

T. RHODUS.

RHEOSTAT.

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1,154,728.

Patented Sept. 28, 1915.

Fig. 1.

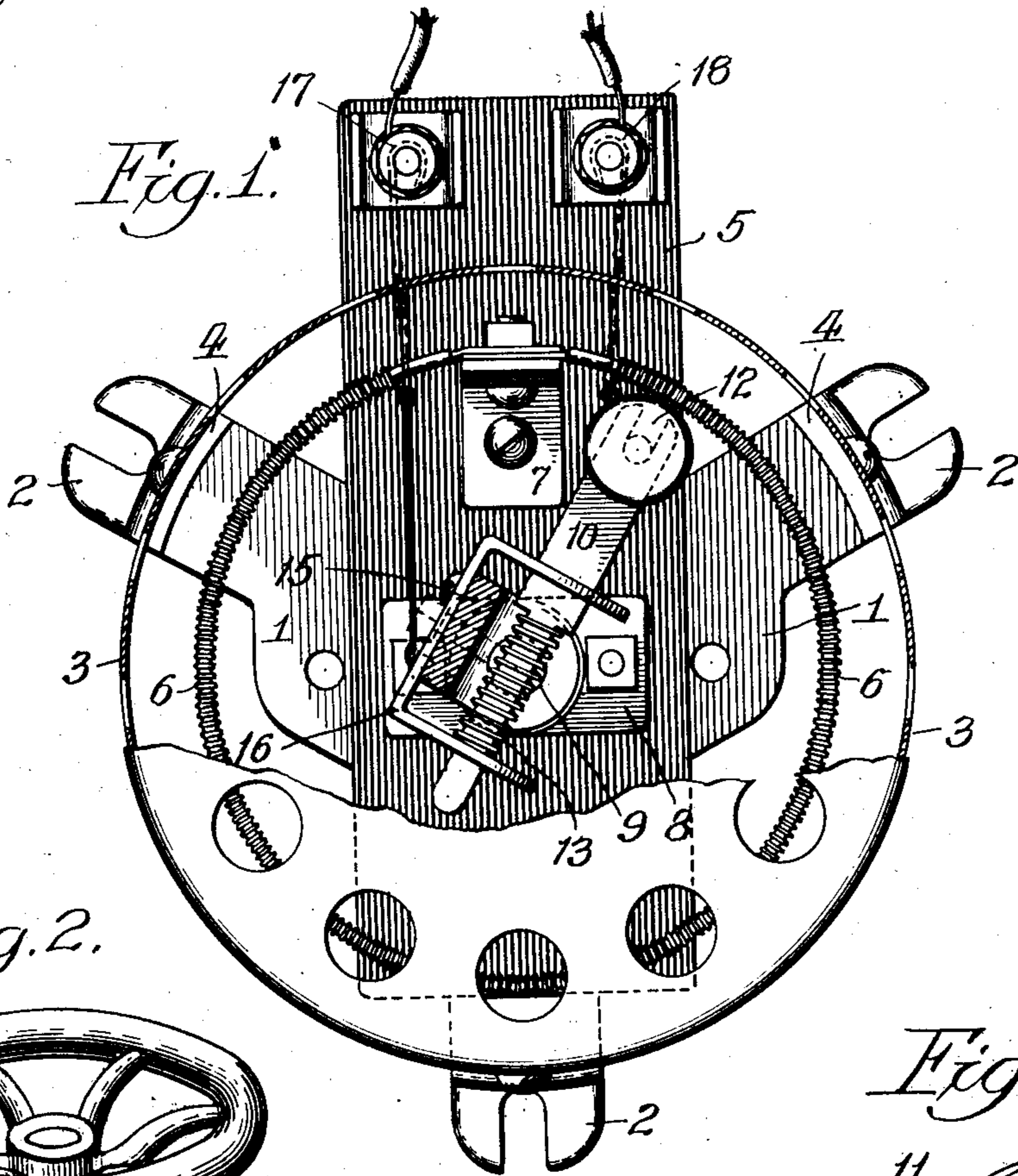


Fig. 2.

