No. 873,754. PATENTED DEC. 17, 1907.

P. L. JOHNSON.

REGISTERING COUNTER.

APPLICATION FILED MAY 11, 1906.

2 SHEETS—SHEET 1.

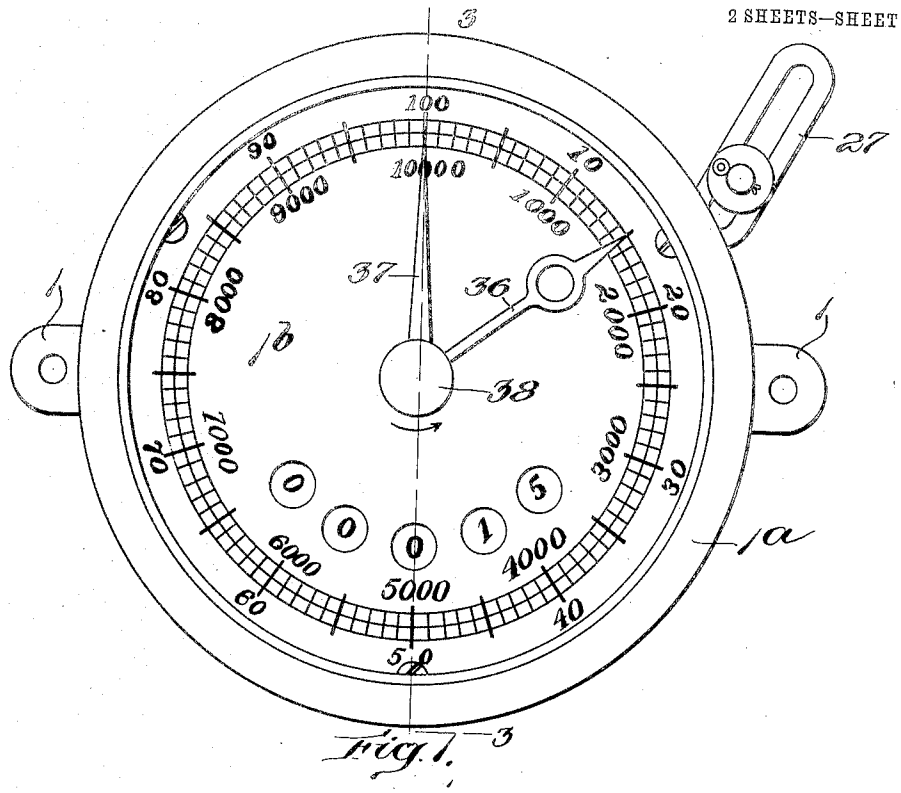
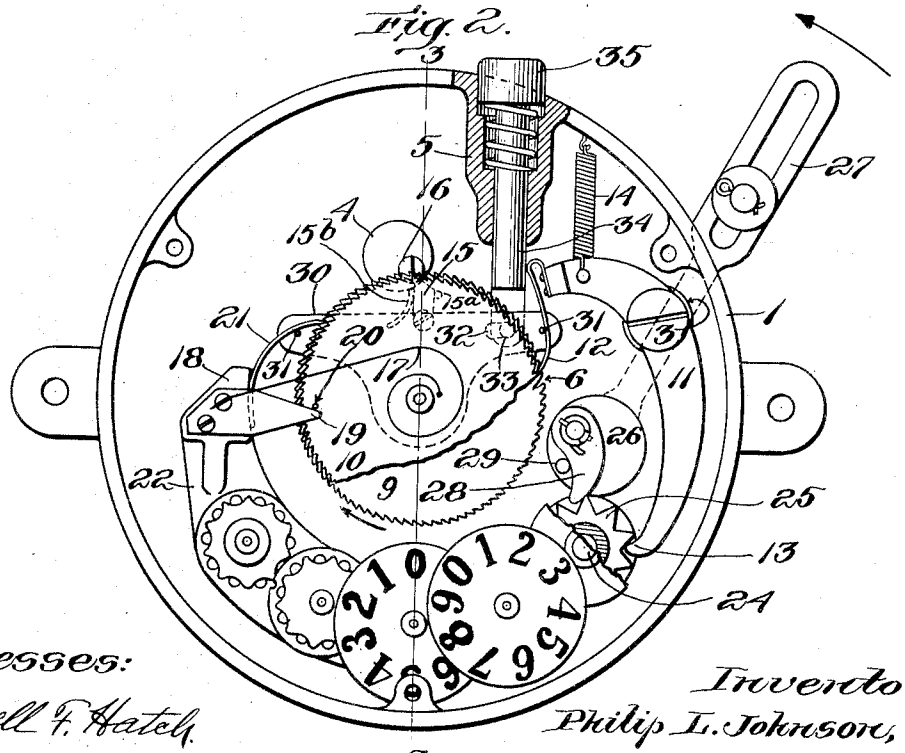


