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PERFORATED RECORD CARD

Original Filed Dec. 19, 1936

FIG. 1.

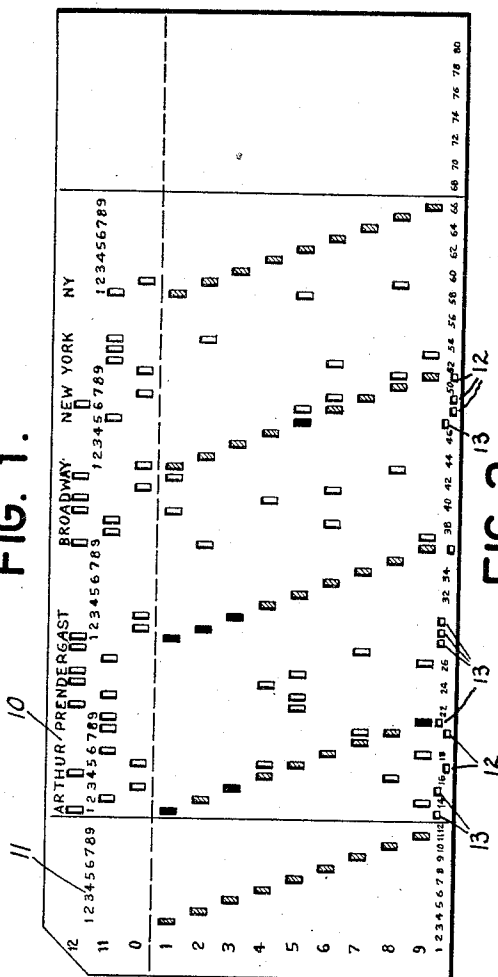


FIG. 3.

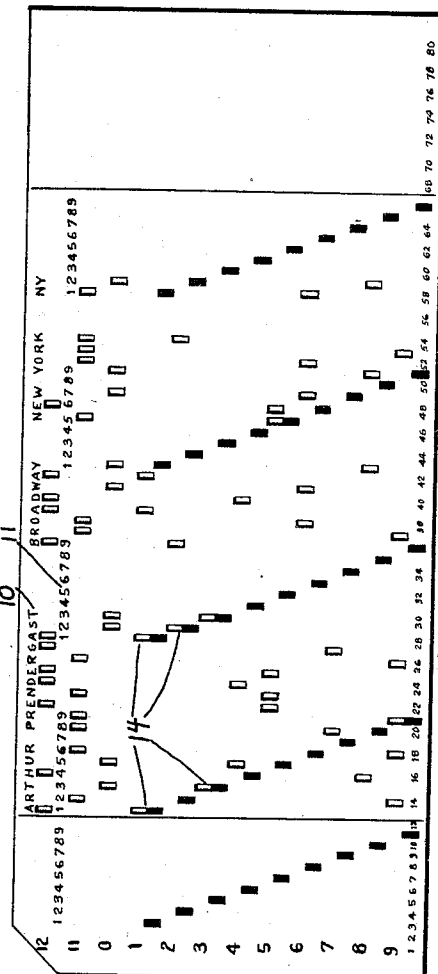
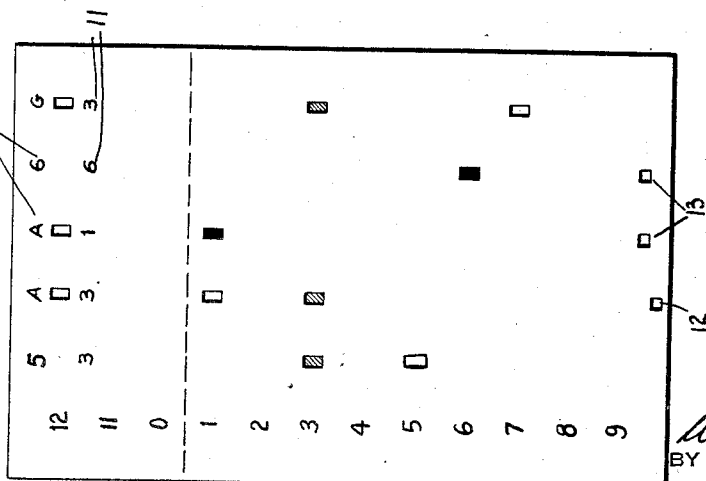


FIG. 2:



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PERFORATED RECORD CARD

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Original application December 19, 1936, Serial No. 116,703, now Patent No. 2,195,865, dated April 2, 1940. Divided and this application December 16, 1938, Serial No. 246,043

7 Claims. (Cl. 235—61.12)

This is a divisional application based on my co-pending application Serial No. 116,703, filed Dec. 19, 1936, now Patent No. 2,195,865, granted April 2, 1940.

