

Aug. 12, 1930.

C. D. LAKE

1,772,492

RECORD SHEET FOR TABULATING MACHINES

Filed July 20, 1928

2 Sheets-Sheet 1

FIG. 2.

STORES CLASS	CHARGE DEPT	PART AND ORDER NO.	LOT	UNIT COST	REQUIREMENT	ON ORDER	DELIVERED ON ORDER	AGENCY	TRADE NUMBER	DATE	LOT	STOCK IN-CUR
				000000	000000	000000	000000	000	000	000	000	000000
QUANTITY OF MATERIAL				UNIT	REQ. FILLED BY							
				111111	111111	111111	111111	111	111	111	111	111111
SIZE AND DESCRIPTION OF MATERIAL				222222	222222	222222	222222	222	222	222	222	222222
				333333	333333	333333	333333	333	333	333	333	333333
				444444	444444	444444	444444	444	444	444	444	444444
				555555	555555	555555	555555	555	555	555	555	555555
PRICE PER UNIT				TOTAL VALUE								
				666666	666666	666666	666666	666	666	666	666	666666
				777777	777777	777777	777777	777	777	777	777	777777
DATE DELIVERED	SIGNED	RECEIVED BY		888888	888888	888888	888888	888	888	888	888	888888
				999999	999999	999999	999999	999	999	999	999	999999

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FIG. 1.

DATE ¹² / ₁₁		GROUP	APPRO	ITS	SERIALIZED	APPROVED BY	DATE
JOB NO							
INSTRUCTIONS OR DESCRIPTION		2	2	2	2	2	2
		3	3	3	3	3	3
		4	4	4	4	4	4
AMOUNT	R.T.	5	5	5	5	5	5
	O.T.	6	6	6	6	6	6
TOTAL		7	7	7	7	7	7
		8	8	8	8	8	8
		9	9	9	9	9	9

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FIG. 4.

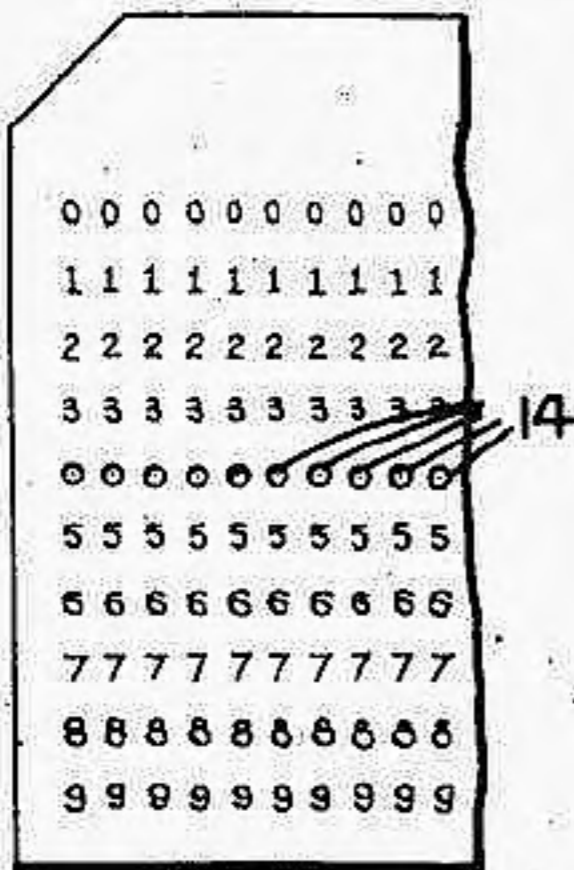


FIG. 5.

