

(No Model.)

C. W. HASTINGS.

ELECTRO MAGNETIC POISE ADJUSTER.

No. 338,522.

Patented Mar. 23, 1886.

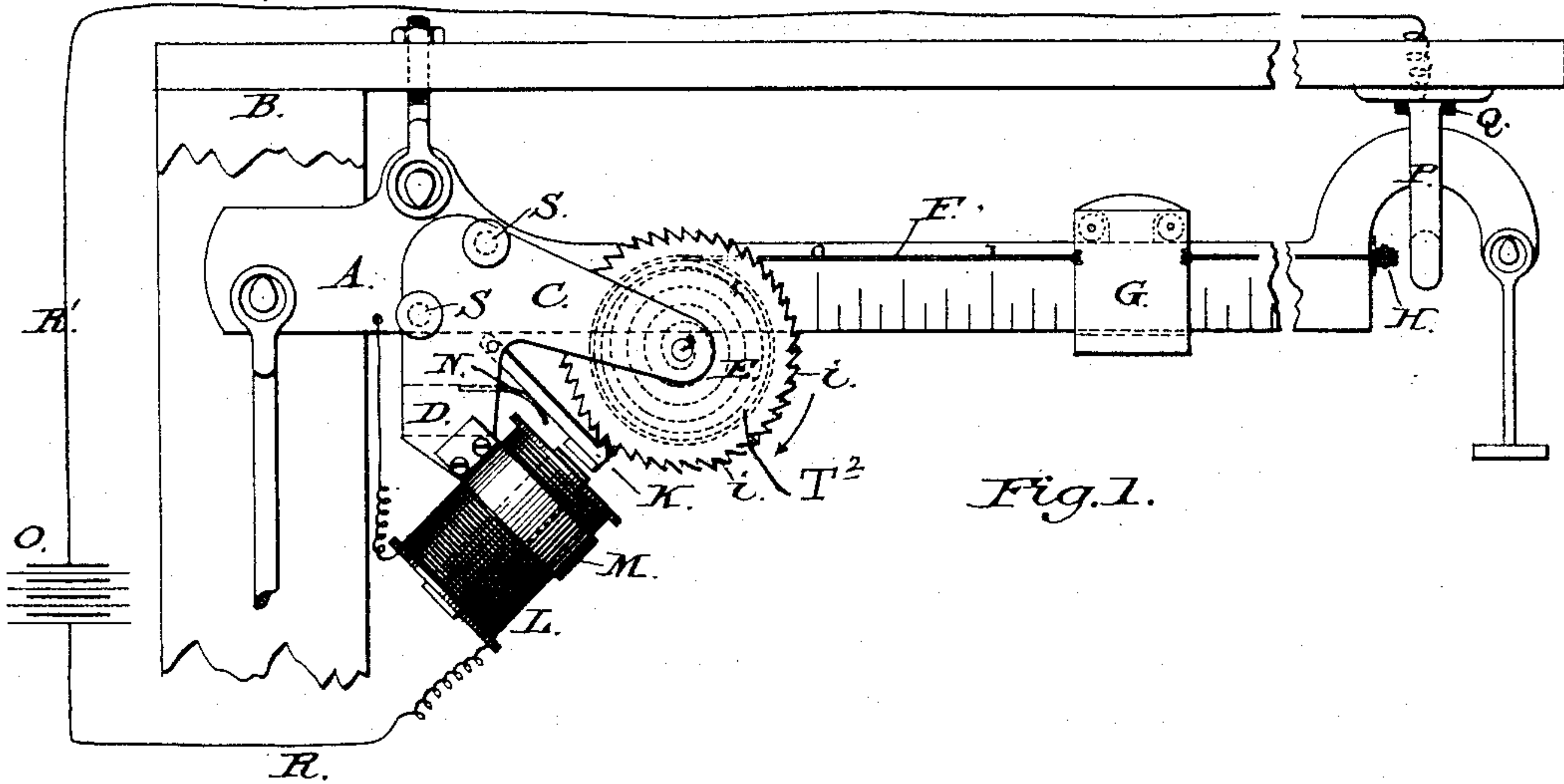


Fig. 2.

