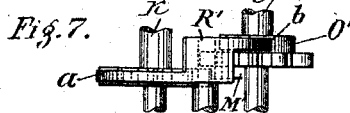
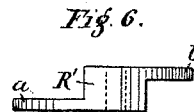
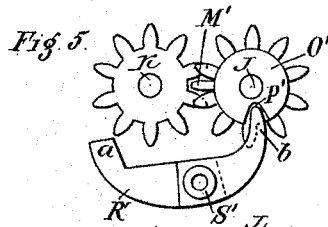
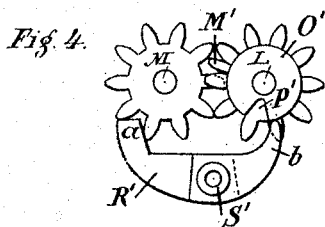
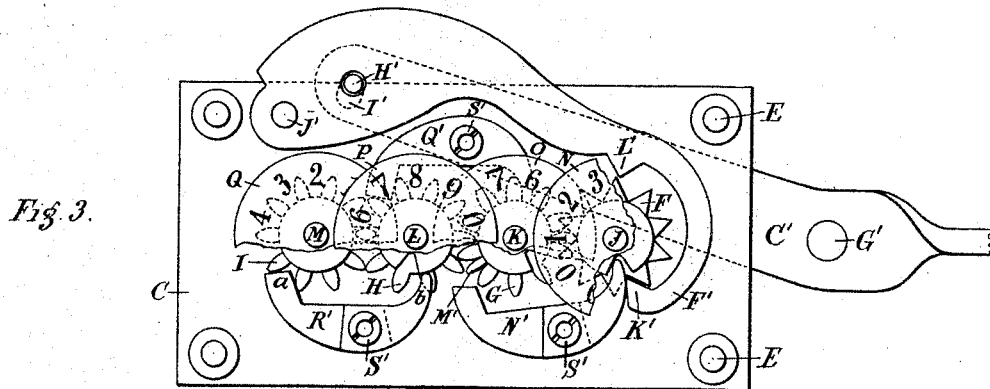
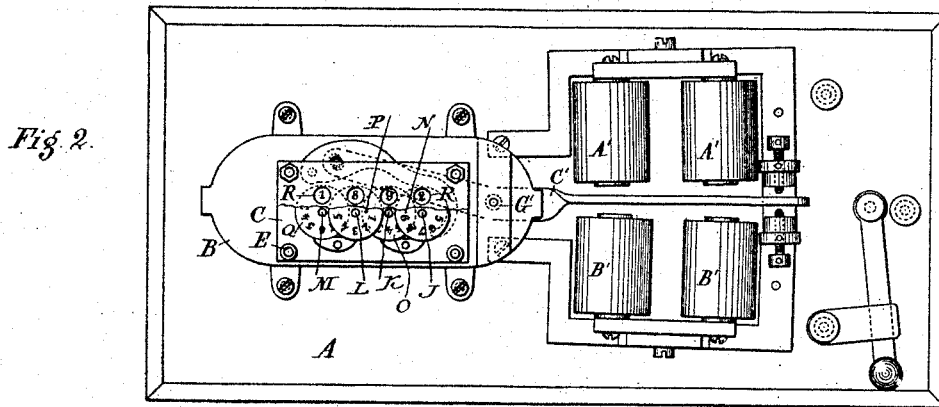
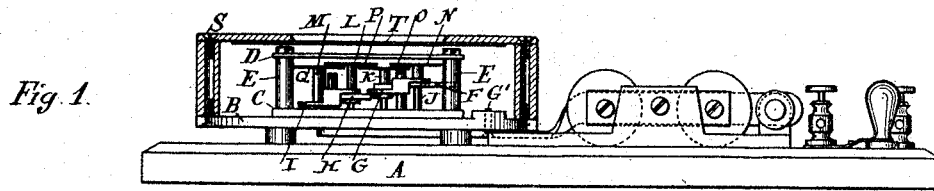


(No Model.)

W. N. DURANT.
COUNTING REGISTER.

No. 491,537.

Patented Feb. 14, 1893.



WITNESSES:
Chas. H. Smith
Leona Northrop

INVENTOR
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UNITED STATES PATENT OFFICE.

WALTER N. DURANT, OF MILWAUKEE, WISCONSIN.

COUNTING-REGISTER.

SPECIFICATION forming part of Letters Patent No. 491,537, dated February 14, 1893.

Application filed February 25, 1892. Serial No. 422,730. (No model.)

To all whom it may concern:

Be it known that I, WALTER N. DURANT, of the city of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented
5 new and useful Improvements in Registers; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of
10 this specification.

My invention relates to improvements in registers or devices for automatically counting and registering any number of units from
15 one to one or more thousand.

It also pertains to the device for automatically communicating motion to the register through the agency of electricity and electromagnets, where by the registry of the strokes
20 of an engine, the work of a printing press or other machine may be shown and kept in an office at a distance from such printing press or other machine.

The construction of my invention is explained by reference to the accompanying drawings in which

Figure 1 represents a side view thereof, part in section; Fig. 2 is a top view, having a part of the inclosing case broken away to
30 show the interior mechanism; Fig. 3 is a top view of the gears and gear-supporting frame with the inclosing case removed; Figs. 4 and 5 represent top views of two of the gears and the locking pawl removed from the supporting
35 frame, showing the pawl in its locked and unlocked positions. Fig. 6 represents a side view of the locking pawl and Fig. 7 represents a side view of the device shown in Figs. 4 and 5.

