March 13, 1934. F. M. CARROLL 1,950,479

STOP DEVICE FOR TABULATING MACHINES

Filed Sept. 24, 1928

FIG. 1.

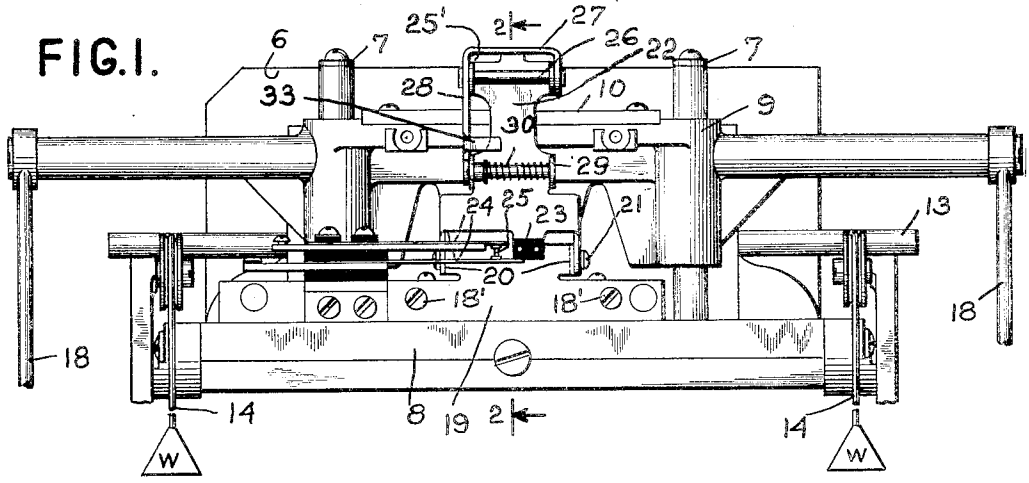


FIG. 2.

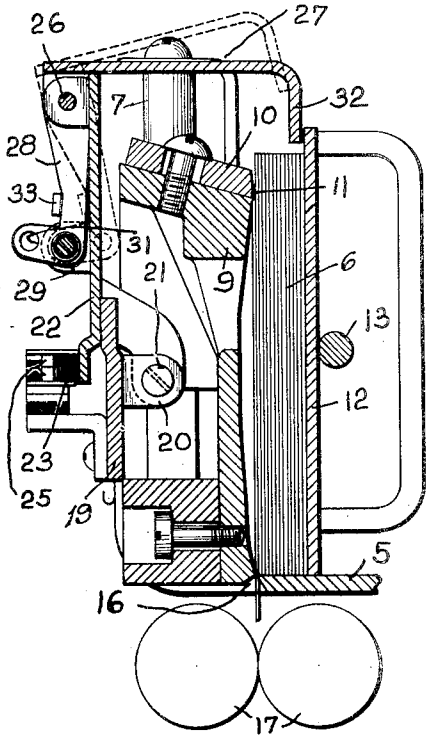
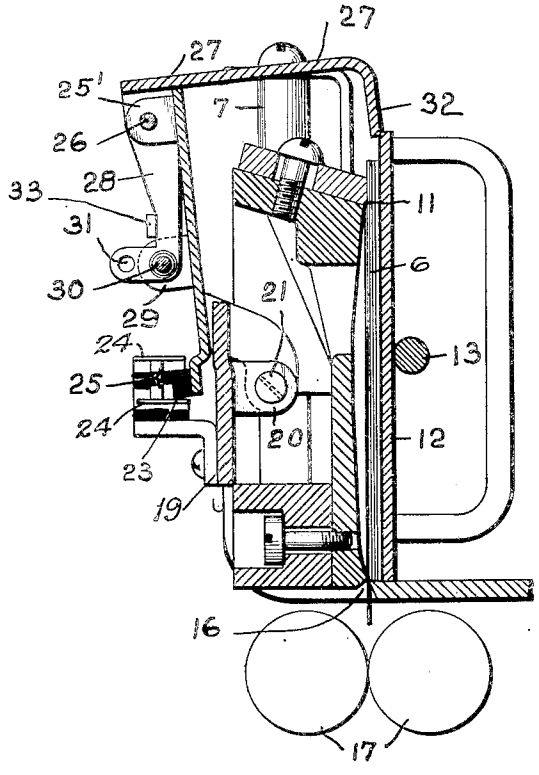


FIG. 3.



