

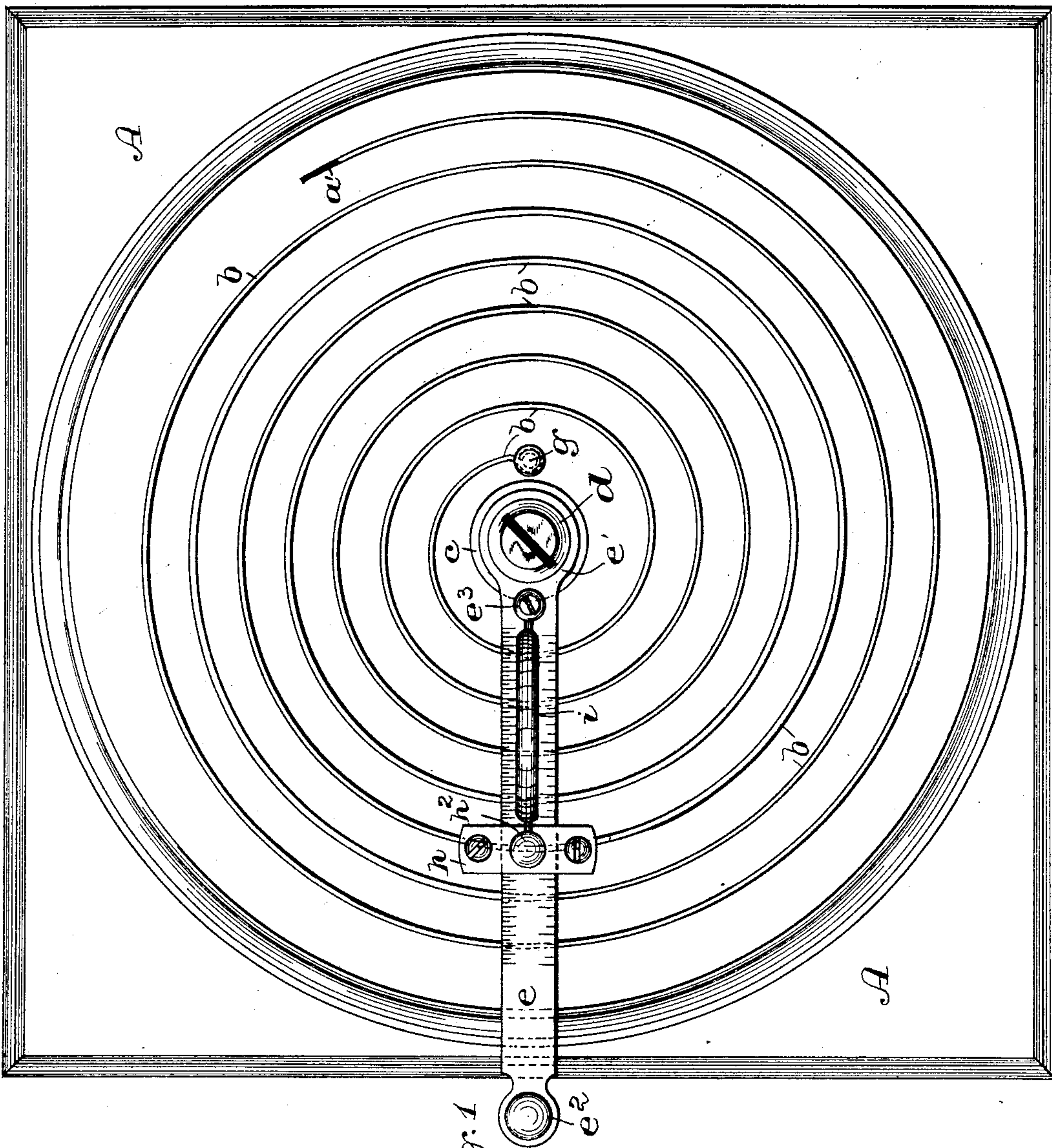
(No Model.)

