L. S. ROBINSON.

SEGREGATION SYSTEM.

APPLICATION FILED MAR. 8, 1915.

1,235,502.

Patented July 31, 1917.

3 SHEETS SHEET 1.

Fig 1

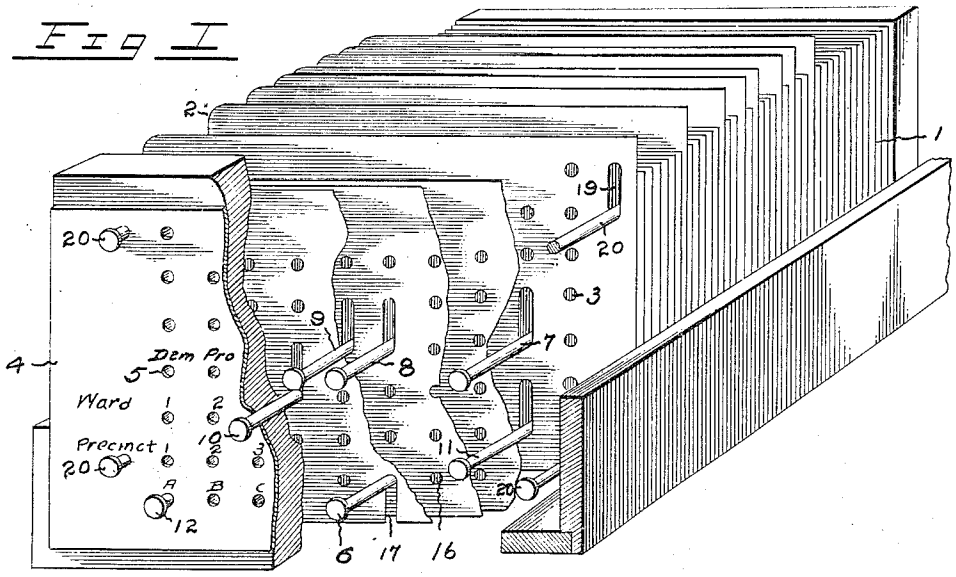
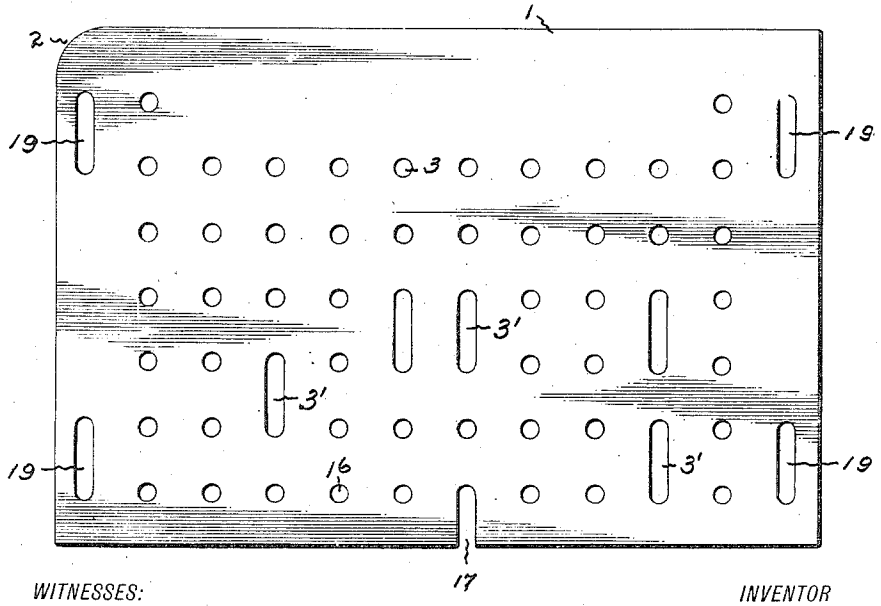


