Oct. 20, 1959 A. A. DICKE 2,909,317

FUNCTION CONTROL MEANS FOR CALCULATING MACHINES

Original Filed March 22, 1951 2 Sheets-Sheet 1

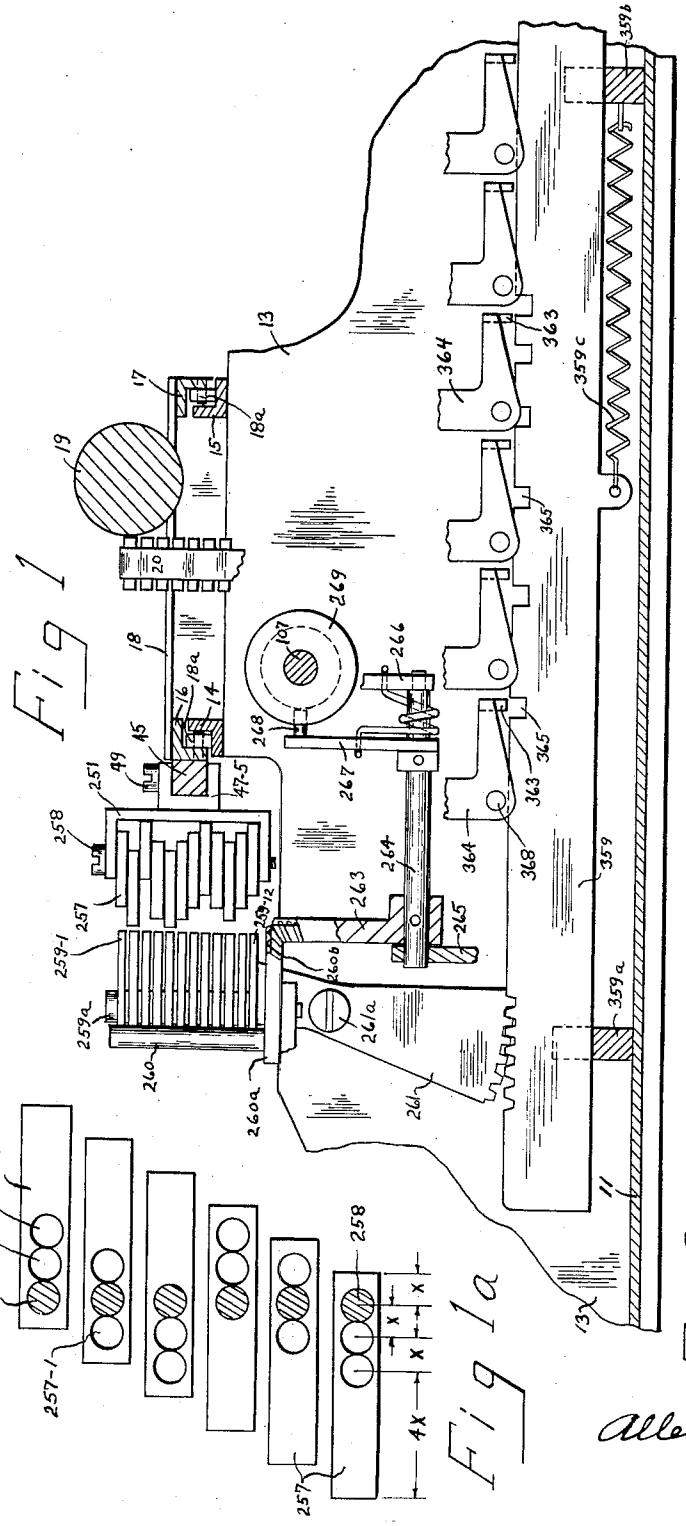


Fig 1

Fig 1a

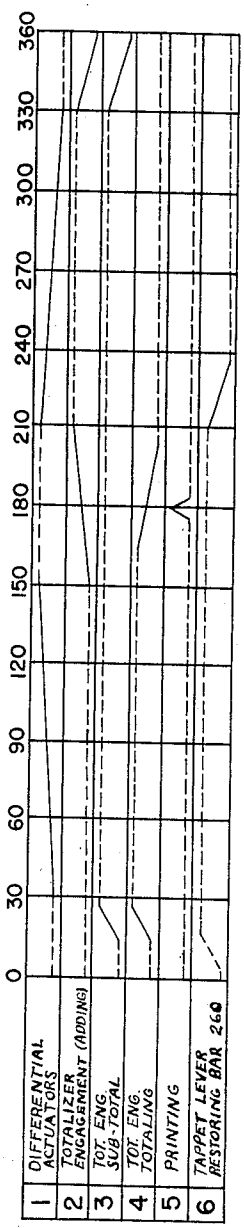


Fig 2

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Fig 3

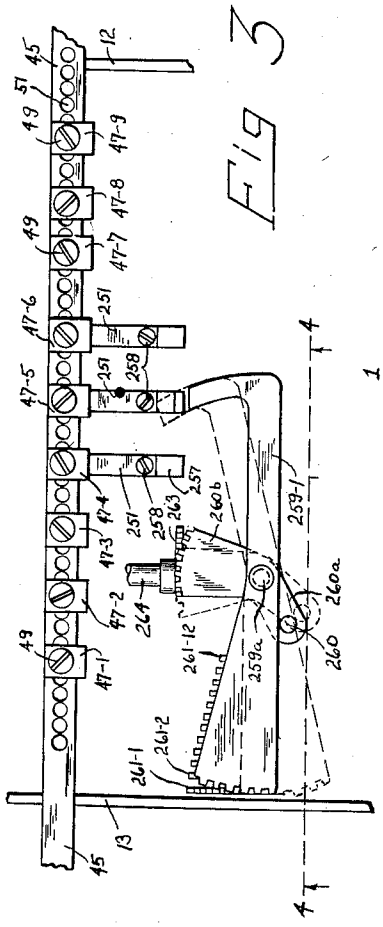
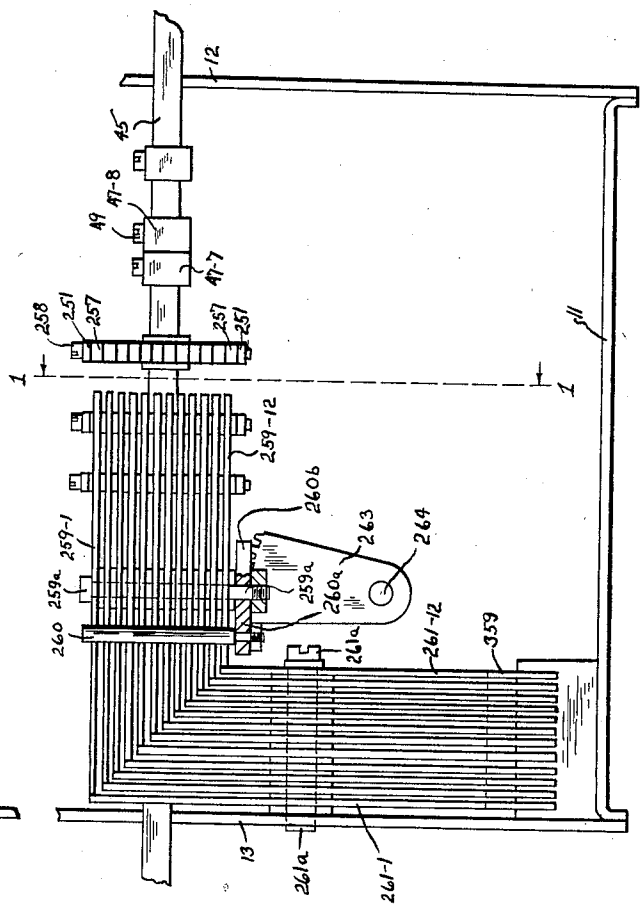


Fig 4



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FUNCTION CONTROL MEANS FOR CALCULATING MACHINES

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Original application March 22, 1951, Serial No. 216,943, now Patent No. 2,709,511, dated May 31, 1955. Divided and this application April 6, 1955, Serial No. 499,728

4 Claims. (Cl. 235—60.5)

This invention relates to function control means for calculating machines and is a division of application Serial Number 216,943, filed March 22, 1951, now Patent No. 2,709,511.

The invention is applicable to such machines having a platen carrying carriage traversed relative to printing elements for printing items in column formation.

An object of the invention is to provide improved means for automatically controlling functions performed by such machines, the selected function being dependent upon the carriage positions, and being determined by tappets on the carriage for each columnar position thereof, each tappet serving to arrest the advance of a feeler, such as a tappet lever, which lever is adapted to set a function control device.

Another object is the provision of an improved tappet which may be used to select one of a plurality of separate functions, whereby all of the tappets in the machine may be identical.

Another object is the provision of a tappet having a plurality of holes, or the like for receiving a positioning member, such as a clamping bolt, so that the selection of the hole will determine the function to be provided by the tappet.

