

CALCULATOR.

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Patented Mar. 9, 1909.

4 SHEETS—SHEET 1.

914,741.

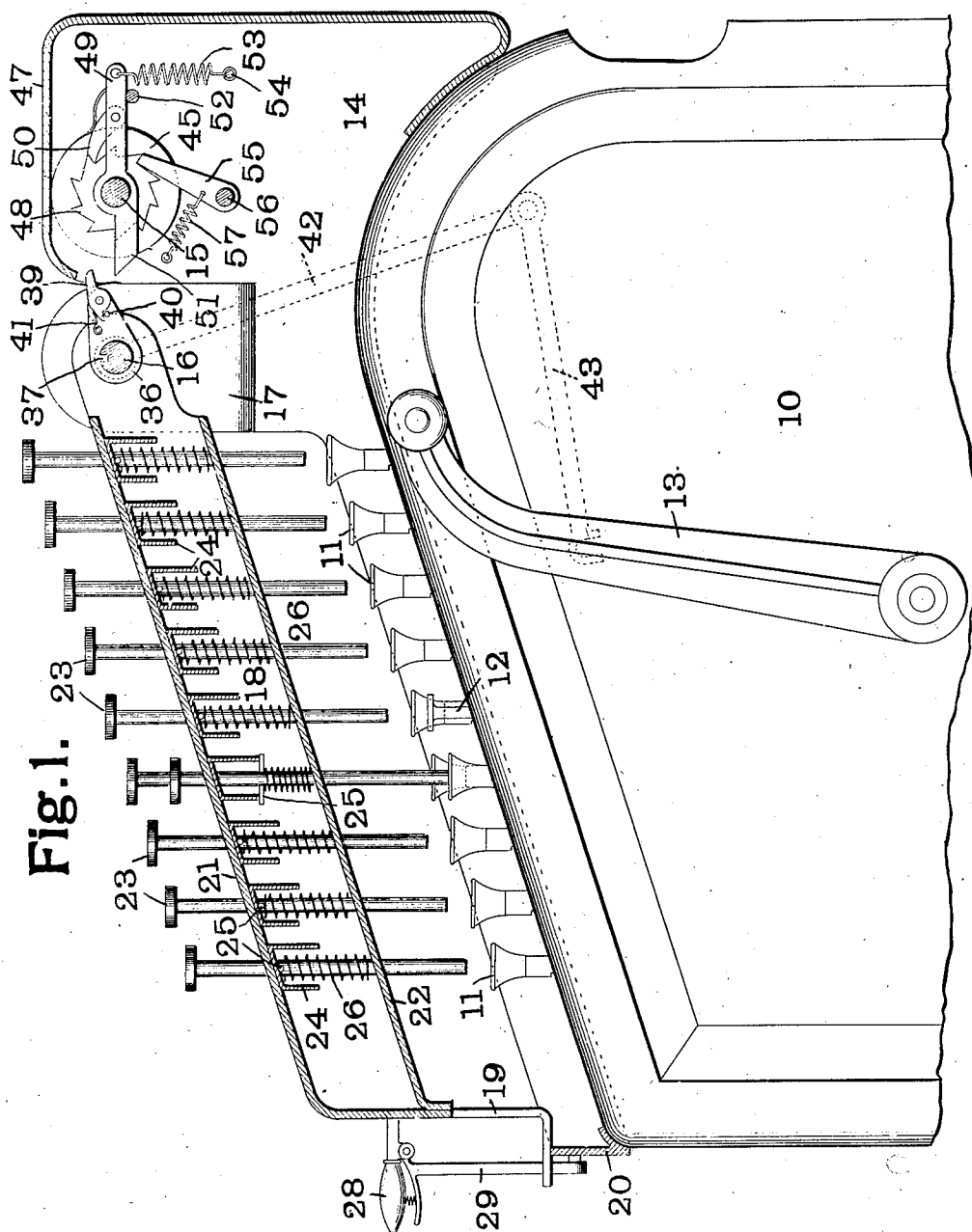


Fig. 1.

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 4 SHEETS—SHEET 2.