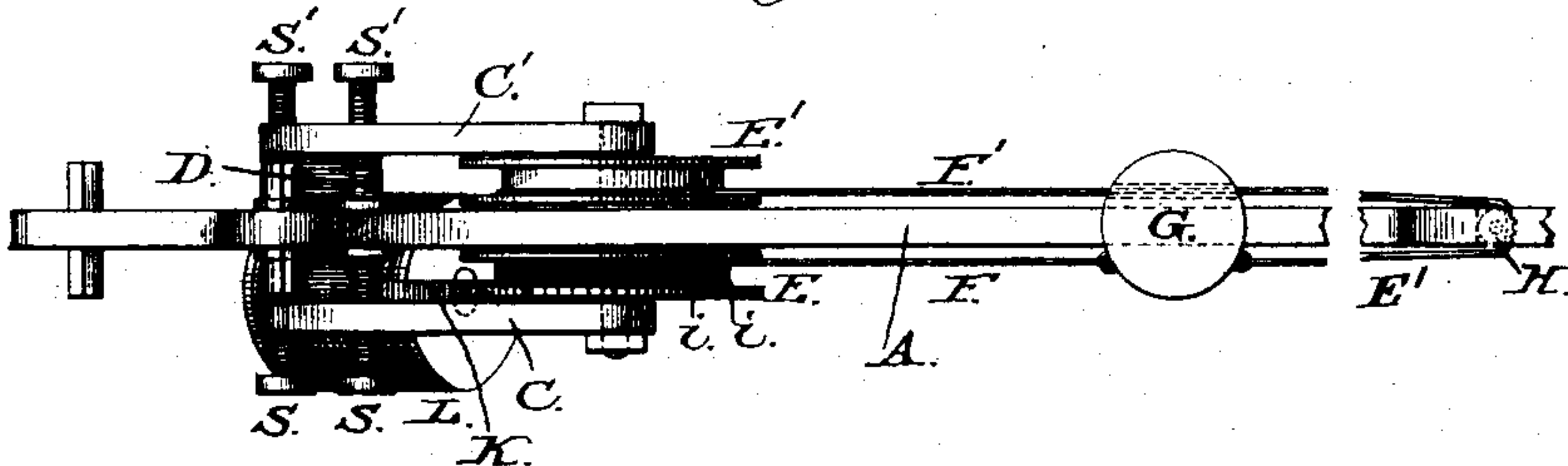


Fig. 3.