Another object is to so form such tappets that each hole may provide for two functions, by turning the tappet end for end. In this way a tappet may be employed to provide for a number of functions twice the number of holes in the tappet.

By this arrangement the serviceman can readily set or reset the machine, in the field, for any desired function or functions for each carriage position.

Other objects will become apparent from the following description taken in connection with the attached drawings showing an illustrative embodiment of the invention and wherein:

Fig. 1 is a vertical longitudinal cross-section, on the line 1—1 of Fig. 4 of a machine illustrating one form the invention may take;

Fig. 1*a* is an enlarged detail view of a tappet for controlling machine functions, the tappet being shown in six possible effective positions;

Fig. 2 is a time chart;

Fig. 3 is a fragmentary top view of the machine shown in Fig. 1;

Fig. 4 is a fragmentary front elevation of the machine of Fig. 1.

Referring to said drawings, and particularly Figs. 1 and 4 thereof, the numeral **11** designates a bottom plate, and **12** and **13** designate, respectively, the right and left side plates of a machine incorporating the invention in one form. Numerals **14** and **15** designate, respectively, the front and rear carriage supporting rails which are shown in the form of angle bars. **16** and **17** are, respectively, front and rear carriage frame members also formed of angle bars. **18** is a carriage cross member, one being provided at each end and upon which the platen **19** or other device is supported. **18***a* designates say, four rollers

mounted on the carriage and running on the rails **14** and **15**. **20** designates generally type carrier mechanism which may be caused to print upon the platen. The carriage may be traversed by any known or suitable means.

Detachably carried on the front carriage frame member **16**, as by screws (not shown) is a stop bar **45** upon which are located a plurality of nine stop blocks **47–1** to **47–9**, although any other number than nine may be employed. These stop blocks are of C-shape, as shown in Fig. 1, and are preferably held in position by set screws **49** each received in one of a series of conical recesses **51** in the top of the stop bar **45** Fig. 3. Stop blocks **47** through cooperation with other means (not shown) serve selectively to determine the various columnar positions of the carriage. This may be means such as those shown in application S.N. 216,943 or any other known suitable means.

Referring to Figs. 1, 3 and 4, each of the stop blocks **47–1** to **47–9** carries suitable tappets for controlling various functions of the machine in accordance with the columnar position of the carriage. In the form shown, this comprises a U-shaped tappet support bracket **251**. Mounted between the horizontal arms of said bracket are a plurality of tappets **257** (twelve being shown) preferably formed as shown enlarged in Fig. 1*a*. Each tappet is formed with three holes **257–1**, **257–2** and **257–3**, one of which receives the clamping bolt **258**. Since either end of the tappets may point forwardly each tappet may be in one of six effective positions. Each tappet serves to control the position of the respective one of the twelve tappet levers **259** pivoted at **259***a*. Normally all the tappet levers will be moved to withdrawn position shown in full lines in Fig. 3 by the universal restoring bar **260**, operated by the main operating mechanism. This occurs at about 210° of movement of shaft **107** (Fig. 2, line 6). However, the bar **260** will be moved to the dotted line position of Fig. 3 at the beginning of each machine operation permitting the tappet levers **259** to move rearwardly to "feel" the tappets, and take a position determined by the location of its related tappet. Each tappet lever **259** is intergeared, as shown, at its left end with the upper end of an associated vertical lever **261** (Figs. 1 and 4) pivoted on the pin **261***a* carried by a fixed part of the machine such as the left side frame **13**. Its upper end is formed as a gear sector meshing with the gear sector on the left end of its associated lever **259**.

The vertical levers **261** serve to set suitable function controlling members **359**. These members may conveniently be control slides such as the horizontal control slides shown in Figs. 2, 10, 11, 12, 13, 29 and 88 of William S. Gubelmann U.S. Patent 2,226,919. By forming such slides, say twelve in number in the present machine, with suitable notches such as **365** any desired function control can be secured by using, for example, mechanism such as disclosed in said patent.

It is contemplated that the following functions may be controlled by the tappets on the carriage and the mechanism controlled thereby:

Add Counter 1
Subtract Counter 1
Sub Total Counter 1
Total Counter 1
Add Counter 2
Subtract Counter 2
Sut Total Counter 2
Total Counter 2, etc., for any number of totalizers
Return carriage to No. 1 position
Move carriage to No. 2 or any other position
Split printing at preset position
Cause Non printing
Non print Cents

Non print Amount
Non print All
Print Keyboard Date
Print Day Only
Print Month and Day
Print Month, Day and Year
Disable Automatic Tabulation
Tabulate One Column
Tabulate Skip One Column
Tabulate Skip Two Columns
Tabulate Skip Three Columns
Open Carriage Throat
Feed Paper
Feed Paper and Open Throat
Automatic Cycling

and such other functions as may be required.