Fig 2



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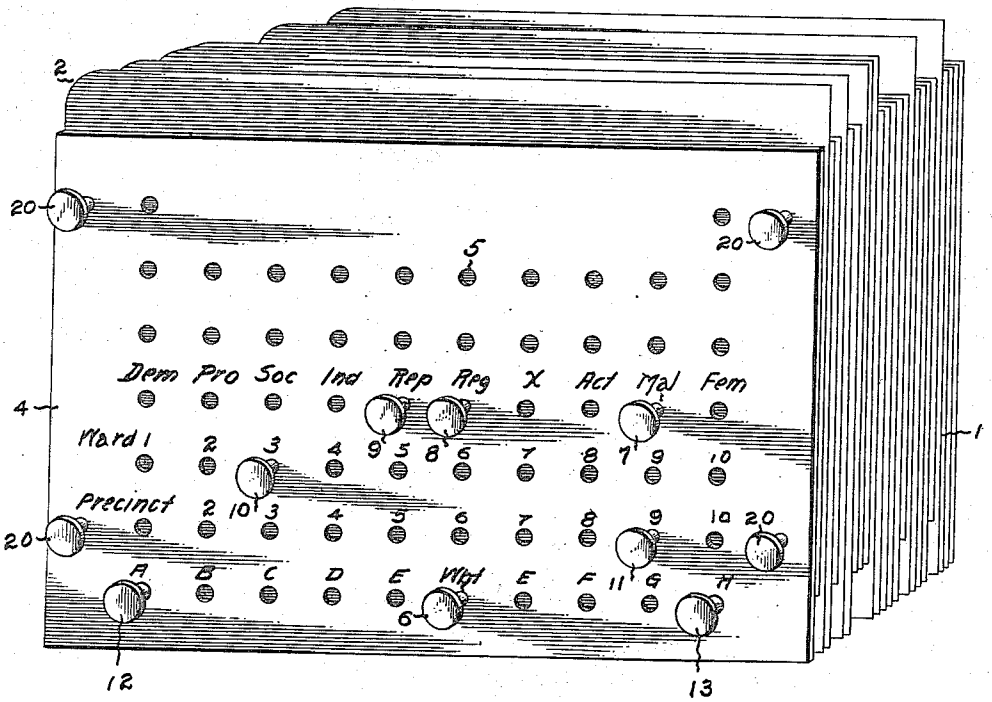
3 SHEETS—SHEET 2.