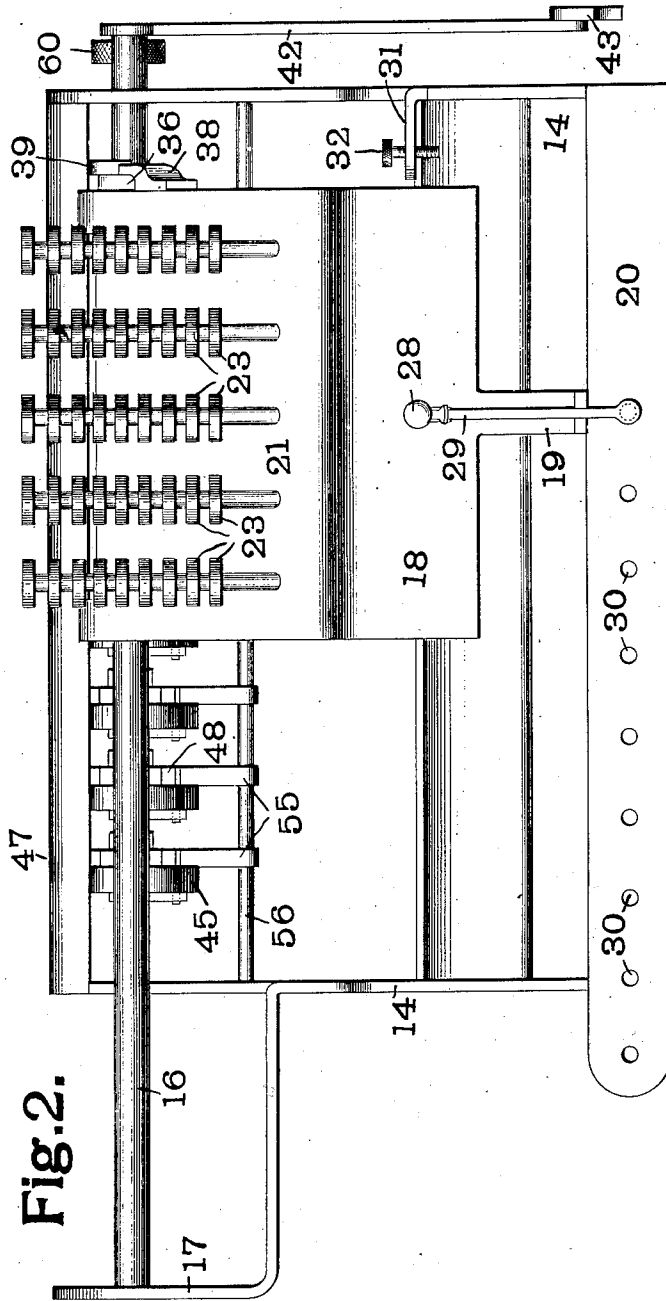


Fig. 2.

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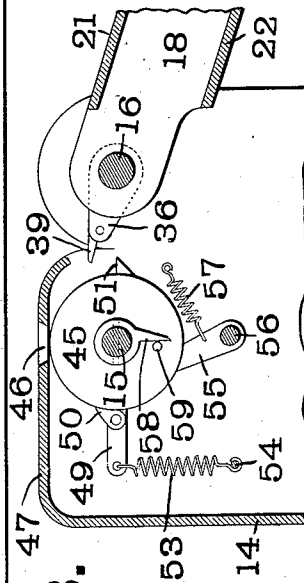


Fig. 3.

