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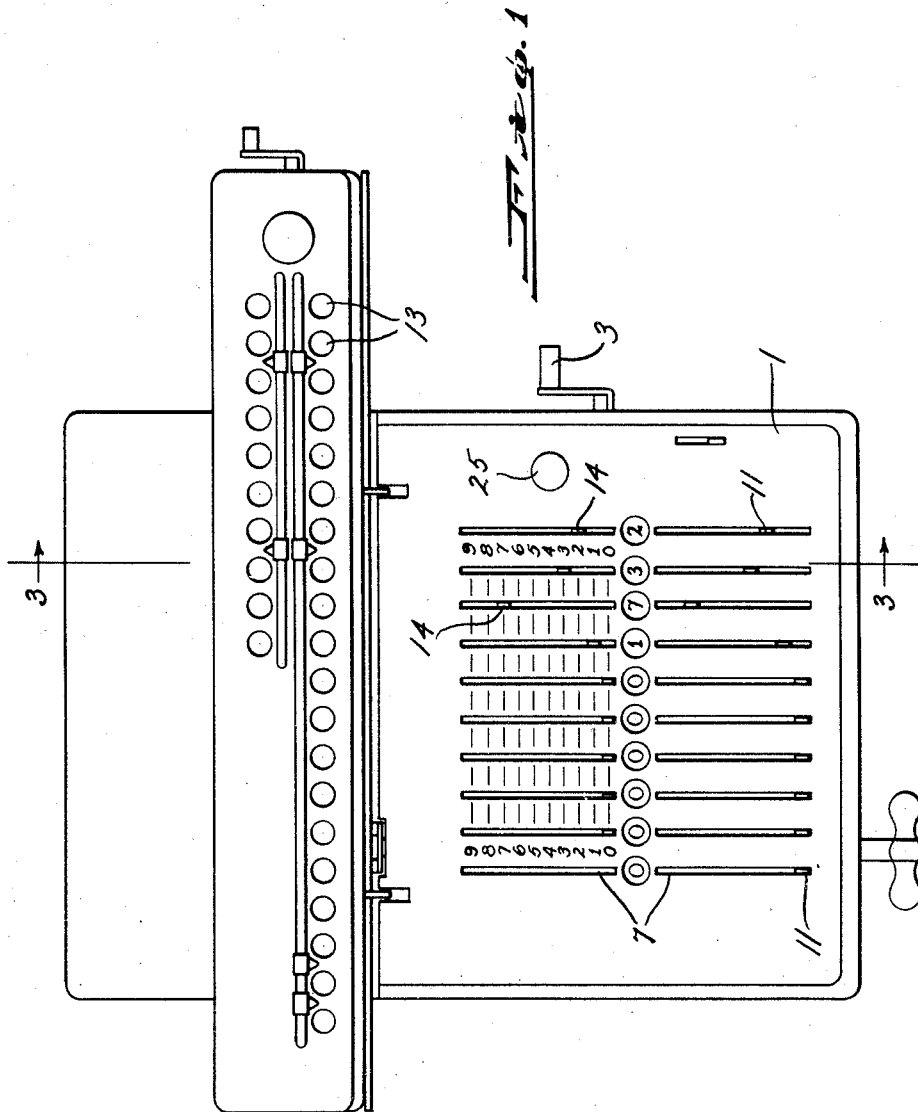
E. F. BRITTEN, JR

1,965,879

CALCULATING MACHINE

Filed March 13, 1934

4 Sheets-Sheet 1



INVENTOR

Edwin F. Britten, Jr.

