April 23, 1940. A. A. REMBOLD 2,198,127

DIRECT SEGREGATION SYSTEM

Filed March 30, 1938

FIG. 1

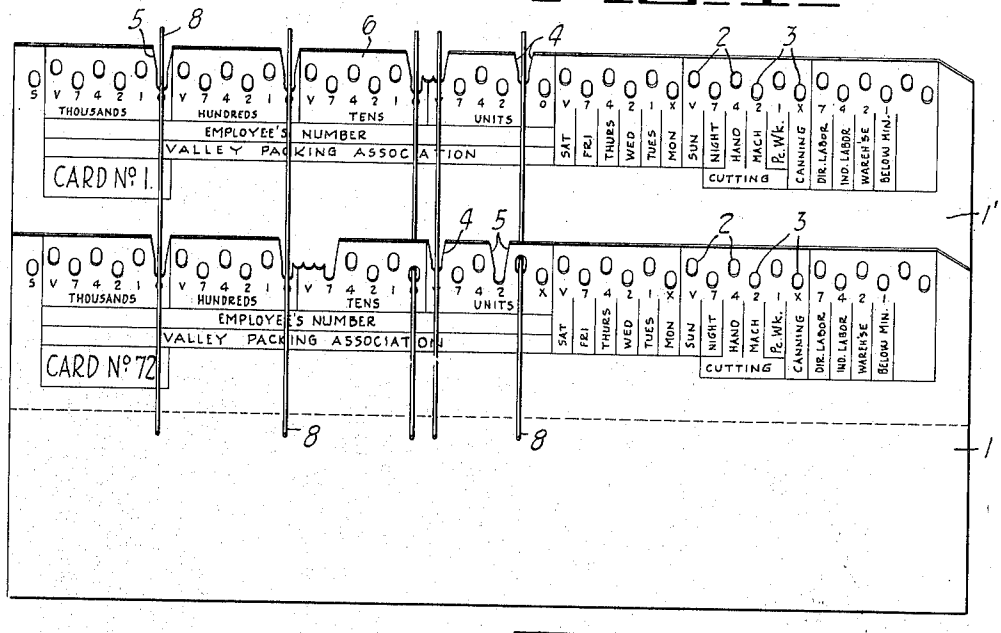


FIG. 2

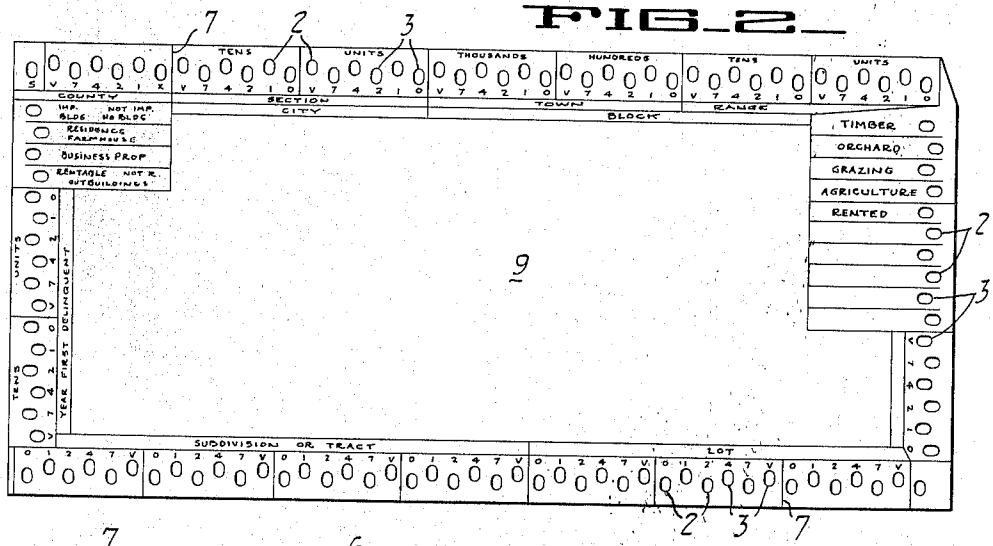
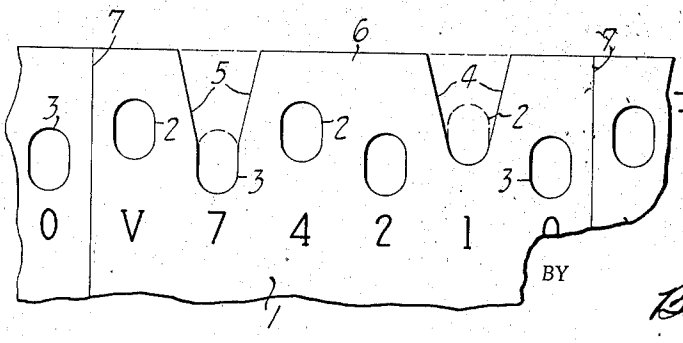


