

Sept. 13, 1932.

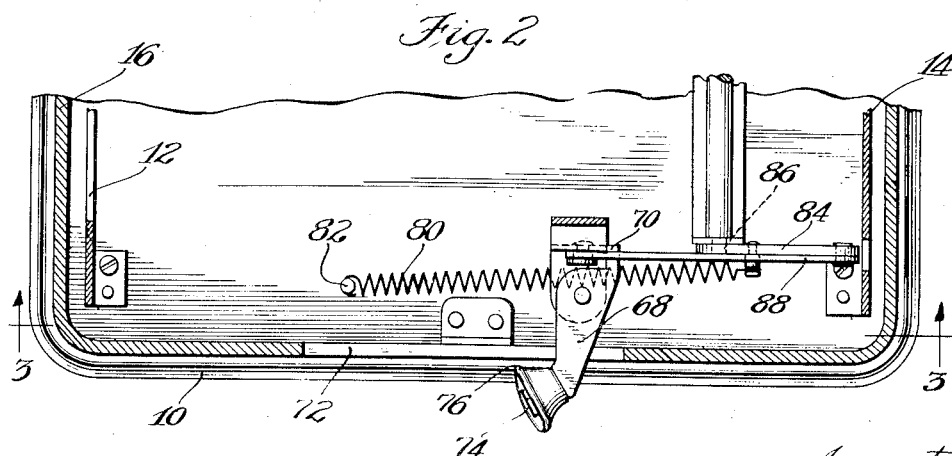
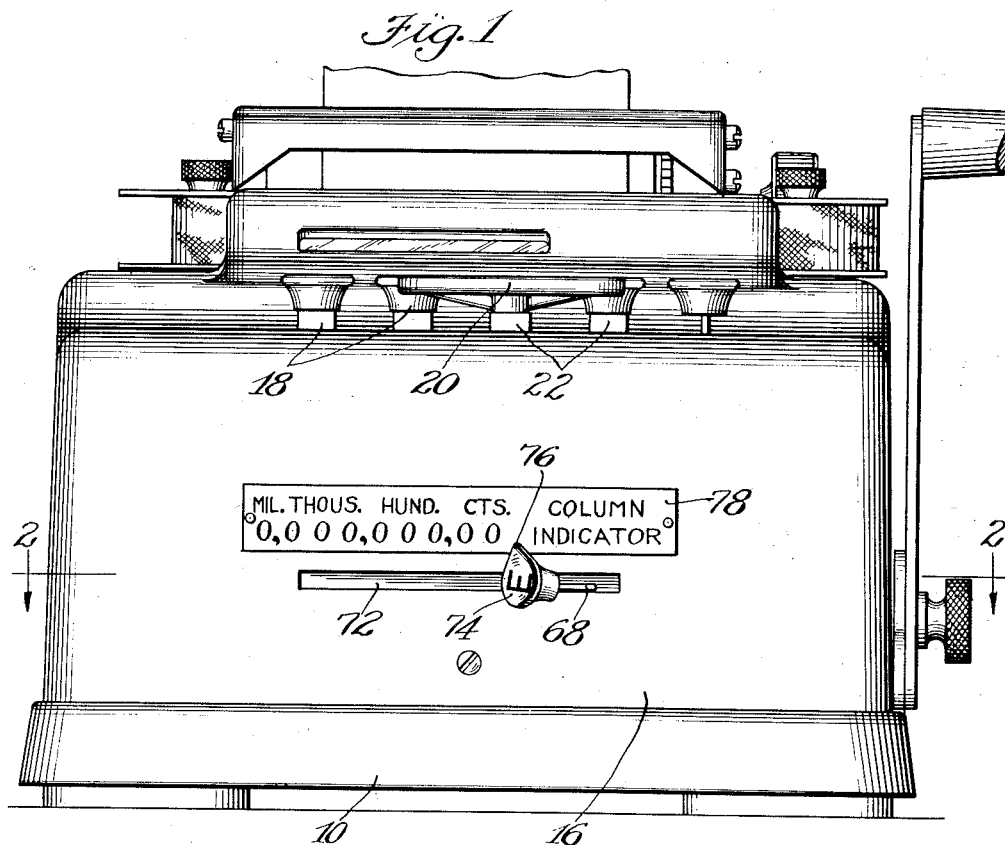
T. O. MEHAN

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ERROR KEY MECHANISM FOR ADDING MACHINES

Filed Feb. 20, 1930

2 Sheets-Sheet 1



Inventor:
Thomas O. Mehan.

By Williams, Bradbury, McCaleb & Hinkle
Atty's.

