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2,213,607

CARD AND THE LIKE FOR SEQUENCE SORTING

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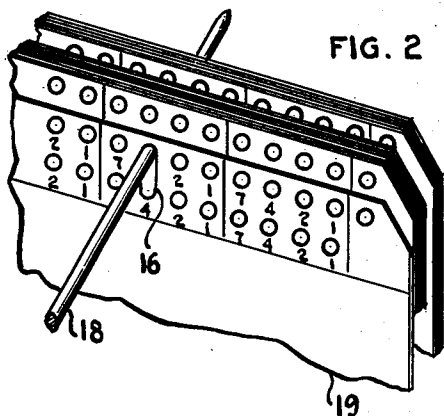


FIG. 2

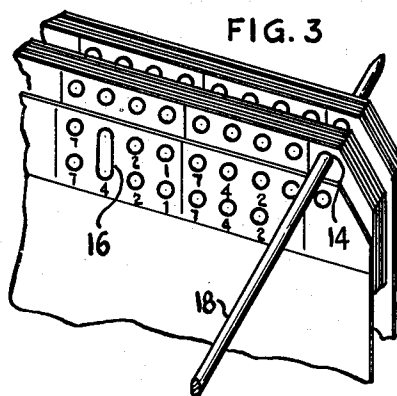


FIG. 3

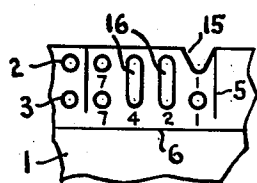


FIG. 4

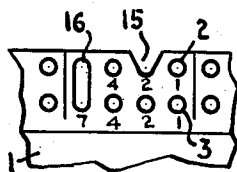


FIG. 5

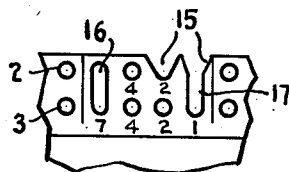


FIG. 6

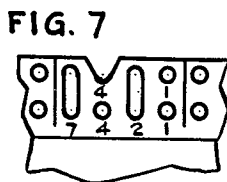


FIG. 7

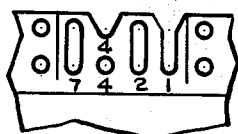


FIG. 8

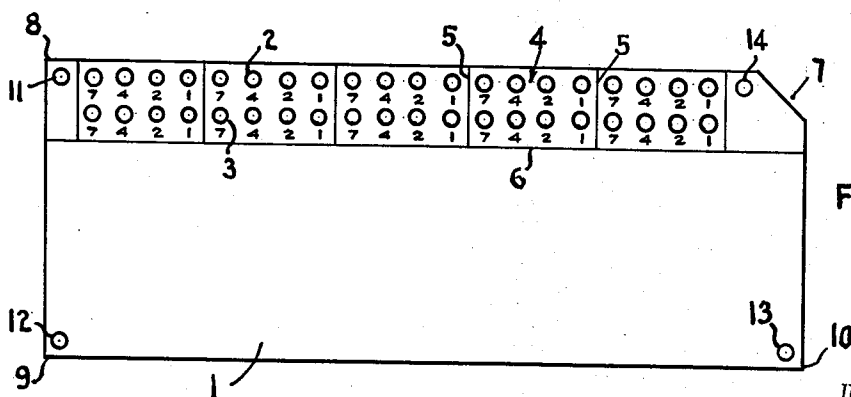


FIG. 1

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2,213,607

CARD AND THE LIKE FOR SEQUENCE
SORTINGDonald A. Nevin, Athens, Ohio, assignor to The
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Application September 19, 1939, Serial No. 295,583

1 Claim. (Cl. 129—16.1)

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 for accounting and statistical records, into desired sequence.

It is well known to those skilled in the art that record cards are sorted in two different ways; namely, selective sorting and sequence sorting. When cards are sorted selectively, only those cards of a particular or desired classification are wholly or partially removed from a plurality or stack of similar cards, whereas, when such cards are sorted into a sequence, all of them are rearranged from their original order into the desired order or sequence.

The mechanics employed in card sorting are known to those skilled in the art as the positive (direct) and inverse (indirect) means. The positive (direct) means identifies the method whereby only the desired cards are moved, exposed or completely removed from a plurality of similar cards, while the undesired cards remain in their original order or position.

