March 6, 1951 W. E. BLOCK 2,544,251

SORTING AND CLASSIFYING SYSTEM
FOR CARDS OR THE LIKE

Filed June 24, 1944 5 Sheets-Sheet 1

Fig. 1.

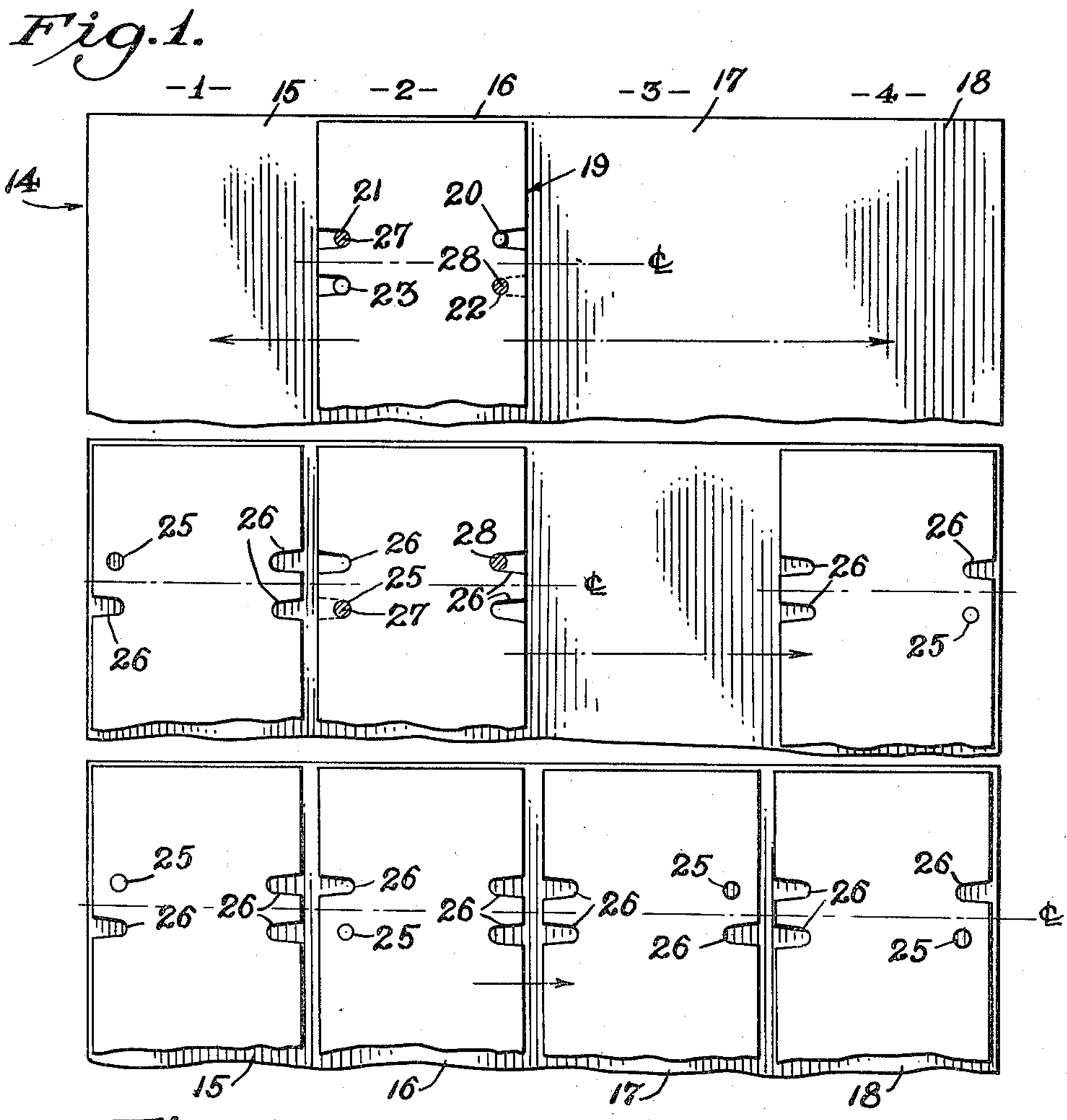
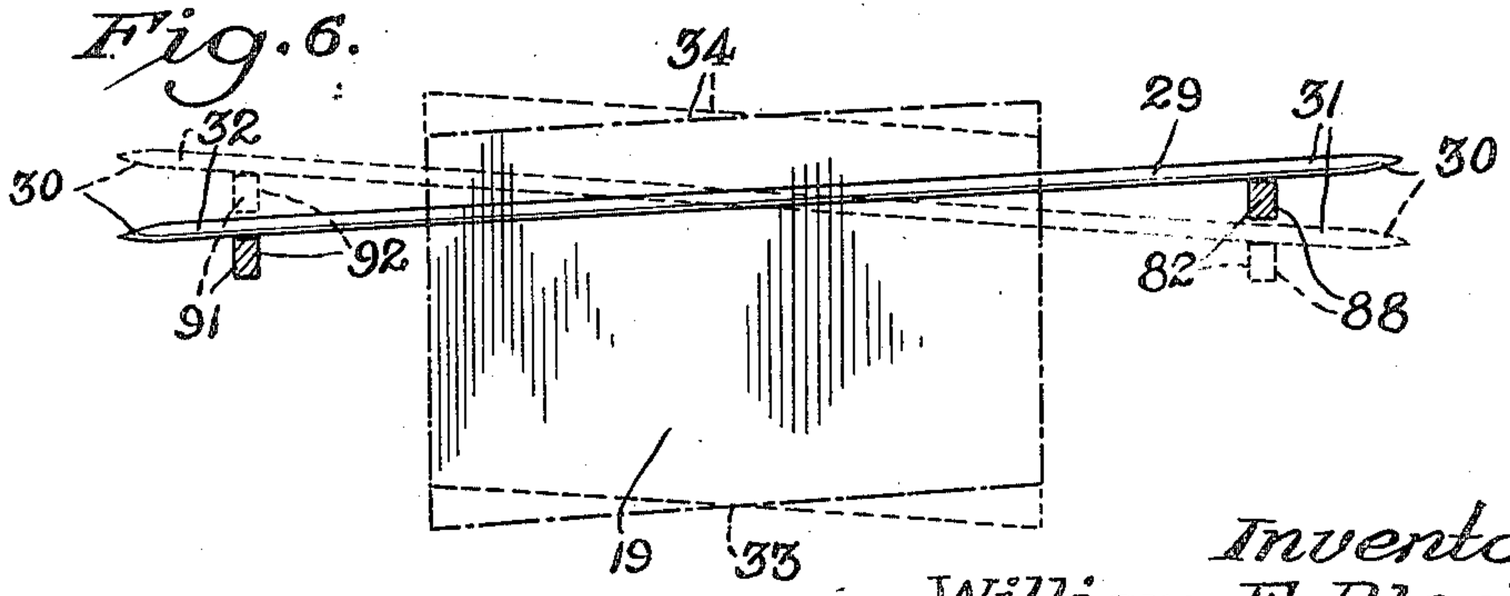


Fig. 6.



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SORTING AND CLASSIFYING SYSTEM FOR CARDS OR THE LIKE

2,544,251

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5 Sheets-Sheet 2

Fig. 2.