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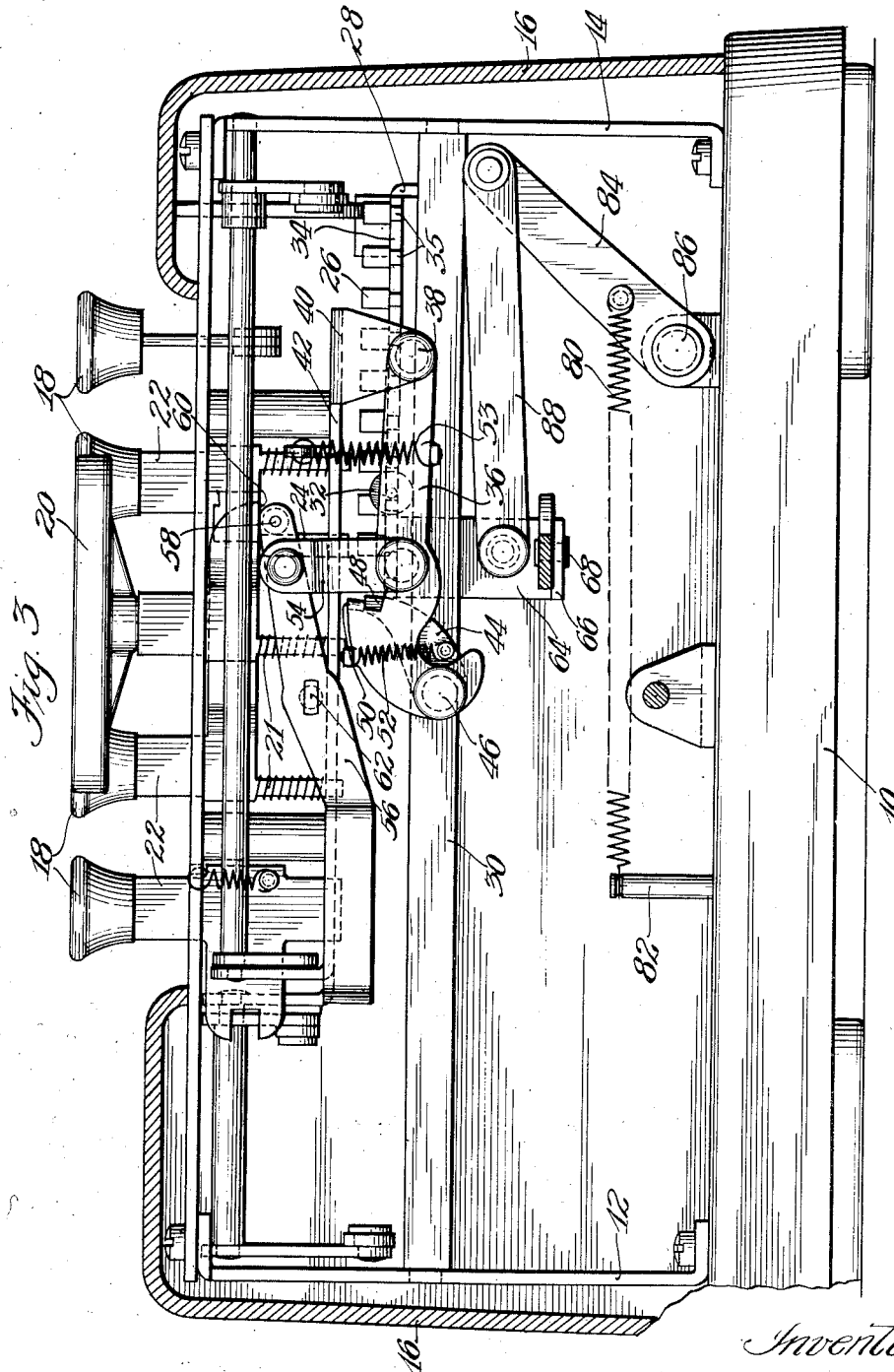
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Atty.s.

UNITED STATES PATENT OFFICE

THOMAS O. MEHAN, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
REMINGTON RAND, INC., A CORPORATION OF DELAWARE

ERROR KEY MECHANISM FOR ADDING MACHINES

Application filed February 20, 1930. Serial No. 429,920.

My invention relates generally to adding machines of the ten-key type and more particularly to means for indicating the columnar position of the stop carriage and to the provision of simple means for selectively setting the stop carriage.

It is an object of my invention to provide an improved combined carriage setting and carriage position indicating key.

A further object of my invention is to provide an improved means for facilitating the use of a ten-key adding machine in multiplying and dividing operations.

Other objects will appear from the following description, reference being had to the accompanying drawings, in which:

Fig. 1 is a front elevation of an adding machine incorporating my invention;

Fig. 2 is a sectional view of the front portion thereof taken on the line 2—2 of Fig. 1; and

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1.