Fig 3



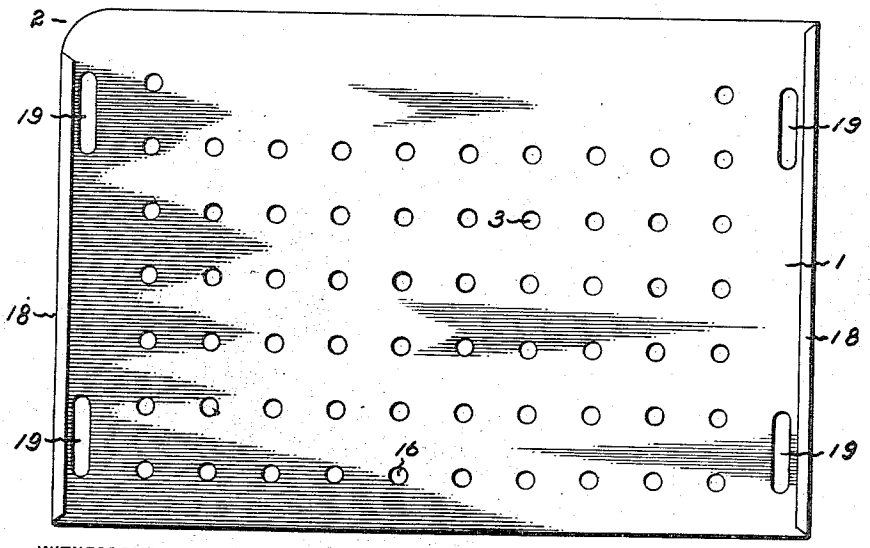


Fig 4

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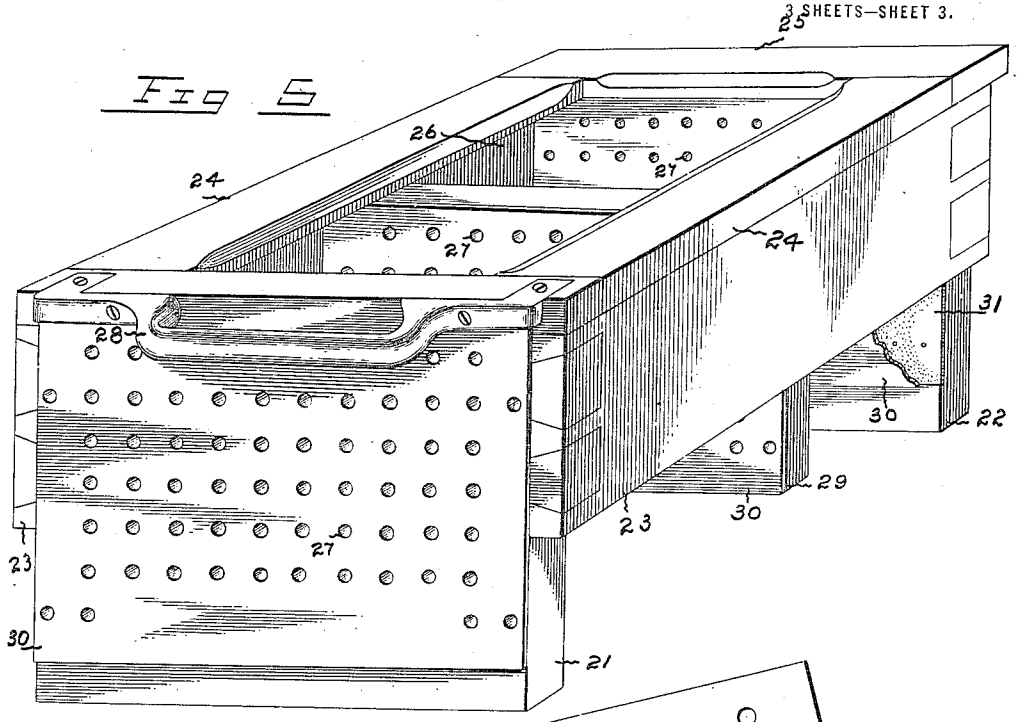
3 SHEETS—SHEET 3.