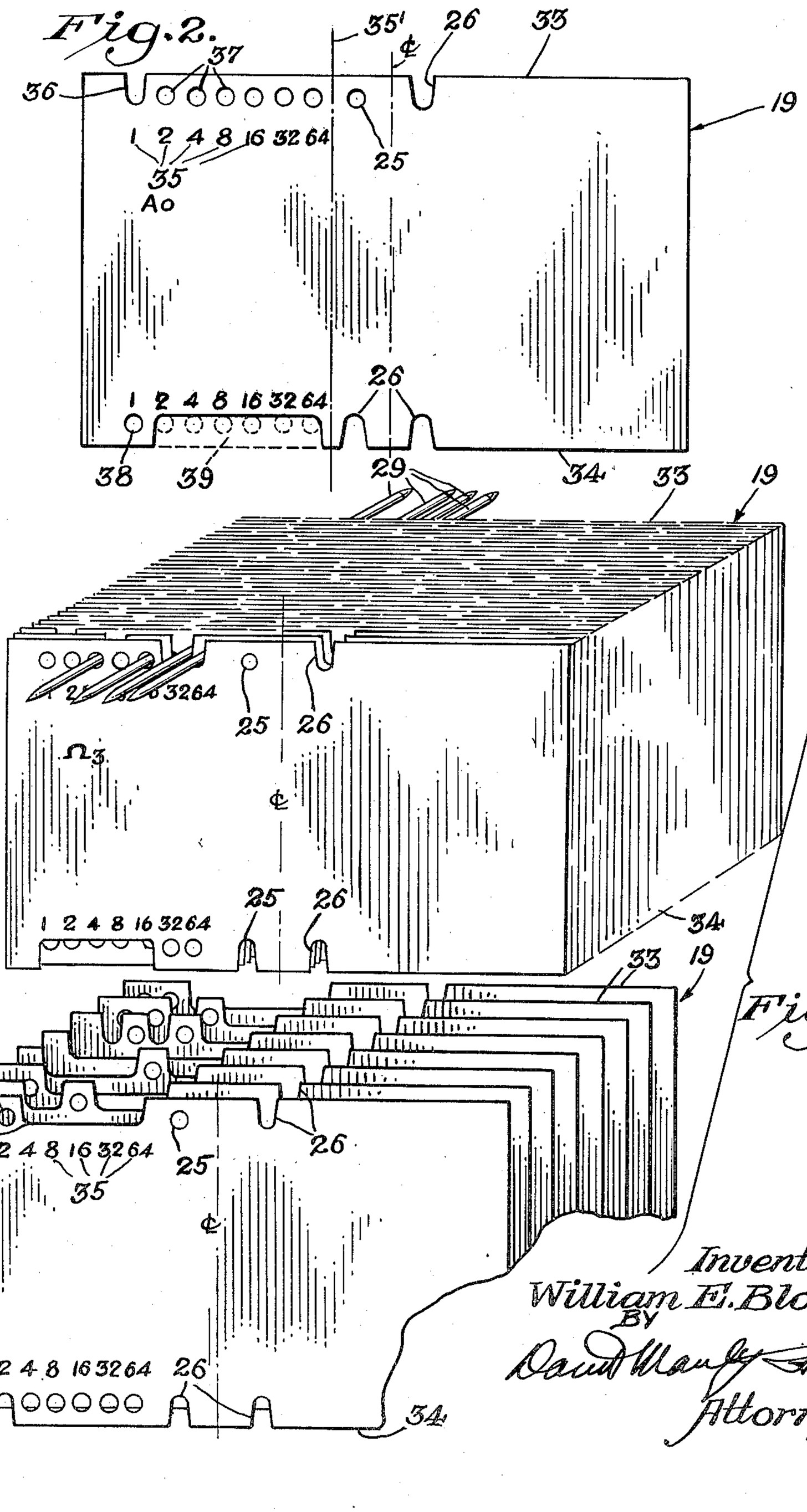

Fig. 3.

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SORTING AND CLASSIFYING SYSTEM FOR CARDS OR THE LIKE

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Fig. 4.

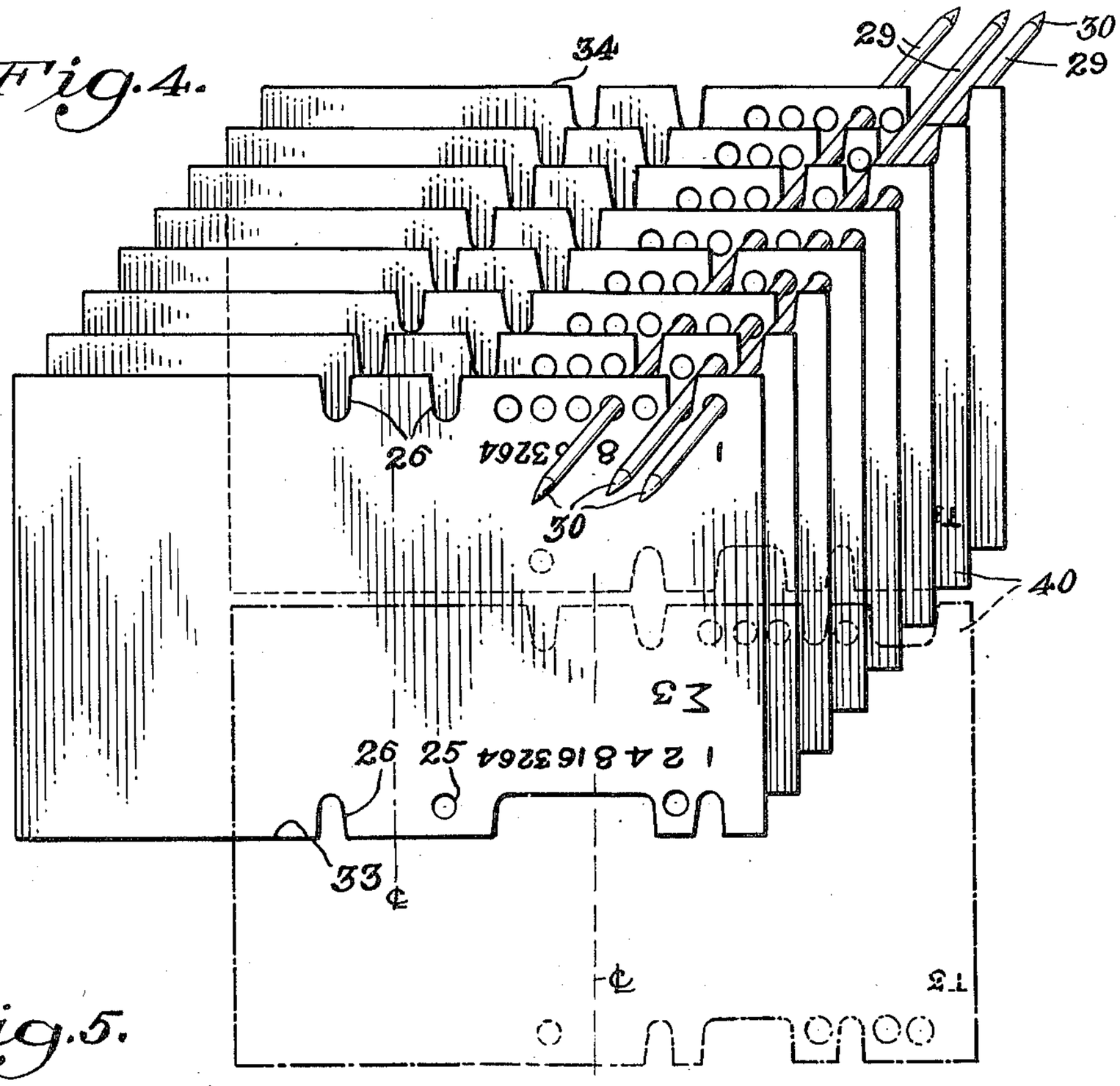

Fig. 5.

