Aug. 4, 1931. H. A. WEINLICH 1,817,501

PRINTING MECHANISM FOR ACCOUNTING MACHINES

Filed March 6, 1928

FIG. 1.

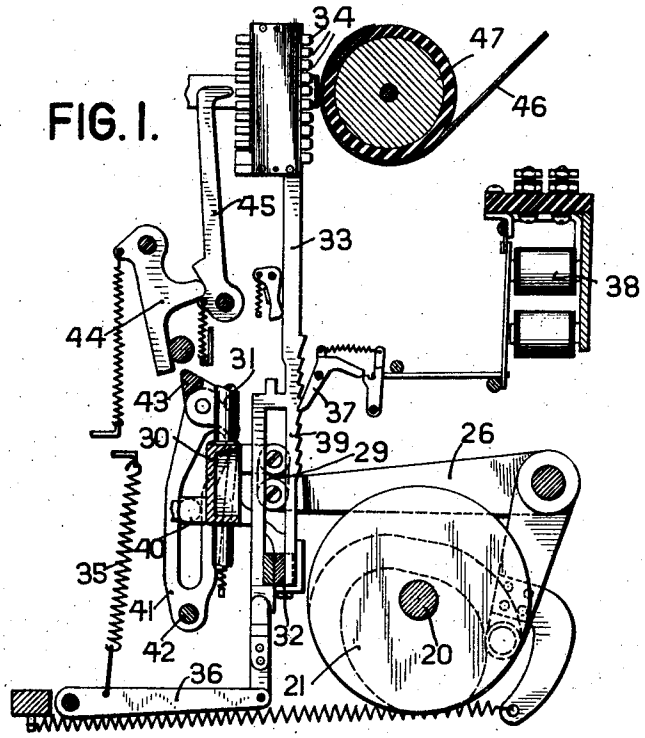


FIG. 2.

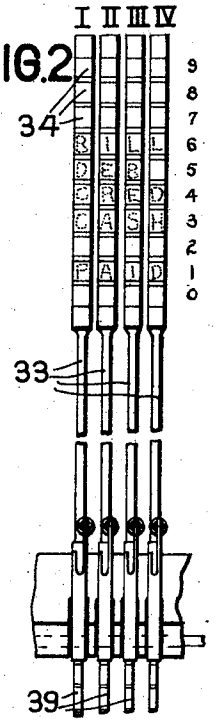
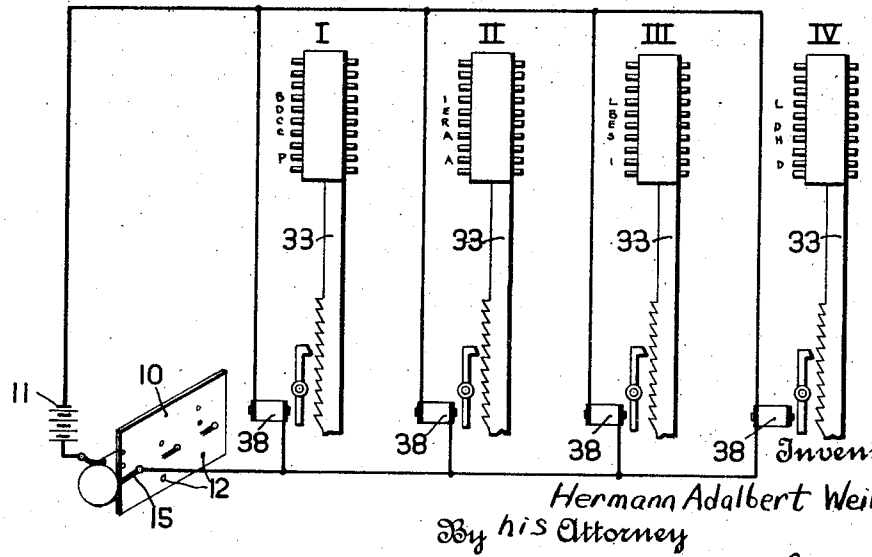


FIG. 3.



Inventor
Hermann Adalbert Weinlich
By his Attorney
W. M. Wilson

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UNITED STATES PATENT OFFICE

HERMANN ADALBERT WEINLICH, OF BERLIN, GERMANY, ASSIGNOR TO THE TABULATING MACHINE COMPANY, OF ENDICOTT, NEW YORK, A CORPORATION OF NEW JERSEY

PRINTING MECHANISM FOR ACCOUNTING MACHINES

Application filed March 6, 1928. Serial No. 259,412.