Fig 5



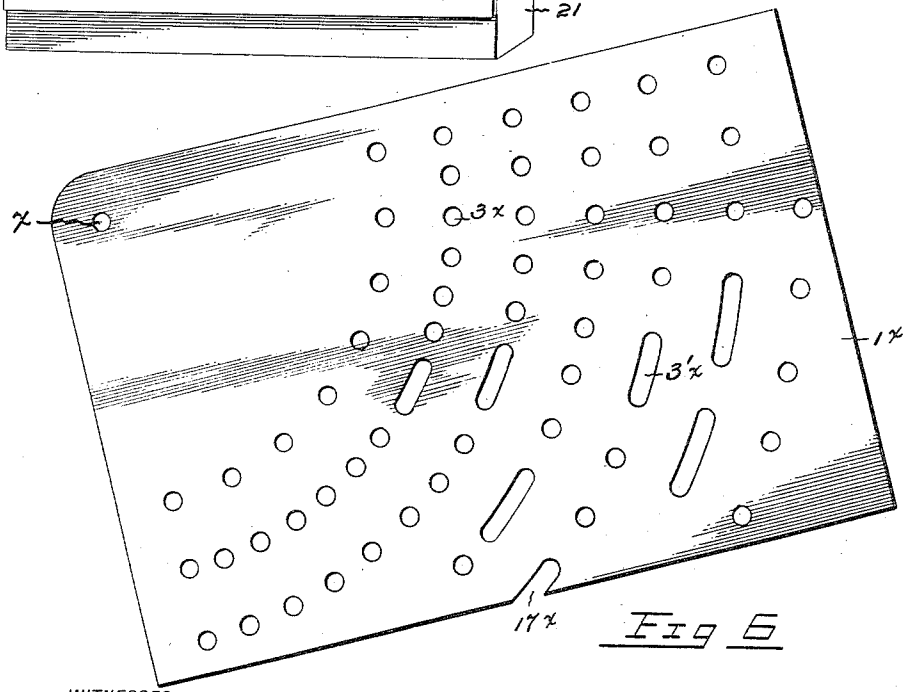


Fig 6

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UNITED STATES PATENT OFFICE.

LEO S. ROBINSON, OF ALAMEDA, CALIFORNIA.

SEGREGATION SYSTEM.

1,235,502. Specification of Letters Patent. Patented July 31, 1917.

Continuation in part of application filed January 30, 1913, Serial No. 745,194. This application filed March 8, 1915. Serial No. 12,931.

To all whom it may concern:

Be it known that I, LEO S. ROBINSON, a citizen of the United States, residing in the city of Alameda and county of Alameda, State of California, (whose post-office address is 2237 San Antonio avenue,) have invented new and useful Improvements in Segregation Systems, of which the following is a specification, forming a continuation as to subject-matter common to the two, of my copending application filed January 30, 1913, bearing Serial Number 745,194.

This invention relates to improvements in card systems or the like, and the means for designating, and segregating the units therein according to the designation thereof.

Among the objects of my invention are to provide means for readily designating the cards or units in the system, according to desired subclassifications;

To provide means for making a compound or complex selection at one operation;

To provide means for segregating from the mass of units, each and every unit bearing a common designation or combination of designations;

To so designate each card that it is adapted to be segregated manually, or by electric or other counting or segregating machines, automatic, or otherwise;

To provide a segregating system adapted to the segregating of cards, stencils, matrices, or other units having physical characteristics adaptable to differentiation in accordance with this invention.

This invention possesses other advantageous features that, with the foregoing will be set forth at length in the following description, wherein I shall outline in full that form of the invention selected for illustration in the drawings accompanying and forming part of the present specification. The novelty of the invention will be included in the claims succeeding said description. From this it is apparent that I do not restrict myself to the disclosures made by said drawing and description, as I may adopt many variations within the scope of my invention as expressed in said claims.

For convenience in disclosing some of the adaptations of this invention, the following description and drawings will be confined to its application to card systems; but I do not wish to be understood as confining myself to this particular application, or the construction or arrangements of parts particularized therein.

In the drawings:

Figure 1 is an isometrical perspective of a stack of cards, contained within a suitable container, certain of the cards being broken away to disclose the relation of the associated cards, and their subclassification designations engaging the retaining rods.

Fig. 2 is a plane or face view of a card, having certain of its original master holes elongated or varied, to give it a certain distinguishing designation, or combination of distinguishing subclassifications.

Fig. 3 is an isometrical perspective in front elevation of a mass of cards stacked together behind the key card; certain of the designated units appearing above the mass of cards, in accordance with their engagement with the retaining means passing through the mass of cards; all of these segregated cards having common, single or multiple subsclassifications.

Fig. 4 is a plane or face view of a blank card, ready to receive designating subclassification opening alterations in accordance with this invention.

Fig. 5 is a perspective view from in front looking down upon the bottom of an inverted tray constructed in accordance with this invention, to facilitate the segregation of the designated units from the mass.

Fig. 6 is a view similar to Fig. 2 showing a modified form of perforation adaptable to a modified means or mode of segregation.

In detail the construction illustrated in the drawings consists of the blank text card 1, preferably having one corner cut away as at 2 as a ready means of detecting a reversed card in the stack. This text card is provided with the systematically spaced master holes, openings, or apertures 3, coinciding with similar holes in the key card, hereinafter described. These master openings engage the rods to prevent undesignated cards from responding to the operation of segregation hereinafter described; and they act as a guide or pilot-hole in the subsequent operation of elongation, slotting notching, or other alteration or designation in combination with the various master holes. These cards are preferably uniform in size and of conventional dimension.