2 Sheets—Sheet 1.

O. A. KESSNER.
RHEOSTAT.

No. 460,972.

Patented Oct. 13, 1891.



WITNESSES:

Wm. H. Campfield, Jr.
Arthur Cresse

INVENTOR:

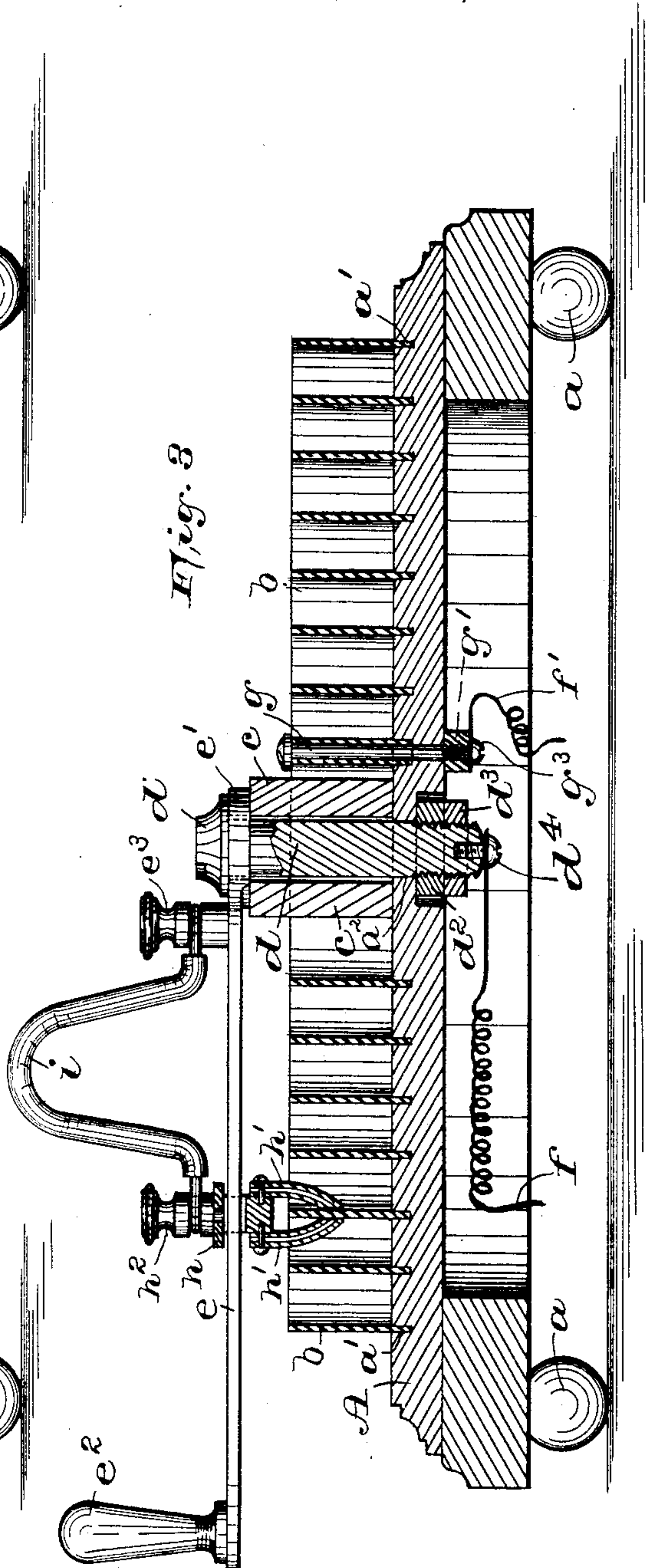
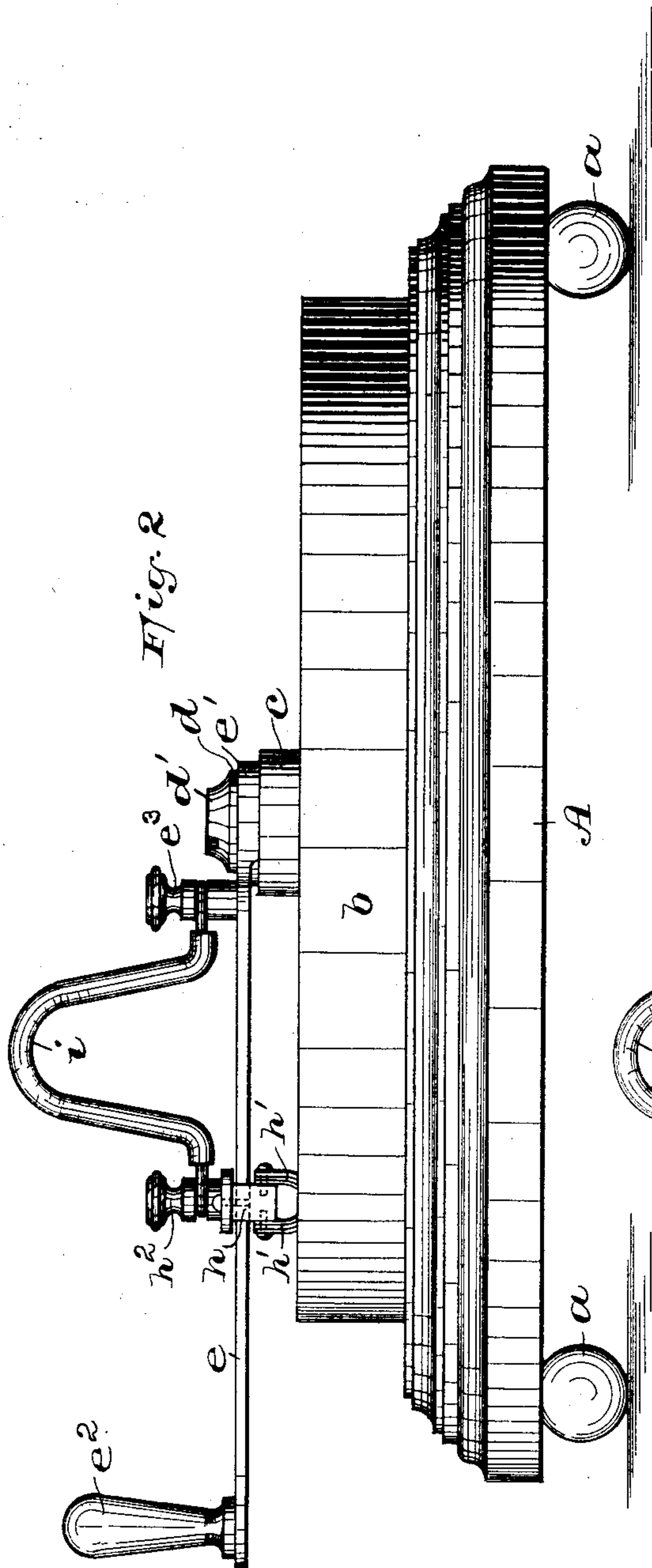
Otto A. Kessner,