This invention concerns accounting machines and more particularly to printing mechanisms therefor provided for printing certain identifying data.

The main object of the present invention is to extend the field of usefulness of such printing mechanisms whereby they may be called upon when occasion requires, to print letters, words or abbreviations in addition to the regular numbers.

Another object of the present invention is to control the printing of words from a single controlling column.

It is a further object of the present invention to provide means whereby the simultaneous differential positioning of a series of type carrying members may be controlled from a single controlling column.

It is a further object of the present invention to provide means to control the desired positioning of a series of type carrying members from a single controlling column, such as a series of index point positions of a controlling card.

The present improvements have been shown for illustrative purposes in connection with an electrically controlled tabulator in which the analyzing mechanisms consist of series of brushes cooperating with individual contacts. A single row of brushes is usually provided to completely analyze each card, these brushes, of course, searching the several index point positions at differential times and differentially controlling the adding and printing mechanisms to enter items therein according to the differential time at which the circuit is made at the analyzing brushes.

The various groups of card columns represent different data such as items, classification, dates, etc. and in carrying out the present invention only one column is necessary for controlling the printing of words or abbreviations of more than one character.

The present improvements are applicable to machines operating either on stationary or moving cards and in connection with single or combinational hole systems but for the sake of illustration it has been shown as applied to a machine of the single index point type in which cards are adapted to be analyzed while in motion.

These and incidental objects which will be pointed out hereinafter will be clear from the following detailed description in which,

Fig. 1 is a view in side elevation of the preferred means for setting the printing type carriers and effecting the printing.

Fig. 2 is a view in side elevation of a group of the type carrying members associated with the word printing devices.

Fig. 3 is a diagrammatic representation of the control system shown in connection with the analyzing and controlling mechanisms.

The particular type of printing mechanism adapted to carry out the present invention does not concern the present improvements and any of the prior art constructions may be readily adopted. To more clearly comprehend the improvements they are shown in connection with a printing mechanism of the type embodied in the well known Hollerith tabulating machine, as exemplified in the Lake Patent No. 1,379,268, dated May 24, 1921 but such showing should be considered illustrative rather than restrictive.

The tabulator is well known and is fully shown and described in the patent referred to and as is well known when perforated cards 10 are passed through the machine one or more counters are operated to show the figures, or totals of the figures represented by the perforations in said cards.

Shafts 20 designates a shaft operable during listing operations to drive a cam 21 which in turn oscillates a lever 26 during each listing operation.

The ends of the oscillatory lever 26 are connected by links 29 with a cross head 30 movable over vertical rods 31 and imparts vertical movement thereto. Extending from the cross head 30 are arms carrying a bail 32 which extends through a plurality of slotted bars 33 equal in number to number of letters in the largest word to be printed and each carrying a series of ten sliding type bars 34 which carry at their ends the desired printing characters. Normally the

bars 33 are drawn upward by coil springs 35 connected to them through links and lever 36 and therefore are in contact with the bail 32 and follow the upward movement of the latter imparted by lever 26 until arrested by pawls 37 operated by the magnets 38, and engaging in one of a series of notches 39 in the side edge of the bars 33. The spacing of the notches 39 corresponds with the spacing of the movable type 34 and the movement of the bars under the influence of levers 26 is synchronous with the movement of the perforated cards through the machine. It will be apparent from the preferred circuit arrangement that when a perforation is encountered by a brush 15 in the tabulator, the series of magnets 38 will be energized and the type bars are all stopped at a point in their upward travel which brings the type corresponding to such perforations in the printing position and holds them there until after printing.

The series of magnets 38 are preferably connected in multiple and are energized by a source of current 11 when the circuit is completed through the perforations 12 in a particular card column of the card 10.

