

(No Model.)

J. H. GUNNING.
RHEOSTAT.

No. 437,111.

Patented Sept. 23, 1890.

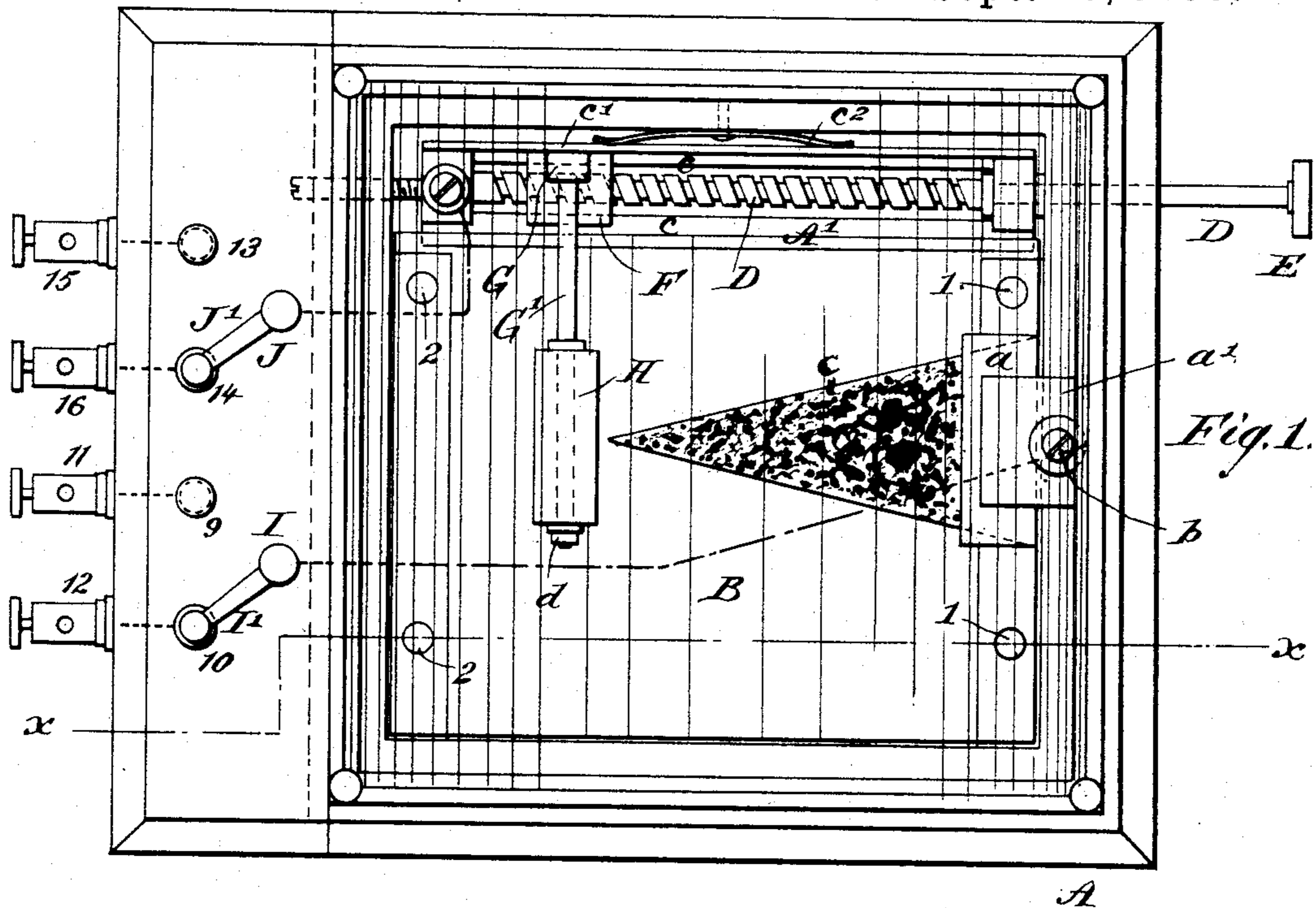


Fig. 2.

