

(No Model.)

G. H. ROGERS.
ADDING MACHINE.

No. 550,764.

Patented Dec. 3, 1895.

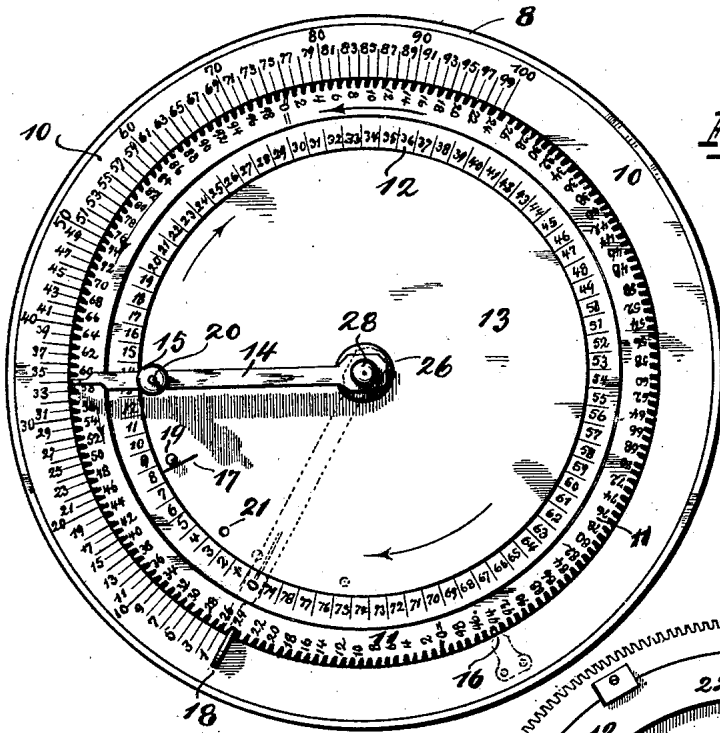


Fig. 1.

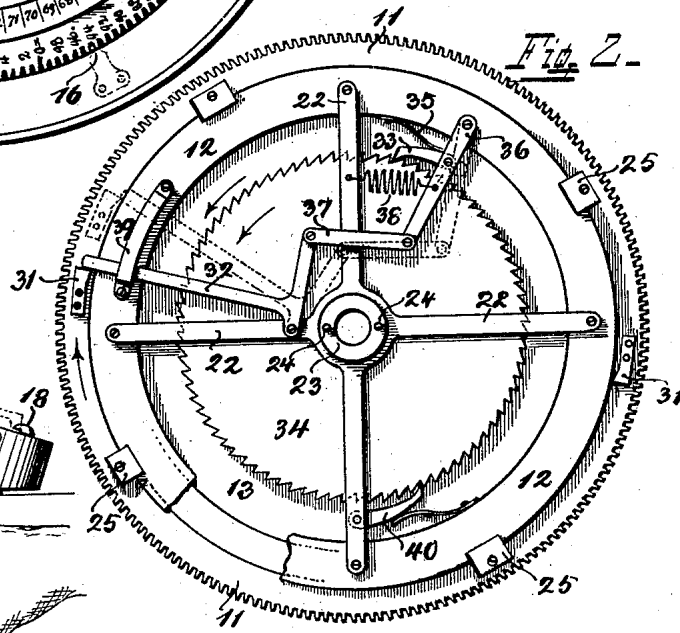


Fig. 2.

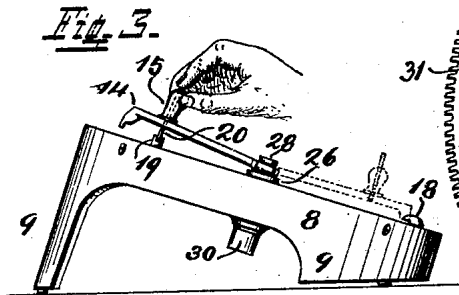


Fig. 3.