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UNITED STATES PATENT OFFICE

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STOP DEVICE FOR TABULATING MACHINES

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Application September 24, 1928, Serial No. 307,860

6 Claims. (Cl. 192—125)

This invention relates to tabulating machines and more particularly to machine control devices controlled by the presence or absence of record cards.

Tabulating machines as now constructed are provided with electrically controlled devices to suitably control the operation of the machine either as an incident to the passage of the last record card from the magazine or upon a change in group classification. In certain instances it may be desirable to inhibit certain machine operations prior to the exhaustion of the record cards in the magazine and the present invention is directed to the provision of means for providing for the above.

By way of explanation of the utility of the present improvements it may be desirable to merely tabulate or list the data represented by a stack of record cards which are not in their entirety receivable by the magazine and to thereafter obtain a total of such results. The present improvements prevent total printing operations which would naturally follow upon the cessation of feeding of the cards of each stack in the magazine. Prior to the listing of the last stack of cards the preventing means is manually rendered inoperative to permit a subsequent total printing operation which transpires as an incident to the listing of the last record card.

When tabulating cards with regard to their group classification the machine is ordinarily adjusted to institute a total printing operation as an incident to a change in classification. In the event that the complement of cards receivable by the magazine causes a split in a section or group of like classification, the machine will ordinarily institute a total printing operation as an incident to feeding the last record card of the split section, thus causing a total to be printed at an intermediate and usually objectionable point. The present improvement causes stoppage of the machine perior to analyzing the last card of a group permitting additional record cards to be placed in the magazine whereby machine operations will follow in the proper and required sequence.

It is then a broad object of the present invention to provide means controlled by the record cards in the magazine to suitably control machine operations.

It is a further object of the present invention to provide such means in the nature of electrical contacts the positions of which are suitably controlled by the record cards in the magazine.

More specifically it is an object of the present invention to provide an operating member which may be adjusted to such a position that when contacted by the magazine follower it will cause machine controlling contacts to be differently positioned.

Other objects and advantages will be obvious from the following particular description of one form of mechanism embodying the invention shown in the accompanying drawing in which:

Fig. 1 is a front view in elevation of the preferred form of the present invention.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is similar to Fig. 2 but shows some of the parts in partially operated position.

The side frames of the tabulating machine support a platform 5, upon which a stack 6 of record cards are placed on edge. Upon vertical guides 7 secured to a fixed frame portion 8 is mounted a vertically reciprocable crosshead 9 upon which is carried a picker plate 10 which overhangs at 11 or projects beyond the face of the crosshead a distance slightly less than the thickness of a card. The usual follower plate 12 is manually positioned to engage the last card in the stack to be fed and in contact therewith is a cross rod 13 which is held against the follower by weights diagrammatically designated by W, which are secured to the rod by cords 14 passing over pulleys 15, all of which is fully shown and described in the Hollerith Patent #685,608. The follower plate 12 exerts a constant pressure against the cards and holds them firmly so that when the crosshead descends from its highest point, the picker 10 will engage the top edge of the first card and carry it down through a throat 16 into cooperation with a pair of feeding rollers 17. The crosshead is actuated by the usual connecting rods 18 actuated in turn by crank disks driven by the usual tabulating motor (not shown).

The feeding rolls 17 then present the records singly to the analyzing devices, and when perforations or index points are sensed by analyzing brushes circuits are completed therethrough to control the setting of accounting and printing devices. These parts being of common form in the well known Hollerith tabulating machine require no detailed description. For details of construction and operation of the card feeding devices the patent to Hollerith #685,608 may be referred to while Lake #1,600,413 will give additional details as to the analyzing and register and printing controlling devices.