BY *Fred C. Fraentzel,* ATT'Y.

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UNITED STATES PATENT OFFICE.

OTTO A. KESSNER, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE HANSON
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RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 460,972, dated October 13, 1891.

Application filed March 18, 1891. Serial No. 385,487. (No model.)

To all whom it may concern:

Be it known that I, OTTO A. KESSNER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Resistance-Boards or Rheostats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to a device adapted to be used in connection with dynamo-electric machines, having for its object the interposition of a desired electrical resistance in a circuit, whereby the electro-motive force from a dynamo can be controlled and readily regulated when applied directly to the field-magnets of a shunt-wound machine by means of said device, thereby carefully adjusting the current, which is very essential in the processes of alloy deposits of any metal.

The invention has therefore for its main purpose to provide an electrical device or instrument for obtaining a gradual increase or decrease of power without the sudden fluctuations, as caused in machines of the ordinary construction in making and breaking a circuit in between two points of different potentials in the circuits.

The invention therefore consists of a board provided on its upper surface with a continuous spiral of conducting material and a connecting-piece also of conducting material arranged to slide longitudinally on an operating-arm and making electrical connection with the spiral, the circuit terminals being connected with one end of the spiral and with the pivotal post of the handle, whereby the entire length of the spiral or a part thereof is interposed in the circuit, which is either a main circuit or a shunt, and the force or power of the current can be gradually increased or decreased with accuracy and ease.

The invention further consists in certain arrangements and combinations of parts, as

will be hereinafter more fully set forth, and finally embodied in the clauses of the claim. 50

In the accompanying three sheets of drawings, in which is illustrated my invention, Figure 1 is a plan view of my new resistance-board or rheostat. On Sheet 2, Fig. 2 is a side elevation of the same, and Fig. 3 is a vertical section of Fig. 2. 55

Similar reference-letters are employed to indicate corresponding parts in each of the several views. 60

In the drawings, A is a base or board of wood or other non-conducting material, provided with feet *a*. The upper part of said board *a* is provided with a spiral groove *a'*, in which is securely arranged a spiral conducting or resistance plate *b*, which is of uniform thickness and homogeneous material, thereby offering a uniform resistance at all points to an electrical current passing through the same. Said base A is preferably hollow underneath, as will be seen from Fig. 3, and is provided with a central perforation *a''*, through which passes a pivotal post *d*, and around which is arranged a perforated sleeve *c*, said sleeve resting upon the base and forming a bearing for an arm or lever *e*, upon which rests the head *d'* upon the pivotal post *d*. The lower end of said post is secured to the base by means of nuts *d''* and *d'''*, and into the lower end of said post is screwed a binding-screw *d''''*, to which is connected a wire *f*. A second post *g* is secured in a perforation in the base and held therein by means of a nut *g'*, said post projecting up above the upper surface of the base, and one end of the spiral plate *b* being formed around said post, as shown more especially in Fig. 3. A binding-screw *g''* connects with the bottom of said post, having a wire *f'* connected therewith. The lever or arm *e* is provided with a finger-piece *e''*, said arm extending radially above the upper edge of the spiral plate *b* from its pivotal post. Upon said arm or lever *e* is arranged a slide *h*, provided with downwardly-projecting springs or brushes *h'*, which are made to embrace both sides of the spiral plate *b*, as shown. In order to insure electrical communication between the slide and the lever 85 90 95

or arm *e*, I have placed on one end of said arm a binding-post *e*³, and upon said slide *h* is arranged a second binding-post *h*², and connecting said post is a flexible cable *i*, of any desirable construction.

From Fig. 3 it will be evident that by means of the wires *f* and *f'* the device can be arranged in a circuit, either main or shunt, the current passing from wire *f* through post *d*, arm *e*, (or coil *i*), through the slide *h*, and its brushes *h'*, which complete the circuit with the spiral resistance-plate *b*, as will be evident. Consequently when the arm *e* is turned about its pivotal post *d* the brushes *h'* slide along the spiral plate *b*, thereby causing the slide *h* to move longitudinally on the arm *e*, according to the direction of its rotation. Thus it will be clearly evident that any desired length of the spiral plate *b* can be cut out of circuit or thrown into circuit, and the electro-motive force of the machine can be carefully adjusted and gradually increased or decreased as may be necessary without making or breaking the circuit, as in machines as now ordinarily used for this purpose, and without causing a sudden fall of potential, which is of great disadvantage in the use, in connection with the process of alloy deposits, of any metal where it is necessary to very carefully adjust the machine in order to properly control the current.

The handle or lever *e* can be graduated on its opposite edges to designate the volts and ampères.

My device is adapted for use more especially in the process of electroplating, but the instrument can be used either as a rheostat or a resistance-coil or as a potentiometer.