CODE		HOLES				CODE		HOLES				CODE		HOLES				CODE	HOLES	
1	A	1				14	N		2	4	8		27	Δ	1	2		8	16	ZERO	-	
2	B		2			15	O	1	2	4	8		28	Θ			4	8	16	.1-	32	
3	C	1	2			16	P					16	29	Σ	1		4	8	16	2-		64
4	D			4		17	Q	1				16	30	Φ		2	4	8	16	3	32	64
5	E	1		4		18	R		2			16	31	Ψ	1	2	4	8	16			
6	F		2	4		19	S	1	2			16	0	Ω	-	-	-	-	-			
7	G	1	2	4		20	T			4		16										
8	H				8	21	U	1		4		16										
9	I	1			8	22	V		2	4		16										
10	J		2		8	23	W	1	2	4		16										
11	K	1	2		8	24	X				8	16										
12	L			4	8	25	Y	1			8	16										
13	M	1		4	8	26	Z		2		8	16										

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March 6, 1951 W. E. BLOCK 2,544,251

SORTING AND CLASSIFYING SYSTEM FOR CARDS OR THE LIKE

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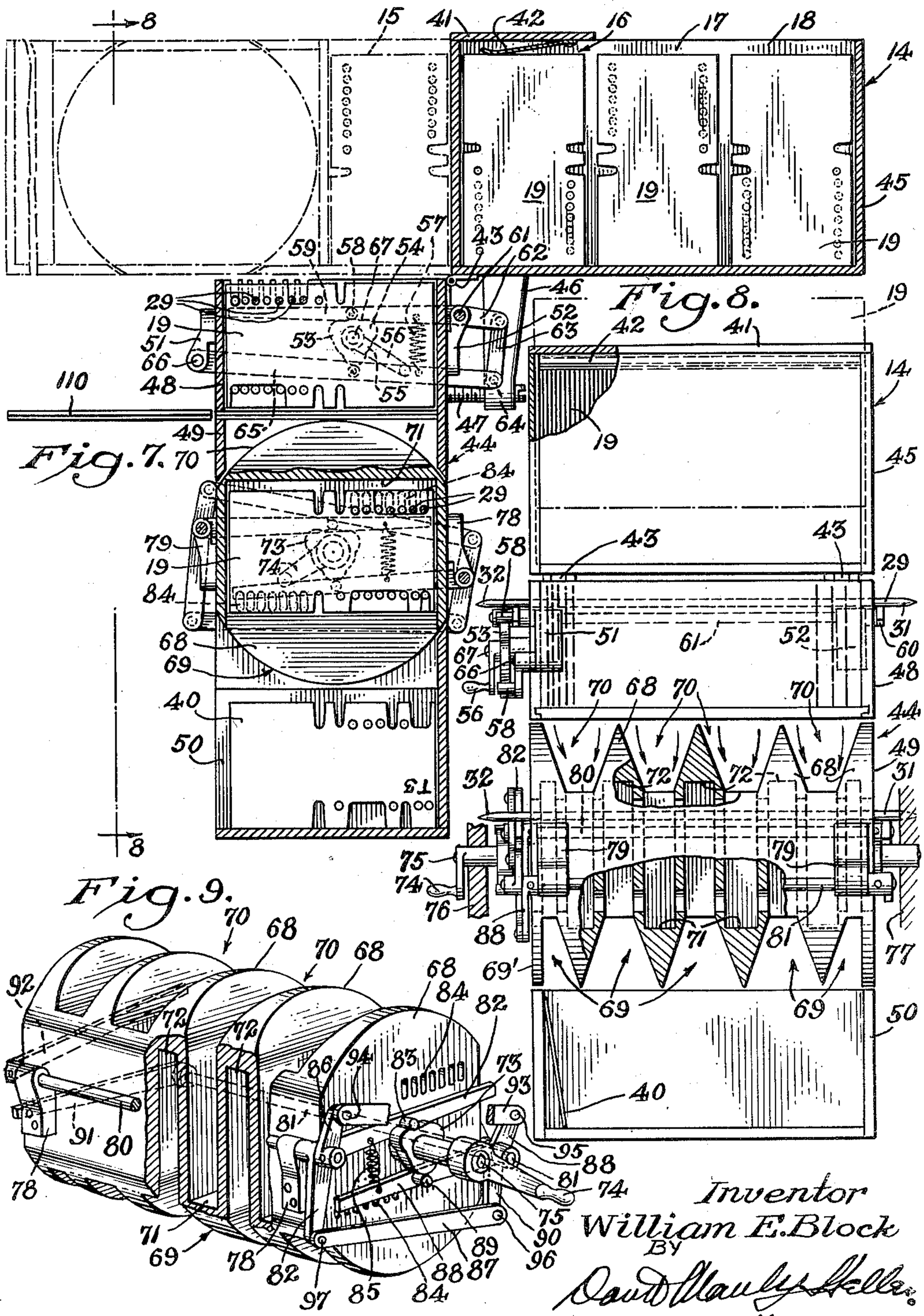

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SORTING AND CLASSIFYING SYSTEM FOR CARDS OR THE LIKE

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Fig. 11.

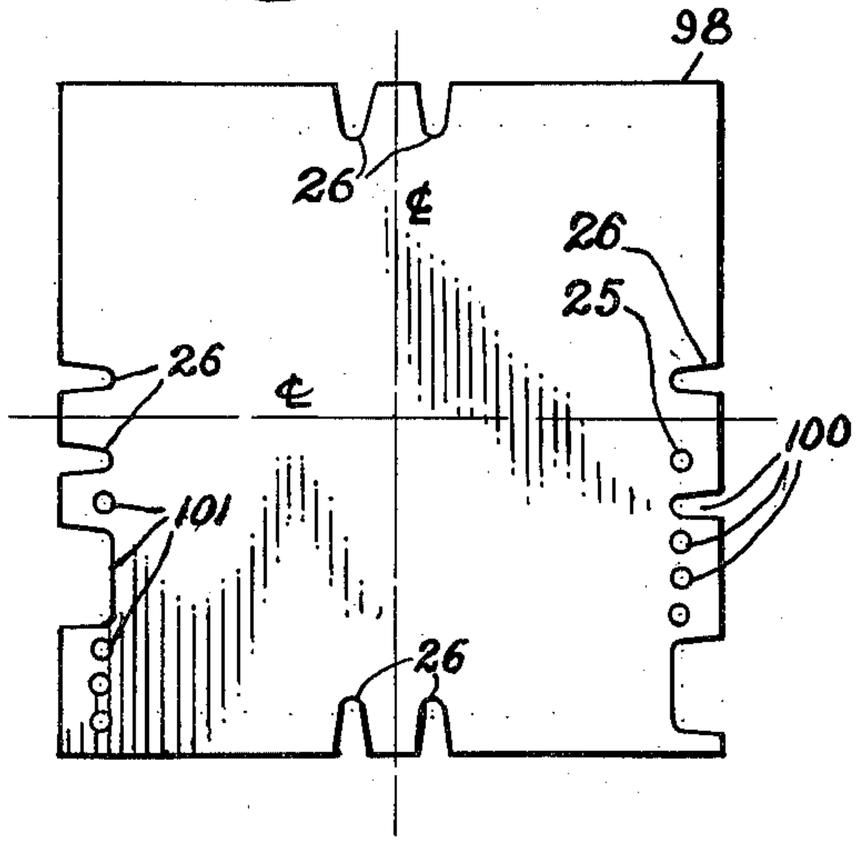


Fig. 12.

