to provide a novel mechanism, including sorting bars and means for actuating them, in a card sorting device of the character described.

Other features and advantages of the invention will appear more fully as the description proceeds, reference being had to the accompanying drawings wherein a preferred form of the invention is shown. It is to be understood however that the drawings and description are illustrative only and are not to be taken as limiting the invention except insofar as it is limited by the claims.

In the drawings:

Fig. 1 is a longitudinal sectional view through a card sorting device embodying our invention;

Fig. 2 is a plan view of the card sorting device;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary sectional view illustrating the position of the raised bar and the latching mechanism therefor;

Fig. 5 is a fragmentary bottom plan view partly in section of the card sorting device;

Fig. 6 is a detailed view of one of the supporting plates for the cards; and

Fig. 7 is a fragmentary detailed view of a guide plate that cooperates with the supporting plate to receive the cards and to guide the sorting bars between their lowered and raised positions.

Referring now in detail to the drawings, and in particular to Fig. 3, this figure shows the front face of a card 10 of the type that are to be sorted

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with the card sorting device embodying our invention. Cards of this character are notched in accordance with certain identifying index symbols thereon, these notches being shown along the lower edges of the cards at 11.

As an example of the several bases upon which a group of cards may be selectively sorted, the card shows an index classification under salesman, under the commodity sold, under the class of sale, under the shipping point and under the tax applicable. The salesman index covers all numbers of three digits, the commodity index covers all numbers of two digits, the class of sales has three branches, the shipping point has three branches and the tax classification is according to two classes. This is merely an example of a break down according to which it might be necessary to locate a card. For example, if you wanted to know something about a sale made by salesman No. 742 of a commodity sold in class 10, the type of sale being type C, the shipping point being identified by the letter C and the tax being of the B type, you would be looking for a card having the notches 11 indicated in Fig. 3. That is, there is one notch 11 under the numeral 7 in the first series of digits, another notch under the numeral 4 in the second series of digits, and a third notch under the numeral 2 in the third series of digits. Under the commodity classification there is a notch under the numeral 1 but there is no other notch since the system of classification does not provide a notch where one of the figures is a zero. Notches likewise are provided under the letter C in the class of sale group and under the letter C in the shipping point group. Under the tax classification the notch is under the letter B.

It will be noted that there is a raised bar 41 in each of the notches mentioned hereinbefore. These bars 41 are the sorting bars. It is quite obvious that when all of the bars are raised as indicated in Fig. 3 only those cards 10 which have the peculiar combination of notches corresponding to those bars will drop down over the bars that are raised. All the other cards will be lifted to a higher level so that they can be readily removed or segregated from the cards desired. If, for example, you wanted all of the sales of salesman No. 742 you would merely raise the bars under the salesman selective classification. Only those cards notched in the No. 742 spaces will drop down over the No. 742 bars. All other cards will be raised. A further selective sort for commodities, etc. may then be made as outlined above.

It is believed that the foregoing description

will roughly illustrate how the cards are notched for sorting purposes in our sorting device. The sorting device itself will now be described in detail.

The sorting device consists of a rectangular frame casting 13 having a series of supporting feet 14 thereon. The casting is provided with horizontally extending ears 15 to which the feet 14 are secured by screws. The frame has two side flanges 16 and 17 along the top edge thereof, these flanges being adapted to mount certain parts of the card holding mechanism and card sorting mechanism. The front wall of the rectangular frame is reduced in height in comparison with the side and rear walls, the reduction in height being mostly from the top so that the front wall is a relatively narrow, angularly shaped section as indicated at 13F in Fig. 1. Across the top of the frame we mount a cross bar 18 and on this cross bar two side rails 19 and 20 and a front stop 21 are fastened. The side rails and the front stop may be made of any suitable light material such as wood or plastic. The front stop 21 has a guide plate 22 thereon, the guide plate being notched with uniformly spaced notches as indicated at 23 (see Fig. 7). This guide plate functions as a means of guiding one end of the sorting bars in a manner which will be explained more fully hereinafter. It will be noted that the guide plate 22 extends all the way down to the bar 18 but that the front stop 21 is notched out as shown at 24 in back of the guide plate so that the sorting bars can extend through the notches 23 in the guide plate.