The inverse (indirect) means is defined as the method whereby the undesired cards are moved, partially exposed, or wholly removed from the plurality, leaving the desired cards in their original position.

My invention relates particularly to a new and useful improvement in a card and the like for sequence sorting by the inverse method.

Record cards of this type are used in large quantities and after being sorted or classified a few times and the results tabulated, are frequently filed away and only used for occasional references. As the cost of cards and filing space for the keeping of these records is a large item in modern business, it makes it desirable that the desired classifications be coded so as to secure the maximum of information on the smallest standard size card, using a minimum quantity of cards and hence a minimum amount of filing space is required.

I am aware that various improvements in card codings have been made to conserve card space, such as, perforations in the body of the card, together with slots substantially punched connecting a perforation in one row with an adjacent perforation in another row. United States Letters Patent No. 1,739,087, dated Dec. 10, 1929, is designed as an improvement over the United States Letters Patent No. 1,544,172, dated June 30, 1925, both issued to Perkins, by providing the medium of coding which utilizes a staggered hole arrangement thereby reducing the number of

lateral perforations required in each group, from four to three.

In the embodiment of my invention, each card is provided with two lateral series of perforations adjacent one or more of its edges, one series of which may be notched to the edge of the card, several perforations on all the cards being so placed as to coincide one with another, when the cards are stacked together, so that by the passing of a rod, wire, or other separating implement through any coinciding row of such perforations, the cards in which those perforations have been opened out to the edge may be separated from the remaining cards, the perforations of which have not been so opened out. The other or inner series of perforations may be opened outwards to the outer series to form elongated slots, so that by the passing of a rod, wire, or other separating implement through any coinciding row of these inner perforations, the cards in which those perforations have been elongated outwards to the outer perforation will remain in their original position when the rod is lifted, while those not so elongated will be elevated the distance of the slot length, above the body of the stack of cards.

The principal object of my invention is to combine a series of coded perforations adjacent the edge or edges of a card and a plurality of notches which extend from certain of those perforations to the edge of the card to form a pattern of notches, which pattern identifies the particular card so notched with a single classification whereby the cards may be sorted inversely and completely removed, while being sorted into numerical or other desired sequence, with another series of perforations parallel to and adjacent the first series and in vertical alignment therewith, which may be connected to the perforations of the outer series by cutting away the intervening material between the perforations so that they may also be inversely sorted with marginal exposure and subsequent complete removal to effect a sequence sort of the cards.

It is a further object of my invention to divide these rows of perforations into groups. These groups are then coded either numerically or otherwise and the groups are separated by printed lines to facilitate the correct notching or slotting of the card in a predetermined manner in accordance with the code selected.

Still another object of my invention is to provide a card or the like with perforations adjacent one or more of the edges which can be coded either numerically or otherwise from "0" up to

wards to any desired numerical limit along side and edge.

It is still another object of my invention to connect some of the first row of perforations adjacent the edge with certain of the second row of perforations by slots so as to obtain marginal exposure of such cards.

My means of accomplishing the foregoing objects may be more readily understood by reference to the accompanying drawing which is hereunto annexed and forms a part of this specification in which:

Fig. 1 is an illustration of my invention, showing two rows of perforations adjacent the edge of the card and divided into numerical "fields" or groups of eight holes by printed lines;

Fig. 2 is a fragmentary perspective view showing marginal exposure of certain cards in a stack of cards through the second row of perforations;

Fig. 3 is a fragmentary perspective view showing how the marginally exposed sorting cards of Fig. 2 may be removed from the rest of the stack for additional sortings or tabulations where that is desired;

Figs. 4 to 8 are fragmentary views of a card showing successive representation of such a card after it has been notched and slotted to correspond to the numbers "1" to "10", only one of the fields or groups being so cut.

Similar reference numerals refer to similar parts throughout the entire specification.

As shown in Fig. 1 of the drawing, a card, sheet or the like 1 has a row of perforations 2 adjacent and parallel to the edge of the card and a second inner row of perforations 3 adjacent and parallel to the first row of perforations 2. The perforations of the inner row 3 being so aligned with the perforations in the outer rows in a direction perpendicular to the edge of the card. These rows of perforations 2 and 3 are preferably divided into groups 4, by printed lines 5 and line 6.