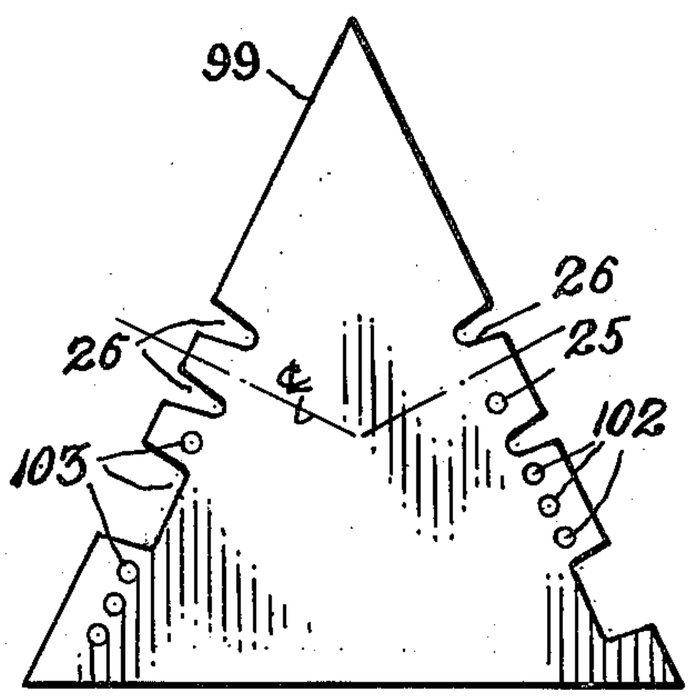


Fig. 13.

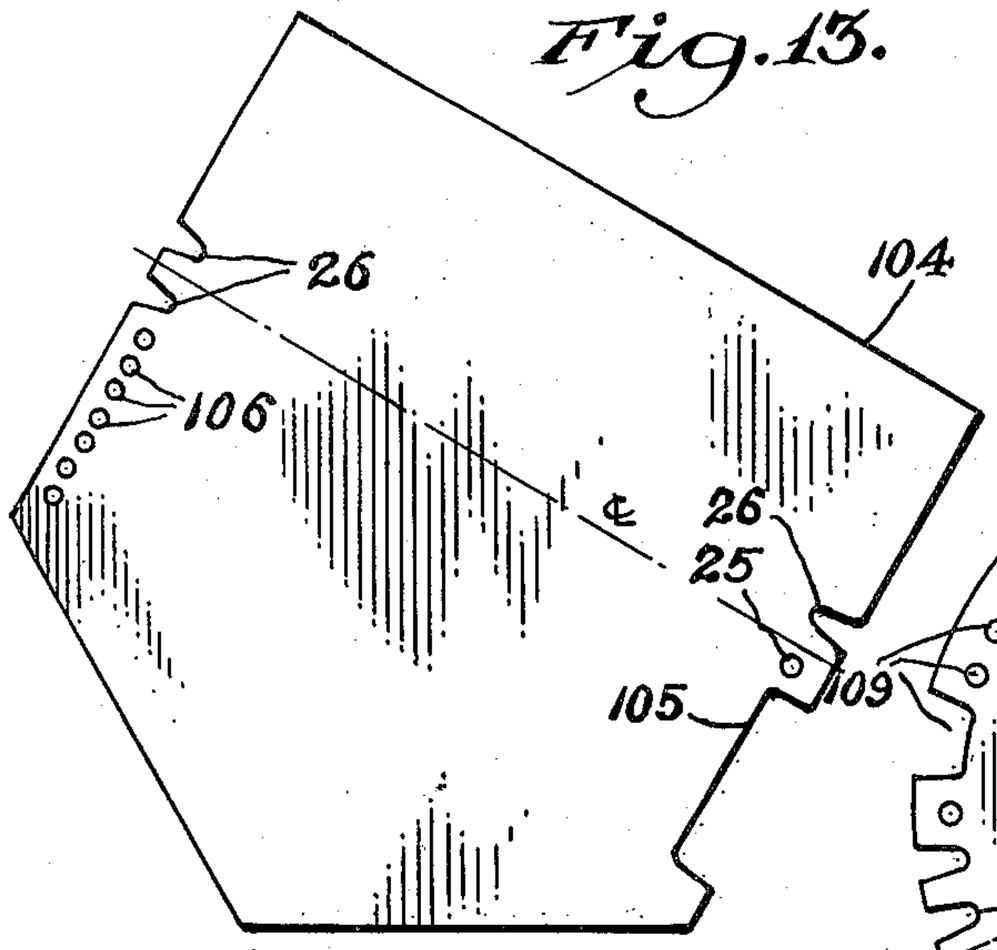
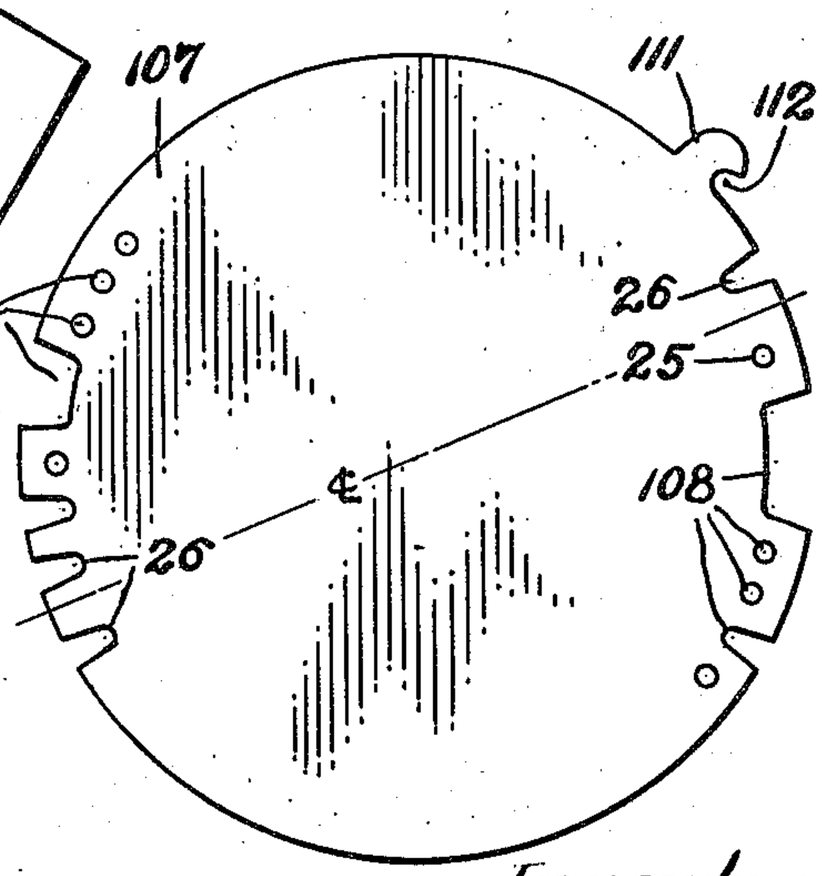


Fig. 10.



