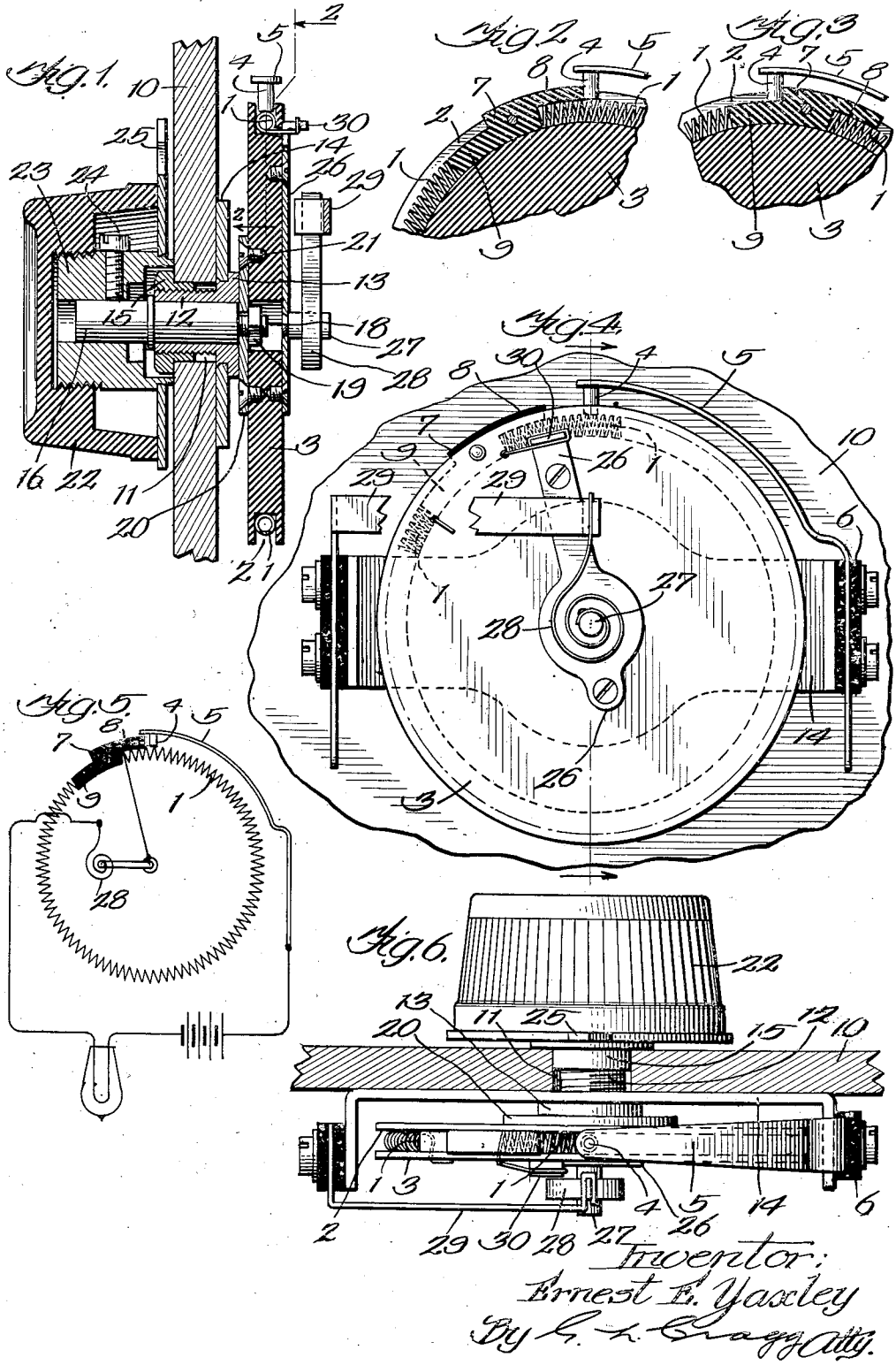
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E. E. YAXLEY

RHEOSTAT

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# UNITED STATES PATENT OFFICE.