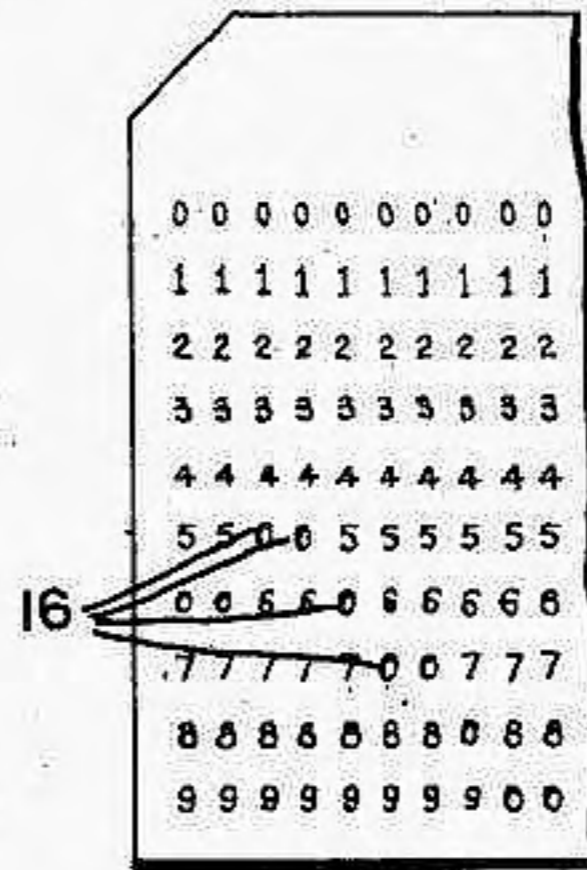


FIG. 3.

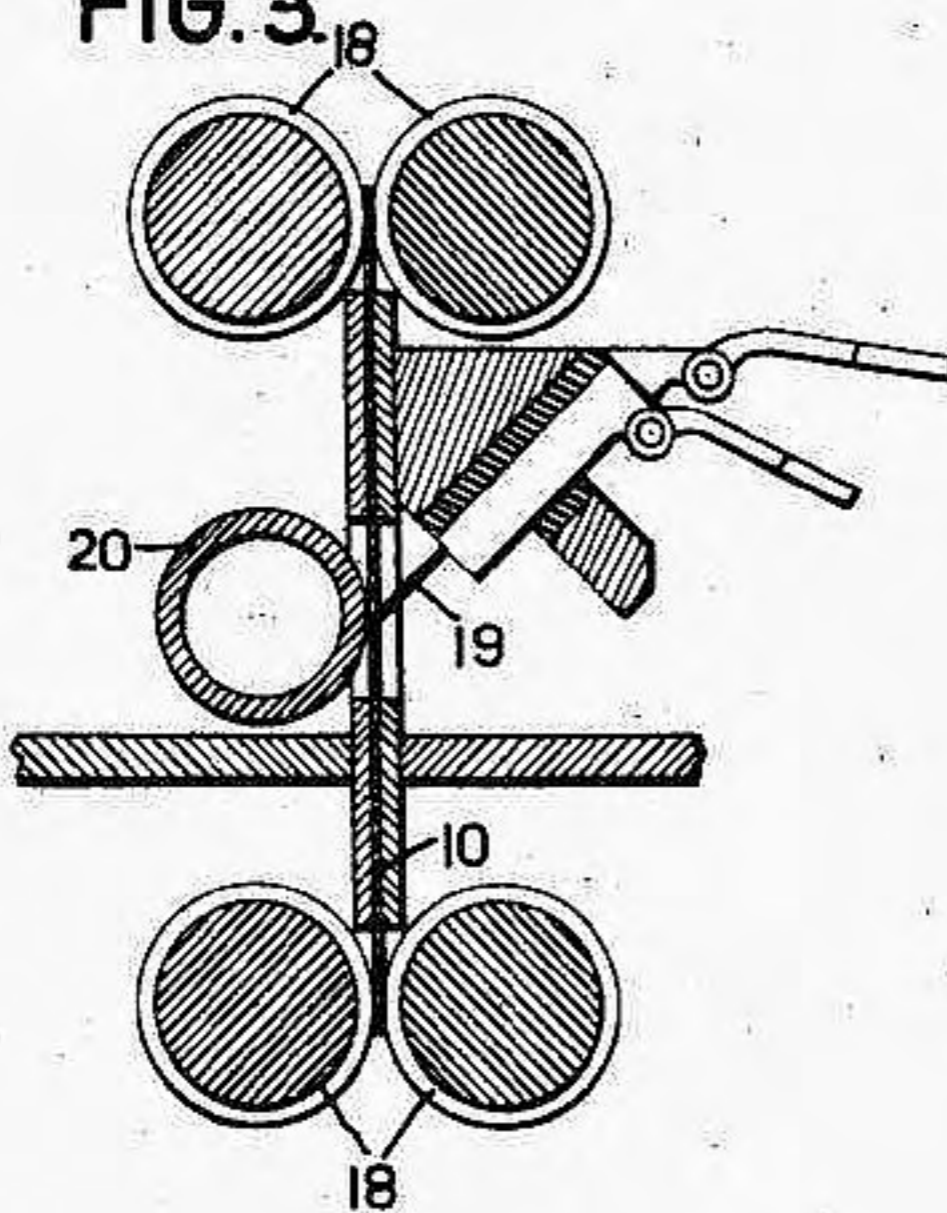
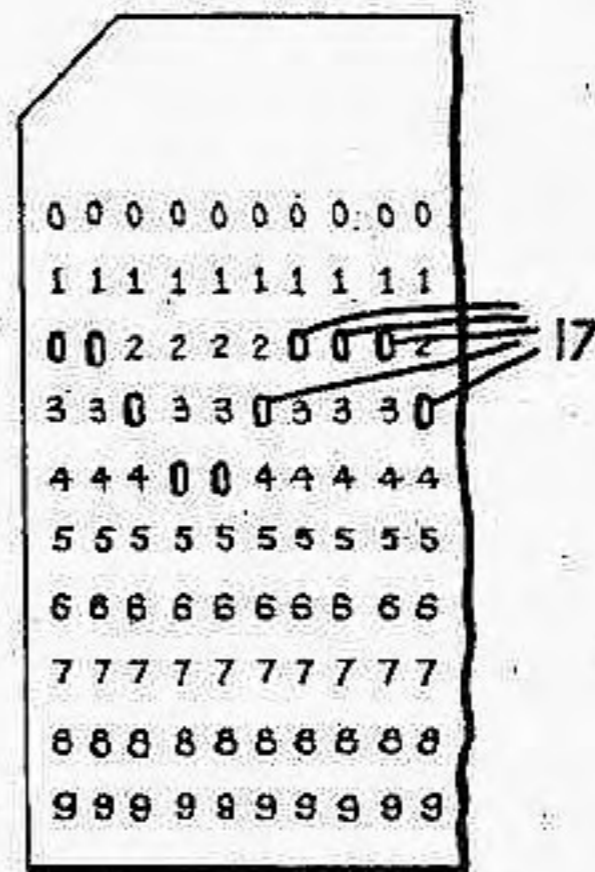