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Patented Mar. 6, 1951 2,544,251

UNITED STATES PATENT OFFICE

2,544,251

SORTING AND CLASSIFYING SYSTEM FOR CARDS OR THE LIKE

William E. Block, Chicago Ill.

Application June 24, 1944, Serial No. 541,936

9 Claims. (Cl. 129—16.1)

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My invention relates to a new and useful improvement in perforated record cards, sheets, and the like, such as are used for sorting, separating and classifying records and also a mechanism for selectively withdrawing one single card, or a group of cards from a stack of cards of similar configuration.

One important object of my invention is to provide a series of perforations on two edges of a card, the said perforations being designated in geometric progression, and also being provided with assorting perforations to enable one to assort the cards readily in upright and forward facing position preliminary to the actual assorting operation, the sequence arrangement or position of the cards being immaterial and in no way affecting the selectivity afforded by my system or perforations.

Another object of my invention is to provide an assorting card which may be of any polygonal structure, regular, or irregular, approaching infinity, except that a circular card is to be provided with at least one irregularity to permit assorting the same in proper position as aforementioned for selective purposes.

Another object of my invention is to provide an assorting card which may be selectively withdrawn from a large stack of cards, the selection thereof comprising but two operations after the cards have been first righted, that is namely, placed in erect and forward facing position.

Another object of my invention is to provide a selective assorting mechanism which comprises a chamber adapted for setting up the cards in the correct position preliminary to the selective operation, the said mechanism comprised of a selective mechanism articulately secured to the initial arranging mechanism, adapted to be positioned at right angles thereto, the said articulate section being comprised of a primary compartment in which the cards remain in position for selectivity, an intermediate compartment in which a group of like cards are caused to drop after the first selective operation, and a final compartment into which a single card is disposed to drop after the second selective operation. No matter how many cards are used in an original stack, any one card may be selectively removed therefrom in only two operations.

A further object of my invention is to provide the assorting mechanism, mentioned hereinabove, with vibratory action for subjecting the cards to intermittent alternate forward and rearward shaking activation so as to cause the desired and unsupported cards to drop thru.

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Another object of my invention is to provide an assorting card and mechanism for the purposes heretofore mentioned which is simple in construction, practical and efficient in its operation and use, and of such relatively simple arrangement as to warrant economical production thereof in quantity.

Other objects, features and advantages resident in my invention will become apparent from an examination of the accompanying drawings and the ensuing description, wherein like symbols are used to designate like parts, and in which;

Fig. 1 represents a schematic or diagrammatic arrangement showing the method of orientating the cards, originally, as an operation preliminary to selectivity; in other words, arranging the cards all in such a position that the respective sorting holes **25** are in alignment, the said view indicates the three steps adapted to isolate the cards into groups in all the possible positions which they may occupy in the stack, after the stack has first been coincidently arranged so that all of the cards are congruent or coincidently positioned.

Fig. 2 is a front view of one of the cards showing my invention and the method of coding the same for selectivity and for orientating or positioning preliminary to individual selection.

Fig. 3 shows the first operation, the stack of cards being shown in perspective with a series of needles passing therethru, while the cards not being held by the needles have been caused to drop as indicated in that view.

Fig. 4 shows the second or ultimate operation and is a perspective view indicating the cards that have been dropped as a result of the preceding operation illustrated in Figure 3, also showing clearly the card T3 dropping thru as the card which has been selected as the one desired to be isolated from the stack.

Fig. 5 shows a code that has been utilized for a group of 128 cards which have been used in order to show the maximum number of cards that may be used when seven selecting or assorting holes are incorporated in a card.

Fig. 6 shows a diagrammatic view of the action to which the needles inserted in the cards are subjected in order to cause the unsupported card or cards, to drop thru readily, the said method of vibration or movement of the needles is utilized in both the first assorting operation as well as the second which will result in ejecting the desired card, or a group of cards that may be similarly coded.

Fig. 7 shows a longitudinal cross-sectional view

of a card file that may be conveniently utilized for holding cards for safe keeping or storage purposes, and which is adapted to permit selective operation to be performed readily and conveniently; the illustration is diagrammatic and suggestive.

Fig. 8 is a view looking in the direction of the arrows 8—8 on Figure 7 with certain portions thereof broken away to more clearly elucidate the structure needed for selective operation.

Fig. 9 is a perspective view of the mechanism utilized to impart to the needles the alternate vibrating motion indicated in Figure 6.

Fig. 10 shows a circular form of card which may embrace the principles for assorting, and selectivity indicated in the form shown in Figure 2.

Fig. 11 shows how a square card may be treated in the same manner and coded for selective operation.

Fig. 12 shows a regular triangular card which may be utilized, except that in the triangular card the intermediate compartment of the assorting mechanism would be rotated 120° instead of 180°.

Fig. 13 shows an irregular polygon, pentagonal in shape, which is coded in accordance with the efficient practices made available by my invention.

Referring to Figure 2, I show, preferably, a rectangular type of card which appears to be the more universally adopted commercial form of filing card, and indicate thereon its detailed construction. Now, referring to the code in Figure 5, the card illustrated is a card designated "A" sub zero and is coded according to the aforesaid code.

With reference to the card generally designated 19, we take, preferably, its longer edges 33 and 34 and draw an imaginary line 35', to the right thereof we have the three slotted portions 26 and the hole 25 which are utilized as will be hereinafter more clearly elucidated. For arranging the cards in any given stack to a position such as that when they are congruently or coincidently superimposed, all the holes 25 of the various cards will also be coincidental and in one continuous coaxial position; thus if we consider the card illustrated in Figure 2 as in an upright position adapted for sorting purposes, then it may be noted that the particular combination for "A" sub zero in the codified section of the card namely to the left of the imaginary divisional line 35', and generally designated 36 and 37, consists of seven divisions which are designated 35 and for coding purposes may be considered as being identified by the indicia 1, 2, 4, 8, 16, 32 and 64, being a geometric progression of two, the first term thereof being the numeral 1. The said geometric progression whose last term is 64 is capable of accommodating different coding for 128 cards inasmuch as any number lying between terms of the progression can be derived by various permutations and combinations of the terms of the progression. For example 57 is derived by adding 32, 16, 8 and 1.