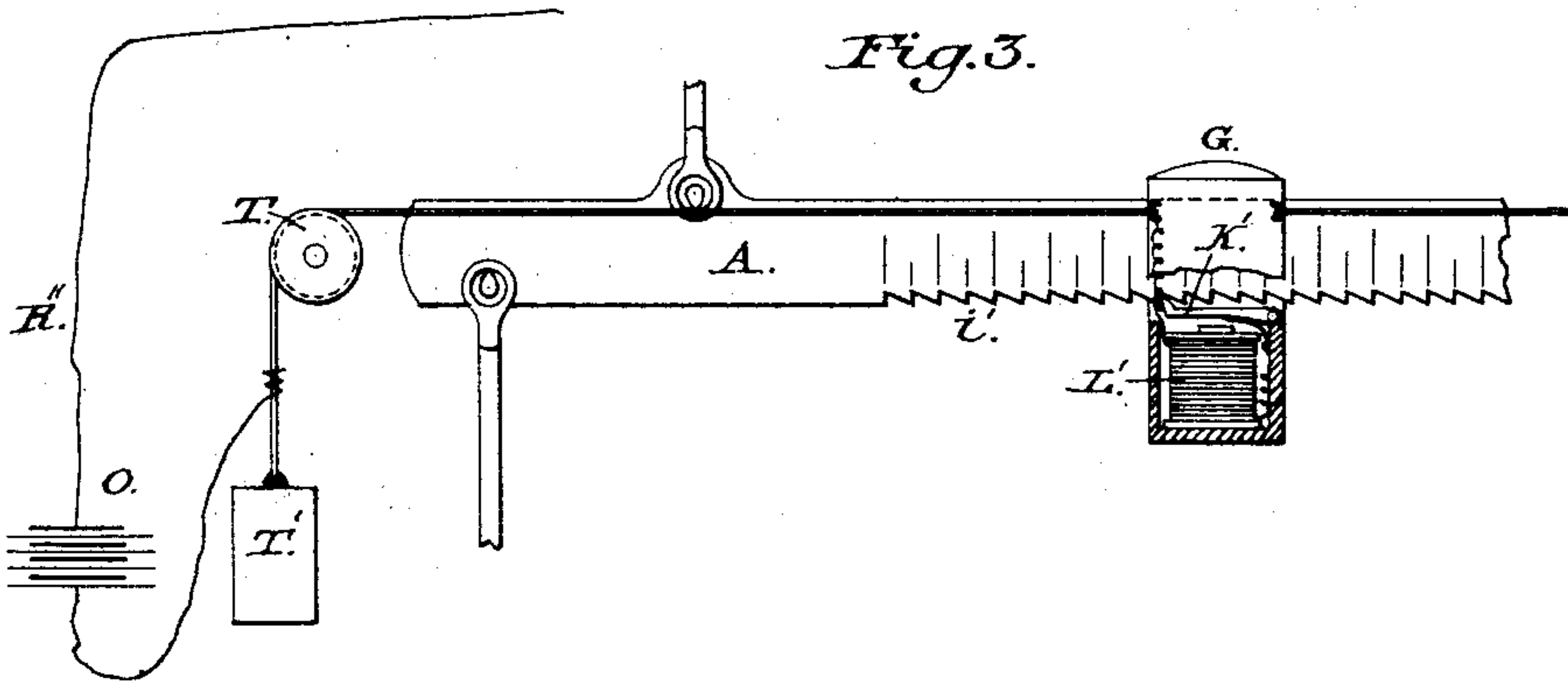
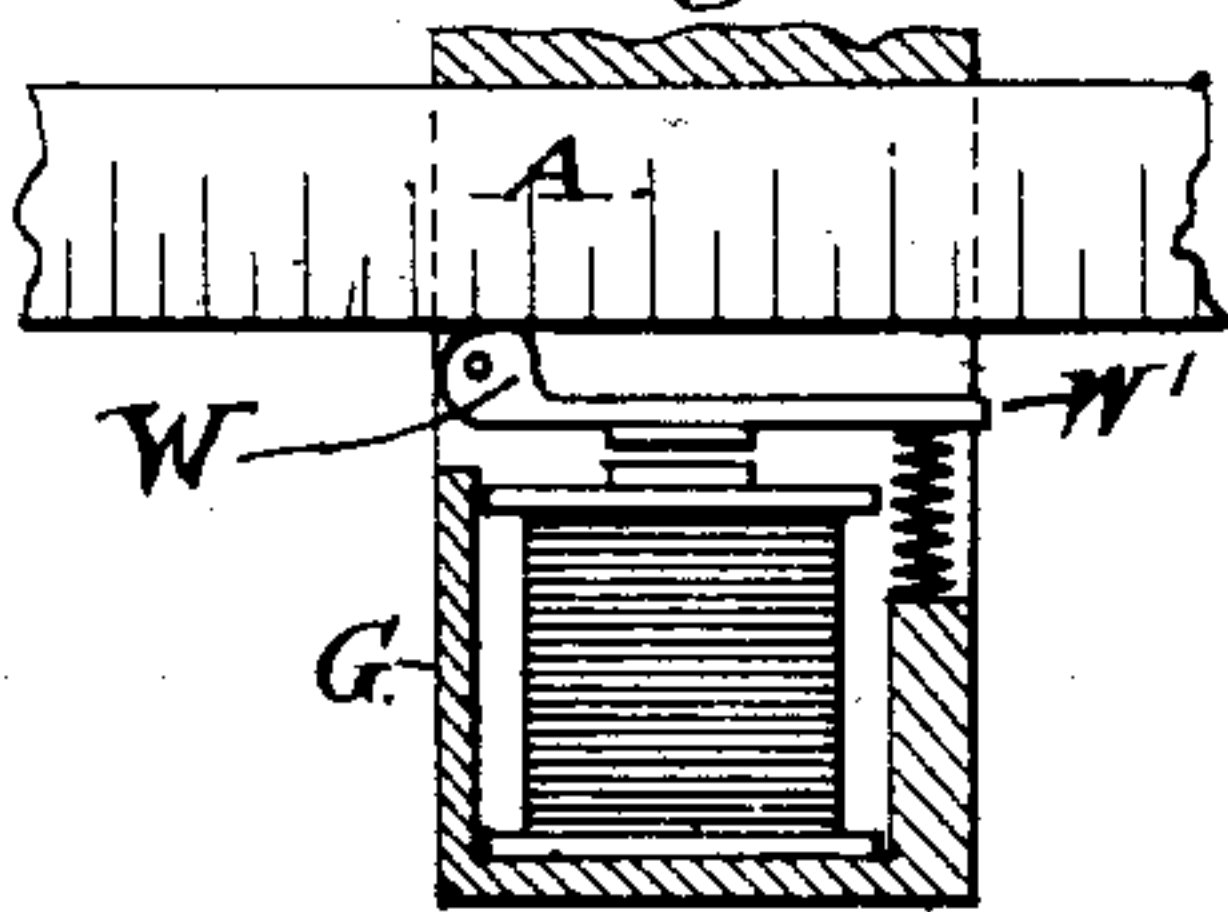


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ELECTRO-MAGNETIC POISE-ADJUSTER.