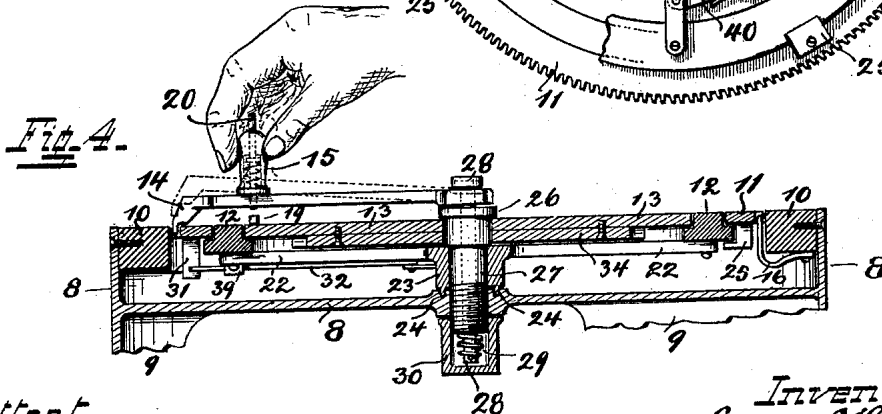


Fig. 4.

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ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 550,764, dated December 3, 1895.

Application filed February 9, 1895. Serial No. 537,792. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. ROGERS, a citizen of the United States, and a resident of Birmingham, Jefferson county, State of Alabama, have invented certain new and useful Improvements in Adding-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, attention being called to the accompanying drawings, with the reference-numerals marked thereon, which form a part of this specification.

This invention relates to improvements in adding-machines which are devices for adding figures expeditiously and accurately in an automatic manner.

The improvements comprise a new construction which indicates and registers automatically the hundreds whenever the sum of the added units or tens passes a hundred, means for adding hundreds independently from units or tens, and minor details of construction, which will be referred to at the proper time.

In the following specification, and particularly pointed out at the end thereof, is found a full description of my invention, its operation, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 is a top or face view of the improved adding-machine. Fig. 2 is an inverted view of such top with the internal operating mechanism as it appears when removed from its inclosing frame. Fig. 3 shows in a side elevation, at a reduced scale, the apparatus in working position. Fig. 4 shows a central vertical section of the same.

8 is a circular frame or casing formed on its under side with a flange or foot 9, upon which it rests, said flange being higher at one side to cause the top or face of the device to assume an inclined position to facilitate observation of the numbers thereon. Around the inside of this casing, and preferably flush with its upper edge, is provided a stationary ring 10, secured in position in any suitable manner and having one-half of its upper surface graduated, the division embracing one hundred equal parts, all properly

numbered from "1" to "100." Inside of this stationary ring and on a level with it is a rotatable ring 11, having its outer edge next to ring 10 provided with two hundred teeth, while on its upper side numbers for said teeth are provided, one number to each tooth, said numbers arranged in two sets or series, each embracing, consecutively, the numbers from "1" to "100."

To avoid crowding of numbers in the drawings, which show the device at reduced size, only alternate graduations on ring 10 and alternate teeth on ring 11 are numbered. Next to and within this latter ring is again a stationary one 12, graduated to any amount of numbers, from "1" to "80" having been adopted in this case. The space inside of this ring is closed by a rotatable disk 13, which with all the rings described before, constitutes the face of the apparatus, which completely closes the top of frame 8, the spaces between the teeth of ring 11 excepted. In the center of this face is pivotally supported a pointer 14, capable of being rotated all around, over, and close to the surface of the same and provided with a handle 15 for convenient manipulation. Normally its free downwardly-pointed end is raised off from the top surface over which it swings, but may be depressed to cause such pointed end to enter one of the spaces between the teeth of ring 11, after which this ring may be rotated by means of the handle on the pointer. To prevent errors caused by this ring moving from its position, a spring-actuated stop 16 is provided, which passes up from the under side and enters one of the spaces between the teeth. At one side the upper end of this stop is rounded off to permit the rotation of ring 11 in one direction, (see arrow,) while the other side of this stop being straight does not yield and slide out when rotation in opposite direction is attempted, whereby the ring is prevented from accidentally moving back from the position to which it has been advanced. This stop 16 is further so located that when ring 11 is at rest it holds it in a position which brings the spaces between its teeth opposite the graduation-marks on ring 10.