FIG. 6.



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UNITED STATES PATENT OFFICE

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RECORD SHEET FOR TABULATING MACHINES

Application filed July 20, 1928. Serial No. 294,110.

This invention is directed to the general end of providing an improved means of placing a greater amount of statistical, or like data, upon a given record card than has been heretofore possible, resulting in increased efficiency and benefits accruing from tabulating, or like machines preferably employed in connection with such record cards. Where card cost and filing space are important considerations, it is possible, by means of the present improvements to place on a record card of appreciably smaller dimensions the same statistical or tabular data placed on record cards of a size heretofore employed.

In machines of the Hollerith type, for example, it has been the practice to provide record cards with index points thereon arranged in columns and with the index points all laterally spaced from each other and arranged in transverse rows. It has also been the practice to space the perforations, which are usually circular, an appreciable and suitable distance apart laterally in order to prevent the brush cooperating with one column of holes from accidentally contacting through the holes of an adjacent column.

While the natural solution of placing more data on a given card is to make the circular perforations smaller in diameter it has been observed that cards having relatively small circular perforations were not satisfactory with respect to machine operation and strength or durability.

In tabulating and sorting machines of the electrical type a certain length of time is required for establishing the circuit through the holes in the card. This length of time and other requirements of the machine have, without resorting to other mechanical expediences, governed the diametrical dimensions of circular card perforations and when the smallest size that could be used was determined it was found that the additional data that could be placed on the new record was, to all extents, not appreciable.

It has also been discovered in practice that as the circular perforations were reduced in diameter and placed closer together a straight line of such perforations would act in the manner of a line-perforated stub card

and record cards weakened in this manner did not possess the necessary characteristics of strength and durability.

It is then a main object of the present invention to provide an improved means of providing a greater quantity of perforated data upon a record card of a given size without sacrificing card strength or durability as well as to produce a record card that is satisfactory with respect to machine operation and one that may be employed in connection with machines now in commercial use without material changes in the mechanisms therein.

It is a still further object of the present invention to provide an index point having the necessary characteristics and requirements for proper analyzing operations for deriving tabular data from a record card.

In carrying out the present invention the spacing of adjacent card columns is reduced in order to provide more data on a given card, and to provide for the necessary time element for electrical contact the holes are elongated in the direction of card feed. The form and spacings of the perforations are such that considerable resistance to tearing by a series of such perforations is effected.