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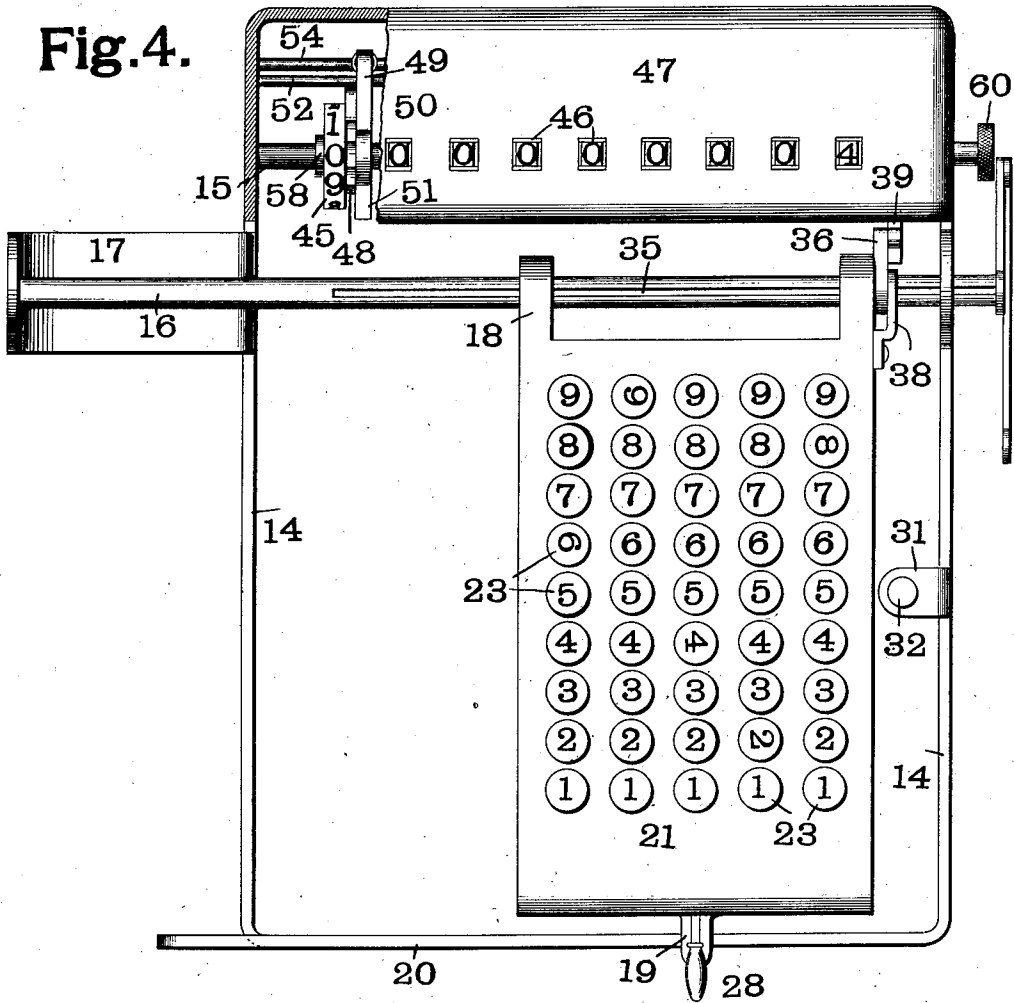
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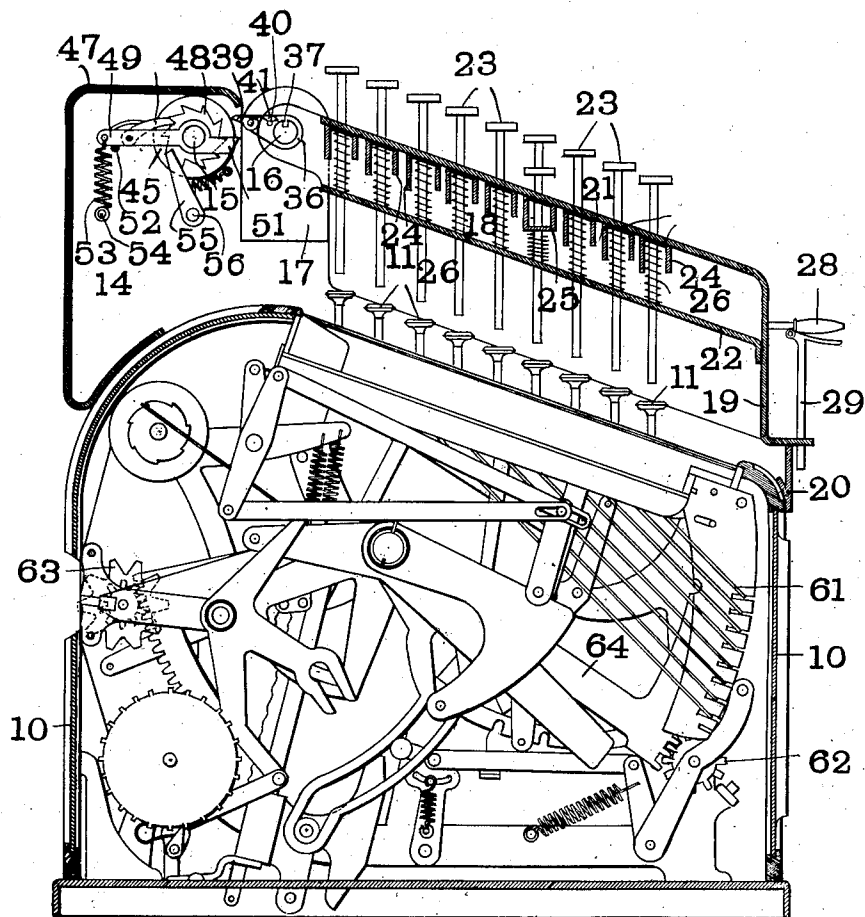
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Fig. 5.



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UNITED STATES PATENT OFFICE.

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CALCULATOR.

No. 914,741.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed April 16, 1906. Serial No. 311,882.

To all whom it may concern:

Be it known that I, ADOLPHUS G. MEIER, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Calculator, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The object of my invention is to provide an adding or other calculating machine with a superimposed or supplementary keyboard, and also with a supplementary accumulator, so that the machine may be used for multiplication and similar calculations.