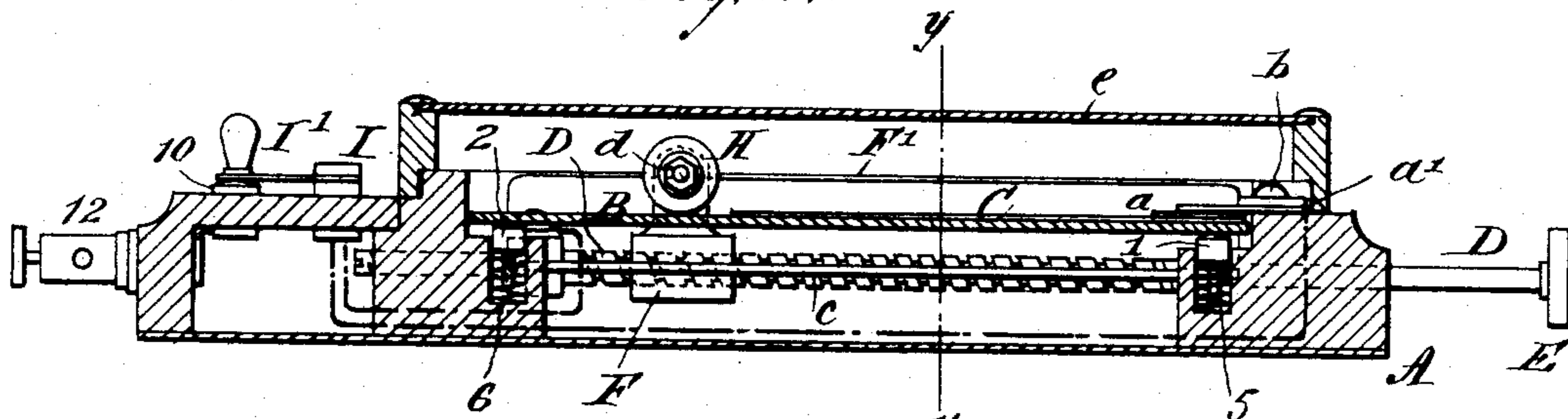
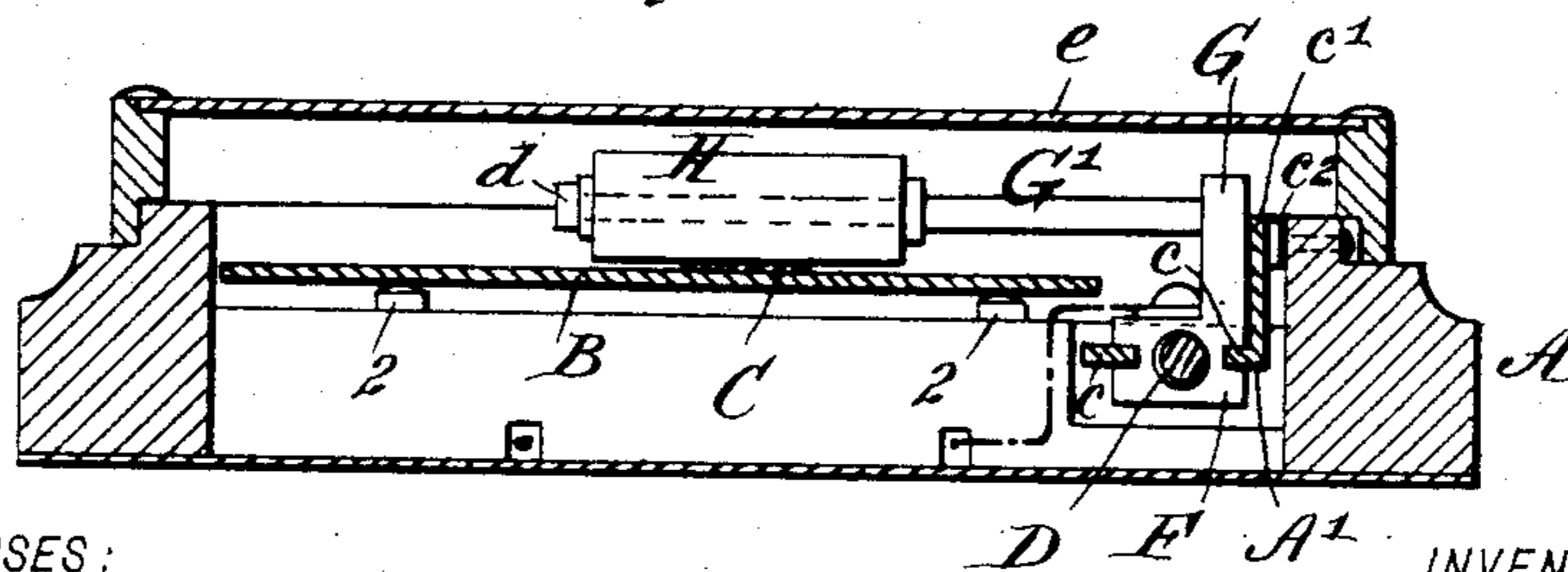


Fig. 3.



WITNESSES:

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RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 437,111, dated September 23, 1890.

Application filed November 15, 1889. Serial No. 330,422. (No model.)

To all whom it may concern:

Be it known that I, JOSEPHUS HENRY GUNNING, of New York city, in the county and State of New York, have invented a new and
5 Improved Electric - Current Regulator, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a plan view of my improved electric-current regulator. Fig. 2 is a transverse
10 section taken on line *xx* of Fig. 1, and Fig. 3 is a longitudinal section taken on line *yy* in Fig. 2.