The adding operation is performed substantially like in similar devices, or as described in Patents Nos. 454,838 and 463,027,

and consists substantially of bringing the pointer 14 opposite the graduation on the ring 10, the number of which corresponds with the first number to be added, the zero on ring 11, as well as an index-mark 17 on the disk 13, having first been brought in line with the zeros of the stationary rings. Next the pointer 14 is depressed to engage with the ring 11, after which it is turned to the left until a stop 18, coincident with zero on the ring 10, is encountered, beyond which the depressed pointer cannot pass. This brings the first number to be added opposite the stop 18, after which the pointer is raised up and turned back for the next number to be added and to be found also on ring 10, into the space opposite which number it is inserted, and ring 11 is turned again until stop 18 is reached once more. When opposite this latter the sum of the added numbers appears. This is as a matter of course, because the spaces between the teeth of ring 11 correspond as to position with the graduations on ring 10, and the number of teeth which pass stop 18 is the same as the number of graduations over which the pointer moves from where it has been started after insertion until its progress is arrested by stop 18, opposite which the sum of the numbers accumulated on ring 11 always appears. Every time one hundred teeth and accordingly one hundred numbers of ring 11 have passed stop 18 the disk 13, with its index-mark 17, advances automatically one graduation past ring 12, so that in order to obtain the complete result after the first hundred is passed the position of said mark must be ascertained first with reference to ring 12, and the particular figure to which it points thereon must be prefixed to the figures appearing on ring 11, opposite stop 18.

Larger numbers than one hundred (100) cannot be added at one time and by one operation of the pointer, and such figures must be divided—that is to say, the hundreds must be added separately by advancing disk 13 alone, while the tens and units are added as usual. For such purpose, or when adding hundreds alone, a stud 19 is provided on disk 13, and a depressible catch-pin 20, held up by a spring within the hollow handle 15 of the pointer, is depressed to catch the stud 19 on the disk 13, and whereby this latter is advanced with reference to the ring 12 by handle 15. Fig. 3 shows mode of manipulation for such purpose, during which the pointer itself is not depressed to engage with the ring 11, which latter therefore remains stationary.

To facilitate observation of the advance of disk 13 on ring 12, an additional index-mark 21, in shape of a dot, is provided to be used in place of mark 17, which is obscured by the pointer-arm. As shown in the drawings, the pointer is in position to add "34" presently to "824," so far added and indicated by the position of ring 11 and disk 13, while the total adding capacity of this particular apparatus is "8,099."

When beginning a new addition the index-mark 17 on disk 13, as well as the zero-graduation on ring 11, must be brought in line with zero on rings 12 and 10, the latter coincident with stop 18. The most convenient and quickest way to do this is, as to ring 11, by inserting the pointer in the nearest one of the spaces between the teeth marked 99 and 1, (in the actual machine,) which space is designated by zero, and then swinging the ring around, the same as in adding, until stop 18 is reached, when zero will be found to be in proper position. As to disk 13 the pointer is swung so as to come back of stud 19, after which pin 20 is depressed and the pointer is swung ahead to catch the stud, after which the motion of the pointer is continued, disk 13 moving with it, the same as in adding hundreds, until stop 18 is again encountered, when index-marker 17 will also be found in proper position, its location with reference to stud 19 being such as to insure this fact.