The key card 4 has the holes 5 arranged to coincide with the master holes 3 in the

cards. Each hole 5 may be given a designating title in accordance with the nature of the data to be sub-classified by the cards. The shape and position of the holes in the key card remain unaltered.

The text cards 1 may be distinguishingly designated by enlarging or elongating certain of the master holes therein, depending upon the desired designation; for instance, the card illustrated in Fig. 2, has certain of its original master holes altered to form enlarged apertures 3′, and by comparison with the key card it is seen that the card designates a certain person as being white, male, registered as a Republican and voting in ward 3, precinct 9. This description can be extended to the full capacity of the card by enlarging as many master holes as desired, and may be augmented by text matter written on the face of the card.

This invention is practised as follows: The text cards are stacked face to back in alinement, see Fig. 3. To segregate all the individual text cards bearing any one or all of the six items of description above, the key card is alined in front of the stack, the retaining rod 6 is inserted in the hole entitled "Wht" (abbrevation for white) or all the retaining rods 7, 8, 9, 10 and 11 may be inserted in the respective holes bearing titles on the key card, corresponding with the desired items of information. With these rods inserted through the whole stack, the cards are inverted, agitated or manipulated, causing all of the cards having slots engaged by all of the rods to extend outward the limit of the slot, exposing a margin of card beyond the edge of the stack; those cards not having slots engaging all of the rods will be held *en masse* by the rods engaging the master holes therein. With the slotted cards hanging suspended on the retaining rods, one or more support rods 12 and 13 can be inserted above them to hold the margins exposed when the stack is restored to the upright position, as shown in Fig. 3. If it is desired to remove the segregated cards, all the rods except the support rods (12 and 13) can be removed. If only one item of information is wanted, one retaining rod is inserted in the designated hole in the key card, and every card designated with an altered master hole corresponding to that particular item, will respond to the segregating operation described. The many ramifications in the application of this invention, and its adaptability to many and varied classifications, and subclassifications is sufficiently apparent. Inverting the cards to accomplish segregation is the preferable method, but other methods can be employed without departing from the spirit of this invention.

By placing in juxtaposition suitably shaped contacts in electrical counting or segregating machines, the slotted cards can be divided out of the stack according to the peculiar designated subclassifications in an obvious manner, or the altered holes may be adapted to other means for automatic mechanical segregation.

The nethermost holes 16 are preferaby reserved for these classifications, in connection with which it is desired that cards bearing such data be removed entirely from the stack. In the operation of segregation, those cards which are designated by extending the hole to the margin of the card as at 17 are not retained by the retaining rods inserted therein and can fall free of the stack or mass of cards, in the act of segregation. One or more of these nether holes must be retained to receive the support rods 12 and 13, if their function is required, and no container is used.

This lower row of holes are spaced above the lower edge of the card, a distance equal to the space between the master holes, so that the lower edge of the card will rest upon the support rods passing through the adjacent master holes.

When it is desired to provide master holes in the card in such numbers that the texture of the card may be weakened to an undesirable extent, the card can be reinforced with fabric, metal or other additions. Additional holes may be provided by a series of wire loops, perforated tabs, or the like, added to the edge of the card, and the removal or cutting open of such loops or tabs would release from the retaining means the card or cards so designated, in the same manner as the alteration of the master holes, before described, and is in full accordance with the spirit of this invention and the claims forming part of this specification, so long as the means permit the designated cards to separate from the stack or mass of cards, by differentiated engagement or disengagement with the retaining means. It is advisable to keep the alterations of the master holes within the margins of the cards, as the cutting or slotting through the edges of the cards tends to interfere with the stacking or assembling of the cards.

The card illustrated in Fig. 4 is designed to overcome frictional coherence of the cards in the stack during the operation of segregation. The metal or reinforcing edging 18 keeps the surface of the cards from bearing against or chafing each other, besides adding to the strength of the card.