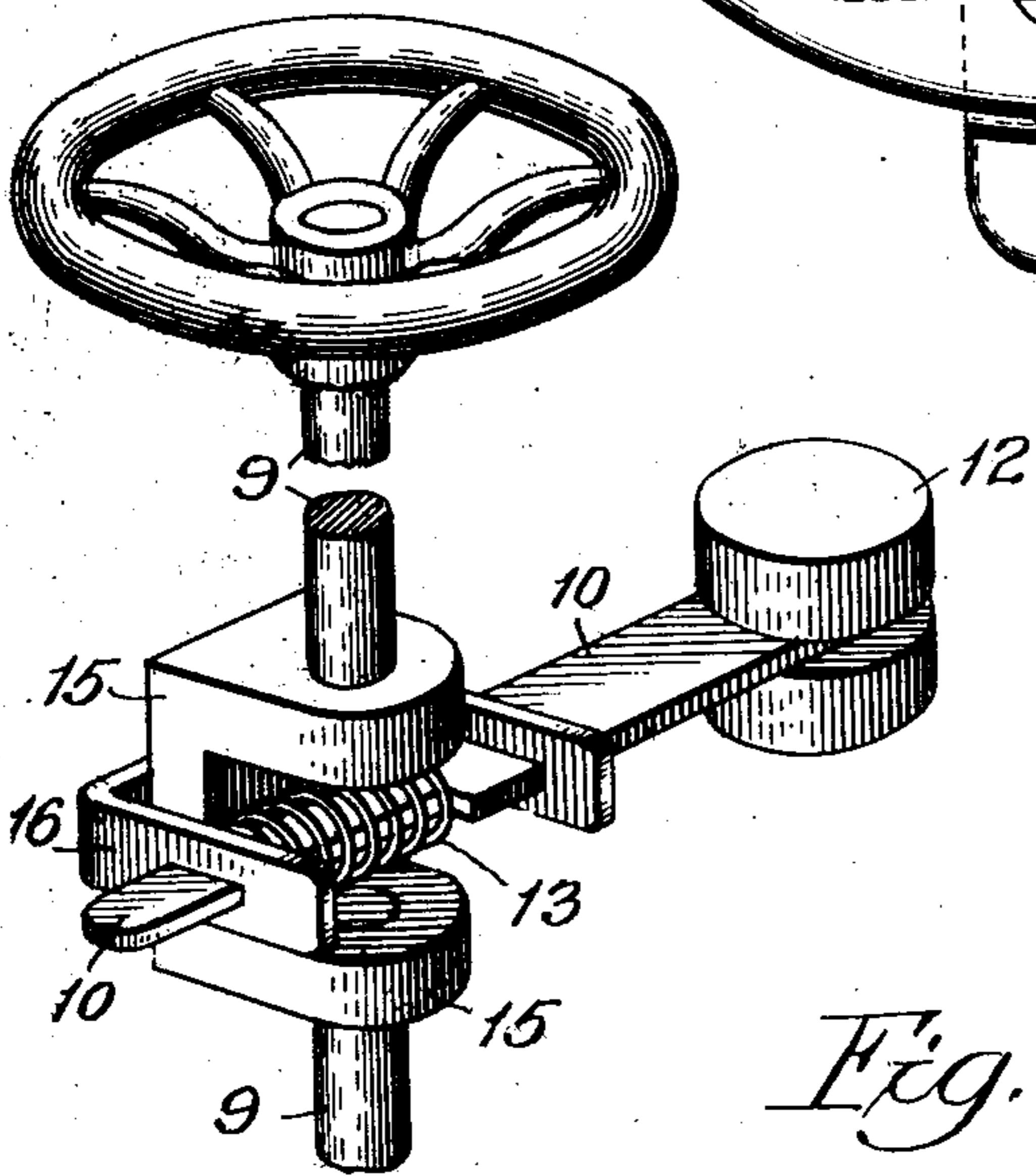


Fig. 4.