Cooperating with the control slides **359** are a plurality of cross-fingers **363** each forming a part of a bail **364** pivoted at **368**. The construction whereby each bail **364** controls the function of a part of the machine may be the same as in said Patent 2,226,919.

I will be noted that the levers **259** will be operated through the same angle by an equal difference in tappet face position, but that the gear sections of the different levers **259** will move through distances proportional to their distances from the axis of pivot **259***a*. By placing the pivot **261***a* of the levers **261** the same distance from the gear segments of levers **261** as the respective gear segments of levers **259** are from pivot **259***a* the levers **261** will, respectively, receive the same angular movement as the levers **259** and slides **359** will receive the same movement irrespective of with which lever **261** they are connected. Therefore, the control slides **359** can be made the same irrespective of the position in which they are to be used. This feature would, of course, be equally desirable in the case where the tappet levers are mounted for oscillation about a horizontal axis transverse to the machine.

The oscillation of the tappet lever restoring bar **260** may be effected in various ways. In the form shown the bar **260** is carried by a lever **260***a* having a rearwardly extending bevel gear sector **260***b*. Meshed therewith is shown a bevel gear sector **263** fixed to the horizontal shaft **264** journaled in brackets **265** and **266** fixed to the frame of the machine. Said shaft carries an upwardly extending arm **267** having a projection **268** cooperating with a cylindrical cam face on the disc **269** carried by the shaft **107** which is the main operating shaft of the machine. An equally effective way to restore the slides **359**, gear sectors **261** and tappet levers **259** would be to move the slides to the left by a universal restoring bar (not shown) operated by the main operating mechanism.

It will be noted that the constructions shown and described will serve admirably to accomplish the objects stated above. It is to be understood, however, that the constructions disclosed above are intended merely as illustrative of the invention and not as limiting as various other modifications therein may be made without departing from the invention as defined by a proper interpretation of the claims which follow.

I claim:

1. In a calculating machine of the type having a frame member, a carriage translatable relative to said frame member, a platen on said carriage, printing mechanism for printing on paper on said platen and a general operating mechanism serving to operate said printing mechanism, the combination of a plurality of unitary function control tappet structures mounted on the carriage for movement therewith, each tappet structure comprising a bracket, a bolt carried by the bracket and at least one tappet, said tappet being an elongated plate with a hole therein for said bolt, said hole being so spaced from the ends of said tappet that the distance from one end to the center of the hole is a multiple of said distance from the other end.

2. In a calculating machine of the type having a frame member, a carriage translatable relative to said frame member, a platen on said carriage, printing mechanism for printing on paper on said platen and a general operating mechanism serving to operate said printing mechanism, the combination of a plurality of unitary function control tappet structures mounted on the carriage for movement therewith, each tappet structure comprising a bracket, a bolt carried by the bracket, and at least one tappet, said tappet being an elongated plate with a plurality of holes therein for said bolt, the said holes being so spaced from each other and the ends of the tappets that the distance from the ends to the centers of the holes are multiples of the distance from the center of one of said holes to one of its ends.

3. An article of manufacture, comprising a tappet for use in a calculating machine of the type having a frame member, a carriage translatable relative to said frame member, a platen on said carriage, printing mechanism for printing on paper on said platen and a general operating mechanism serving to operate said printing mechanism, said tappet being adapted for mounting on the carriage for movement therewith, said tappet comprising an elongated plate with a mounting hole therein, said hole being so spaced from the ends of said tappet that the distance from one end to the center of the hole is a multiple of said distance from the other end.

4. An article of manufacture, comprising a tappet for use in a calculating machine of the type having a frame member, a carriage translatable relative to said frame member, a platen on said carriage, printing mechanism for printing on paper on said platen and a general operating mechanism serving to operate said printing mechanism, said tappet being adapted for mounting on the carriage for movement therewith, said tappet comprising an elongated plate with a plurality of mounting holes therein, the said holes being so spaced from each other and the ends of the tappet that the distance from the ends to the centers of the holes are multiples of the distance from the center of one of said holes to one of its ends.

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