My device is preferably made in the form of an attachment, as shown in the drawings, which can be applied to a machine of standard type. The main and supplementary devices may, however, be formed in an integral machine if desired.

In the accompanying drawings, which illustrate one form of attachment made in accordance with my invention, together with a portion of an adding machine to which the same is applied, Figure 1 is a vertical longitudinal section of the attachment and a side elevation of a portion of the adding machine; Fig. 2 is a front elevation; Fig. 3 is a sectional view of a portion of the attachment; Fig. 4 is a top plan view on a slightly reduced scale, a portion of the main frame or casing being broken away, and Fig. 5 is a view showing the main adding mechanisms.

Like marks of reference refer to similar parts in the several views of the drawings.

10 represents an adding machine or other suitable calculating machine. In the drawings I have shown the type of machine known as the "Burroughs" adding machine, or "American" arithmometer, but my attachment may be used in connection with other types of adding and calculating machines.

11 represents the numeral keys, 12 the error key and 13 the operating handle of the adding machine 10, all of these parts being of the usual construction.

14 is the main frame or housing of my attachment. This frame or housing 14 is arranged to fit on the top of the adding machine 10, as clearly shown in Fig. 1. Journaled in the rear and upper part of the frame or hous-

ing 14 is a shaft 15 on which is mounted the supplementary accumulator mechanism, as will be hereinafter more fully described. In front of the shaft 15 is a rock shaft 16 carried at one end in the frame or housing 14 and at the other in an extension 17 of said frame or housing 14. The rock shaft 16 is thus made of sufficient length to allow of the necessary movement of the supplementary keyboard. The supplementary keyboard is mounted in a laterally movable frame 18, which is slidingly mounted at one end on the said rock shaft 16, and at the other is provided with a downward extension 19 running upon the front plate 20 of the main frame or housing 14. The sliding frame 18 is provided with a top plate 21 and a bottom plate 22. Through these plates 21 and 22 pass the stems of the keys 23 of the superimposed or supplementary keyboard. The plate 21 is provided on its under face with channel bars 24. Passing through each of the channel bars 24 is a pin 25. Surrounding each of the key stems 23 between the pin 25 and the lower end 22 is a coil spring 26, which normally holds the key 23 in its raised position. When one of the keys 23 is depressed so as to bring the pin 25 below the channel bar 24, the key can be rotated through one-quarter of a turn so as to lock the key in its depressed position, as shown in Fig. 1. The laterally movable frame 18 is provided with a handle 28 by means of which its movement is controlled. This handle 28 is provided with a detent 29 adapted to enter holes 30 in the front plate 20 hereinbefore referred to. The main frame 14 is also provided with a lateral projection 31 carrying a set screw 32 adapted to bear upon the top of the error key 12, so as to release the numeral keys 11 of the adding machine, as will be hereinafter described. The rock shaft 16 is provided with a key-way 35 extending through a considerable portion of its length. Mounted upon the said rock shaft 16 is an operating lever 36 provided with a tongue 37 extending into the said key-way 35, so that the said arm 36 moves with the rock shaft 16 as the said shaft is oscillated. The said arm 36 is, however, capable of movement longitudinally of the shaft with the frame 18. In order to move the arm 36 with the frame 18, the said frame is provided with a bracket 38, as shown in Figs. 2 and 4. The arm 36 is provided with a finger 39 normally held in position against a stop 40 by

means of a spring 41. In order to operate the shaft 16 the shaft is extended beyond the right hand side of the main frame 14 and has rigidly secured to it an arm 42. This arm 42 is connected to the operating handle 13 of the adding machine by means of a link 43.

Loosely mounted upon the shaft 15 hereinbefore described, are the accumulator wheels 45 of the supplementary accumulating device. Each of these wheels contains upon its periphery numerals from zero to 9, which numerals are visible through openings 46 in the top plate 47 of the main casing or housing 14. Secured to the right hand side of each of the wheels 45 is a ratchet wheel 48 containing ten teeth and adjacent to each of the ratchet wheels 48 is a lever 49 provided with an operating dog 50, which engages with the teeth of the ratchet wheel 48. The forward end 51 of each of the levers 49 is adapted to be actuated by the finger 39 on the arm 36.

52 is a rod which acts as a stop for the various levers 49 and the levers are normally held in position against this stop 52 by means of coil springs 53 attached at one end to the said levers 49, and at the other to a rod 54.