The movable parts—that is, ring 11, disk 13, and pointer 14—are sustained in their respective positions as follows: Ring 12 rests on and is secured to arms 22, spreading from a central hub 23, supported on the bottom of frame 8. To prevent it from turning, pins 24 are provided on it, which pass into holes in said bottom. The two upper edges of this ring 12 are rabbeted to receive in the outer rabbet ring 11, while disk 13 rests in the inner rabbet. Lugs 25 on the under side of ring 11 take around the lower edge of ring 12 to prevent the former ring from dropping out of its position in case the device should be upset. Disk 13 is held down to its position by a flange 26 of a sleeve 27 passing through a central perforation in disk 13 and through hub 23 into the bottom of frame 8. The pointer is held in position by a pin 28, on which it swings and which passes through sleeve 27, extending partly beyond the same, the protruding end below being encircled by a spring 29, which holds pin 28 in place, permitting it at the same time a limited longitudinal movement. The inner or pivoted end of the pointer is slightly reduced in thickness, so that the head of pin 28, as it is drawn tightly down on it by spring 29, causes the other free end to tilt sufficiently upwardly to clear the face of the apparatus. When for adding this end is depressed, the pin 28 is slightly lifted or drawn upwardly against the action of the spring, below which it becomes contracted and immediately by its expansion tilts the pointer up again, when the same is released. The spring is preferably covered by a cap 30, screwed onto sleeve 27, which for such purpose is partly extended through the bottom of casing 8.

To cause automatically an advance of disk 13 on ring 12 to indicate on the latter every time when a hundred has been added by ring 11, two lugs 31 are provided on ring 11, diametrically opposite each other and so located on the under side thereof that whenever the

hundred-mark on its upper side is about to pass stop 18 one of them comes in contact with and swings a lever 32, pivoted to a stationary center (preferably one of arms 22) in a manner to cause a pawl 33 to pass back and drop in behind the next following tooth of a ratchet-wheel 34, rigidly secured to and forming part of disk 13. This pawl is held in contact by a spring 35 and carried by an arm 36, also swinging from a stationary center and connected to lever 32 by a link 37.

The number of the teeth on the ratchet-wheel corresponds with the number of the graduations on ring 12, and the contact between one of the lugs 31 and the end of lever 32 is so limited that when the former has passed and released the latter to enable a spring 38 to restore it again to its normal position, pushing, also, pawl 33 ahead with it, said pawl advances the ratchet-wheel only one tooth, which is equivalent to an advance of disk 13, to which it is secured, past ring 12 equal to one graduation on the latter.

39 is a supporting-guide for the free end of lever 32, and 40 is a spring-pressed stop-pawl swinging on a stationary center and holds the ratchet-wheel and with it disk 13 to the position to which they have been advanced.

Having described my invention, I claim as new—

1. In an adding machine, a top or face provided with graduations and numbers for adding and with numbers showing added results, a swinging pointer pivoted in the center of this face, a frame 8, on which this latter is supported, such frame also forming a casing to inclose the actuating mechanism, a flange 9, below this casing, being higher on one side to cause the numbered face to assume an inclined position.

2. In an adding machine, the combination of two stationary rings 10 and 12, one graduated and provided with the numbers to be selected from for adding, such numbers arranged in tens and units, the other ring graduated and numbered to indicate hundreds, a rotatable ring 11, to add and indicate at a predetermined position the added numbers selected on ring 10, a rotatable disk 13, provided with an index-mark to add and indicate on ring 12 the added hundreds, and means to operate the rotatable parts.

3. In an adding machine, the combination of two stationary rings 10 and 12, one graduated and provided with numbers to be used for adding and arranged in units and tens, the other ring graduated and numbered to show hundreds, a rotatable ring 11, provided with teeth and numbers arranged in tens and units to be used for showing added results, a rotatable disk 13, provided with an index mark to add and indicate by its position with reference to ring 12 the added hundreds, a swinging pointer to rotate ring 11, a stop adapted to arrest the motion of the pointer when so rotating ring 11, whereupon this latter by the position of one of its numbers with

reference to said stop, indicates the added result by units and tens and mechanism operated by ring 11, whereby disk 13 is automatically advanced one graduation past on ring 12 for every hundred added by ring 11.