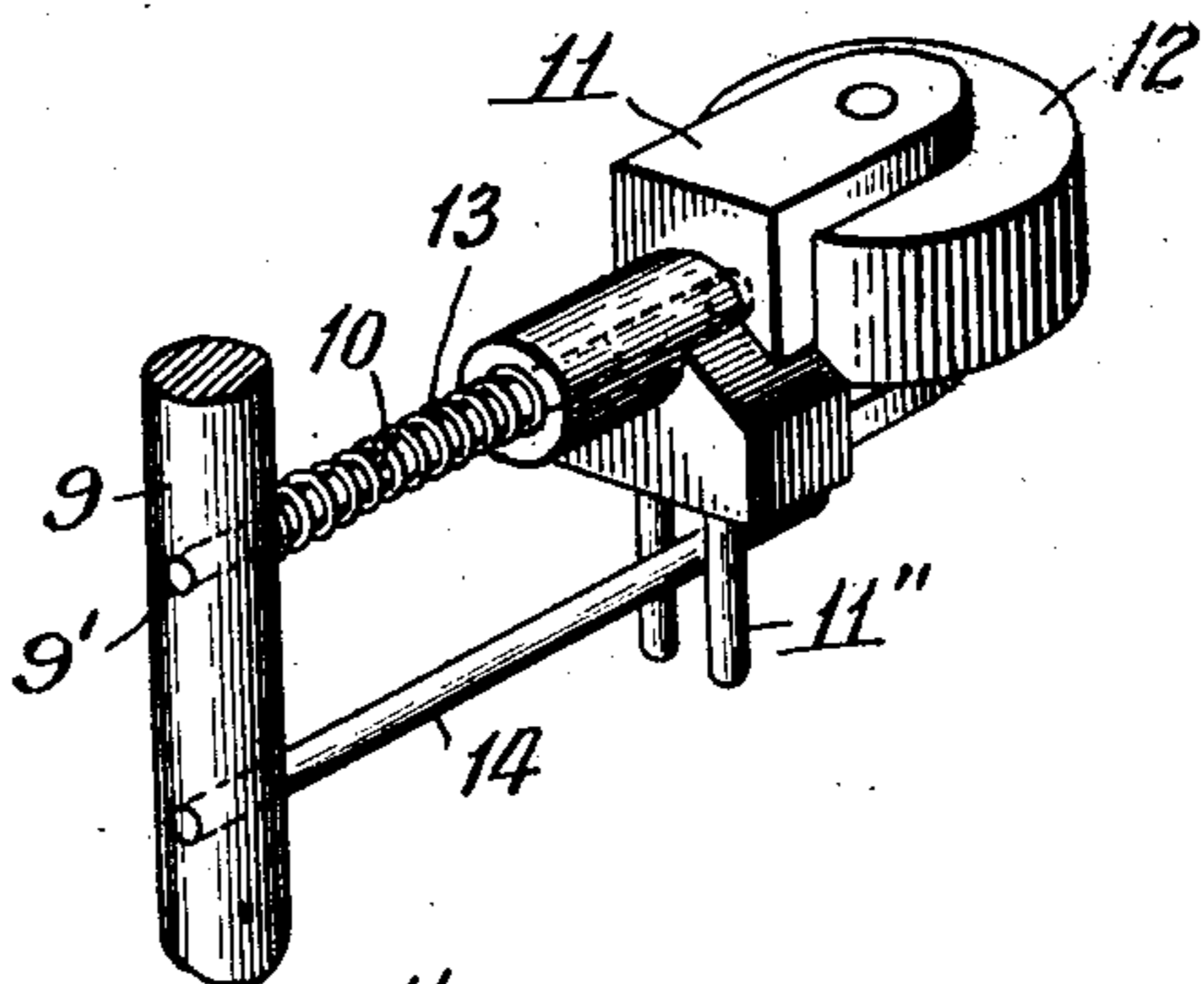