The principal object of the invention resides in the provision of an improved form of record card having an increased data receiving capacity.

In carrying out the object of the invention, one or more of the columns of a Hollerith record card may be doubly punched, once to represent a letter of the alphabet or a digit and a second time to represent another digit.

The well known Hollerith card usually has alphabetic characters represented thereon by a two-hole code punching, one hole being made in the "0," "11" or "12" index point position of a column and known as the "zone" perforation and the second hole is made in one of the digit index point positions "1" to "9." Thus, the letter "A" is represented by holes in the "12" and "1" positions. If now it is desired to enter in the same column the digit "3," for example, a hole is punched in the "3" index point position.

For the purpose of reading this doubly punched column, it is necessary to distinguish which digit hole is the companion of the "0," "11" or "12" zone hole. This is effected by providing a key hole made in the margin of the card in line with the perforated column when the digit represented is greater in value than the digit hole belonging to the letter. When the condition is reversed, no key hole is required. A third condition, namely, that in which both digit holes are the same as where "A" and a "1" are punched in the same column or two 3's etc., requires a differently located key hole to identify such condition and control the machine accordingly.

According to a second form of the invention, a column of a Hollerith card is punched in the usual way with a zone hole and a digit hole to represent a letter or a digit hole alone to represent a numerical character. A second digit is represented by a hole made in the space between two regular index point positions. In this arrangement the holes made have a dimension in the direction of the card column equal to at least half the distance between two adjacent index point positions so that, if for example two 3's are entered in a column, one perforation is made in the "3" index point position and the second is made in the space between the "3" and "4" index point positions. As a result, the two holes adjoin or overlap to form a single continuous perforation.

In the parent application, there is shown a ma-

chine arranged to sense the record cards of the present invention and control printing mechanism according to the entries made.

Various other objects and advantages of the invention will be obvious from the particular description of two forms of record cards embodying the invention or from an inspection of the accompanying drawing, and the invention also constitutes certain new and useful features of construction hereinafter set forth and claimed.

In the drawing:

Fig. 1 is a view of a double-punched record card according to one form of the invention.

Fig. 2 is a diagrammatic view showing various punching conditions.

Fig. 3 is a view of a double-punched record card according to a second form of the invention.

Referring to Figs. 1 and 2, the various holes are shown in three manners for the sake of clearness and better identification. The holes having no sectioning or shading relate to the characters printed on the upper printing line designated 10. The holes having oblique section lines therein relate to the digits printed on the lower printing line designated 11, while the holes that are blackened relate to both upper and lower lines 10 and 11.

In preparing the card, the holes relating to the upper printing line 10 may first be perforated in the usual manner in accordance with the desired coding arrangement in any or all of the eighty columns provided. If now, additional numerical information is to be entered on the card, any or all of the eighty columns are punched again with the desired digit holes just as though the columns had not already received punchings. This gives rise to three distinct conditions of which cognizance is taken as follows.

The second punching may be of a digit greater than, equal to or less than the value of the digit hole already present in the column. If the second hole is greater in value, a key hole 12 is made in line with that column above the lower edge of the card. If the second hole is equal in value, a key hole 13 is made in line with that column intermediate the row of lower key holes 12 and the row of "9" holes. If the second hole is less in value, no key hole is required.

It will be understood, of course, that the punching of key holes is effected only where two separate items are punched in a column and that where only a single item is recorded, whether it corresponds to printing on lines 10 or 11, no key holes are necessary.

The several different, double-punching conditions are shown in the enlarged diagram of Fig. 2. In this figure, a "5" and a "3" are punched in the first column and as the "3", which is the second punched hole or the hole related to line 11, is less in value than the hole related to line 10, no key hole punching accompanies. The second column contains the letter "A" coded as a "12" and a "1" hole and the numeral "3". Since the "3" hole is greater in value than the "1" of letter "A", the key hole 12 is made at the lower extremity of the column. The third column contains the letter "A" and a "1". Since the "1" holes coincide, key hole 13 is made. Again, in the fourth column, the numerals in both lines 10 and 11 are "6" and key hole 13 is also made. Finally, in the last column, a "G" coded as a "12" and a "7" and the numeral "3" are recorded. Here, since the "7" is of greater value than the "3", no key hole is required.