4. In an adding machine, the combination of two stationary rings 10 and 12, one graduated and provided with numbers arranged in units and tens and to be used for adding, the other ring graduated and numbered to show hundreds, a rotatable ring 11, provided with teeth and numbers arranged in units and tens to be used for showing added results, a rotatable disk 13, provided with an index-mark to add and indicate by its position with reference to ring 12, the added hundreds, a swinging pointer to rotate ring 11, a stop adapted to arrest its motion when so rotating ring 11, whereupon this latter by its position with reference to said stop, indicates with one of its numbers the added result, a spring-resisted pin 20, carried by the pointer and a stud 19 on disk 13, adapted to be engaged by pin 20 when the same is depressed, such engagement enabling the rotation of disk 13 for the purpose of adding hundreds and indicating them on ring 12.

5. In an adding machine, the combination of two stationary rings 10 and 12, one graduated and provided with numbers arranged in units and tens and to be used for adding, the other ring graduated and numbered to show hundreds, a rotatable disk 13, provided with an index-mark to add and indicate by its position with reference to ring 12, the added hundreds, a swinging pointer to rotate ring 11, a stop adapted to arrest its motion when so rotating ring 11, whereupon this latter by its position with reference to said stop indicates with one of its numbers the added result, a projection 31 on ring 11, a lever 32, swinging on a stationary center and its free end located in the path of projection 31, a pawl 33 operatively connected to lever 32, a ratchet-wheel 34 with which it is in engagement and which forms a part of disk 13, a spring 38, opposing the action of projection 31 on lever 32 and restoring the latter to its normal position, thereby also causing pawl 33 to move the ratchet-wheel and advancing disk 13 with it past on ring 12.

6. An adding machine having a graduated and numbered working face, consisting of concentric rings and surfaces, all flush with each other and arranged as follows: at the outside a stationary ring 10, graduated and containing in units and tens the numbers to be added, a rotatable ring 11 next to it, provided with numbers indicating the added result by its position with reference to ring 10, a stationary ring 12, next to ring 11, graduated and numbered to indicate hundreds, a rotatable disk 13 with an index mark, inside of ring 12, indicating by the position of said mark with reference to ring 12, the added hundreds and means to operate the rotatable parts.

7. In an adding machine, the combination of an inclosing casing 8, a supporting frame therein consisting of a centrally affixed hub with radial arms 22, a ring 12 fixedly secured to these arms and recessed at both its upper edges, a ring 11, supported on ring 12, in the outer recess thereof and capable of rotation thereon, a rotatory disk 13, also supported on ring 12, but on the inner recess thereof and means to confine the parts supported on ring 12 to their position within their respective recesses on ring 12.

8. In an adding machine having stationary and rotary parts, graduated and numbered for adding numbers and for indicating added results, a pin 28, loosely supported in a central bearing on said machine and capable of a limited longitudinal movement therein, a pointer 14 swinging on said pin and held in position thereon by the head of the latter and having its pivoted end slightly reduced, a spring 29, acting on the lower end of pin 28

and normally drawing the head of the latter against the reduced inner end of the pointer for the purpose of tilting up the outer end of the same.

9. In an adding machine the combination of an inclosing casing 8, a ring 12 fixedly supported therein and recessed at both its upper corners, a rotatory ring 11 supported in the outer recess thereof and confined therein by lugs 25, a rotatory disk 13, supported in the inner recess of ring 12, a hollow sleeve 27 secured to casing 8 and provided with a flange 26 for holding disk 13 to its position on ring 12, a pin 28 confined within the hollow sleeve 27 and a pointer pivotally supported on pin 28.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE H. ROGERS.

Witnesses:

L. J. HALEY, Jr.,

E. N. HAMILL.