The opposite edge (or the very same edge or if preferred an adjacent edge) as can be seen at 34 is the exact counterpart or reverse construction of the code on edge 33, namely, for "A" sub zero the code specifies that the first divisional code line axis is to have a slotted portion 36, the remaining six portions being holes 37. On the opposite edge 34 the reverse is the

condition, namely, opposite the slot 36 a hole 38 is positioned, and opposite the six holes 37 an enlarged slotted portion 39 is indicated. Each of the cards has a different combination of slots and holes and the converse arrangement on the opposed edges so that once the cards have been orientated to assume an upright and forward facing position, the selective operation can be readily proceeded with as indicated in Figure 3. Let us assume we wish to select the card designated "T" sub three. First (referring to Fig. 1) the cards 19 are placed in coincident arrangement into sections 15, 16, 17 and 18, preferably in space denoted 16. Two needles 27 and 28 are inserted in diagonally opposed positions in card slots and holes 21 and 22, and the said needles are moved right and left as indicated in the top diagram of Fig. 1, resulting in the first assortment which isolates to the left in section 15, all cards having the hole 25 in the upper left hand position, and to the extreme right in section 18, all cards having the hole 25 in the lower right hand position. Before initiating assortment operations, care should be taken that the number of cards placed originally in section 16, of Fig. 1 should be loosely packed, and not tightly packed, so as to prevent notched cards from being moved by the needles 27 and 28 by means of frictional contact with cards having their holes engaged by the said needles.

The next assorting step is to place needles diagonally in superimposed card slots and holes designated 20 and 23 (see intermediate diagram Fig. 1) and the needle 28 is moved to the right while the needle 27 is held in place, the result is indicated in the lower section of the diagram of Fig. 1. The cards then can be very readily arranged so that the holes 25 of all the cards 19 coincide, the cards then being arranged in compartment 15 so that the holes 25 assume the upper right hand position. When the cards are then rotated thru an angle of 90° the holes 25 will then assume the upper left hand position (see Fig. 7) where cards in upper compartment are so positioned ready for operating the selecting mechanism. The selection of a particular card may now be proceeded with.

According to the code in Figure 5, "T" happens to be the twentieth item designated, and indicates that holes 4 and 16 should be cut open or formed into slotted portions and inasmuch as there are four "T" cards namely "T" sub zero, "T" sub 1, "T" sub 2 and "T" sub 3, and we desire "T" sub 3, which card indicates its code portion designated 32 and 64 as slots so that in order to select the card designated "T" sub 3, I insert needles 29 into the holes designated 4, 16, 32 and 64. The ends of needles are then subjected to an alternate vibratory or shaking motion as indicated in Figure 6, thus causing the cards generally designated 19 and indicated in Figure 3 at the bottom thereof in perspective as falling thru. Those cards have the codified axis demarcating portion designated 4, 16, 32 and 64 cut thru and form a slot altho each card is also different in combination at the top edge, yet all these eight cards are dropped thru in only one operation. Now from these eight cards a particular card is desired and in order to obtain that particular card, namely, from the eight cards that had dropped thru to the bottom in Figure 3, the eight cards are now rotated thru 180° as indicated in the view of Figure 4, after that has been done, three needles 29 are utilized to insert into the opposite edge of the card which

has been inverted, the three needles utilized at this time are the ones omitted from the code, namely, one, two and eight, then the same arrangement for causing a vibratory or shaking action is resorted to whence card T3 will be caused to drop and thus the desired card is readily yielded from the entire stack of cards. The ends 31 of the needles 29 are, preferably, pointed as depicted at 30. If it be desired to make a selection from the group of eight cards of a smaller group, rather than a single card, by inserting fewer needles or in other words by inserting needles in code divisions one and two, or in one and eight, or any single needle may be inserted, groups of cards not retained by the needles will be dropped.

It can be readily seen that with comparatively few needles, a great many cards can be operated upon and in two operations a single desired card will be yielded by the system utilized. It can be most readily noticed that with the addition of one other code space, that is, having eight spaces instead of seven, 256 cards can be operated upon in a stack, to yield one desired card, and for an additional hole 512 cards can be used for unit selectivity, one additional space permitting 1024, so that according to geometric progression, the quantities of cards that may be operated upon in order to obtain a single card using my system, necessitates but the least number of operations, with the least and simplest mechanical equipment needed for such purpose.

It can also be seen, that it is not necessary to have the cards numerically arranged nor alphabetically nor in any other manner. So long as the cards are coincidently positioned upright and facing forward, or inverted and facing backward, with the orientating hole, generally designated 25, in alignment in all the cards, the cards are ready for selective purposes. After the selection is made, the cards may be deposited into a storage box or compartment in any manner or form and when one card is to be selected therefrom, they merely need to be arranged coincidently in accordance with the operation hereinbefore stipulated and suggested, and the single card or group of cards as the situation may be, can readily be derived or obtained. A suggestive structure for practicing my said invention with the particular card code indicated, is shown in Figures 7, 8, and 9. In Figure 7 a structure generally comprised of a file box or case 14 is shown in cross-section and has four compartments when in horizontal position for selective purposes generally designated 15, 16, 17 and 18. The cards are preferably placed in compartment 16, that is the second compartment when the lower portion of the equipment designated 44 is in alignment with the static portion designated 45. The middle section 16 is, preferably, covered with a lid 41 on which is attached a flat spring 42 in order to offer a slight pressure on the edges of the cards 19. The operations indicated at Figure 1, are then resorted to and the cards then will assume the positions indicated in compartments 15, 16, 17 and 18. The desirable position is the one indicated in compartment 17, hence the cards in compartment 15 in order to assume a coincidental position with those in compartment 17 are rotated 180° on their longitudinal axis and then placed coincidently in compartment 17 adjacent the cards in compartment 17 already there. The cards in compartment 16 are rotated 180° on an imaginary longitudinal axis and 180° on an imaginary horizontal axis in order to bring them

to the same coincidental position, wherein the holes 25 would be in alignment with the cards already situated in compartment 17; then the cards in compartment 18 are rotated 180° about their imaginary horizontal axis and placed in compartment 17; all the cards are now assumed to have the same position as the cards in compartment 17 whence they are taken out of compartment 17 and placed into the end compartment 15 after which the section designated 44 is allowed to drop to a perpendicular position by virtue of the hinge 43 and caused to rest against the adjusting stop 47 mounted in the bracket 46. The cards 19 are then stacked exactly as indicated in the compartment 48, compartments 48, 49 and 50 are the compartments which serve to facilitate the selection of an individual card.

Compartment 48 is adapted to receive a series of needles one for each code designation, and in this particular case, when it is desired to select card "T" sub 3, needles have been placed in the holes designated 4, 16, 32 and 64. After the needles have been inserted they are to be subjected to the action indicated at Figure 6 and for which purpose the following mechanism is provided. Brackets 51 and 52 are secured to the sides of compartment 48 and the said brackets hold rotatably shafts 66 and 61 respectively. The lever 59 is oscillated, an action performed by the cam structure 53 which has a series of high points 54, and depressions 55, it being rotatable by virtue of the handle 56 mounted on the shaft 67, the lever 59 having attached thereto a conventional cam roller 58 and being in turn connected by spring tension to the link 65 which is articulately secured to the shaft 66, the spring 57 holding the lever 59 and the link 65 so that the rollers 58 will bear contactual relationship with the cam 53.