The side rails 19 and 20 cooperate with the front stop 21 to support two guide rods 25 and 26. Metal clips 27 and 28 are provided at the free ends of the rails 19 and 20. The rods 25 and 26 are fastened to these clips by suitable screws 29 and 30. The bars 25 and 26 have reduced threaded ends which extend through the front stop 21 where they receive screw caps 31 and 32. An adjustable plate 33 is mounted for sliding movement lengthwise of the bars 25 and 26. This plate is intended to back up a series of cards 10 which are placed against the front stop 21. The plate 33 like the guide plate 22 is provided with notches 34 in its lower edge to receive the sorting bars as they are raised. In order to frictionally oppose endwise movement of the plate on the bars 25 and 26 brackets 35 and 36 are mounted on the back of the plate 33 and have bifurcated tip portions 37 and 38 fitting over the bars 25 and 26 at some distance from the plate 33. Coil springs 39 and 40 are interposed between the plate 33 and the bifurcated ends 37 and 38 of the brackets. The frictional holding is actually accomplished by the coil springs 39 and 40 which grip the bars 25 and 26 slightly. The brackets are merely means to prevent relative movement between the plate 33 and the coil springs 39 and 40.

The actual supporting means for the several cards that may be held between the front stop 21 and the plate 33 comprises a multiplicity of uniformly spaced parallel sorting bars 41. These sorting bars are individually mounted at one end by means of the notches 23 in the guide bar 22, and adjacent the other end each of the bars 41 is provided with a fixed, depending pin 42 (see Figs. 1 and 4). The pins 42 extend downwardly through two spaced plates 43 and 44 that extend transversely of the rectangular frame. In order to hold the bars 41 yieldingly in lowered position each bar has two springs 45 and 46 affixed thereto, the lower ends of the springs being mounted in flanges 47 and 48 on the plate 44. With the guide pins 42 threaded through the openings in the plates 43 and 44 and the slots in the plate 22 engaging the bars 41, the bars are accurately guided for vertical movement and are yieldingly urged downward at all times by the springs 45 and 46.

Each of the bars 41 has a laterally extending pin 49 thereon. This pin is for the purpose of engaging one end of an operating lever 50. There is an operating lever for each of the bars 41. The several operating levers 50 are carried by bearing plates 51 that are mounted on the under surface of the cross bar 18. The plates 51 are secured to the cross bar by screws. Each plate has a series of depending ears 52, 53, 54, 55 and 56 so arranged as to pivotally mount the levers 50 by means of pivot pins extending through the ears. It will be noted by an examination of Fig. 5 that the ears 53, 54 and 55 each has two pivot pin receiving portions so that the pivots of the several bars are staggered across the plate 51. Also, the pins 49 are mounted at different distances from the free ends of the bars 41 to correspond to the pivotal mounting of the levers 50. Each of the levers 50 has an upturned end portion 57 on which a key head portion 58 is formed. The heads 58 are provided with suitable indications whereby they may be identified in accordance with the markings shown on the card 10 in Fig. 3. In order that the card index key information may be continuously displayed we mount on the stop plate 21 an information card 59 which duplicates the basic classification information on the several cards that are to be sorted. Such card may desirably be held by the screw caps 31 and 32.