FIG. 3



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DIRECT SEGREGATION SYSTEM

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6 Claims. (Cl. 129—16.1)

This invention relates to improvements in sorting and classifying of cards, and has for its objects improved construction enabling a direct sorting and classifying of cards and also the direct sorting and classifying of a greater number of cards bearing different data thereon than cards of the same and larger size that have heretofore been available, without weakening the cards. Other objects and advantages will appear in the drawing and specification annexed hereto.

In the drawing

Fig. 1 illustrates a perspective view of a pair of cards as seen from the front with wire-like rods in position for releasing the rear card.

Fig. 2 is a plan view of a card illustrating my invention as applied to all four margins of a card.

Fig. 3 is an enlarged fragmentary view of a portion of a card showing my invention.

Before describing my invention in detail, a brief explanation of the heretofore existing problems will be helpful to a full understanding of said invention.

The general idea of forming cards and the like along one of the marginal edges thereof with a row of openings, each of which openings is adapted to be directly and separately slotted out to the edge of the card, with only those so slotted or cut away relating to the particular classification desired, is shown in U. S. patent to Robinson, No. 1,235,502, July 31, 1917, and in U. S. patent to Perkins No. 1,544,172, June 30, 1925. In my present invention, as well as in the previous disclosures, the general manner of operation is similar, in that the holes or openings along the margin of the card are respectively identified by symbols, and by slotting out certain of the openings to the edge of the card, while leaving others unslotted, a large number of different combinations of slotted and unslotted openings may be made. When cards formed to provide these combinations are arranged in a stack, the openings in the cards will be in registration with each other, and by inserting wire-like rods through one, or a combination of registering openings that are slotted out, a separation of the card or cards so slotted, is effected, since all the other cards in the stack in which the registering openings receiving the wires are not slotted out will be supported on the rod or rods against removal from the rods in an edgewise direction.

It is obvious from the foregoing explanation, that the greater the number of openings in a row along a marginal edge or marginal edges of each card, the greater will be the number of combinations. It is equally obvious that the above described method of sorting cards is impractical unless the cards are relatively small and light, since the cards are supported on the rods from relatively thin margins. Since the supporting margins of the cards along their edges are further weakened by the openings, it has heretofore been found necessary to limit the number of such openings per inch to a number which will leave sufficient card stock between the openings to give the desired strength for supporting each card without tearing away the margin of the supported card outwardly of the row of openings and without permitting said margin to flex out of the plane of the card in handling the cards.

I have found that by offsetting alternate openings along a margin of each card, thus forming a row of staggered openings, I am able to provide a greater number of said openings along such margin and at the same time provide a card having greater durability in use than in previous cards and without reducing the size of the openings. Hence for a card of 8½ inches in length, which I have found to be substantially the maximum length practical in cards adapted for sorting by the aforesaid method, I am able to furnish the same number of working combinations for performing a direct segregation or sorting of desired cards as would heretofore be required for a much longer or larger card, and by the same token, I am able to produce a card much smaller than the present size card, but having the same number of working combinations.

Referring to Fig. 1 in the drawing, the cards 1, 1' are each formed along a margin thereof with a row of elongated openings of generally oval form arranged in staggered relation, the openings 2 of the row being disposed nearest the adjacent edge of the card and the openings 3 respectively in said row being disposed between the pairs of adjacent openings 2 and offset toward the center of the card uniform distances away from said edge. The major axis of each of said openings 2, 3 is disposed at right angles to the edge of the card along which the row extends and it is pertinent to note that the openings 3 are preferably only offset relative to openings 2 a distance only about one-half the length of their major axes.