The link 65 is connected to another intermediate link 63 and to a still further link 62 which link 62 is fixed to the shaft 61 and at the forward end of this shaft structure as seen in Figure 8, another level similar to 59 designated 60 is positioned which is also keyed to shaft 61, now the action is as follows: It is to be noted that when the roller 58 of the link 65 is at high point the roller 58 secured to the lever 59 is on low point, when the cam is rotated the high point 54 on the cam thru actuation of the roller will cause the lever 59 to oscillate about its articulate pivot on the shaft 61; the supplemental lever 60 on the other end of the filing case actuating the portion 32 of the needles 29 is motivated thru the cam high points 54 contacting the rollers 58 and subjecting the link 65 to oscillatory movement by virtue of its articulation on the shaft 66, thus translating its articulate motion thru the linkage 63 and 62 to a rocking motion of the shaft 61 which is keyed to the lever 60 will cause the said lever to operate; therefore the levers 59 and 60 will operate simultaneously, that is, when the lever 59 is moving downward, the lever 60 will move upward and vice versa.

After the cards have been placed in the compartment 15, or the depending section 48, when the selective section of the file is in a vertical position, the crank 56 is rotated a number of times, incidently, the cards are not packed tightly so as to afford a less frictional contact between the cards and permit of their ejection and ready separation when the cam 58 is motivated subjecting the needles to the oscillatory or vibratory motion indicated in Figure 6, thus loosening the cards which are without support on these respective needles 4, 16, 32 and 64, then the slide 110

is removed permitting the cards that are not supported in compartment 48 to drop thru into the respective openings 70 in compartment 49.

The structure is best illustrated in Figure 9 where it is indicated that the sections 68 are, preferably, positioned in an arcuate housing-like structure 69' so as to permit rotation thereof 180° at a time. The structure is comprised of a series of openings 70 with sharp edge sections so as to cause the cards dropping thereupon to fall into either of two adjacent compartments designated 70, or 69 depending on which position the sections 68 may assume. The cards will rest on the bottom 71 of the respective pockets 70, or 72 which are the bottoms of the pockets 69. After the cards have dropped into these pockets 70 and subsequently to the insertion of the proper needles through the cards, the rotor element 68 is rotated through an arc of 180°, then another vibrational action is caused to take place by virtue of the cam 73 which is similar to the one designated 53. The action here is a duplex arrangement of mechanism, if we may call the arrangement in compartment 48 a simplex mechanism.

The vibratory mechanism is comprised of a series of supporting brackets 78 and 79 in which are journalled the shafts 80 and a corresponding shaft 81 on the opposing side, a number of slotted portions 84 are indicated for insertion of needles therethru, and the cam is mounted on the shaft 75 rotatable relative to element 68 and to which is keyed the handle 74 for rotating purposes, the entire affair mounted, preferably, in the bearings 76 and 77 so as to permit the entire unit composed of section 68 with its cam actuated mechanism to be rotated within the arcuate confines 69' when it is desired to select a particular card as the second and ultimate operation of unit selectivity.

The shafts 80 and 81 serve to retain articulately mounted thereon the bell-crank levers 82 and 88 respectively, the said bell-cranks being free to rotate on the said shafts, the shafts being keyed to the levers 86 and 90, one leg of the bell-crank 82 being articulately connected thru the link 87 articulating at points 97 and 96 to the lever 90 which is keyed to the shaft 81, the link 93 being articulately secured at 94 to the lever 86 and at 95 articulately connected to one leg of the bell-crank 88. The free portions of the bell-crank levers 82 and 88 respectively have secured thereto rollers 83 and 89 which operate 180° out of phase with respect to the cam 73 and are retained in contactual relationship with respect to the said cam by virtue of the interconnecting spring 85; thus it can be seen that when the handle 74 is rotated, the leg of the bell-crank 82 disposed nearest the slotted portions 84 will be caused to be swung in an arcuate direction by virtue of its being pivoted on shaft 80 thus causing any needles which may be inserted in any of these openings 84 to be lifted up and down. Simultaneously with that action, and translating the motion of the arcuate motion of the said bell-crank 82 by virtue of its link connection 87 to the link 90 which is keyed to the shaft 81, the lever 91 will be caused to operate in synchronism therewith, namely, when the bell-crank 82 travels in an upward direction, the complementary operating lever 91 will move downwardly and vice versa. When the lever 82 moves downwardly, the lever 91 will move upwardly, and in similar fashion thru the bell-crank 88 the lever 92 is moved in contrary direction to the bell-crank 88, that is, when the bell-crank 88 moves downwardly, the lever 92 at the rear of the unit moves upwardly and vice versa. The said complementary vibratory unit on the one hand consisting of the bell-crank 82 and the lever 91 move 180° out of phase with respect to the bell-crank complementary vibratory unit comprised of the bell-crank 88 and the rear actuating lever 92. Thus it can be seen by a number of rotary motions of the handle 74 the cards will be subjected to the treatment indicated in the Figure 6.

In compartment 50 the desired card generally designated 40, and bearing the code "T3" (see Figure 4) can be found, thus showing the assortment to be complete. Now, any multiple of one hundred twenty eight cards may be selectively disposed in a similar container in which event the desired selectivity will be one card for every one hundred twenty eight cards of a group of similarly codified units of one hundred twenty eight.

Figures 10, 11, 12 and 13 show, exemplarily, how my codifying scheme or method may be utilized with different shapes of cards. The rectangular however, are considered the more desirable and for that reason have been found commercially more universally in adoption. In Figure 10, I show how a circular card 107 may be treated i. e. by providing an irregularity on its periphery in the form of a tab extension 111, having perhaps a notched portion 112, so as to permit a needle to be inserted at its periphery, and by one or more complete rotations of that needle through revolutions of 360°, all the tabs 111 will be caught, and hence the cards will be thus coincidently positioned.

The next operation would be to insert needles as indicated in Figure 1, at the respective points marked 26 and 25, using two diagonally opposed needles and then the two diagonally opposed needles complementary to the first two diagonally inserted needles, and then the cards may be orientated to assume the same upright and face forward position ready for selectivity. The code 108 may be designated on one portion thereof and 180° opposed thereto, the counterpart 109 of that code following thru the same motif and scheme as indicated for the rectangular arrangement shown in Figure 2.

Likewise a square card 98 may be utilized in which event it will require a greater number of sorting operations in order to set the cards upright and coincidental, inasmuch as the four sides of a square are equal and two slotted portions on each of three sides will be required and one slotted portion and one hole on the side which is considered its upright arrangement. The selection code 100 and its counterpart 101 are shown on two opposed edges.

Figure 12 shows an isosceles triangularly shaped card 99 which will naturally require that two of its edges contain assorting portions, and on one side, respectively, double slots 26, whereas one side will have a single slot 26 and a hole 25 showing the erect position. On only two sides the combination and its counterpart may be indicated, that is namely, where a hole is part of the combination on its opposing side a slot is to be positioned in opposed relationship and vice versa. The selective code and its counterpart are indicated 102 and 103.

Figure 13 indicates an irregular polygon consisting of five sides, pentagonal in nature, generally designated 104 and in order to orientate it to upright and straight forward position, two slots will be required on each of its edges or sides except

the one side which is to be considered as the alignment side for erect and face-forward purposes, which has merely one slot 26 and aligning opening, or hole 25. The selective code 105 and its counterpart 106 is found on any two sides.

The cards, after they are set in upright position may be treated in a mechanism similar to that indicated in Figures 7, 8 and 9, and the desired card may be selectively obtained in two operations; if one hundred twenty eight cards are used, seven codifying points are necessary and two operations are needed for the selection of any one card, and as heretofore stated, the number of cards that can be contained in the original stack for the selection of a single card grow in rapid progression because of the geometric progression arrangement that is utilized to characterize my particular codifying system.