Fig. 1.

Fig. 2.



Witnesses:

Roswell F. Hatch.

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Inventor:

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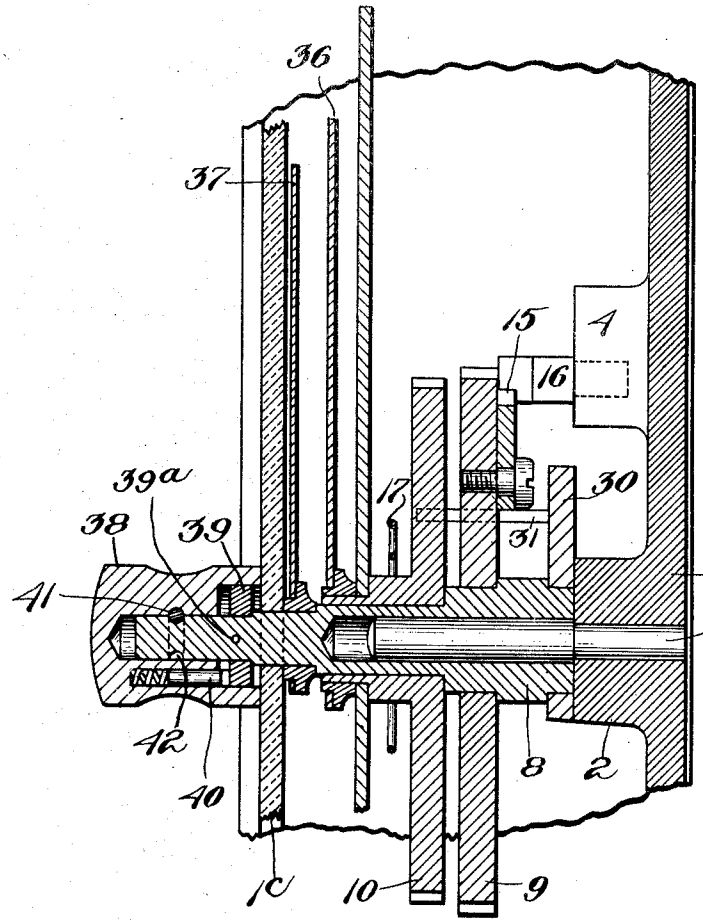


Fig. 3.

Fig. 5.

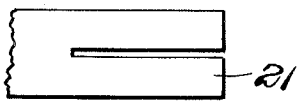
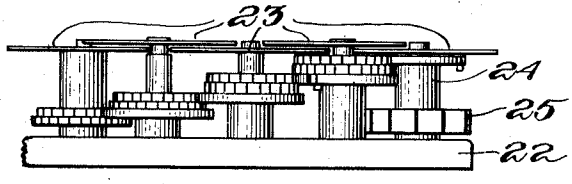


Fig. 4.



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UNITED STATES PATENT OFFICE.

PHILIP L. JOHNSON, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO CROSBY STEAM GAGE AND VALVE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

REGISTERING-COUNTER.

No. 873,754. Specification of Letters Patent. Patented Dec. 17, 1907.

Application filed May 11, 1906. Serial No. 316,388.

To all whom it may concern:

Be it known that I, PHILIP L. JOHNSON, a citizen of the United States, and a resident of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Registering-Counters, of which the following is a specification.