In order to lock the bars 41 in raised position after they have been raised by depressing the headed ends of the levers 50 we mount a latch bar 60 in the side walls of the frame 13. The mounting is best shown in Fig. 3. Two threaded bearing members 61 and 62 are threaded into the side walls of the frame 13. The latch bar 60 is provided with pivot pins 63 and 64 extending into the bearing members 61 and 62 so as pivotally to support the bar 60. A spring 65 is connected to the bar 60 and is then fastened to the rear wall of the frame 13 (see Fig. 5) so as to tend to pull the bar 60 toward the cross bar 43. The bar 60 has stop pins 66 thereon adapted to engage the bar 43 to limit the movement of the bar 60. An operating lever 67 is fastened to the bar 60 and has a finger tab 68 thereon. The purpose of the lever is to move the bar 60 in opposition to the pull of the spring 65.

The bar 60 carries a multiplicity of individual springs 70 which are joined together along their base by an integral strip 69. The length of the springs 70 and the position of the bar 60 with respect to the sorting bars 41 is shown best in Figs. 1 and 4. The bar 60 has notches 71 in the top edge thereof and the sorting bars 41 have a vertical shoulder 72 thereon so that when a bar 41 is raised from the position shown in Fig. 1 to the position shown in Fig. 4 the spring 70 which overlies the notch 71 that the bar 41 fits in will snap under the bar 41, holding the bar in raised position against the pull of the springs 45 and 46. Now when it is desired to release the raised bars 41 to allow them to return to their lower position, the lever 67 is depressed to swing the latch bar 60 in a counterclockwise direction from the position shown in Fig. 4 until the top of the spring 70 is pushed out far enough to

slide along the shoulder 72 thus allowing the bar 41 to drop. When the lever 67 is released the spring 65 is strong enough to pull the bar 60 into the position shown in Fig. 1, bending the springs 70 in the manner shown in Fig. 1. Thus at the end of any selecting operation the bars 41 are all restored to position to begin a new sorting operation by the mere depression of the finger tab 68.

From the foregoing description it is believed that the nature and advantages of the present invention will be readily apparent to those skilled in this art.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A selective sorting device for sorting a group of cards having sorting notches in one edge thereof arranged in patterns, said sorting device comprising a framework, parallel bars on said framework mounted for straight line vertical reciprocation, there being at least a bar for each selective sorting notch in the group of cards, and adapted to form a support on which the cards may be supported by placing them with the notched edges extending transversely of the bars, individual lifting keys one for each of said bars, individual spring fingers bearing against upwardly extending faces on said bars and engageable beneath a bar when a bar is lifted to solely support it in lifted position independently of said keys, whereby one to all bars completing a pattern may be selectively raised to lift cards not having the notches of the selected pattern, said fingers comprising leaf springs, a pivoted bar carrying said springs, means urging said pivoted bar in a direction to engage said fingers with said card supporting bars, and means to turn said pivoted bar to force the fingers out from supporting-position under their respective card supporting bars and into engagement with said upwardly extending faces.

2. A card sorting device of the character described, comprising a framework, a front stop on said frame against which cards may be positioned, a series of card sorting bars in closely spaced parallel relation extending rearwardly from said front stop, said bars being mounted for limited vertical movement, means on said front stop for guiding the adjacent ends of said bars in their vertical movement, an adjustable rear stop plate mounted on said framework for engaging cards and holding them in vertical position on said bars, guide pins on the bars, and a cross member on the frame receiving said guide pins and cooperating with the guide means on said front stop to guide the bars in their vertical movement.

3. A card sorting device comprising a framework, means on the framework mounting a series of parallel sorting bars in closely spaced relation for guided vertical movement, individual levers associated with said bars to lift the same without shifting the same longitudinally of themselves, a latch bar having individual spring fingers thereon for engaging under said bars to solely support the sorting bars in raised position when said bars are lifted by one of said lifting levers, a common actuating member for causing said latch bar to release all of the spring fingers by a single movement, said sorting bars having vertical faces thereon along which the spring fingers may slide when released from beneath the sorting bar, and means urging said latch bar into a position in which said fingers are either in engagement with said vertical faces or in sorting bar supporting position.

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