The slots 19 may be provided in the cards and they may be strung on the rods 20 fastened between the ends of the trays, drawers, or framework, for containing the stack of cards. These slots act as guides to prevent lateral displacement, wedging or jamming of the cards in segregation, by causing the lateral edges to move parallel in

separating from the stack; and also prevent the removal of the cards from the container.

Suitable mechanical containers, such as trays, drawers, and the like, may be provided to facilitate the manipulation of cards treated in accordance with this invention, without departing from the spirit thereof: and the manner of enlarging, altering or placing the designating or classification holes may be varied to suit particular conditions in the practice of this invention, and I do not wish to be understood as confining myself to the particular disclosures illustrated and above described.

A convenient segregation tray or drawer such as illustrated in Fig. 5 includes the front and back 21 and 22 joined by the sides 23 and the bottom strips 24—24 and 25 forming a frame leaving the central opening 26. This central opening permits access to the lower edges of the cards when the tray is in the inverted or segregating position. If the cards show any disposition to pack tightly together and not respond freely to the agitation of segregation, dragging the fingers across the lower edges exposed through the opening 26, tends to flutter the cards separating them sufficiently to insure the descent of the designated units among them. The front and back 21 and 22, of the box are provided with the perforations 27 alined with the master holes 3 in the units, to receive the retaining rods inserted through the mass of units. The strip 25 extends beyond the back 22 to act as a convenient hand hold at this point; the front of the box being provided with the handle 28. Operating or manipulating the tray in the act of segregation, consists in lifting the inverted tray by the handle 28, and the hand hold at 25, and gently dropping the tray onto a solid table top, the jar causing the slotted cards engaging the retaining means to drop below the edge of the mass of cards, the front and back 21 and 22 being higher than the mass, to provide the necessary space between the mass of cards and the table top, to accommodate the designated units protruding beyond the margin of the mass; alternately lifting and dropping the front and back ends upon the table top sufficiently agitates the mass of cards to cause the proper segregation described. When all of the designated cards have descended, the support rods 12 and 13 are inserted and the tray returned to its normal upright position. In long trays the partition 29 may be built into the tray as illustrated in Fig. 5. To preserve the alinement of the holes in the front and back 21 and 22, and the partition 29, they are provided with the metal plates 30—30, the openings in which are slightly larger than the diameter of the retaining rods. The holes in the front, back and the partition behind these plates are considerably larger than the retaining rods; this is a desirable precaution where the tray is constructed of wood, owing to the expansion and contraction of wood; but may be dispensed with when the tray is constructed entirely of metal.

To prevent the dislodgment of the retaining rods except by intention, a sheet of rubber 31 may be inserted between the back 22 and the adjacent plate 30, provided with holes of less diameter than the retaining rods, the rubber 31 exerting friction against the rod sufficient to hold it after insertion therethrough until intentionally withdrawn.

A modification of this invention is shown in Fig. 6 in which the stack of cards 1X are strung on a rod extended through the pivot hole X, and the designation slots 3'X are cut approximately concentric with this pivot hole. This is a convenient means for segregating the cards without other mechanical aids than the rods. The slotted cards responding to the classification rods, swing outward from the stack on the pivot rod in the act of segregation.

Having thus described this invention, what I claim and desire to secure by Letters Patent is:

1. A segregation system including a plurality of units said units being provided with a multiple series of registering master holes therethrough in rectangular alinement; a retaining rod extending through one of the sets of said registering holes in the units; some of the master holes in some of the units being altered to distinguish the units engaging said rod.

2. A segregation system including a plurality of units said units being provided with a multiple series of registering master holes therethrough in rectangular alinement; a container for said units having holes therein registering with said master holes; a retaining rod extending through one of the sets of said registering holes in all of the units; the master holes of said set in some of the units being altered to distinguish the units engaging said rod.

3. A segregation system including a plurality of units said units being provided with rows of registering master holes therethrough in horizontal and vertical alinement; some of the master holes in some of the units being altered to distinguish the units; and retaining rods adapted to pass through the registering holes in the units.

