

April 10, 1956

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2,741,312

INDICIA-CONTROLLED RECORD PERFORATING MACHINE

Filed Sept. 18, 1951

3 Sheets-Sheet 1

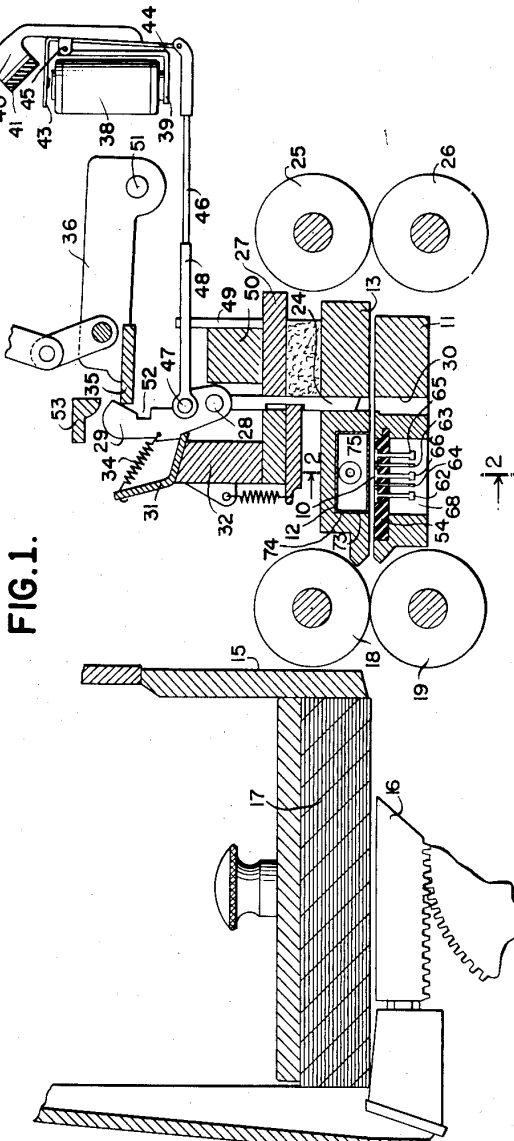


FIG. 1.

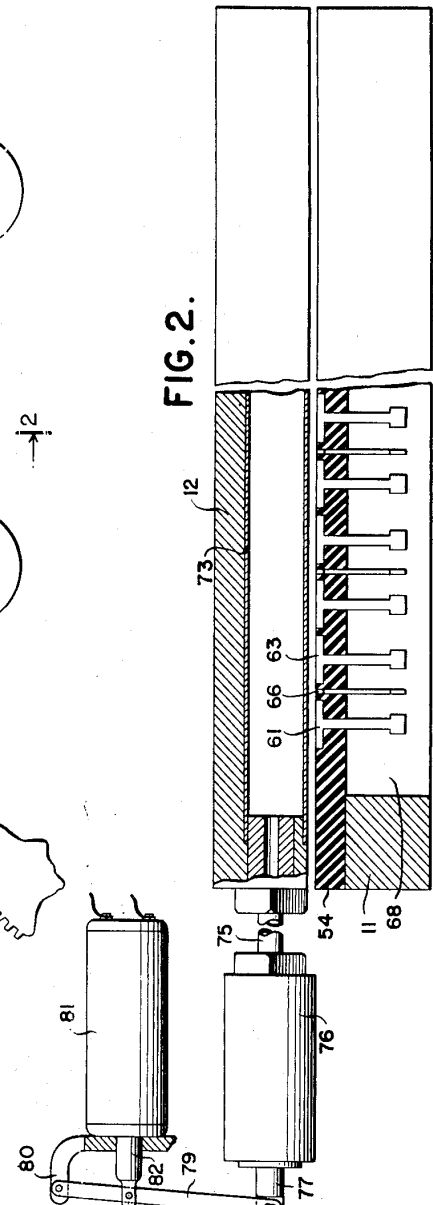


FIG. 2.

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FIG. 3.

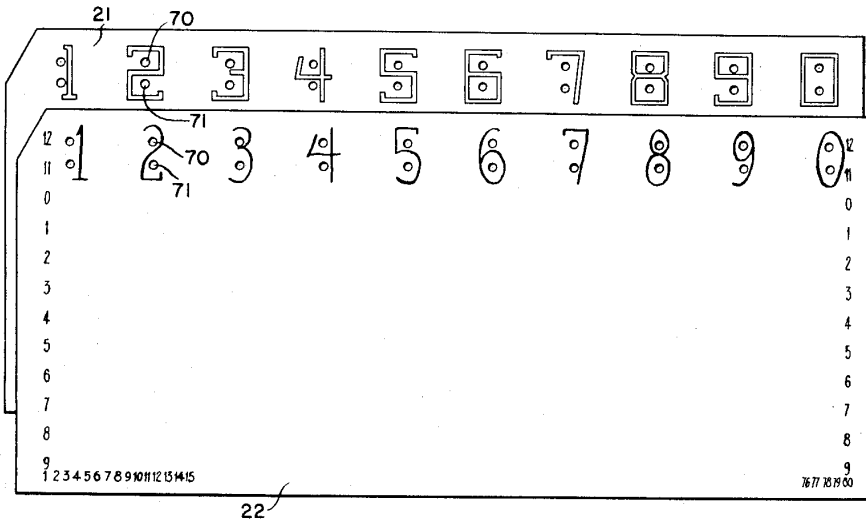


FIG. 4.