BY

Stuart Hilder

ATTORNEY

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E. F. BRITTEN, JR

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4 Sheets-Sheet 2

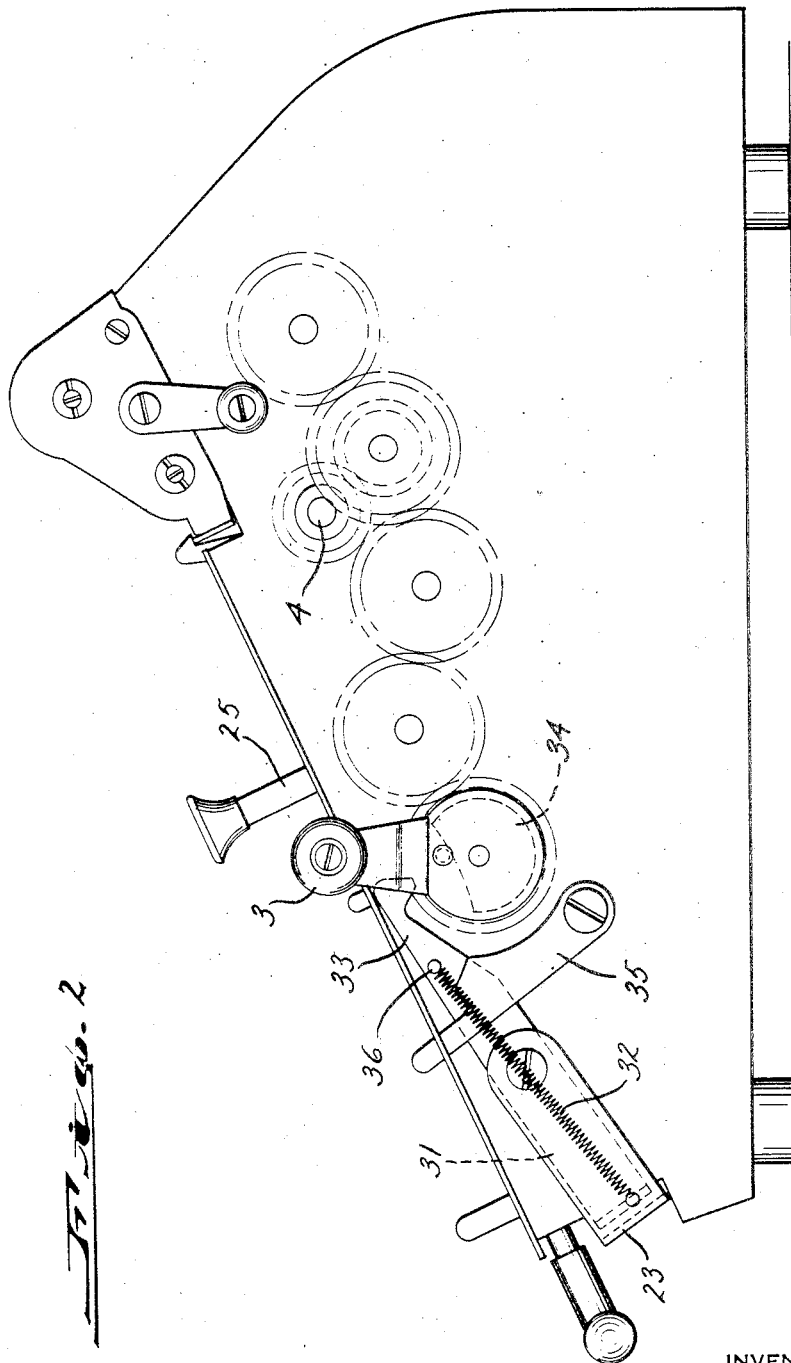


Fig. 2

INVENTOR

Edwin F. Britten, Jr.

Stuart Hilder

ATTORNEY

July 10, 1934.

