No. 746,352. PATENTED DEC. 8, 1903.

T. M. MINOR.

POCKET ADDER AND SUBTRACTER.

APPLICATION FILED MAY 9, 1903.

NO MODEL.

Fig. 2

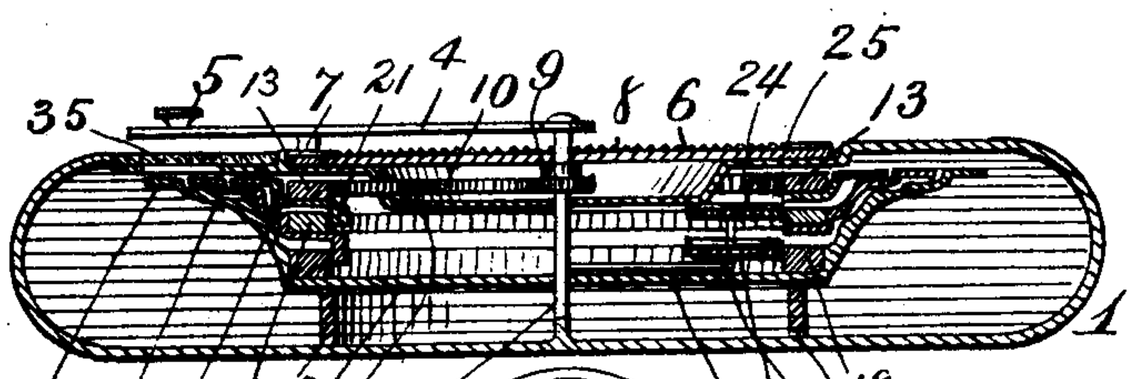


Fig. 1.