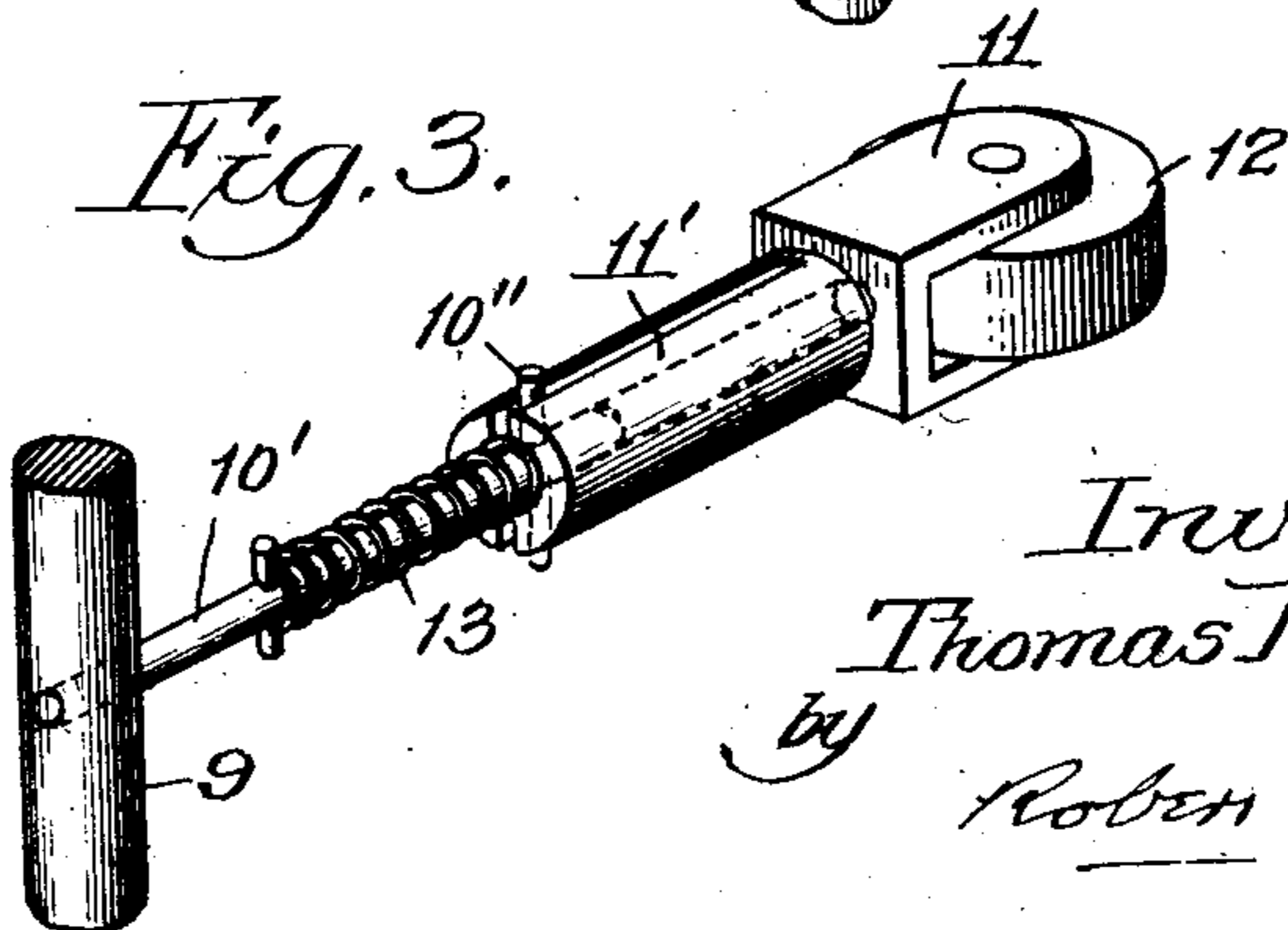