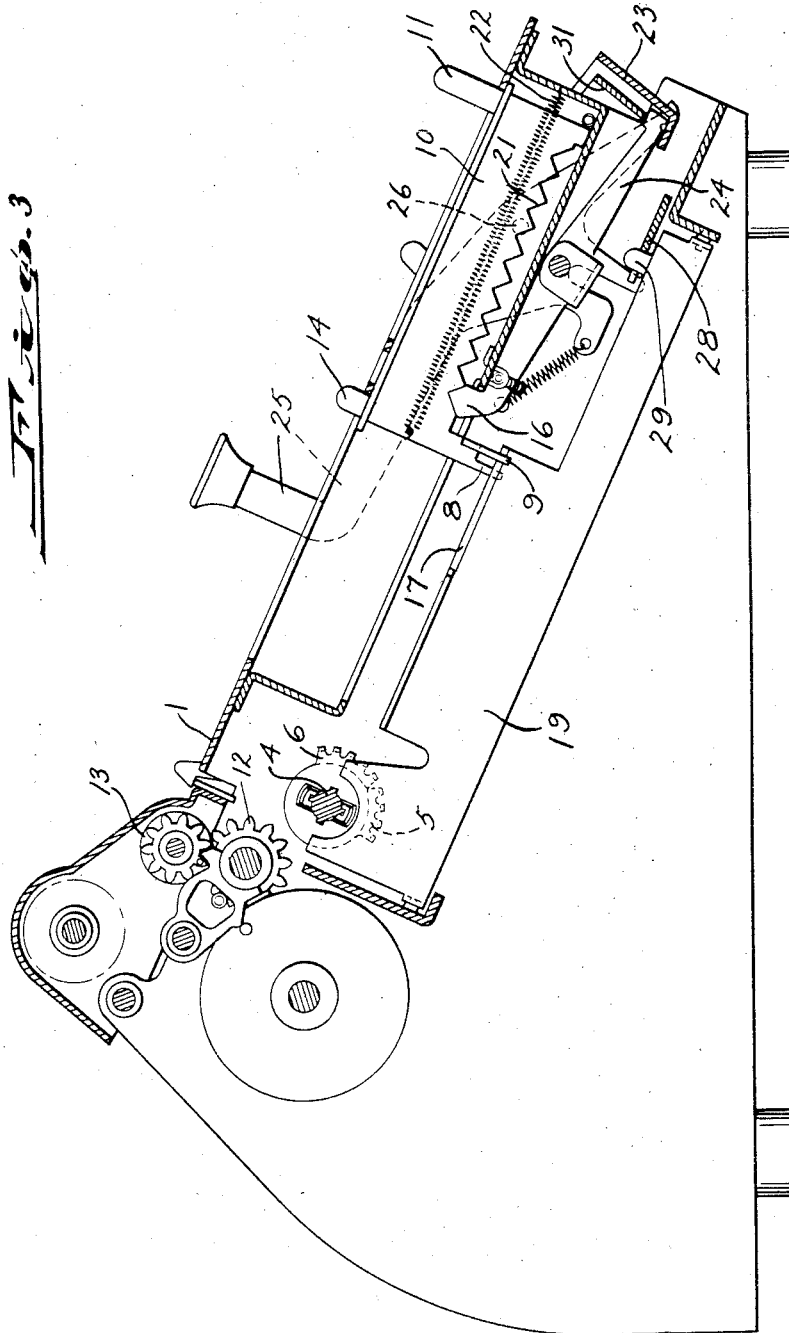
E. F. BRITTEN, JR

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INVENTOR

Edwin F. Britten, Jr.