To facilitate the resorting of cards misplaced in stacking, each card has the upper right hand corner 7 cut away. Adjacent to each of the corners 8, 9, 10 of the card, I provide holes 11, 12, and 13. A sorting needle or rod of the proper dimensions is inserted in each of the holes 11, 12, 13 of any card extending beyond the cutoff corner 7 and by lifting the needle those cards which have become misplaced in stacking will be withdrawn from the mass of cards and can be readily replaced in correct position for sorting.

Referring now to Figs. 4 to 8, there is shown the sequence of the card 1 coded with numerals 7 4 2 1 in each field of perforations, by successive illustrations of the appearance of the card when notched and slotted in accordance with my invention.

Fig. 4 shows the row of perforations 2 notched at coded numeral 1 with notch 15 for the coded numeral "1" and the row of perforations 3 connected to the row of perforations 2 at coded numerals 4—2 by slots 16 for marginal exposure of card 1 for coded numeral "6."

Fig. 5 is representative of a card 1 having coded numeral 2 notched with notch 15 referring to coded numeral "2" in the row of perforations 2 and slot 16 connecting coded numeral 7 of the row of perforations 2 with the row of perforations 3 for coded numeral "7" for marginal exposure of that classification.

In Fig. 6 the card 1 has the perforations 2 notched at the coded numerals 2 and 1 for the coded numeral "3" and the marginal exposure 75 of card 1 for the coded numeral "8" is obtained

by connecting perforations 2 and 3 of coded numeral 7 with slot 16 and notch 15 of coded numeral 1 with slot 17.

Fig. 7 shows a card notched for the coded numeral "4" and slotted for marginal exposure 5 of coded numeral "9."

The card 1 in Fig. 8 is shown to be notched for the coded numeral "5" and slotted for marginal exposures of the card for coded numeral "10" (7—2—1).

The method of sorting or arranging in numerical sequence cards of my invention is similar to that disclosed only in the Perkins patents above referred to. The cards are first arranged in correct order, that is face to back and right side up, by means of the cut away corner 7. The sorting needle is passed in turn through successive holes and by lifting the needle those cards which have the corresponding hole notched out will fall from the mass. The operation is repeated through all of the perforations of the coded fields until all cards are sorted into numerical sequence.

When the needle 18, Fig. 2, has been passed through a hole in the lower row which is slotted into a corresponding hole in the upper row, but is not opened out through the edge, such a card 19 or cards will only drop a distance equal to that between the lower row of holes 3 and the upper rows of holes 2 thus exposing a margin of the cards not so slotted. Following this occurrence in the sorting operations, the marginally exposed cards may be compressed firmly between the thumb and fingers of one hand, to hold the cards which extend above the remainder in the position shown in Fig. 3, or if a sorting tray is used, the usual compressor may be employed for this purpose. The sorting needle 18 is then withdrawn and inserted in a hole 14 adjacent to the cut corner 7, of those cards which did not drop, following which the compression may be released and the elevated cards impaled on the needle, may be withdrawn in the usual manner.

In preparing perforated cards of this type for sorting and classifying by the "needle" method, a punching device provided with a coded keyboard is frequently used for rapidity and accuracy in cutting out the holes corresponding to the system in use. It is important for checking purposes, however, that the holes be divided by printed lines and numerals or other printed code identifications which indicate the proper cutting of portions adjacent to certain holes or combinations of certain holes, this feature alone determining the system to be used in sorting.

Many users of these cards prefer the hand "ticket" punch method of preparing the cards for sorting. To those skilled in the art it is obvious that the proper combination of notches, slots or openings to obtain the most characteristics in a given width of card depends upon the dividing of the most advantageous number of holes into groups by printed lines combined with marking the holes with numerals, or other indicia, which instruct the operator in the preparation of the card.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

A stack of cards for classification purposes, each card provided with a series of coded perforations adjacent one or more edges, a pattern of notches in the edges of each card which refer to a single classification, and a second

series of perforations adjacent to and parallel with the first series, the centers of the perforations of the two series being in vertical alignment, the space between certain of said aligned perforations being cut away forming a pattern of slots which refer to a single classification,

whereby inverse sorting with marginal exposure and complete removal, and sequence sorting may be obtained, certain of the notches in the edges of a card intersecting certain of said slots for representation of certain values.

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