As fully explained in the prior patents, for example the patent to C. D. Lake, No. 1,600,413,

dated September 21, 1926, the record cards carry additional perforations in the nature of classification data, a change of which automatically conditions the machine for a total taking operation when the group classifications change. Since the magazine may accommodate only a limited number of cards the machine will automatically institute a total taking operation as an incident to analyzing the last card in the magazine, even though it may not be the last card in a classified group. Under other circumstances where record cards of a stack which more than fills the magazine are being merely tabulated without regard to classification a total print will be obtained upon analyzing the last card of each stack even though a total is desired only when the last card is analyzed. To prevent taking a total at intermediate points the following means is provided.

Attached by fastening means, such as screws 18' to the fixed frame 8, is a plate 19 having bent lugs 20. Pivotally mounted on said lugs by screws 21 is an upstanding plate 22 to which is fastened an insulating block 23 in contact with the lower one of a pair of contact carrying plates 24. The resiliency of the lower plate is normally adapted to retain contact points 25 closed and retain plate 22 in the position shown in Fig. 2. Plate 22 has a pair of ears 25' on which is pivoted by means of a pin 26 a plate 27 having a depending integral portion 28. Slidably mounted in ears 29 integral with plate 22 is a spring urged retaining pin 30, the enlarged pointed head of which is adapted to enter and register with one of two holes 31 formed in the depending portion 28 and thus determine the position of plate 27 with respect to plate 22.

When the plate 27 is in the position shown by full lines in Fig. 2 a downwardly extending portion 32 is in the line of contact with the upper portion of the follower 12 so that as record cards are fed singly to the analyzing devices the follower approaches the downwardly extending portion 32. Prior to the exhaustion of record cards in the magazine the contact of the follower 12 with portion 32 will, through the intermediate plate 27, cause plate 22 to be rocked about pivot pins 21 (see Fig. 3) thus depressing the lower contact blade and separating contact points 25. The contacts are preferably in the emergency stop circuit as fully explained in the prior patent to C. D. Lake, No. 1,379,268, patented May 24, 1921. Since the contacts will be retained separated the machine will come to a full stop thus permitting the operator to place an additional stack of record cards in the magazine. When the follower is moved aside out of contact with the depending portion 32 the resiliency of the lower contact blade 24 will cause the plate 22 to assume its normal vertical position, shown in Fig. 2.

When it is desired to disable the motor stopping means, when for example it is desired to take a total or stop the machine as an incident to tabulating the last record card, the plate 27 will be shifted to the dotted line position shown in Fig. 2, the shifted position being limited by the engagement of a lug 33 integral with the depending portion 28 with the face of plate 22, pin 30 now engaging a hole 31 to lock plate 27 in its shifted position, at which time the depending part 32 thereof is entirely out of the path of the follower 6. Thus normal operations of the machine may ensue.

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 to be limited therefore only as indicated by the scope of the following claims:

What is claimed is as follows:—

1. A device of the character described comprising in combination, a pair of contacts adapted to control machine operations, a shiftable member effective to adjust said contacts when the number of record cards in a magazine comprise a predetermined number, and means whereby said member may be rendered ineffective.

2. A device of the character described comprising in combination, a follower adapted to be positioned in accordance with the number of record cards in a magazine, a contact operating device having a part adapted to contact with said follower when the record cards comprise a predetermined number, and means for retaining said part out of cooperation with said follower.

3. A device of the character described comprising a follower adapted to be positioned in accordance with the number of articles in a magazine, a pivoted machine controlling device, means carried by said device engageable with said follower prior to the exhaustion of articles in the magazine for rocking said machine controlling device, and means whereby the last named means may be held out of engagement with said follower.

4. A device of the character described comprising, a follower coacting with one of the articles in a magazine stack, a pivoted machine controlling member, a device pivoted upon said member having a portion engageable by said follower prior to the exhaustion of articles in said magazine stack, and means whereby said device may be shifted to prevent its portion from being engaged by said follower.

5. A device of the character described comprising, a follower coacting with one of the articles in a magazine stack, a machine controlling member, a member adapted to have a position on said controlling member for engagement by said follower when said articles consist of a predetermined number, and means comprising a spring pressed plunger for holding the last named member in and out of operative relationship with the follower.

6. A device of the character described comprising, a follower coacting with one of the articles in a magazine, means for causing said follower to take positions in accordance with the number of articles in the magazine, a shiftable machine controlling device controlled by said follower and effective when the articles consist of a predetermined number, and means whereby said device may be rendered ineffective.

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