The machine comprises the usual base 10, upon which the side frames 12 and 14 are supported, and is enclosed in the customary casing 16. This machine is of the ten-key type, having the usual numeral keys 18 and a zero key 20 suitably supported for vertical reciprocations, being held in their upper positions by springs 21. The numeral key stems 22 each have a downward projection 24 adapted to cooperate with one row of the plurality of rows of stops 26 carried by a carriage 28. The latter is mounted for transverse reciprocable movement on the usual guides, one of which is the rail 30, and has the usual rollers 32 to reduce friction. An escapement rack 34 secured to the carriage has forwardly projecting teeth 35 cooperable with an escapement mechanism comprising a lever 36 pivoted at 38 to a lug 40 depending from a plate 42 rigid with the machine frame, and a pawl 44, pivotally secured adjacent the end of the arm 36 by stud 46, and having its toe 48 held against a lug 50 bent rearwardly from the arm 36 by tension spring 52. The arm 36 is normally held in its upper position, as shown in Fig. 3, by a spring 53, and is adapted to be swung downwardly by a link 54, one end of which is pivoted to the arm 36 and the other end of which is pivoted to a lever 56. The lever 56 forms the arm of a bail, the cross bar 58 of which lies beneath shoulders 60 formed on each of the digit key stems 22 so that said bail will be swung clockwise about its pivot 62 upon the depression of any one of the numeral keys.

A bar 64 is secured to the carriage and has a forwardly projecting portion 66 to which an error key stem 68 is pivotally connected, the stem having a lug 70 adapted to cooperate with the vertically extending portion of the bar 64 and thus limit its counter-clockwise movement (Fig. 2). The stem 68 normally projects through an elongated horizontal slot 72 formed in the casing 16, and at its outer end has, detachably secured thereto, a key-button 74 which has an upwardly projecting point 76 adapted to register with a column indicating scale 78 secured to the casing 16.

The carriage is pulled to the left (Fig. 3), by a spring 80, one end of which is anchored to a pin 82 secured to the base 10 and the other end of which is connected to a lever 84 pivoted to the base 86. A link 88 has one end pivotally connected to the upper end of the lever 84 and its other end pivotally joined to the vertical portion of the bar 64. The spring 80 thus acts to move the carriage 28 to the left, such movement being normally prevented by the engagement of one of the teeth 35 on the escapement rack 34 with the pawl 44.

Upon depression of any one of the numeral keys 18 or zero and spacing key 20, the lever 56 will be rocked clockwise, thereby swinging the escapement arm 36 counter-clockwise and permitting the end 48 of the pawl 44 to engage beneath one of the teeth on the escapement rack 34. Upon release of the key it will be forced upwardly by its spring 21 and by the spring 53, the latter spring also swinging the lever 36 clockwise. The pawl 44 will, however, rest beneath one of the teeth of the escapement rack 34, and, as the lug 50 is raised from its position to the left of the tooth, the spring 80 will move the carriage to the left one step, whereupon the toe 48 of

the pawl 44 will engage the left face of the next tooth of the escapement rack. The error key stem 68 will, of course, move to the left with the carriage and the point 76 of its key button will indicate the columnar position of the carriage. If an error has been made by the depression of the incorrect key, said error may readily be corrected merely by pushing the error key to the right one step, whereupon the incorrectly set stop 26 will be cammed upwardly in the usual manner.

The error key shown may by a single manual operation be used to clear entirely the stop pin set up, or may be used to re-set any number of the last set stop pins to normal position. It is thus a great convenience when the machine is used for multiplication and division. Since the key button 74 is detachable from its stem 68, the stem may be swung inwardly so as not to project through the slot 72 and thus the key stem does not interfere with the removal of the casing 16.

The invention is capable of wide variation within equivalent limits and I contemplate such variation as may be desirable or useful in the particular adaptation of the invention shown, or in its adaptation to other machines. I do not restrict myself in any unessential particulars, but what I claim and desire to secure by Letters Patent is:

1. In an adding machine having a reciprocable stop carriage, the combination of a casing having an elongated slot formed therein, an indicator scale on said casing adjacent said slot, an error key stem pivotally secured to the stop carriage and projecting through said slot, and a key button removably secured to said stem and having a pointer cooperating with said indicator scale, said error key stem being manually pivotable through said slot upon removal of said key button thereby to permit removal of said casing.

2. In an adding machine having an apertured casing, the combination of a stop carriage reciprocable within said casing, a stem pivotally secured to said carriage and normally projecting through said aperture, means to limit the pivotal movement of said stem, an indicating scale on said casing adjacent said aperture, and a finger piece detachably secured to said stem and having a pointer for cooperation with said scale, whereby said finger piece may be removed and said stem swung inwardly through said aperture to permit removal of said casing.

In witness whereof, I hereunto subscribe my name this 17th day of February, 1930.

THOMAS O. MEHAN.