Fig. 3.



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RHEOSTAT.

1,154,728.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS RHODUS, a citizen of the United States of America, and a resident of Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Rheostats, of which the following is a specification.

This invention relates to that type of rheostats in which the resistance element is formed by a spiral winding of wire disposed in concentric relation to a centrally arranged and manually actuated shaft carrying the adjustable contact member of the apparatus, an example of which forms the subject matter of my prior Patent No. 1,053,219, dated February 18, 1913. And the present improvement has for its object, to provide a simple and efficient structural formation and association of parts whereby an extended contact is attained between the adjustable contact member and one or more adjacent individual wire windings of the stationary resistance member, with an avoidance of wear upon the active surface of such windings, and the change in the electrical resistance thereof due to such wear, all as will hereinafter more fully appear.

In the accompanying drawings: Figure 1, is a sectional plan view of a rheostat, embodying the preferred form of the present invention. Fig. 2, is a detail perspective view of the adjustable contact member and its accessories. Figs. 3 and 4, are detail perspective views illustrating modified forms of the adjustable contact member and its accessories.

Similar reference numerals indicate like parts in the several views.

Referring to drawing, 1 represents the supporting base or spider having a plurality of radially projecting feet 2, by which it is attached to the surface of a bench, wall or other support.

3 designates the inclosing shell of the apparatus, of any usual and suitably orificed form which permits of a circulation of air to ventilate and carry off the heat generated in the actual use of the appliance. Such shell is preferably of a circular form and secured in place by means of attaching screws passing through the shell and screwing into a circularly disposed series of lugs 4 on the frame 1, aforesaid.

5 designates a slab or bar of insulating material secured to the upper surface of the

frame 1, to form an insulating support for the stationary resistance element and its accessories hereinafter described.

6 designates the resistance element of the present structure, formed by a series of flat open spiral windings of resistance wire, wound upon an insulating core, as in my aforesaid Patent No. 1,053,219. And as in said patented construction, said core will be of an open ring shape, with overlapping ends secured to a supporting bracket 7 attached to the insulating slab 5, above described, and with said core and its resistance wire arranged in concentric relation to the center or axis of the rheostat as shown in Fig. 1.

8 designates a bearing hub or neck secured centrally to the insulating slab 5, and adapted to afford a journal bearing for the axially arranged revoluble shaft which carries the adjustable contact member of the rheostat.

9 designates the revoluble shaft, above referred to, and which is provided with a suitable operating handle for convenient manual adjustment in actual use.

10 designates a radially disposed arm or member, provided at its outer end with a carrying head or yoke 11, to which is journaled a roller or drum 12, having rolling contact with the inner surface of the stationary resistance element 6, the associated parts just described constituting the movable contact element of the rheostat. The described construction admits of the use of a contact roller or drum of ample length to afford a corresponding degree of electrical contact with one or more individual strands of the spirally wound resistance wire of the stationary resistance element 6, in actual use.

At its inner end the arm or member 10, is slidably carried by the movable shaft 9, aforesaid, and a resilient outward tendency is imparted to said arm or member 10, by a spring 13, hereinafter described. The sliding connection between the arm 10 and the shaft 9 may be effected by various detail structural means. In the construction shown in Fig. 3, the shaft 9 is provided with a fixed lateral arm 10' upon which the carrying head or yoke 11, aforesaid, is slidably mounted by means of a sleeve extension 11' that is slotted longitudinally to receive a guide pin 10'' of said lateral arm 10' adapted to prevent any turning movement of the yoke 11 upon said lateral arm. In the construction illustrated in Fig. 4, the revo-

luble shaft 9 is formed with a transverse guide 9' which receives an inner end of the arm 10 formed to slidably fit the said orifice 9' as shown. With such construction means is required to prevent any rotation of the guiding end of the arm 10 in the orifice 9', and this is attained by a laterally arranged fixed arm 14 on the shaft 9, having sliding engagement at its outer end between a pair of depending lugs or prongs 11'' on the yoke 11, aforesaid.

The preferred means for attaining said sliding connection is illustrated in Figs. 1 and 2, and comprises the formation of the shaft 9 in two sections disposed in separated axial alinement and connected together by a yoke 15, as shown.

16 designates a C shaped bracket secured in angular relation to the yoke 15, and having its arms formed with alined guide orifices for the reception of the inner portion of the arm 10, aforesaid, and which inner portion is formed to slidably fit said orifices as shown.

The spring 13, before mentioned, may have any usual form and arrangement but is preferably of the coiled form shown, and arranged to encircle the arm 10, as illustrated in the various figures of the drawings.