4. A segregation system including a plurality of units said units being provided with a series of registering master holes therethrough in horizontal and vertical alinement; a container for said units having holes therein registering with said master holes; some of the master holes in some of the units being altered to distinguish the units; and a plurality of coöperating retain-

ing rods adapted to pass through the registering holes in the container and the units.

5. A segregation system including a plurality of units said units being provided with a multiple series of registering master holes therethrough in rectangular alinement; a retaining rod adapted to extend through said registering holes in the units; some of said holes being altered to distinguish the particular units.

6. A segregation system including a plurality of units said units being provided with a multiple series of registering master holes therethrough in rectangular alinement; a retaining rod adapted to extend through said registering holes in the units; some of said holes being connected by a slot to distinguish the units.

7. A segregation system including a plurality of units said units being provided with a series of registering master holes therethrough; a retaining rod adapted to extend through said registering holes in the units; some of said holes being altered within the margin of the units to distinguish the units.

8. A segregation system including a plurality of units said units being provided with a series of registering master holes therethrough; retaining rods adapted to extend through said registering holes in the units; some of said holes being adapted to be altered from time to time, to progressively distinguish the units.

9. A segregation system including a plurality of units said units being provided with parallel guide slots; a container for said units; guide rods extending through said container and engaging said guide slots; said units being provided with a multiple series of registering master holes in rectangular alinement; and retaining rods adapted to extend through said registering holes; some of the master holes in some of the units being altered to distinguish the units.

10. A segregation system including a plurality of units said units being provided with parallel guide slots; a container for said units; guide rods extending through said container, and engaging said guide slots; said units being provided with multiple series of registering master holes in horizontal and vertical alinement; some of said holes being altered to distinguish the units and retaining rods adapted to extend through said registering holes.

11. A segregation system including a plurality of units said units being provided with parallel guide slots; a container for said units; guide rods extending through said container, and engaging said guide slots; said units being provided with multiple rows of registering master holes through said units in horizontal and vertical alinement, some of said holes in adjacent rows being connected by slots to distinguish the units; retaining rods adapted to extend through said registering holes.

12. A segregation system including a plurality of units said units being provided with parallel guide slots; a container for said units; guide rods extending through said container, and engaging said guide slots; said units being provided with multiple rows of registering master holes therethrough in horizontal and vertical alinement, the lowest horizontal row being spaced upward from the bottom of the units a distance approximately equal to the distance between the rows of holes, some of said holes being altered to distinguish the units and support rods adapted to extend through said container and said units.

13. A segregation system including a plurality of units; said units being provided with multiple rows of registering master holes therethrough uniformly spaced apart in vertical alinement, some of said holes being altered to distinguish the units, the lowest horizontal row being spaced upward from the bottom of the units a distance approximately equal to the space between the holes of adjacent rows.

14. A segregation system including a plurality of units said units being provided with rows of registering master holes therethrough; some of said holes being altered to distinguish the units; a retaining rod adapted to extend through said registering holes in the units; and a key card having a series of designated holes therethrough registering with said alined master holes.

15. A segregation system including a plurality of units; said units being provided with a series of registering master holes therethrough; some of the holes being altered to distinguish the units; a container for said units having holes therethrough registering with said master holes; retaining rods adapted to pass through the holes in the said container, and the registering master holes in said units; and said container having an opening in the bottom exposing the edges of said units.

16. A segregation system including a plurality of units said units being provided with a series of registering master holes therethrough; some of the holes being altered to distinguish the units; a container for said units having holes therethrough registering with said master holes; retaining rods adapted to pass through the holes in the said container and the registering master holes in said units; and means for holding said rods in said container.

17. A segregation system including a plurality of units said units being provided with a multiple series of registering master holes therethrough; some of said holes be-

ing altered to distinguish the units; a container for said units having holes therethrough registering with said master holes; a plurality of retaining rods passing through the holes in the said container and the registering master holes in said units, whereby said units not having altered master holes are locked in alinement with the perforated face of the container; and units having altered master holes may extend beyond the margin of the units not so altered.