The cross head 30 has rearwardly-extending projections 40 with rollers which work in slots in plates or lever 41 pivoted at 42 and as the cross head rises these levers, by reason of the conformation of the slots, are forced back, thereby swinging a bail 43 to the left into engagement with pivoted spring actuated levers 44, forcing the same back and allowing a series of pivoted spring actuated printing levers 45 to swing away from the type bars carried by the plates or bars 33. At the limit of upward movement of the cross head 30, however, this bail 43 is turned down and slips off from the ends of levers 44 and these being suddenly released are thrown by their springs forward, thus driving the printing levers forward with sufficient force and momentum to strike either a type or the blank point on a type carrier. A type thus struck, strikes the paper 46 on a roller 47 and prints thereon the proper letter.

By the means above described it will be seen that every perforation 12 in a particular card column will cause to be set at the printing position and printed on a sheet a series of letters which make up the word to be printed, in addition to tabulating and printing the figures in the ordinary and usual way.

While a particular number of type bars and controlling elements have been shown the number is not considered the essence of the invention and may be changed to meet certain situations.

The invention has now been described in connection with a single operative embodiment thereof but it will be understood that many modifications will readily occur to 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:

1. In a machine of the class described comprising in combination, a plurality of type carrying members having a different series of type which in the same position represent words, and a single column controlling means adapted to control for each operation the same differential movements to bring different characters of a plurality of type carrying members at the printing line.

2. In a machine of the class described comprising in combination, a plurality of type carrying members having different series of type adjustable differentially to the same positions to effect the printing of words or the like, means for controlling at each operation the differential but same adjustment of a plurality of said type carrying members, and a common controlling mechanism associated with said means.

3. In a machine of the class described comprising in combination, a plurality of type carrying members having different series of characters which in combination denote words or the like, means for reciprocating a plurality of said members, means for differentially stopping said members at the same positions, and a common controlling mechanism for rendering a plurality of the last mentioned means effective simultaneously during the reciprocation of the type carrying members.

4. In a machine of the class described comprising in combination, a record controlling card having a plurality of columns, a series of type carrying members having different series of characters and each carrying a plurality of printing characters, and means whereby the differential positioning of a plurality of type carrying members is controlled from a single controlling column of the card.

5. In a tabulating machine including in combination, a record controlling card having a plurality of controlling columns, a plurality of reciprocable type carrying members having different series of type, means for differentially controlling a plurality of said type carrying members, said means being controlled from a single controlling column of the card.

6. The combination with a plurality of record effecting devices, a plurality of setting devices, a plurality of controlling devices operable together to control the differential but equal displacement of the plurality of record effecting devices, and means whereby the setting devices control the controlling devices.

7. The combination with a plurality of sets of character type each set being distinct from the other set, and each set being differentially movable to printing position, controlling elements, one for each set of type, and means representing a predetermined group of characters whereby a plurality of controlling elements are operable simultaneously to effect a differential but equal displacement of a plurality of sets of type.

8. In a machine of the class described the combination with a plurality of differentially adjustable type carriers representing for equal adjustments at the printing line different type, a plurality of stop devices therefor, and means for rendering said stop devices operable simultaneously to effect an equal adjustment of said plurality of type carriers.

9. In a machine of the class described the combination with a plurality of differentially adjustable type carriers, each carrying a plurality of printing characters, a plurality of controlling devices whereby said type carriers are adjusted in combination, and means comprising a record card having differentially positioned index points, each representing a plurality of characters for controlling the differential positioning of a plurality of controlling devices.

10. In a machine of the class described the combination with a plurality of type carriers, a controlling element comprising a record card having differentially positioned index points, and means whereby each index point controls the simultaneous positioning of a plurality of type carriers.

11. In a machine of the class described the combination with a plurality of type carriers each having a set of type, and record controlled means comprising a single index point for selecting a type in each of a plurality of type carriers.

12. In a machine of the class described, the combination with a plurality of type carriers, means for shifting said type carriers, controlling devices for effecting the differential positioning of a plurality of type carriers, and analyzing means correlated with a single column of a record card for controlling the operation of the controlling device.

13. In a machine of the class described, the combination with a record card analyzing means for analyzing the perforations of a record card, a group of type carriers and means controlled by said analyzing in response to a single perforation in said record card for controlling the differential positioning of a group of said type carriers.

14. In a machine of the class described, the combination with a record card having a column of differentially positioned index points, a group of type carriers adapted to be positioned under control of any one of said index points, and means for differentially adjusting said group of type carriers in accordance with the differential position of the index point on the record card.

In testimony whereof I hereto affix my signature.

HERMANN ADALBERT WEINLICH.