The modified constructions illustrated in Figs. 3 and 4, are made the subject matter of a separate application for Letters Patent Serial No. 16,546, filed March 24th, 1915.

17 and 18 designate binding posts secured to an outer portion of the insulating slab 5, aforesaid and having connection respectively with the stationary resistance element 6, and with the movable contact element 10, 12, as shown in Fig. 1.

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

1. In a rheostat, the combination of an insulating support a ring shape resistance element formed in the main of a resistance wire wound into an open series of convolutions, a rolling contact element having contact with the inner wall of said resistance element, a centrally arranged revoluble shaft, an arm slidably associated with said shaft and carrying at its outer end the rolling contact element aforesaid, and means for yieldingly forcing said arm outward, substantially as set forth.

2. In a rheostat, the combination of an insulating support, a ring shape resistance element formed in the main of a resistance wire wound into an open series of convolutions, a rolling contact element having contact with the inner wall of said resistance element, a centrally arranged revoluble shaft, an arm slidably associated with said shaft and carrying at its outer end the rolling contact element aforesaid, and a spring encircling said arm and adapted to force

the same outwardly, substantially as set forth.

3. In a rheostat, the combination of an insulating support, a ring shape resistance element formed in the main of a resistance wire wound into an open series of convolutions, a rolling contact element having contact with the inner wall of said resistance element, a centrally arranged revoluble shaft formed in spaced and alined sections, a yoke connecting said sections together, a guide bracket associated with said yoke, an arm slidably mounted in said bracket and carrying at its outer end the rolling contact element aforesaid, and means for yieldingly forcing said arm outward, substantially as set forth.

4. In a rheostat, the combination of a supporting frame, a reticulated inclosing casing carried by said frame, an insulating slab mounted on said frame, a ring shaped resistance element formed in the main of resistance wire wound in a flat open series of convolutions, a rolling contact element having contact with the inner wall of said resistance element, a centrally arranged revoluble shaft, an arm slidably associated with said shaft and carrying at its outer end the rolling contact element aforesaid, and means for yieldingly forcing said arm outward, substantially as set forth.

5. In a rheostat, the combination of a supporting frame, a reticulated inclosing casing carried by said frame, an insulating slab mounted on said frame, a ring shaped resistance element formed in the main of a resistance wire wound into a flat open series of convolutions, a rolling contact element having contact with the inner wall of said resistance element, a centrally arranged revoluble shaft, an arm slidably associated with said shaft and carrying at its outer end the rolling contact element aforesaid, and a spring encircling said arm and adapted to force the same outwardly, substantially as set forth.

6. In a rheostat, the combination of a supporting frame, a reticulated inclosing casing carried by said frame, an insulating slab mounted on said frame, a ring shaped resistance element formed in the main of a resistance wire wound into a flat open series of convolutions, a rolling contact element having contact with the inner wall of said resistance element, a centrally arranged revoluble shaft formed in spaced and alined sections, a yoke connecting said sections together, a guide bracket associated with said yoke, an arm slidably mounted in said bracket and carrying at its outer end the rolling contact element aforesaid, and means for yieldingly forcing said arm outward, substantially as set forth.

7. In a rheostat, the combination of an insulating support, a ring shaped resistance

element formed in the main of a resistance wire wound into an open series of convolutions, a rolling contact element having contact with the inner wall of said resistance element, a centrally arranged revoluble shaft, an arm associated with said shaft and carrying on its outer end the rolling contact element aforesaid, and means for yieldingly forcing said contact element outward, substantially as set forth.

8. In a rheostat, the combination of a curved resistance element formed in the main of a resistance wire wound into an open series of convolutions, a rolling con-

tact element having contact with the inner surface of the resistance element a centrally arranged revoluble shaft, and an expansible carrying means connected at its inner end to said revoluble shaft and provided at its outer end with a journal bearing for said rolling contact element, substantially as set forth.

Signed at Chicago, Illinois, this 22nd day of December, 1914.

THOMAS RHODUS.

Witnesses:

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HYDE W. PERCE.