Similar letters and figures of reference indicate corresponding parts in all the views.
15

The object of my invention is to construct an electric-current regulator or rheostat for controlling primary or secondary currents and for introducing resistance into the electric
20 circuit wherever it is required.

My invention consists in the combination, with a tapering resistance-piece formed of a conductor or semi-conductor, of a roller adapted to roll upon the tapering plate from the
25 narrower to the wider end or in the reverse direction, and means for moving the said roller gradually and uniformly.

It also consists in means for graduating the pressure of the roller upon the resistance-piece, all as will be hereinafter more fully described.
30

My invention is designed for use in connection with medical batteries; but I do not limit or confine myself to this particular use, as it
35 may be employed in connection with electroplating-machines and electric-lighting devices.

In the frame A, which is of non-conducting material, is inserted the plate B, of insulating material—such as glass, hard rubber, or gutta-percha—and the said plate is pressed
40 outward by four spring-pressed followers 1 1 2 2, which, together with their springs 5 5 6 6, are contained and guided by holes in the frame A. The springs 5 5 are made much
45 stronger than the springs 6 6, to secure a stronger contact of conducting-surfaces at that end of the glass plate. To the said plate B is attached a tapering resistance-plate C,
50 formed of paper or analogous non-conducting material coated with a semi-conductor, such

as plumbago. The resistance-plate C is attached to the insulating-plate B by means of any suitable cement, and an electric contact is formed with the said plate C by means of
55 a plate *a* and a clip *a'*, which is held in place by the screw *b* passing through the said clip into the frame A.

In one side of the frame A, parallel with a line bisecting the angle of the resistance-piece
60 C, is journaled a screw D, which extends beyond the frame and is furnished with a wheel E, by which it may be turned.

The nut F, arranged upon the screw D, is grooved on opposite sides and slides upon
65 guides *c*, arranged in a frame A', which is pivoted on the ends of the screw. The said frame A' is provided with an upwardly-extending plate *c'*, between which and the frame A is placed a spring *c''*, which tends to press
70 the plate *c'* inward toward the center of the frame A. The nut F carries a right-angled arm G, in which is inserted an arm G', which extends over the face of the plate B, parallel
75 with the said plate, and upon the extremity of the said arm G' is journaled the metallic roller H, which is held in place upon the arm by the nut *d*.

The clip *a'* is connected electrically with the binding-post I, attached to the frame A,
80 and the frame A' is connected electrically with the binding-post J, attached to the frame A. In front of the binding-post I there are two contact-points 9 10, connected electrically
85 with the binding-posts 11 12, and in front of the binding-post J there are contact-points 13 14, connected electrically with the binding-posts 15 16. On the binding-post I is pivoted
90 a switch-arm I', which is capable of touching either of the contact-points 9 10, and on the binding-post J is pivoted a switch-arm J', which may be brought into contact with either
95 of the points 13 14. Conductors carrying a current of one kind are connected with the binding-posts 11 15, and conductors carrying
100 a current of a different character are connected with the binding-posts 12 16.

The instrument is placed in the electric circuit which is to be controlled by inserting the wires in the binding-posts, as described.
100 By turning the screw D in one direction the roller H is carried forward into contact with

the point of the resistance-piece C, thereby introducing the resistance due to a small contact and to the material of the said resistance-piece. By continuing the turning of the screw the roller is carried forward upon the resistance-piece toward the wider end, thereby diminishing the resistance as the line of contact between the resistance-piece and the roller increases in length, and as the distance between the roller and the clip a' is diminished, the roller H may be carried forward until it forms an electric contact with the plate a , when the resistance will be entirely cut out. It is obvious that the stronger springs insure a more perfect contact as the roller H approaches the clip a' . The resistance in the circuit is increased by reversing the operation just described.

The resistance-piece C may be of any semiconductor or poor conductor of electricity, and its proportions may be varied to adapt it to different currents.

To exclude dust and moisture and to protect the rheostat, I apply to the frame A a cover provided with a glass plate e .

My improved rheostat may be connected in the primary or secondary circuit, and it may

be arranged as a fixture in the office or laboratory or applied as a part of a portable medical battery.

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

1. In a rheostat, the combination of a spring-supported insulating-plate, a tapering resistance-piece secured to the insulating-plate, a contact-roller fitted to roll along the tapering resistance-piece, and an adjusting-screw for moving the contact-roller, substantially as specified.

2. In a rheostat, the combination, with the resistance-piece and its supporting-plate, of springs constructed to exert different pressures on opposite ends of the plate, substantially as specified.

3. In a rheostat, the combination, with the contact-roller H and its supporting-frame, of the spring c^2 , adapted to force the contact-roller down upon the tapering resistance-piece, substantially as specified.

JOSEPHUS HENRY GUNNING.

Witnesses:

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