SPECIFICATION forming part of Letters Patent No. 338,522, dated March 23, 1886.

Application filed April 30, 1885. Serial No. 163,923. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. HASTINGS, of Brooklyn, in the county of Kings and State of New York, have invented a new and
5 useful Improvement in Electro-Magnetic Poise-Adjusters for Beam-Scales; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the let-
10 ters of reference marked thereon, making a part of this specification.

My invention relates to the control of the sliding poise upon the beam of an automatic weighing-machine by means of an electro-
15 magnet; and has for its object to supply a simple and effective attachment which may be applied to any ordinary beam-scales, whereby an automatic movement of the poise may be readily obtained and controlled through the
20 agency of an electric current.

It consists in the combination, with the sliding poise moving upon the beam of the scale, of a weight or spring to produce its automatic movement along the beam, a pawl or ratchet
25 to arrest said movement, an electro-magnet operating, when excited, to actuate and release the pawl, and an electric battery and conductors forming a circuit, including the magnet, and arranged to be opened and closed by the
30 movement of the scale-beam.

In the accompanying drawings, Figure 1 is a side elevation of the beam of a platform-scale having my improvement attached thereto; Fig. 2, a top view of the beam and its at-
35 tachment; Fig. 3, a side elevation illustrating a modification of my invention in which the electro-magnet is placed in the poise, and Fig. 4 a detached partial view of the electro-magnet actuating a cam-lever as an equivalent
40 for a pawl.

A represents the beam of a platform-scale of any approved construction, and B the stand-
ard from which the beam is suspended in the customary manner.

45 C C' are the curved parallel side bars of a frame, which is completed by a cross-bar, D, (see dotted lines, Fig. 1,) connecting the lower arms of said side bars. The bars are separated by an interval wide enough to embrace

the beam, and also two pulleys or barrel- 50
wheels, E E', which are pivoted independently of each other to the inner face of the outer end of each side bar, so that the beam may pass freely between, as illustrated in Fig. 2. The frame carrying the two pulleys may be 55
secured to the inner end of any ordinary scale-beam, A, by means of two sets of opposed clamping-screws, S S' S' S', which are led through the side bars, C C', so as to engage the beam when it is interposed between them, as 60
shown in Fig. 2. Each pulley E and E' contains an internal spring, T², (see dotted lines, Fig. 1,) which, when wound up, will produce a rotation of the pulley upon its pivotal axis, and is fitted with a cord, F F', which is led 65
thence to the sliding poise G, moving upon the beam. The cord F from the pulley E is led directly to the poise and attached thereto. The cord F' from the opposite pulley, E', is led 70
to the end of the beam around a friction-pulley, H, thereon, and back on the opposite side of the beam so as to be attached to the poise on that side. The two cords are so adjusted in length as that when the poise is carried to the outer end of the beam the cord F shall be 75
unwound from its pulley E, while the cord F' will be wound up on its pulley E', and vice versa. The spring in the pulley E' is of a strength barely sufficient to take up the slack of its cord when the poise is moved outward, 80
while the spring in the pulley E is of a strength sufficient to overcome the spring in E', and to draw the poise inward along the beam. The rim of the pulley E is provided with ratchet-teeth i i, which are engaged by a pawl, 85
K, pivoted to the frame. This pawl serves as an armature for an electro-magnet, L, which is secured to the side bar, C, of the frame immediately under the ratchet i i, by means of a band, M. (See Fig. 1.) The pawl K is automatically 90
carried into engagement with the ratchet-teeth by means of a spring, N, and is withdrawn therefrom by the attraction of the electro-magnet, when the latter is excited, by an electric current from a battery, O, which may be placed 95
in a suitable recess in the standard of the scale or at any convenient point. A conducting-wire, R, is led from one pole of the battery

O to the magnet, and from the magnet to the beam A. A second conducting-wire, R', is led from the opposite pole of the battery to the trig-loop P, which controls the play of the outer end of the scale-beam. An electrical contact of the outer end of the beam with the trig-loop P is prevented, when the beam is elevated, by means of an interposed insulating-block, Q, or by other well-known devices; but when the beam drops it forms an electrical contact with the loop, and thereby closes the electrical circuit from the battery through the beam and the electro-magnet.