In order to illustrate that the geometric arrangement will permit of selectively codifying one hundred twenty eight cards, the terms of the progression are designated 1, 2, 4, 8, 16, 32 and 64, by permutation and combination of the said numerals which designate the openings that may be utilized for codifying purposes; any numeral from one to one hundred twenty seven can be attained, the cipher indicating the one hundred twenty eighth and signifying no holes.

According to the code in Figure 5, inasmuch as the alphabet contains only twenty-six characters, I have used the Greek alphabet in which the following letters have been used, delta, theta, phi, sigma, psi and omega, hence I have taken the thirty two alphabet characters and designated them with numerals as either sub zero, sub one, sub two, or sub three, thus giving us one hundred twenty eight designations or one hundred twenty eight differently coded cards.

By virtue of my codified arrangement it is to be understood that the figures of the geometric progression, namely, one, two, up to sixty four, or up to any numeral that it may be desired, depending on the number of cards that may be utilized, are merely imaginary and suggestive so as to facilitate the manner of codifying a large number of cards.

My system by way of practical utilization, may be used to advantage by public utilities or institutions having to do with filing numerous records, or insurance companies, where for example "T" sub 3 may denote one or more individuals whose policies are about to lapse, or may indicate policy holders 60 years or older, or younger, or any category it may be found desirable to resort to for classification.

Altho I have herein indicated preferred forms of the card structure and also of a mechanism to facilitate the assortment and selectivity thereof, it is to be understood that inasmuch as the disclosed structure is susceptible of modifications, alterations and improvements, my invention is to be limited only by the appended claims.

Having thus disclosed and revealed my invention, what I claim as novel and desire to secure by Letters Patent is:

1. A card or the like adapted to be identically orientated with all other cards in a stack of cards, comprising an open slot and a perforation on one of its edges and two open slots on at least another of its edges, the said slots and perforation being equidistant from the geometric center of the said card.

2. A card or the like adapted to be identically orientated with all other cards in a stack of cards comprising, an open slot and a perforation on one of its edges, and two slots on all of the remaining edges, the said slots and perforation being equidistant from the geometric center of the said card.

3. The method of selecting a single card from a stack of cards, each provided with a code section consisting of permutations and combinations of open slots and perforations identified by terms of a geometric progression, each card being also provided with a complementary code section opposed to the permutations and combinations of open slots and perforations in the said code section; selective operation being performed by (1) inserting a series of needles in each of the open slotted portions in the code section (2) subjecting the stack to vibratory motion allowing the unsupported cards to drop from the stack, (3) inverting the group of cards dropped from the stack, (4) inserting in the complementary code section needles in each of the open slotted portions therein, (5) and subjecting the said cards which formerly dropped thru to vibratory motion, thus releasing a chosen card.

4. In a card selecting and assorting structure or mechanism, vibrating mechanism adapted to lift and lower opposed ends of needles alternately, to subject cards mounted on said needles to be shaken comprising, a pair of oppositely disposed shafts mounted in supports on the sides of said selecting and assorting mechanism, a bell-crank element articulately mounted on each of said shafts, a lever element keyed to each of said shafts, a link element articulately secured to a bell-crank element on one of said shafts and to the lever element keyed to the other of said shafts, on the remaining end of said mechanism a lever keyed to each of said shafts, the free legs of said bell-crank lever elements provided with cam rollers, a cam provided with a series of protuberances and intermediate depressions rotatably mounted in between said cam rollers, spring means connecting the free legs of said bell-crank levers maintaining the said cam rollers in contacting relationship with the periphery of said cam, and means associated with said structure adapted to motivate the said cam element.

5. In a unit selective mechanism, an intermediate compartment consisting of adjacent card receiving pocket portions separated by sharp edged wall portions on one face thereof, and alternately disposed card receiving pocket portions on an opposed face thereof, the said card receiving pocket portions on the said first-mentioned face being disposed in alternate relationship with respect to the said second-mentioned card receiving pocket portions on the said opposed face.

6. An orientating method for a stack of cards congruently arranged, each card being provided with a sorting code including four portions, namely, a hole and an open slot on one edge of each card, and two open slots substantially oppositely disposed with respect to the said hole and open slot, the said holes in all of the said cards being disposed in alignment or registry when the said cards are arranged in orderly fashion, the said holes being in alignment or registry with the slots of the other cards in the said stack when the cards are congruently arranged in disorderly fashion; the said sorting operation being performed by (1) arranging congruently the said stack of cards preparatory for sorting, (2) inserting needles in each of two diagonally opposed sections and moving the said needles in opposed directions, (3) inserting the said needles in each of the remaining sections of

that portion of the said stack of cards remaining as a result of step (2) and moving the said needles in opposed directions, the sorting operations resulting in four sub-stacks orientated in four different positions, whereas all the cards in each of said sub-stacks being identically orientated, and (4) restacking the said resultant sub-stacks into identical position with respect to any one sub-stack, by rotating one sub-stack 180° on its imaginary horizontal axis, one sub-stack 180° on its imaginary longitudinal axis and 180° on its imaginary vertical axis, and ultimately by rotating the third sub-stack 180° on its imaginary vertical axis, thus resulting in an orderly arrangement of the said stack of cards.

7. The method of selecting a single card from a stack of cards, each provided with a code section consisting of permutations and combinations of open slots and perforations identified by terms of a geometric progression, each card being also provided with a complementary code section opposed to the permutations and combinations of open slots and perforations in the said code section; selective operation being performed by (1) inserting a series of needles in each of the open slotted portions in the code section of the card desired (2) subjecting the stack to vibratory motion allowing the unsupported cards to drop from the stack; (3) inverting the group of cards dropped from the stack, (4) inserting in the complementary code section needles in each of the open slotted portions therein, (5) and subjecting the said cards which formerly dropped thru to vibratory motion, thus releasing a chosen card, the total number of needles used being equivalent to the number of terms of the said geometric progression.

8. The method of selecting a single card from a stack of cards, each provided with a code section consisting of permutations and combinations of open slots and perforations identified by terms of a geometric progression, each card being also provided with a complementary code section opposed to the permutations and combinations of open slots and perforations in the said code section; selective operation being performed by (1) inserting a series of needles in each of the open slotted portions in the code section of the card desired (2) subjecting the stack to vibratory motion allowing the unsupported cards to drop from the stack, (3) inverting the group of cards dropped from the stack, (4) inserting in the complementary code section needles in each of the open slotted portions therein, (5) and subjecting the said cards which formerly dropped thru to vibratory motion, thus releasing a chosen card, the total number of needles used being equivalent to the number of terms of the said progression, the number of needles used for the said operation designated (1) being equivalent to the number of terms whose combined sum designates the code of the said card to be selected, the number of needles used for the said operation designated (4) being equivalent to the total number of needles minus the number of needles used for said operation designated (1).

9. A card file comprised of two sections, an orientating section subdivided into four compartments, and a unit selecting section articulately secured thereto, and adapted to be positioned at substantially right angles thereto, one of the said compartments being common structure to both the said orientating section and the said unit selecting section, the said unit selecting section being subdivided into three compartments comprising, the said compartment common to both sections, an intermediate compartment rotatably mounted and provided with oppositely disposed pocket portions, means on the said intermediate compartment for shaking cards supported on needles deposited therein, and a unit selection compartment for receiving a selected card.

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