55 are retaining pawls which engage with the ratchet wheels 48. The retaining pawls 55 are pivoted on a rod 56 and are held in normal position by means of coil springs 57. In order to return the accumulator wheels 45 to their initial position I secure to the shaft 15 at the left hand side of each of said wheels an arm 58, and I provide each of the said wheels with a pin 59 adapted to be engaged by the arm 58. The arms 58 are operated by means of a milled head 60 upon the end of the shaft 15.

The main adding mechanism contained in the casing 10 being of usual construction need not be described in detail. It is provided with stops 61 which are set up by the operation of the keys 11. Upon the operation of the handle these stops determine the number placed in the main adding or accumulator wheels 62 and in the printing wheels 63. When the sum is taken by depressing the total key the same is transferred from the accumulator wheels 62 to the printing wheels 63 by means of levers 64.

The operation of my device is as follows: If, for example, it is desired to multiply 69,428 by 374, the number 69,428 is set up on the supplementary or superimposed keyboard, as shown in Fig. 4, by depressing the proper keys 23, and turning each key depressed through one-quarter of a revolution, so as to lock the key in its depressed position. It is, of course, necessary to force down the error key 12 by means of the set screw 32, so that all the numeral keys 11 of the main machine will be free. After the number is set up, as above described, the handle 13 of the adding machine is operated. At each operation of the handle the rock shaft 16 will be

operated so as to bring the finger 39 into engagement with the end 51 of the lever 49 of the right hand accumulator wheel, and, consequently, the right hand accumulator wheel will show the number of times which the handle has been operated with the keyboard in the first position. In this instance after the handle is operated four times and the right hand accumulator wheel shows four through its opening, as illustrated in Fig. 4 of the drawings, the handle 28 is grasped and the detent 29 released so that the supplementary keyboard can be swung upward on the rock shaft 16 and moved one space to the left, when it is swung down and again secured in position by means of the detent 29. The handle is now operated seven times and the keyboard again moved one space to the left and the handle operated three times, the numbers 3 and 7 appearing through the openings 46 to indicate to the operator when the handle has been operated the proper number of times. By now taking the total on the adding machine the required result is obtained. In order to return the accumulator wheels to zero, the milled head 60 is grasped and the shaft 15 rotated until the arms 58 engage the pins 59 on all the wheels 45 and the wheels can then be brought to zero.

While I have shown and described my supplemental accumulating device as being driven directly from a manually operated handle, I do not wish my invention limited to such construction as it is well known in the art that a mechanical drive is the equivalent of the manually operative handle and it is evident that in place of the direct connection the supplemental accumulator may be driven from any intermediate part which is in turn driven from the operative handle.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is—

1. In a calculator, the combination with an adding machine or the like provided with a main keyboard and accumulator, of an operating handle for said machine, a supplementary keyboard, and a supplementary accumulator for said keyboard, said supplementary accumulator being actuated from the operating handle of said adding machine.

2. In a calculator, the combination with an adding machine or the like provided with a main keyboard and accumulator, of an operating handle for said machine, a laterally movable supplementary keyboard, and a supplementary accumulator for said keyboard, said supplementary accumulator being actuated from the operating handle of said adding machine.

3. In a calculator, the combination with an adding machine or the like provided with a main keyboard and accumulator, of an operating handle for said machine, a laterally

movable supplementary keyboard, a plurality of accumulating devices adapted to be brought successively into operation by the movement of said keyboard, and means for actuating said accumulating devices from the operating handle of said adding machine.

4. In a calculator, the combination with an adding machine or the like provided with a main keyboard and accumulator, of an operating handle for said machine, a laterally movable supplementary keyboard, a plurality of supplementary accumulating devices, actuating mechanism movable with said keyboard and adapted to engage said accumulating devices, and operating connections between said actuating device and the operating handle of said adding machine.

5. In a calculator, the combination with an adding machine or the like provided with a main keyboard and accumulator, of an operating handle for said machine, a laterally movable supplementary keyboard, a plurality of supplementary accumulating wheels, ac-

tuating mechanism for said wheels movable with said keyboard, and operating connections between said accumulating wheels and the operating handle of said adding machine.

6. The combination with an adding machine and its actuator, of a computing attachment comprising a depressible and laterally adjustable key board with provisions for setting up a certain amount to be repeated varying numbers of times under different decimal adjustment of said key board and a counter driven by the adding machine actuator to show the numbers of such repetitions under the different adjustments of the key board.

In testimony whereof, I have hereunto set my hand and affixed my seal in the presence of the two subscribing witnesses.

ADOLPHUS G. MEIER. [L. s.]

Witnesses:

BENNETTE PIKE,
JAMES H. BRYSON.