In the operation of my improved electro-magnetic poise-motor constructed as described, the poise will, when the scale is not in use, automatically remain at the inner end of the beam, being drawn thereto by the force of the spring contained in the pulley E, which operates to wind up the cord attached to the inner side of the poise.

When it is desired to use the scale, and the article to be weighed is placed upon the platform, the poise G is drawn out by the attendant to the outer end of the beam, this movement serving to wind up the spring in the pulley E, while the slack in the outer cord attached to the poise is taken up meantime by the spring in the opposite pulley, E'. The weight of the poise G, causing the beam to tip, will bring its outer end into electrical contact with the trig-loop P, and thus close the electric circuit through the wire R, electro-magnet L, beam A, and wire R', to the battery O. The consequent excitation of the magnet L will cause it to withdraw the pawl K from the ratchet *i i*, and thereby set free the spring-actuated pulley E, so that it will operate to wind up the cord F and draw the poise inward along the beam. So soon, however, as by the movement of the poise, an equilibrium is established in the beam, causing it to lift from the trig-loop, the circuit will be broken, and the magnet, losing its power, will release the pawl, which, under the action of the spring N, will engage the ratchet *i i*, and arrest the movement of the poise at the point indicating the weight of the merchandise upon the scale.

Instead of attaching the electro-magnet to the beam by means of a frame, C C', to actuate a pawl engaging ratchet-teeth on a pulley, E, I contemplate, as a modification of my invention, forming a rack, *i'*, upon the under side of the beam, and fitting a spring-actuated pawl, K', in the lower part of the poise G, to engage said rack and prevent, by its engagement, an inward movement of the poise. An electro-magnet, L', is fitted in the poise beneath the pawl, so as to withdraw the latter when the magnet is excited. One end of the coil of the magnet is connected to the poise, so that an electrical connection is established through it with the beam, while the other end of the coil is connected with an insulated wire, which is carried to a spring-actuated pulley, (or, as an equivalent device, over a

pulley, T, to a weight, T',) operating automatically to draw the poise inward. This wire is also connected in circuit with the battery O, the circuit being completed by a second wire, R'', led directly from the battery to the trig-loop. The cord F' from the opposite side of the poise, after passing around the friction-roller H at the end of the beam, may also be held taut by a weight as an equivalent for the spring-actuated pulley E'.

When the beam is in contact with the trig-loop, the pawl K' is released from the rack on the beam, so that the poise may be drawn inward by the weight T'. So soon as the beam rises and the electrical circuit is broken the pawl K' will engage the rack and arrest the poise.

I contemplate the substitution of a clamp or cam, W, actuated by an armature-lever, W', as an equivalent for a pawl and rack, either upon the beam A or the winding-pulley E, to stop the movement of the poise.

It is evident that the cord F' and its spring-actuated pulley E' are not positively essential to my invention, its office being merely to steady the movement of the poise.

I am aware that electro-magnets have heretofore been combined with a weighing-scale to control the motion of the sliding poise, as described in Letters Patent to Henry Fairbanks, No. 110,963, and I do not therefore claim, broadly, such a device.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the sliding poise on a scale-beam, of a cord actuated by a spring or weight to produce automatically an inward movement of the poise, a stop device to prevent said movement, an armature and an electro-magnet actuating the same to release the stop, and a battery and suitable conductors to complete an electric current with the magnet through the scale-beam and its trig-loop, which shall be closed when the beam is in contact with the loop and open when the contact is broken, all substantially in the manner and for the purpose herein set forth.

2. The combination, with the sliding poise upon a scale-beam, of a spring-actuated drum or pulley, a cord extending from the poise to the pulley to wind thereon and thereby draw the poise toward it, a rack upon the rim of the pulley, a spring-actuated pawl engaging said rack, an electro-magnet which, when excited, will attract the pawl and withdraw it from the rack, and a battery in circuit with the magnet through the beam and its trig-loop to be closed by the contact of the beam and loop.

3. The combination, with a detachable frame fitting upon a scale-beam, of a spring-actuated pulley pivoted to said frame and carrying cords extending from it to the sliding poise on the beam, an electro-magnet attached to the frame, an armature pivoted to the

frame to serve as a pawl for a ratchet on the pulley, and detachable electric conductors to connect a battery with the electro-magnet, the beam, and the trig-loop at the end of the
5 beam, and thereby complete and close an electric circuit when the beam and loop are in contact, all substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHAS. W. HASTINGS.

Witnesses:

F. P. LEE,

A. B. MOORE.