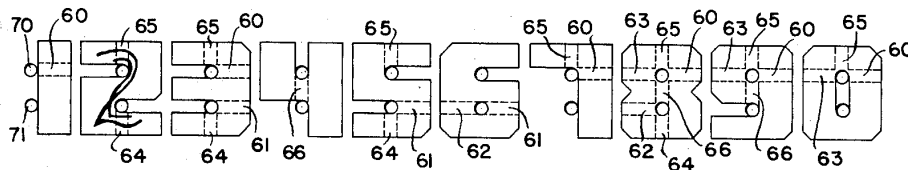
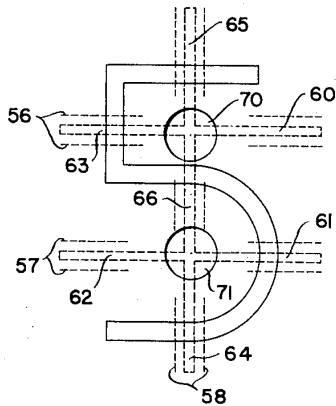


FIG. 5.

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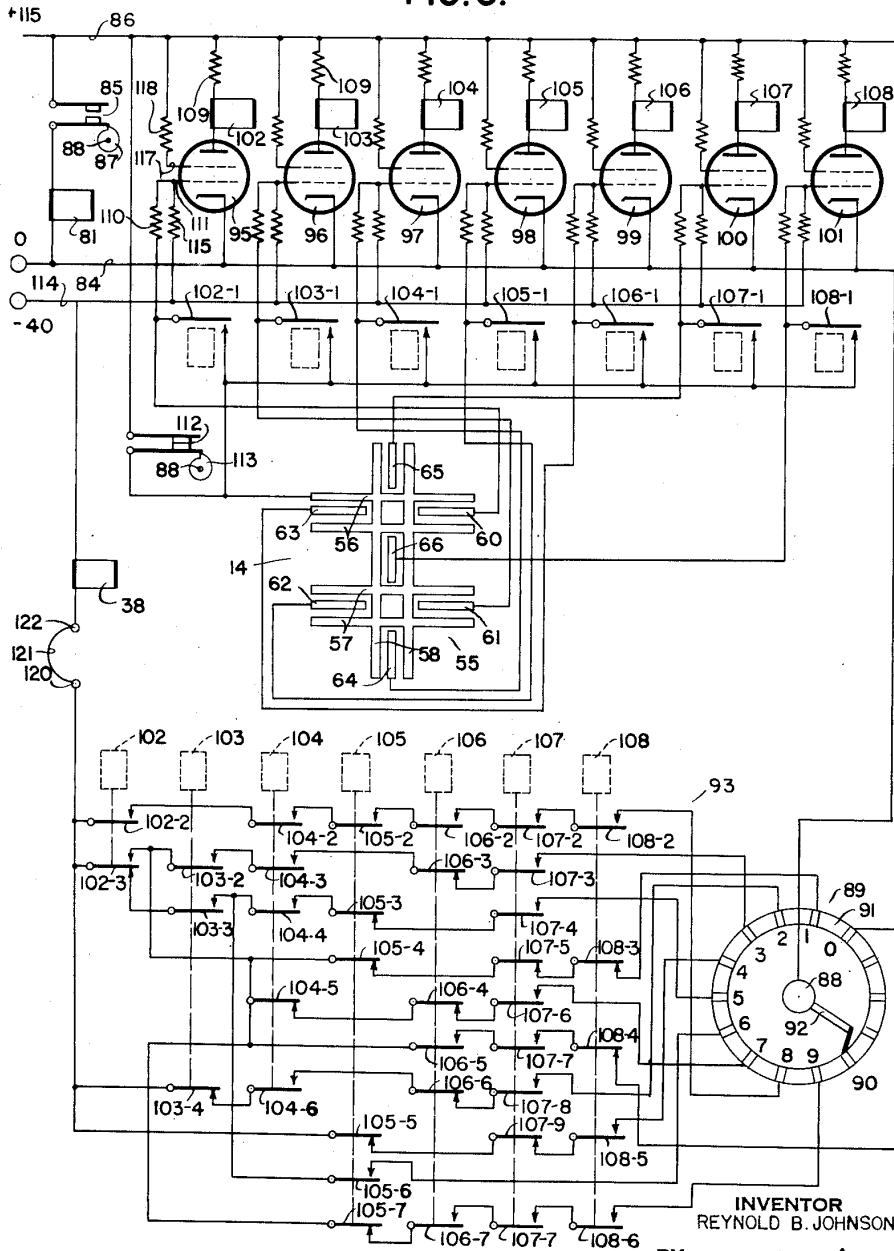
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FIG. 6.