BY

Stuart Kilder

ATTORNEY

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E. F. BRITTEN, JR

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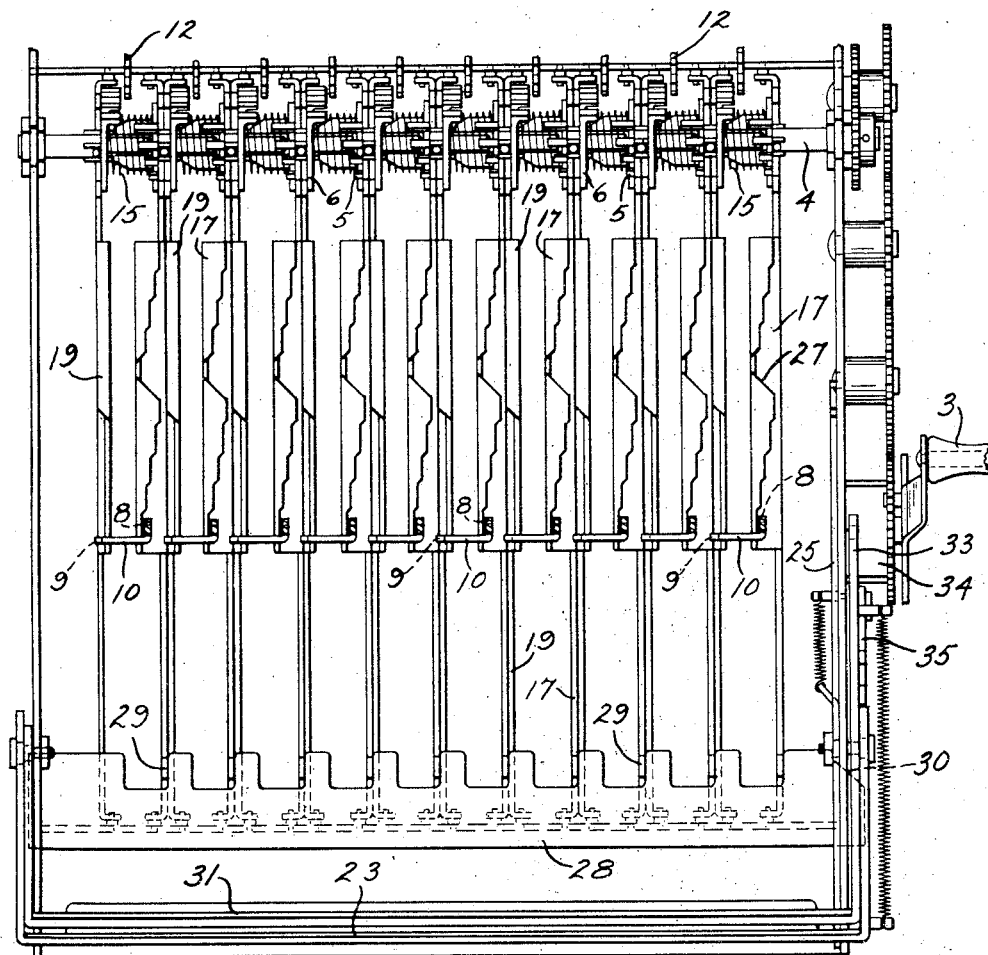


Fig. 4

INVENTOR

Edwin F. Britten, Jr.

BY

Stuart Hilder

ATTORNEY

UNITED STATES PATENT OFFICE

1,965,879

CALCULATING MACHINE

Edwin F. Britten, Jr., Maplewood, N. J., assignor to
Monroe Calculating Machine Company, Orange,
N. J., a corporation of Delaware

Application March 13, 1934, Serial No. 715,293

1 Claim. (Cl. 235—145)

The invention has relation to calculating machines and more particularly to improvements in the digit selecting means thereof.

The digit selecting mechanism of the well known Monroe calculating machine, the essential features of which are disclosed in U. S. Patent 980,888, issued to F. S. Baldwin on June 16, 1908, and in U. S. Patent 1,399,652, issued to E. E. Phinney on December 6, 1921, is commonly set to digit selecting position by means of a bank of depressible keys. The essential portions of this selecting mechanism could, however, be set by the operation of a series of slides, in accordance with a well known arrangement. The present invention relates to improvements in a slide set digit selector mechanism of this character, whereby a convenient means for restoring the slides to zero or inactive position may be employed without appreciably loading up the slides or rendering their adjustment difficult.

In the accompanying drawings illustrating the invention:

Fig. 1 is a plan view of a calculating machine embodying the invention.

Fig. 2 is a right side elevation, with the casing removed.

Fig. 3 is a section, taken on line 3—3 of Fig. 1.

Fig. 4 is a plan view of the selector bails and differential actuator gears.

In these drawings, numeral 4 designates a rotary shaft, on which are mounted pairs of differential actuator gears. The gear 5 of each pair is provided with four teeth of graded lateral extent, and the cooperating gear 6 of each pair is provided with five teeth of even length. The gears 5 and 6 are adapted to be moved along shaft 4, to bring the desired number of gear teeth into the plane of an intermediate gear 12, meshing with the gear of a numeral wheel 13.

The gears 5 and 6 having been set as desired, shaft 4 is rotated to advance the numeral wheels 13 in accordance with the settings of the differential actuator gears, in the usual manner. The numeral wheels 13 are shown as mounted in a transversely shiftable carriage, movable with relation to the selecting mechanism to increase or decrease the value of previous registrations, in the well known manner.

A spring 15 is inserted between each pair of gears 5 and 6, said spring serving to hold the gear 5 in contact with a bail 17 and the gear 6 in contact with a bail 19, these bails being adapted for lateral rocking movement to set the gears 5 and 6 toward each other along shaft 4.