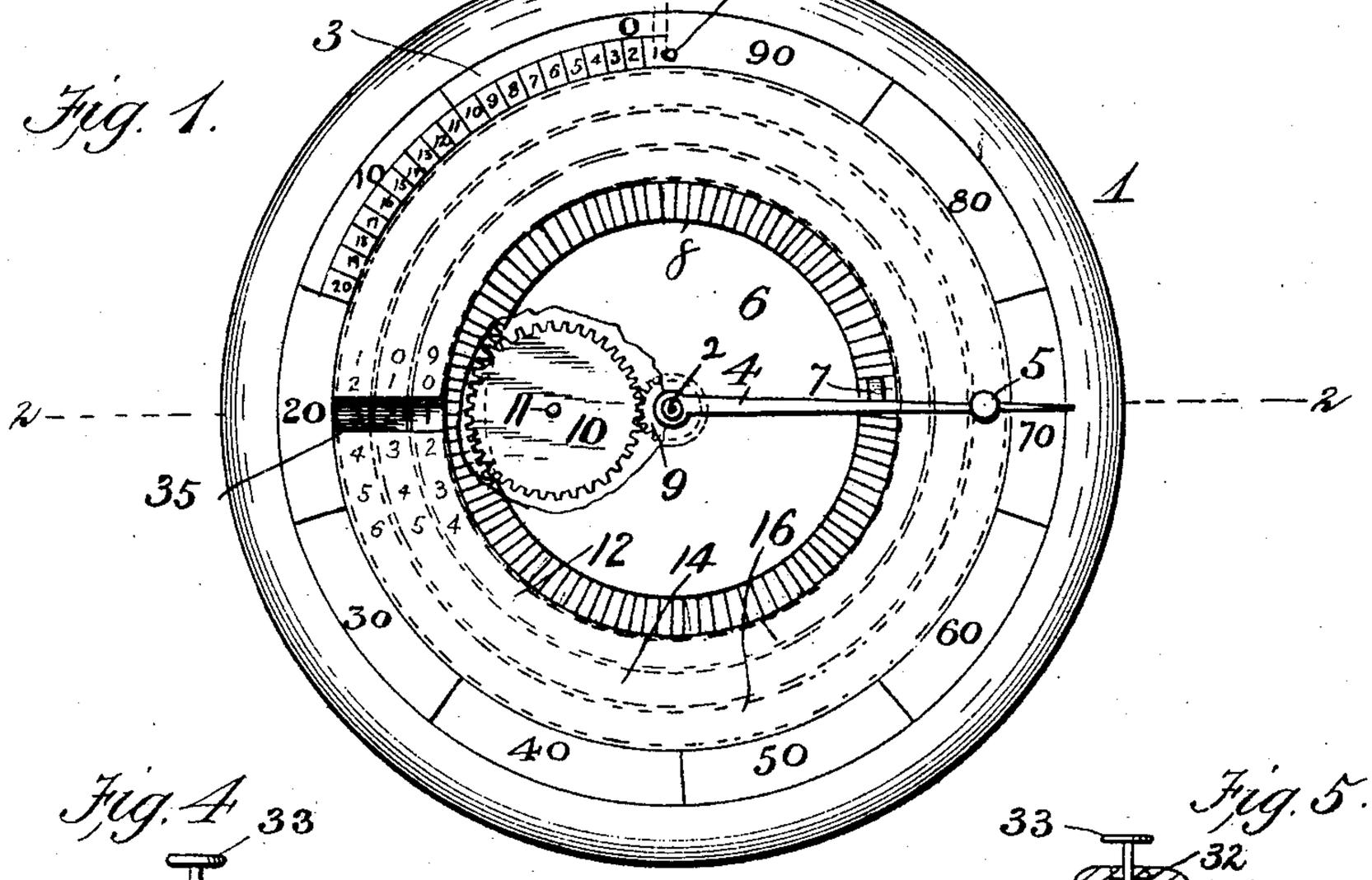


Fig. 4

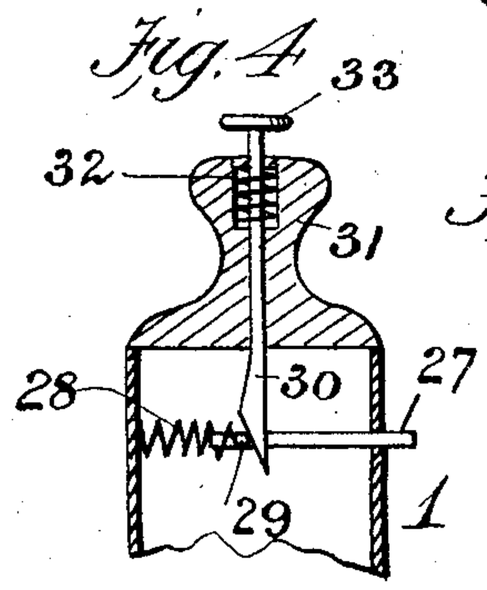


Fig. 3.