Having thus described my invention, what I claim is—

1. An instrument for controlling electrical currents, consisting of a base or support of non-conducting material, a conductor spirally disposed upon its upper surface and projecting up from and above said upper surface, extending from or near the outer edge of the base toward and near the center thereof, a conducting - traveler connecting with said spiral conductor, and means for moving said traveler along the length of and in contact with said conductor, for the purposes set forth.

2. An instrument for controlling electrical currents, consisting of a base or support of non-conducting material, a conductor spirally disposed upon its upper surface and projecting up from and above said upper surface, extending from or near the outer edge of the base toward and near the center thereof, a conducting - traveler connecting with said spiral conductor, means for moving said traveler along the length of and in contact with said conductor, and circuit connections communicating, respectively, with said traveler and with one end of said spiral conductor, for the purposes set forth.

3. An instrument for controlling electrical currents, consisting of a base or support of

non-conducting material, a conductor spirally disposed upon its upper surface and projecting up from and above said upper surface, extending from or near the outer edge of the base toward and near the center thereof, a conducting slide or traveler connecting with said spiral conductor, an arm or lever pivoted to said base and upon which said traveler slides while making contact, and circuit connections communicating, respectively, with said lever or arm and with one end of said spiral conductor, for the purposes set forth.

4. An instrument for controlling electrical currents, consisting of a base or support of non-conducting material, a conductor spirally disposed upon its upper surface and projecting up from and above said upper surface, extending from or near the outer edge of the base toward and near the center thereof, a conducting slide or traveler connecting with said spiral conductor, a post *d*, centrally arranged on said base or support, a lever or arm extending radially from said post above the spiral conductor, said slide or traveler sliding upon said arm, and circuit connections communicating, respectively, with said post *d* and with one end of the spiral conductor, for the purposes set forth.

5. An instrument for controlling electrical currents, consisting of a base or support of non-conducting material, a conductor spirally disposed upon its upper surface, a conducting slide or traveler connecting with said spiral conductor, a post *d*, centrally arranged on said base or support, a lever or arm extending radially from said post above the spiral conductor, said slide or traveler sliding upon said arm, binding-posts on said arm and said slide or traveler, respectively, and an electrical cable connecting said posts, respectively, with said post *d* and with one end of the spiral conductor, for the purposes set forth.

6. An instrument for controlling electrical currents, consisting of a base or support, a conductor spirally disposed upon said base, and projecting up from and above said upper surface and extending from or near the outer edge of the base toward and near the center thereof, a conducting slide or traveler connecting with said spiral conductor, an arm or lever pivoted to said base, an index-scale on said arm, and means for connecting said traveler and the spiral conductor in the circuit, for the purposes set forth.

7. The combination of the base *A*, the spiral conductor *b*, arranged in a spiral groove in the upper surface of said base-post *d*, connecting with wire *f*, arm or lever *e* on said post *d*, slide or traveler *h* on said lever *e*, provided with springs or brush *h'*, and circuit connections, substantially as and for the purposes set forth.

8. An instrument for controlling electrical circuits, consisting of a base or support of non-conducting material, a conductor spirally disposed in a spiral groove in its upper sur-

face projecting up therefrom and above said upper surface, a post extending up from said base, a lever or arm extending radially from said post above the spiral conductor, a slide or traveler sliding upon said arm, brushes or springs extending down from said slide or traveler in sliding contact with the spiral conductor, and circuit connections communicating, respectively, with said post and with one end of the spiral-conductor, for the purposes set forth.

9. An instrument for controlling electrical circuits, consisting of a base or support of non-conducting material, a conductor spirally disposed in a spiral groove in its upper surface, projecting up therefrom and above said upper surface, a post extending up from said

base, a lever or arm extending radially from said post above the spiral conductor, a slide or traveler sliding upon said arm, brushes or springs extending down from said slide or traveler in sliding contact with the spiral conductor, binding-posts on said arm and on the slide, and an electrical cable for connecting said posts, as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 13th day of March, 1891.

OTTO A. KESSNER.

Witnesses:

FREDK. C. FRAENTZEL,
ABM. VAN WINKLE.