Certain of these holes, as desired, are slotted out or cut away to the edge of the card, as at 4 (for openings 2), or 5 (for openings 3), the cutting across of the marginal portion 6 at said

opening, or openings respectively, being along divergently extending lines transversely across said portion from side edges of the slots to the edge of the card. The spacing between the opposite edges of the slots so formed, at the edge of the card, is the same, whether for openings 2, or openings 3, and the degree of divergence of the opposite edges of the slots are likewise the same for either of the openings 2, 3.

The spacing of the openings 2, 3 from the adjacent edge of the card and the degree of divergence and spacing of the opposite edges of slots 4, 5 are such that the edges of the slots will connect with the side edges of the openings 2, 3 at a point below the curved end edges of the openings adjacent the nearest edge of the card to said row of openings, thus insuring against the wire rods 8 (Fig. 1) catching the edges of openings at the juncture between the side edges of the slots and side edges of the openings. Also the degree of divergence of the opposite edges of said slots is such as to not appreciably reduce the width of the card stock remaining between an unslotted opening and an opening that is slotted out, and in any event, as seen from Fig. 3, no reduction whatsoever in the width of such card stock occurs where openings 2 are slotted out and the adjacent openings 3 on either side are not.

It will further be seen from the foregoing that the inner end edges of openings 2, not being in alignment with the inner end edges of openings 3, the tendency of the marginal portion 6 to bend and to break along the inner end edges of the openings is practically eliminated whereas were the openings 2, 3 disposed in a single row with their inner ends in alignment, the marginal portion 6 would readily bend and break along a line extending through said inner ends unless the openings were widely spaced apart. By "inner" end edges of the openings, I refer to the end edges thereof remote from the edge of the card along which the row of openings is disposed. The openings along the marginal edge of the card are divided into fields by lines 7, extending transversely of the row. Each of said fields contains six openings, certain of which fields from right to left across the card are designated "units," "tens," "hundreds," "thousands," and the openings in each such field, from right to left, are designated "0," "1," "2," "4," "7," and "V." The numerals provide identifying means for designating the positions of the slotted openings in certain cards that are covered or uncovered as the case may be, but which slotted openings must exist somewhere within the different combinations permissible or up to 9,834,496 for the number of openings shown in Fig. 1 in the fields designated from "units" to "thousands," for indirect sorting, providing, of course, all combinations are used. The total number of different combinations obtainable in all of the openings along the single margin of the card designated in Fig. 1, for direct sorting, is 11,999,999 where the seven fields are used.

As an example of direct sorting of card No. 1, or the rear card illustrated in Fig. 1 in the drawing, it will be seen that the openings designated "V," and "1," in the unit field, are slotted out; the openings designated "0" in the "thousands," "hundreds" and "tens" fields respectively are slotted out. By inserting wires 8 through the five openings in card 1, being the above designations "V," "1" and "0," it will be obvious that all the cards in the stack in which the openings are similarly slotted out will be free to drop out of the stack, since the slotted out portions free said cards from engaging the rods and the remaining cards will remain in the stack supported on rods 8. In each field, as above described, the opening arbitrarily numbered "V" will be slotted out with some other single opening in the same field where the combination of slotted openings in a card for enabling the separation of that particular card from the stack includes a single slotted opening in that particular field. Thus in Fig. 1 in card 1, the opening designated "V" in the field designated "units" is slotted since card No. 1 is identified by the opening marked "1" being slotted out.

Referring to the front card shown in Fig. 1, this is card No. 72. Hence in the "tens" field the opening designated "V" and the opening designated "7" are slotted out and in the "units" field the openings designated "V" and "2" are slotted out. In the "thousands" and "hundreds" fields the openings designated "0" are slotted out, but not the openings marked "V." This combination is the only one of its kind in the possible 11,999 different combinations of slotted openings within the total number of openings in the fields designated "units," "tens," "hundreds," "thousands," for direct sorting, hence rods or wires inserted through the openings above designated as being slotted out in said card will result in that particular card or similarly formed cards being the only card or cards that are free to drop from the rods.

In any card in which two openings in any field are slotted out, apart from the opening designated "V," then the "V" opening need not be slotted out, thus at no time, in using the numerical designation as a basis for defining various combinations of numerals from the numeral 1 upwardly, need more than two openings be slotted out in any one field.