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INDICIA-CONTROLLED RECORD PERFORATING MACHINE

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Application September 18, 1951, Serial No. 247,051

2 Claims. (Cl. 164—115)

This invention relates to devices for reading characters carried by a record sheet, and more particularly to means for reading Arabic numerals printed or written on a record sheet and effecting operation of a record perforating machine in accordance with the values of the numerals.

A basic operation in punched card accounting or statistical machine practice is the transcription of original data, entered in some form on original records, into punched record form for use in controlling the various automatic accounting and statistical machines. This operation is generally performed by key operated punches wherein the data entered into the records in the form of perforations is determined by the manual operation of keys. The speed and accuracy of the transcription of the original data into punched record form in this manner is, as a result, dependent upon the operator's skill and care, which, of course, vary widely from operator to operator. In operations where accuracy of transcription is a necessity, further verifying operations are usually required to check the perforations in the records with the original information before the perforated records are used in controlling the operations of the various machines.

A more efficient and accurate manner of transcribing original data to punched record form, as described and claimed in Patent Number 2,007,391 to James W. Bryce, and Patent Number 2,275,396 to Reynold B. Johnson, involves the entry of original data onto a record which also becomes the punched transcript record. The original data is entered on this record by making marks with conductive ink or pencil at differentially placed index positions on the record. The records are then fed to a machine which senses and analyzes the marks and automatically effects the punching of perforations into the record at positions corresponding to the sensed conductive marks. In this manner, manual transcription of original data to punched record form is eliminated and increased speed and accuracy of transcription is obtained. Although this automatic transcription system was a marked advance over the conventional manual transcription method of preparing punched records from original data, it involved the recording of the original data in special form rather than conventional written form. As a result, the speed and accuracy of the recordation of original data was decreased to some extent.

The instant invention by providing a device capable of sensing Arabic numerals written with conductive ink on records, and by providing means for effecting the punching of perforations thereon in index positions corresponding to the numerical values of the sensed numerals, permits the entry of the original data on the card to be done in a more natural way, resulting in increased speed and accuracy of recording the original data, while the transcribing of the original data to punched data form is effected automatically in an accurate and speedy manner. In recording the original data on the records, wide variations in the shape of the numerals is permitted.

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A preferred embodiment of the invention may include intermittently driven record advancing means for moving each record through a punching position comprising a line of punches, so that each row of index positions of the record pauses momentarily in the punching position to receive a perforation if any of the punches are operated at that time. Disposed below the intermittent feed path of the records, a short distance before the punching position, is a sensing unit comprising a line of individual sensing devices arranged at right angle to the path of movement of the record. Each sensing device comprises a common contact member and a plurality of individual contact elements deployed in a specific manner. The original numeric data is recorded on each record in a line adjacent its leading edge, and, after this portion of the record is positioned above the sensing devices and the record is stopped momentarily, a pneumatic platen may be operated to force the recording area of the card against the sensing devices so that all the numerals marked in conductive ink on the record are sensed.

Through the distinctive shape of the conductive line or lines forming each numeral, a distinctive pattern of the individual contact elements of each sense device is electrically connected to the related common contact member and, as a result, an individual circuit associated with each contact element so connected becomes energized. The individual circuits associated with the contact elements of each sensing device that are not connected to the related common contact member remain unenergized. Thereafter, as the index point positions of the record move step by step under the line of punches, circuit means controlled by the energized and deenergized circuits associated with the contact elements of each sensing device, control the operation of an associated punch for perforating the record card at an index point position corresponding to the numeric value of the related recorded numeral on the record.

An object of this invention is to provide simple and reliable means for automatically sensing conductive control characters which have been written or preprinted on a record in conventionally legible form, and means to control work devices in accordance with the characters sensed.

Another object of this invention is to provide simple and reliable means for automatically sensing conductive Arabic numerals which have been written or preprinted on a record, and means to control individual work devices at differential times in accordance with the value of each numeral.

Another object of this invention is to provide simple and reliable means for automatically sensing electrically conductive numerals which have been written on a record in conventionally legible form, wherein numerals of the same value may have wide variations as to configurations within predetermined limits and yet be correctly interpreted by the sensing means.

Another object of this invention is to provide means to automatically sense electrically conductive numerals which have been written on a record with possible wide variations as to configuration, and means to effect perforation of the same record at index positions as determined by the sensed numeric information thereon.

Another object of this invention is to provide an improved record perforating machine wherein conductive numerals written or preprinted on a record, with possible wide variations as to individual configuration within predetermined limits, are sensed simultaneously and automatically, and wherein perforating devices are operated to effect perforation of the same record at index point positions as determined by the values of the sensed numerals.

Other objects of the invention will be pointed out in