In the drawings:

Fig. 1 represents a card having the usual form and spacings employed in connection with Hollerith tabulating and sorting machines;

Fig. 2 is a plan view of a perforated record card having index points constructed according to the present invention;

Fig. 3 is a cross sectional view of the brush section of a tabulator, sorting machine or the like, showing the cooperation of an analyzing brush with the preferred form of perforation of an improved record card as the card is fed thereto;

Fig. 4 is a fragmentary portion of a record card employing small circular perforations;

Figs. 5 and 6 are fragmentary portions of record cards illustrating modifications of the present invention.

The improved record card 10 (Fig. 2) is of the usual construction except that the index point designations 11 are spaced closer to-

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gether than the index point designations 12 (Fig. 1) of the usual form of Hollerith record card 13. Since the improved form of perforations are of a reduced width than heretofore it enables a closer lateral spacing of the index point columns and with the attendant possibility of placing more columns of data upon a record card of a given size. The number of columns that may be placed upon a card is determined not only by the required strength of the perforated card but by the closeness to which adjacent brushes may be brought together without the resultant danger of a brush associated with one column engaging an adjacent brush or column perforation resulting in irregular accounting machine operations. The present column width has been adopted with the above in mind and with slight modifications the brushes and holders now employed may be satisfactorily used in connection with the new form of record cards.

Where a series of perforations 11 are required it will be apparent that the card will be weakened along the line of perforations and this is particularly true if the perforations are circular, as indicated by numeral 14 in Fig. 4 which are shown as small as may be practical to use. Such form of perforations materially weaken the card since the circular perforations converge naturally to a tearing line as is readily evidenced by the preferred employment of such perforations for stub cards.

It has been observed that if the perforations are elongated as those indicated by numeral 11 in Fig. 2 and have adjacent substantially straight edges that the resistance to tearing a record card along a horizontal line of perforations is substantially increased. The preferred form of index point perforations 11 are substantially rectangular in which the length is considerably greater than the width. Other forms may be used with similar marked advantages and may be substantially oval-shaped holes 16 shown in Fig. 5 or have adjacent straight edges along the longer side and be substantially circular or elliptical on the other edges such as shown by numeral 17 in Fig. 6.

Considering Fig. 2 it will be apparent that the separation as indicated by A is considerably less than the separation B, the latter being substantially equivalent to a corresponding spacing of the index points of Fig. 1. This requires no change in the timing of the mechanical or electrical parts of the apparatus and the new type of cards may be readily substituted with a similar degree of efficiency in operation. It will be obvious that since a vertical line of elongated perforations never occurs due to the fact that but one perforation in a vertical card column is used the separation at B may also be reduced without materially weakening the card.

Thus the same amount of data may be placed on a card of still smaller dimensions.

Observing Fig. 4 it will be apparent that if a card having small circular holes 14 should be fed downwardly by feeding rollers 18 to a brush 19 that the duration of electrical contact is directly proportional to the diameter of the perforation and where holes of small diameters have been employed not sufficient time was given for electrical contact without employing special brush construction and mechanical expediences. With the employment of the elongated form of perforations it will be apparent that a construction is provided which permits a circuit of longer duration even though the perforation is smaller in width than a circular perforation, by reason of the fact that the wires of brush 19 are in contact with the contact member 20 for a greater length of time while the perforation is passing between the brush and the contact member.

In other words, between the time the brush falls into the leading edge of the hole and the time the brush is lifted by the rear edge of the hole a greater length of time will have transpired than when circular holes having a diameter equivalent to the width of the elongated holes are used. At the same time since the card columns may be closer a greater amount of data may be placed on a given card and the card will still be satisfactory with respect to machine operation and structural strength.

By a comparison of Figs. 1 and 2, it will be apparent that a card formed according to the present invention may represent considerable more tabular data than heretofore.

In the present instance 80 columns of data may be placed on a card compared to a 45 column card used heretofore. It will be apparent that when a card having 40 columns is suitable for all purposes record cards constructed according to the present embodiment will be about half the size of regular Hollerith cards giving marked advantages with respect to card cost, ease in handling, reduction in filing space, etc.

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 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.

I claim—

1. A tabulating card having oblong control apertures arranged in vertical columns and horizontal lines with the greater dimension in the vertical direction whereby the card is stronger and contains more perfora-

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tions than a similar card having similarly arranged and spaced circular perforations of a diameter equal to said vertical dimension.

2. A card as in claim 1 in which the apertures are rectangular.

In testimony whereof I hereto affix my signature.

CLAIR D. LAKE.

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