My invention relates to registering counters and its object is to provide a counter adapted to register the number of operations (revolutions, or reciprocations) of a machine and also simultaneously the total of a series of such operations.

It consists of two parallel ratchet wheels coaxially mounted, independently rotatable and carrying hands adapted to register their movement upon a dial, with means adapted to rotate such ratchet wheels and at the same time operate a register consisting of an ordinary chain of geared counters.

It is illustrated by the accompanying drawings in which—

Figure 1 is a plan view of the counter showing the dial and hands in place. Fig. 2 is a plan view with the dial and hands removed. Fig. 3 is an enlarged section on the line 3—3, Fig. 1. Fig. 4 is a detail view of the geared counters. Fig. 5 is a detail view of the forked pawl.

Similar characters refer to similar parts throughout the several drawings.

1 is the case furnished with the cover 1^a, the dial 1^b, the glass 1^c and with the bosses 2, 3, 4 and 5. Upon the stud 7, set in the boss 2, is mounted the spindle 8 rigidly fixed to which is the ratchet wheel 9, and rotatably mounted upon this spindle is the ratchet wheel 10. Upon the boss 3 is fulcrumed the lever 11 having fixed to its upper end the spring pawl 12 and having its lower end 13 in the form of a pawl. On the upper end of this lever 11 is fixed one end of the spring 14 the other end of which is fixed to the case. On the under side of the ratchet wheel 9 is pivoted the spring controlled stop 15 adapted to engage the post 16 mounted on the boss 4. Fixed to the ratchet wheel 10 is the spring 17 having its outer end fastened to the post 18 to which is also fastened the arm 19 adapted to engage the stop 20 on the upper side of said ratchet wheel 10. To this post 18 is also fixed the forked pawl 21 the members of which engage respectively the teeth of the two ratchet wheels. This post 18 forms one end of the curved plate 22 fixed to the case and upon this plate is mounted the chain of gears 23 of the usual construction. Fixed to the axial shaft of the gear 24 is the star wheel 25.

Extending through the case is the shaft 26 fitted at its outer end with an arm 27 adapted to connect it with the machine by which it may be operated, and having pivoted on its inner end the spring controlled pawl 28 and the stop 29 adapted to limit the movement of said pawl. The lever 30 fulcrumed upon the lower end of the spindle 8 has at either end the arms or studs 31 engaging the spring pawls 12 and 21 and having a slot 32 engaged by the pin 33 mounted on the inner end of the spring controlled rod 34 which extends through the boss 5 and case and has its outer end in the form of a push pin 35. Upon the hub of the ratchet wheel 10 is mounted the hand 36 and upon the spindle 8 is mounted the hand 37. Upon the spindle 8 is also rotatably mounted the resetting knob 38 held in place longitudinally by the pin 41 extending through said knob, and engaging the annulus 42 near the outer end of said spindle. Fixed to said spindle 8 is also the ratchet 39 held in place by the pin 39^a and engaged by the spring controlled pin or plunger 40 mounted in the knob 38, and employed to reset the ratchet 9 by turning said knob in the direction indicated by the arrow, Fig. 1.

The ratchet wheels 9 and 10 are of such relative diameters and have their respective teeth at such distance from their respective centers that the pawl 12, adapted to engage both ratchet wheels simultaneously, usually engages only the teeth of the ratchet wheel 9; but the ratchet wheel 9 has one tooth 6 cut deeper than the others so that when the pawl 12 engages that tooth it will engage the opposite tooth of the ratchet wheel 10 and so rotate the two ratchet wheels together for the distance of one tooth. It will be observed that this occurs once in each complete rotation of the ratchet wheel 9. Each ratchet wheel has 100 teeth so that while the ratchet wheel 9 rotates 10,000 times the ratchet wheel 10 rotates 100 times.