It is manifest that the upper row of openings shown on card 1, 1' respectively may be divided into fields of six openings each running up to "thousands of thousands," by commencing with the "unit" field at the right or left hand margin of the card and then designating the successive fields across the card as "units," "tens," "hundreds," "thousands," "ten thousands," "hundred thousands," "thousand thousands," whereby possible different combinations up to 11,999,999 is possible, using a numerical system, and a direct sort of any one card or plurality of similarly formed cards within such range is possible irrespective of where the desired card may be in the stack. This same number of different combinations is possible in any event, provided the number of holes in the row equals those shown in the cards in Fig. 1. With holes around all four margins, the cards are, of course, suitable for a more extended classification than where the holes are only along one margin.

It is needless to say that various symbols may be used as desired, such as letters, etc., but the numerical system affords an easy method of quick and direct segregation in the general arrangement as described above, and while I have specifically described a card construction, and cards made of cardboard are preferable, my invention is equally applicable to cards of any sheet material, or of various shapes, provided they are capable of being stacked to bring similarly positioned rows of openings in a position with the holes of such rows in registration with each other.

Having described my invention, I claim:

1. In a card segregating system of the character described, a plurality of similar sized cards,

said cards each being formed with a row of openings arranged in staggered relation along and adjacent one edge so positioned to be in registration with the openings in the other cards when the cards are arranged in a stack with their similar edges in alignment, the corresponding openings in the cards being of similar shape and size and positioned to enable slotting out of any one of the openings to the edge of the card adjacent thereto as desired by a slot of a width not less than the width of any one of the openings nearest said edge and without cutting through the edges of the openings adjacent the opening adapted to be so slotted out whereby cards in which the openings are similarly slotted out may be separated from a stack of aligned cards upon separating devices being passed through the registering openings that include the similarly slotted out openings.

2. In a construction as defined in claim 1, the openings in each card nearest the card edge adjacent said row being elongated in a direction at right angles to said edge and equally spaced from each other and the alternate openings of the row in each card farthest from said edge being disposed equal distances from said edge.

3. In a card segregating system of the character described, a plurality of similar sized cards each formed with a pair of parallel rows of similar sized openings positioned adjacent and parallel with one edge thereof, the openings in each of said rows being equally spaced apart and one of said rows being disposed further from said edge than the other with the openings thereof offset relative to the openings of said other row to positions disposed partially within the spaces between the openings of said other row, whereby a straight line parallel with said edge extending through the lower portion of the openings in the row nearest said edge will also extend through the upper portion of the openings in the row farthest from said edge, and various of the openings in said cards respectively being slotted out to the edge adjacent thereto for facilitating separation of the cards in which similar openings are slotted out.

4. In a card segregating system of the character described, a plurality of similar sized cards each being formed with a pair of parallel rows of similar sized, equally spaced openings positioned parallel with and adjacent one edge thereof, the openings in said rows being generally elliptical in shape and disposed with their major axes at right angles to said edge, the openings of one row being offset relative to the openings in the other row in a direction longitudinally of the rows to positions intermediate the pairs of adjacent openings of said other row and with their upper ends in alignment along a straight line extending substantially centrally across the openings in said other row, each of the openings in the pair of rows being disposed relative to said edge of the card for slotting out to said edge along similarly spaced, similarly divergent lines extending from the side edges of the respective openings divergently to said card edge.

5. In a construction as defined in claim 4, the spacing between adjacent openings in each of said cards being substantially equal to the width of the openings respectively whereby the spacing between the upper ends of the openings in the row nearest said edge and the distance between the lower ends of the openings in the row farthest from said edge is double the distance between the lower ends of the openings of the row nearest the said edge and the upper ends of the openings of the row farthest from said edge.

6. In a card segregating system of the character described, a plurality of similar sized cards, said cards each being formed with a row of openings arranged in staggered relation along and adjacent one edge so positioned to be in registration with the openings in the other cards when the cards are arranged in a stack with their similar edges in alignment, each of the openings in each card being of similar shape and size and positioned to enable selective slotting out of the openings to the edge of the card adjacent thereto as desired whereby cards in which the openings are similarly slotted out may be separated from a stack of aligned cards upon separating devices being passed through the registering openings that include the slotted out openings, the openings in each card being substantially elliptical in shape and arranged with their major axes at right angles to the edge of the card adjacent thereto, the alternate openings of the row being equally spaced from said edge and the adjacent openings in the row positioned so that a straight line parallel with said edge will extend transversely across all of the openings in the row.

ALBERT A. REMBOLD.