In this manner, the standard so-called 80-column Hollerith tabulating card may have its recording capacity doubled so that two lines of entries may be printed and the related perforations are clearly identified as belonging to either the one or the other line of printed matter. As a machine is provided according to the invention of the parent case referred to hereinabove, the printed matter may be dispensed with since the machine will separately and correctly interpret the data holes through the aid of the classification identifying holes 12 and 13.

A modified form of record card in which two items are recorded in a single column with interspersed perforations is shown in Fig. 3.

In this case the perforations related to the upper printing line 10 are made in the normal manner and are represented by the unshaded holes in Fig. 3. The holes relating to the line of printing 11 are blackened to better distinguish them. Such holes are made in positions intermediate the regular index point positions so that, where both of the items represented in a single column call for the same digit perforation, two distinct holes are formed, but because of the dimension chosen for the length of the holes, their adjacent edges coincide or overlap to form a single continuous hole 14.

A ready means is thus provided for conveniently doubling the capacity of the record card and even though the perforations are interspersed, their identity is preserved so that one familiar with the coding of the alphabetic characters can interpret the punching without the aid of the printed lines.

The added perforations in a column do not weaken the card and by selecting a length of hole so that coincidence of adjacent edges is obtained when both items call for the same digit hole, a single hole with no objectionable narrow strip of record material between the two is formed, and the card can readily be handled by the machine of the parent case referred to hereinabove.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. A record card for controlling the operation

of accounting machines, having a column of digit representing index point positions, one position for each of the digits, in which column there is also a classification identifying position, and perforations in any two of which index point positions represent two differently classed digits, the column being perforated in one of the index point positions to represent a digit of one class and perforated in another of the index point positions to represent a digit of another class and also perforated in the classification identifying position when the digit of the second class is greater in value than the digit of the first class, whereby two different digits may be recorded in a single column and in a single set of digit representing index point positions and distinguishable in accordance with the presence or absence of a perforation in the classification identifying position.

2. A record card for controlling the operation of accounting machines, having a column of digit representing index point positions, one position for each of the digits, in which column there is also a special indicating position, and a perforation in any one index point position representing either a single digit of one classification or two identical digits of different classifications, an additional perforation in the special indicating position denoting that the single perforation represents two identical digits, whereby two identical digits may be recorded in a single perforation in a single index point position of a record card column and the single perforation identified as representing two identical digits by a perforation in the special indicating position.

3. A record card for controlling the operation of an accounting machine which comprises columns of index point positions, there being in each column one position for each of the digits, and each column of positions constituting two sets of index point positions directly superimposed upon one another with exact coincidence of related digit representing positions so that corresponding positions of the two sets occupy the identical location in the card column, an additional classification position in each column, two different digits being recorded in any column by a perforation in the index point position for one of the digits associated with one set of positions, a perforation in the index point position for the other of the digits associated with the other set of positions and a perforation in the additional classification position when the digit associated with the second set is greater than the digit associated with the first set, whereby two different digits may be recorded in a single column and in a single physical set of digit representing index point positions and distinguishable in accordance with the presence or absence of a perforation in the classification position.

4. A perforated card which controls the action of tabulating machines and which comprises columnar fields and appropriately arranged digit spaces forming digit columns and the perforations of which denote digits of said columns, there being a single group of digit spaces in a single columnar field, one digit space for each of the digits, and a pair of special designation spaces, a single digit being represented by a perforation in the related digit space and a second digit being represented either by a perforation in the related digit space when the second digit is less in value than the first, by a perforation in the related digit space and an accompanying perforation in one of the special designation spaces when it is greater than the first, or only by a perfora-

tion in the other special designation space when it is of the same value as the first, whereby any two digits may be recorded in a single group of digit spaces in a columnar field and their identities denoted in accordance with the condition of the special designation spaces.

5. Means for controlling the operation of a machine, comprising a sheet having character representing designations thereon for controlling the operation of a machine, said sheet having a column of spaced digit identifying positions with only one position for each digit, and a special position for receiving a distinguishing designation, two digits related to two different things being each represented by a designation in the related digit position, with a designation in the special position serving to distinguish the two digit representing designations.

6. Means for controlling the operation of a machine comprising a sheet having a column of digit representing positions and a pair of class representing positions in which two digits of different classes may be represented by designations in positions corresponding to the values of the two digits and distinguished according to their class by a designation in a class representing position.

7. A record card for controlling the operation of entry receiving devices of a statistical machine, said card having a column of digit representing index point positions and a classification representing position in which two different digits may be represented by designations in related index point positions and distinguished by a designation in the classification representing position.

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