18. A segregation system including a plurality of units said units being provided with a multiple series of registering master holes therethrough in the body of the unit spaced inward from the marginal edges thereof; some of said master holes being altered to distinguish said units; and a plurality of retaining rods passing through the master holes in said units.

19. A segregation system including a plurality of units said units being provided with a multiple series of registering master holes therethrough in rectangular alinement and spaced inward from the marginal edges of said units; some of said master holes being altered to distinguish said units; a container for said units having holes therethrough registering with said master holes; a plurality of retaining rods passing through the holes in the said container and the registering master holes in said units, whereby all of said units having unaltered master holes are locked in alinement with the perforated face of the container.

20. A segregation system including a plurality of units said units being provided with a multiple series of registering master holes therethrough; a container for said units having holes therethrough registering with said master holes; a plurality of retaining rods passing through the holes in said container and the registering master holes in said units and held in fixed relation to said container; the units it is desired to segregate according to the combinative relation of said retaining rods in said container having altered master holes to distinguish the units.

21. A segregation system including a key member containing apertures, a set of cards provided with apertures corresponding in position to the apertures in said key member, certain of the apertures in certain cards corresponding in size to the apertures in said key member and others of said apertures in said cards being elongated so as to correspond to two apertures in said key member, and a plurality of segregating members adapted to be inserted in said apertures in said key member and cards.

22. A segregation system including a plurality of rods, and a stack of cards representing units of a series, wherein a plurality of alined parts of all the cards are allotted to particular characteristics of the series of units, and each such part of each card is arranged to allow the insertion of a rod in it, and to permit or prevent transverse movement of the card in a certain direction relative to a rod so inserted, according to the presence or absence, in the unit represented by the card, of the particular characteristic allotted to that part of the cards, whereby all of the unit cards having a certain plurality of characteristics may be segregated simultaneously from the remaining cards.

23. A segregation system including a plurality of segregating members, and a stack of cards representing units of a series, wherein a plurality of alined parts of all the cards are allotted to particular characteristics of the series of units, and each such part of each card is equipped with means for permitting or preventing movement of the card in a certain direction relative to a segregating member co-acting with said part of all the cards, according to the presence or absence, in the unit represented by the card, of the particular characteristic allotted to that part of the cards, whereby all of the unit cards having a certain plurality of characteristics may be segregated simultaneously from the remaining cards.

24. A segregation system including a plurality of segregating members, and a stack of cards, wherein each card bears a plurality of items of information, and a plurality of alined parts of all the cards are allotted to particular items of information, and each such part of each card is equipped with means for permitting or preventing motion in a certain direction relative to a segregating member co-acting with said part of all the cards, according to the presence or absence upon that card of the particular item allotted to that part of the cards, whereby all the cards containing a certain plurality of items of information may be segregated simultaneously from the remaining cards.

25. A card for use in a segregating system provided with a plurality of slots and a series of holes so arranged that by removing a portion of the card between two holes the same may be converted into a slot.

26. A card for use in a segregating system provided with a plurality of slots and a series of uniformly spaced holes so arranged that by removing a portion of the card between two holes the same may be converted into a slot, the lowest horizontal row of said holes being spaced upward from the bottom of the card a distance approximately equal to the distance between the rows of holes.

27. A card for use in a segregating system, provided with multiple rows of master holes therethrough in horizontal and vertical alinement spaced inward from the mar-

gin of the card whereby the removal of the portion of the card between two holes converts the same into a slot.

28. A card for use in a segregating system, provided with a plurality of parallel guide slots, parallel to one edge of the card, and multiple rows of master holes uniformly spaced apart in vertical and horizontal alinement whereby the portion of the card between two holes may be removed to form a slot parallel with said guide slots.

In testimony whereof, I have hereunto set my hand this 23rd day of January 1915.

LEO S. ROBINSON.

Witnesses:
BALDWIN VALE,
A. J. HENRY.