The upper edges of these bails are laterally off-

set, as shown in Fig. 3, these offsets being graduated to correspond with the graduated teeth of the differential actuator gears. The upper offset edges of each pair of bails 17, 19 are engaged between downwardly extending projections 8 and 9, of a setting plate 10, mounted for sliding movement longitudinally of the bails, and manually settable along a numbered scale of the top plate 1 by means of the lug 11, extending through a slot of said plate. A second lug 14, moves along the figures of the scale, and the slide may also carry a second numbered scale, readable through openings in the plate 1.

In Figs. 3 and 4 the plates 10 are shown standing in the zero position, wherein none of the teeth of gears 5 and 6 will be in mesh with the intermediate gears 12.

Assuming that the right hand plate 10 (Fig. 4) is moved upwardly, it will be obvious that the first step of upward movement will bring the projection 8 in contact with the shoulder of the first graduation of bail 17, thereby moving said bail one step to the left, and bringing one tooth of the related gear 5 into the plane of its intermediate gear 12. Further movement of plate 10 will similarly bring two, three and four teeth of gear 5 into registering position. The next step of movement of plate 10 will allow gear 5 to move back out of registering position, under the influence of spring 15, and at the same time projection 9 will engage the shoulder of the graduation of bail 19, rocking said bail and bringing the five teeth of gear 6 into the plane of the intermediate gear 12. Further upward movement of plate 10 will maintain gear 6 in registering position and will move gear 5, one, two, three and four steps, so that the gears 5 and 6 collectively, will serve to register six, seven, eight and nine on the numeral wheels 13.

The setting plates 10 are adapted to be located accurately in any one of their ten set positions by means of spring actuated pawls 16 (Fig. 3) engaging serrated lower surfaces 21 of said plates.

In order to clear the selecting mechanism, that is to say, in order to bring all of the slides 10 to their zero positions, retraction springs 22 connect the plates with the forward frame of the machine, and means are provided for lifting all of the pawls 16 out of engagement with the serrations 21. For this purpose a bail 23 is provided with a flange underlying the forward arms 24 of the pawl 16, said bail being engaged by a key lever 25, fulcrumed at 26 and manually operable to lift the bail 23 and disengage the slides 10 from the pawls 16.

It will be noted that in the retraction of the plates 10 by springs 22, the movement along the graduations of the bails 17 and 19 will be unobstructed by the shoulders of the graduated portions, except that in passing from five to four setting position an abrupt shoulder 27 of bail 17 will be encountered by projection 8. In order that shoulder 27 may not load up the return movement of plate 10 upon depression of the clear key, thus necessitating unduly strong springs 22 and pawls 16 having an unduly stiff spring action, means are provided for rocking the bails 17 to the left during the clearing action. This means consists of a transversely slidable plate 28 having lugs engaging upstanding lugs 29 of the bails 17, plate 28 having a cam surface 30 engageable by the key lever 25 in the clearing movement.

In order to positively force the plates 10 into precise set position before the machine is operated, a bail 31 is arranged to overlie the forward arms 24 of the pawls 16, said bail being normally held in its upper position by spring 32 (Fig. 2). Bail 31 at its right hand end is provided with an arm 33 extending forward into position to be engaged by a locking disk 34, fast with one of the gears of the drive train for the actuator shaft 4. Upon movement of this drive train, as by manipulation of the crank

handle 3, locking disk 34 will force bail 23 against the forward arm 24 of the pawls, forcing said pawls upward unto full engagement with the serrations 21 of plates 10, and holding them in such position during the registering movement of the gears 5 and 6.

A latch 35 (Fig. 2) may be provided, said latch being adapted to engage a pin 36 of the arm 33 of bail 31, said latch when thrown into engaging position serving to lock the slides 10 in their adjusted positions and thereby to maintain such adjustment and prevent accidental displacement of the slides.

I claim:

In a calculating machine, the combination with digit selecting mechanism including a series of pivoted setting bails provided with graduated surfaces, differential actuators, springs adapted to hold said actuators in contact with said bails, plates slidable in contact with the graduated surfaces of said bails, restoring springs for said plates, and spring locator pawls engaging said plates; of a clear key, a bail operable by said key and adapted to release the locator pawls, and a slide operable by said key and adapted to move the setting bails out of contact with the slidable plates.

EDWIN F. BRITTEN, Jr.