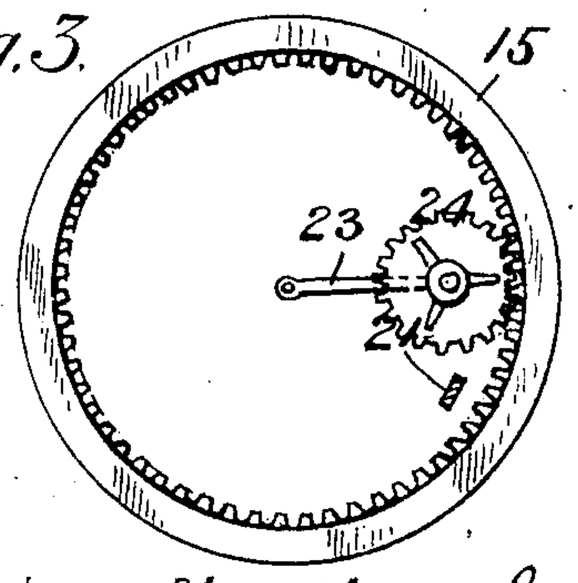


Fig. 3a

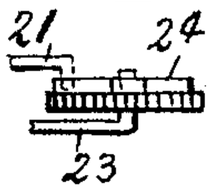
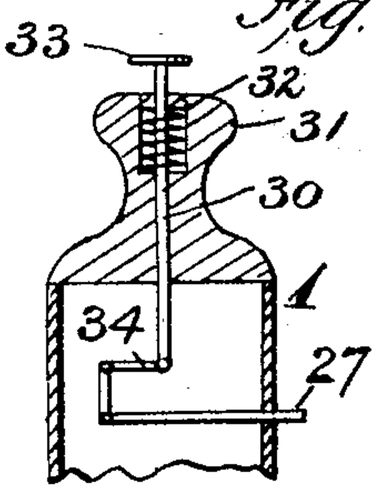


Fig. 5.



WITNESSES

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No. 746,352. Patented December 8, 1903.

UNITED STATES PATENT OFFICE.

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POCKET ADDER AND SUBTRACTER.

SPECIFICATION forming part of Letters Patent No. 746,352, dated December 8, 1903.

Application filed May 9, 1903. Serial No. 156,373. (No model.)

To all whom it may concern:

Be it known that I, TAYLOR M. MINOR, a citizen of the United States, residing at Wabash, in the county of Wabash and State of Indiana, have invented certain new and useful Improvements in Pocket Adders and Subtracters, of which the following is a specification.

My invention has relation to adding and subtracting devices; and it consists in the novel construction and arrangement of its parts, as hereinafter shown and described.

The object of my invention is to provide a handy pocket device adapted to be used for adding and subtracting, the device consisting of a casing having fixed on its face a scale of numbers arranged in circular form, a series of dials located within the casing, the upper face of each dial being provided with numbers which are adapted to come under an opening in the face of the casing. A pointer is journaled to the center of the face of the casing and is provided with a pawl adapted to engage a ratchet-wheel which revolves about the support carrying the pointer, said ratchet-wheel being connected by a chain of gear-wheels with the revolving dials, and consequently as the ratchet-wheel is moved the motion is transmitted to the said dials. The dials are arranged so that one revolution of the dial carrying the units produces one-tenth revolution of the dial carrying the tens, and one revolution of the dial carrying the tens causes the dial carrying the hundreds to make one-tenth revolution.

In the accompanying drawings, Figure 1 is a front elevation of the device. Fig. 2 is a transverse sectional view cut on line 2 2 of Fig. 1. Fig. 3 is a plan view of a ring carried by one of the dials for revolving the same. Fig. 3ª is a side elevation of a dial-operating wheel. Fig. 4 is a transverse sectional view of the handle of the device, showing a means for causing a stop located in the path of the pointer to descend out of the path of the same; and Fig. 5 is a modified form of the means as shown in Fig. 4.

The device consists of the casing 1, in the center of which is erected the post 2. The face of the device is provided with an annular scale of figures 3, said figures being arranged consecutively in units from "1" to "10" within decimals from "10" to "100," as shown in Fig. 1. The pointer 4 is pivoted to the upper end of the post 2, the outer end of said pointer passing over the said scale of figures 3. Said pointer is preferably made of spring metal, and it may or may not be provided with a knob 5. The ratchet-wheel 6 is journaled to the post 2 below the said pointer, the said pointer having a pawl 7, which is adapted to engage the ratchets 8, which are annularly arranged about the periphery of the said wheel 6. The cog-wheel 9 surrounds the post 2 and is fixed to the under side of the ratchet-wheel 6. The cog-wheel 10 meshes with said cog-wheel 9 and is suitably journaled, as at 11, to the casing 1.

The units-dial 12 is annular and is provided with an internally-geared ring 13, which meshes with the cog-wheel 10. The said ring 13 is located at the inner edge of the dial 12. The tens-dial 14 is also annular and is provided at its inner edge with a toothed ring 15. The hundreds-dial 16 is also annular and provided with a toothed ring 18. The bottom 19 of the said dial 16 rests upon the annular support 20, located upon the face of the casing 1. The dial 12 is nested in the dial 14, which in turn is nested in the dial 16 in a manner as shown in Fig. 1. The inner edge of the dial 12 is provided with a lug 21, which overhangs the inner edge of the ring 15, carried by the dial 14, and the inner edge of the dial 14 is provided with a lug 22, which overhangs the inner edge of the ring 18.