The operation of the machine is as follows—When the several parts are assembled as shown in Fig. 2, the spring 17 being under tension and the hands 36 and 37 both pointing to zero (100), if the arm 27 be moved in

the direction indicated by the arrow Fig. 2, said arm will rotate the star wheel 25 in the opposite direction, which will in turn operate the chain of gears and also the lever 11 carrying the pawl 12, thereby extending the spring 14 and moving the ratchet wheel 9 one tooth, when the spring 14 will recoil and return the lever 11 to its normal position and the arm 27, completing its rotation or reciprocation, will assume its normal position with the pawl 28 engaging the next tooth of the star wheel. This operation continues until the pawl 12 reaches the deep tooth 6 (the 100th tooth) of the ratchet wheel 9 when said pawl 12 will engage the ratchet wheel 10 also and move the ratchet wheels together one tooth and the hands of the ratchet wheels 9 and 10 will indicate 100 and 1 respectively on the dial; then the ratchet wheel 9 will complete another revolution and that will be indicated by the hand of the ratchet wheel 10 in the same way. The total number of operations is indicated also by the geared register which being set at zero counts up to 99999 and then registers 00000 ready to start out on a new count, all in a well known way.

If it is desired to begin registering a new series of operations, the operator presses the push pin 35 causing the arms 31 to disengage the pawls 12 and 21 from the ratchet teeth, when the ratchet 10 is returned by the spring 17 and the operator returns the ratchet 9 by means of the resetting knob 38, and both hands again point to zero. It will be noted that, when the hands point to zero, the stop 20 engages the arm 19 and the stop 15 engages the post 16. The stop 15 being pivoted to the ratchet wheel 9 and being held against the post 15^a by the spring 15^b can rotate only in the direction away from said post 15^a and by this arrangement, when the ratchet is rotating in the direction indicated by the arrow, the pivoted stop will pass the post 16 at the same time compressing the spring 15^b, which will immediately react and hold said stop against said post as shown.

This registering counter thus provides means for registering a number of operations of a machine on a dial and simultaneously upon a geared counter; and means for resetting the device to register a new number of operations of the machine on the dial; at the same time keeping a grand total on the geared counter; while the means for resetting are such that they can be manipulated from outside the case thus doing away with the necessity of exposing the interior workings of the machine.

It is obvious that the two ratchet wheels might be of the same diameter, one having one deeper tooth than the rest, and the pawl adapted to actuate one of said wheels continuously and the other intermittently as described.

Having described my invention what I claim and desire to secure by Letters Patent is:

1. In a registering counter a case and a registering mechanism arranged therein including a ratchet wheel, a chain of geared counters, a star wheel engaging and actuating said geared counters, a lever operated by said star wheel, a pawl carried by said lever and adapted to actuate said ratchet wheel, with means extending through the case and operative from without for operating said star wheel; substantially as described.

2. In a registering counter a case and a registering mechanism arranged therein including a ratchet wheel, a chain of geared counters, a star wheel engaging and actuating said geared counters, a lever operated by said star wheel, a pawl carried by said lever and adapted to actuate said ratchet wheel, with means extending through the case and operative from without for operating said star wheel, together with means extending through the case and operative from without for disengaging said pawl from said ratchet wheel and means for resetting said ratchet wheel; substantially as described.

3. In a registering counter a case and a registering mechanism arranged therein including a ratchet wheel, a chain of geared counters, a star wheel engaging and actuating said geared counters, a lever operated by said star wheel, a pawl carried by said lever and adapted to actuate said ratchet wheel, a retaining pawl, with means extending through the case and operative from without for operating said star wheel, and means for resetting said ratchet wheel; substantially as described.

4. In a registering counter a case and a registering mechanism arranged therein including a ratchet wheel, a chain of geared counters, a star wheel engaging and actuating said geared counters, a lever operated by said star wheel, a pawl carried by said lever and adapted to actuate said ratchet wheel, a retaining pawl, with means extending through the case and operative from without for operating said star wheel, together with means extending through the case and operative from without for disengaging said pawls from said ratchet wheel and means for resetting said ratchet wheel; substantially as described.

In testimony whereof I have affixed my signature, in presence of two witnesses.

PHILIP L. JOHNSON.

Witnesses:
RALPH W. FOSTER,
HELEN M. DEARBORN.