The same parts are represented by the same reference letters throughout the several views.

Supported upon a foundation board A is a gear-inclosing frame, consisting of the base plate B, journal plate C, top plate D and corner posts E. The star wheel F and toothed
45 wheels G, H, and I are respectively supported from the journal plate C between it and the top plate D upon the respective journals J, K, L, and M. The upper ends of the respective journals are provided with dial plates N,
50 O, P, and Q, upon the faces of which are stamped or printed the numerals from naught

to nine at uniform distances apart as indicated in the circular line around their marginal edges. The star wheel F and the first
55 registering dial N, are supported on the same journal and move together. The upper plate D is provided with a series of small apertures R, R, of sufficient size only to disclose to view but one figure in each of the series of figures
60 printed upon the respective dials whereby the figures in the several apertures taken together indicate the units, tens, hundreds, and thousands of the number registered or counted
65 by the machine.

S is a removable inclosing case which is provided with a glass front T through which the figures on the dials may be seen.

Motion is communicated from the electromagnets A' and B' to the star wheel F through
70 the vibrating lever C' and pawl F'. The lever C' is pivoted to the base plate B upon the stud G' and its short arm is connected to the pawl F' by the stud H'. The stud H' is rigidly affixed to the lever C' at its lower
75 end, and its upper end extends through the slot I' provided therefor in said pawl F'. The pawl F' is held in place by the pivotal support J'. Thus as the lever C' vibrates it communicates a swinging movement to the
80 free end of the pawl F', which in turn communicates a rotary movement to the star wheel F. The pawl F' is provided with two V-shaped bearings K' and L' which are alternately brought to bear against the teeth
85 of said star wheel as said pawl moves forward and rearward, said star wheel being moved by contact with said V-shaped bearings a distance corresponding to the distance between
90 its teeth with each return stroke of said pawl. The star wheel F and the next two succeeding toothed wheels G and H in the train are each provided on their lower sides with a single tooth M', which tooth M' on one of said
95 wheels is adapted once in each revolution of the wheel to mesh into the teeth of the next succeeding wheel in the series, whereby as each wheel upon the right performs a complete revolution, the next succeeding wheel to the left in the series is moved a distance
100 corresponding to the distance between their teeth, and as each wheel in the series is provided with ten teeth, it follows that as the star wheel performs ten revolutions, the next wheel in

the series performs but one, while the next succeeding wheel is moved but one-tenth of one revolution; and so on through the series, whereby the figures upon the face of the dials thus rotated, as they are brought beneath the apertures in the series, taken together indicate the total number of return strokes of the lever C'.

As the star wheel F is rotated the next succeeding wheel G, in the series is locked so that it cannot rotate, by the arm *a*, of pawl N', which arm engages between its teeth, as shown in Fig. 4, and is thus held by contact of the opposite arm *b*, with the periphery of the drum O', until said drum O' has completed a revolution, when the bearing end *b* of said arm is permitted to drop into a recess P' provided therefor in said drum, at the same time that the tooth M' is brought in contact with one of the teeth of the next succeeding wheel, whereby said next succeeding wheel in the series is released from said locking pawl and permitted to move one tooth forward, when, by the next succeeding movement of the star wheel, the pawl is again thrown into the locking position. Thus in like manner the locking pawls Q' and R', serve to lock and release the wheels against which they are brought to bear. The pawls N', Q' and R' are respectively supported from the plate C upon the pivots S'. The several drums, tooth wheels, and the dials are rigidly affixed to or may be made in one piece with the journals of said tooth wheels. Arms *a* and *b* of said locking pawls are arranged upon different planes as shown in Fig. 7, whereby they are adapted to bear against the drum of one wheel and the teeth of the next succeeding wheel.

The electro-magnets A' and B' are respectively connected with an electric battery or small dynamo in the ordinary manner through wires and a switch not shown, which switch is actuated by the moving parts of the printing press or other machine in such a manner that as such machine moves it moves the

switch and reverses the electric current from one electro-magnet to the other, whereby said lever C' is alternately attracted forward and backward between said electro-magnets with each movement of the printing press or other machine, and the registry of the work of such machine is thereby shown upon the dials of the register.

It is obvious that a spring may be substituted for one of said electro-magnets for moving said vibrating lever C' in one direction when said lever is moved by the joint action of the other magnet and the spring in the ordinary manner by opening and closing the electric circuit. The switch shown at the right in Figs. 1 and 2 is used to cut out and put in the register at will.

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

In an automatic register the combination of the star-wheel F, toothed-wheels G, H. and I., said wheels F, G. and H. being each provided with drums O' affixed to the journals of said wheels; drums O' each provided with recesses P' for the reception of the bearing arm of the locking pawl; a single driving tooth connected with the journals of said wheels and adapted once in each revolution to engage with one of the teeth of and turn the next succeeding wheel in said series; two-arm locking-pawls N', Q' and R', adapted to lock and retain said series of wheels at intervals as they are respectively rotated; vibrating lever C' and one or more electro-magnets adapted as the electric circuit is opened and closed to actuate said vibrating levers C'; all substantially as and for the purpose set forth.

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

WALTER N. DURANT.

Witnesses:

CHAS. G. BINKLEY,
LENORA NORTHROP.