The arm 23 is attached to the post 2 at one end and at its other end is provided with a vertical portion 24, upon which is journaled the wheels 25 and 26, said wheels having projections extending from their peripheries which are adapted to engage the teeth of the rings 15 and 18, respectively. The teeth of the said wheels are located in the paths of the lugs 21 and 22, and consequently when the said lugs come in contact with the path of the said wheels the rings 15 and 18 and their respective dials are turned. The dial 12 makes ten revolutions while the dial 14 is making one, and the dial 14 makes ten revolutions while the dial 16 makes one. The stop-pin 27 extends through the upper face of the casing 1 within the path of the pointer 4, said pin being located between the unit "1" and

"100." Any suitable means, such as a spring 28, may be used for holding the pin 27 in its extended position. In the form of the invention as shown in Fig. 4 the pin 27 is provided with a lug 29, which bears against a chamfered end of the shaft 30 and is normally held back by a spring 32, the end of the shaft being provided with a button 33. It will thus be seen that when the shaft 30 is pushed in the pin 27 will withdraw within the casing 1, and when the pressure is removed from the shaft 30 the parts assume the position as shown in Fig. 4. By withdrawing the outer end of the pin 27 within the casing 1 the pointer 4 may make a number of complete revolutions around the scale of figures without being interfered with by said pin. In the form of the device as shown in Fig. 5 the inner end of the shaft 30 is not chamfered, but is connected to a bell-crank lever 34, to the other end of which is connected the pin 27. The upper face of the casing is provided with a glass-covered opening 35, through which the figures on the small dials may be seen.

The operation of the device is as follows: To add, the pointer 4 is slightly elevated and carried to the beginning of the place containing the unit "1." There the lug 7 of the said pointer is permitted to engage the ratchet-wheel 6 and the said pointer is carried around, say, to "20." The rotary motion is transmitted through the gear-wheels 9 and 10 and the dial 12 is revolved twice and the dial 14 is revolved two-tenths. In order to subtract, the pointer is elevated and carried to the number on the scale desired to be subtracted where the pointer is lowered, the lug 7 engaging the ratchet of the wheel 6 when the pointer is carried back to the stop 27. Thus the dials are revolved in the opposite direction and the remainder can be seen through the opening 35. In order to make several revolutions of the pointer 4 around the scale, the pin 27 is withdrawn out of the path thereof, as above described, and the said pointer may be carried around without interference.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A device of the character as described, consisting of a casing having a scale located on the face thereof, a post erected in said casing, a plurality of revoluble dials located within said casing and concentrically with relation to said post, an arm extending from said post, wheels journaled on said arm and engaging said dials, lugs located on the dials and adapted to engage and operate said wheels, a wheel journaled on said post, a chain of gears connecting said wheel with said disks and a means for rotating said wheel.

2. A device of the character as described, consisting of a casing, revoluble dials located therein, a pointer pivoted to said casing and adapted to operate said dials, a movable stop located on the casing in the path of said pointer and a means for withdrawing said stop from the path of the pointer to a position within the casing.

3. A device of the character as described, consisting of a casing, revoluble dials located therein, a pointer pivoted to said casing and adapted to operate said dials, a movable stop located on the casing in the path of said pointer and a means for withdrawing said stop from the path of the pointer to a position within the casing and a means adapted to cause said stop to assume its normal position.

4. A device of the character as described, consisting of a casing, revoluble dials located therein, a pointer pivoted to said casing and adapted to operate said dials, a spring-actuated stop located on the casing in the path of said pointer and a means for withdrawing said stop from the path of said pointer to a position within the casing consisting of a shaft passing through the casing at an angle to the stop and connecting the same.

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

TAYLOR M. MINOR.

Witnesses:

JOHN F. NIPSHIND,

QUINCY E. WILLIAMS.