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## RHEOSTAT.

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*To all whom it may concern:*

Be it known that I, ERNEST E. YAXLEY, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Rheostats, of which the following is a full, clear, concise, and exact description.

My invention relates to rheostats and has for one of its objects the provision of improved means which prevents the total exclusion of resistance when the rheostat has been adjusted to its extreme resistance excluding position. In carrying out this object of the invention there is a resistance engaging contact and a stop which limits the relative movement of the resistance and the contact in the resistance excluding direction, one of the two first aforesaid elements of the structure overhanging the terminating portion of the connected ends of the resistance to engage the other of these two elements while a portion of the resistance at the connected end thereof yet remains in circuit.

The invention has for another of its objects an improved housing for the resistance and also affords a suitable guide for the contact element to hold it in contacting relation to the resistance. In carrying out this object of the invention the support for the resistance is formed with a resistance receiving groove whose side walls preferably serve to position the resistance and desirably project beyond the resistance to constitute a guide for the resistance engaging contact received therebetween.

The invention will be more fully explained by reference to the accompanying drawing in which Fig. 1 is a sectional view of the preferred form of the invention taken through the axis of the resistance support which is preferably rotatable; Fig. 2 is a sectional view on line 2—2 of Fig. 1 illustrating a part of the structure; Fig. 3 is a view similar to Fig. 2 showing changed positions of the parts; Fig. 4 is a front view of the device; Fig. 5 is a diagram illustrating one circuit arrangement pertaining to the same; and Fig. 6 is a plan view, partially in section, of the mechanism shown in Figs. 1, 2, 3 and 4.

Like parts are indicated by similar characters of reference throughout the different figures.

The resistance element 1 is disposed within an annular groove 2 formed in the periphery of a circular resistance support 3 which is preferably formed of insulating material, the wire of the resistance being desirably uncovered. The resistance is illustrated in the form of a coil of wire, though the invention is not to be limited to the shape of the resistance. As illustrated, the side walls of the groove engage the resistance to position it. The resistance engaging contact 4 enters the groove and is positioned by and between the outer edge portions of the portions of the side walls of the groove that project beyond the resistance. This contact 4 and the resistance support 3 are relatively rotatable, it being preferred to turn the support to regulate the amount of resistance in the circuit having it. In such event the contact 4 is mounted upon one end of an inwardly pressing spring 5 that is anchored to the stationary spring support 6.

A stop 7 is disposed in the groove 1, this stop being composed of insulating material. It serves to limit the movement of the resistance support in a manner to permit total exclusion of the resistance when the circuit having it is to be opened and to prevent the total exclusion of the resistance when the circuit having it is to be closed. To this end one of the two elements 4 or 7, preferably the element 7, carries a portion 8 of insulating material which overhangs a terminating a portion of the connected end of the resistance with the results that are clearly illustrated in the diagram, Fig. 5, when the resistance is being adjusted while remaining in closed circuit. The stop 7 has a portion 9 upon its other side on which the contact 4 rides when the resistance and contact are relatively adjusted to open the circuit containing the resistance and to totally exclude such resistance, the portion 9 being in the same circle with the resistance 1.

Any suitable means may be employed for mounting the structure thus far described. I have illustrated a mounting plate 10 formed with a hole 11 therethrough in which a bearing 12 is received. This bearing has a head 13 which is larger than the

hole, a clamping plate 14 being interposed between this head and the plate 10 and being brought into clamping engagement with the plate 10 by means of the nut 15 which is screwed upon the shank of the bearing. A shaft 16 is formed with a flange 17 that engages the shank end of the bearing 12, this shaft having a reduced threaded portion 18 carrying a nut 19 that presses the plate 20, through which the shaft extension 18 passes, against the larger portion of the shaft whereby said shaft and plate 20 may be turned together. This plate is assembled with the resistance support 3 by means of the screws 21 so that the resistance may be turned with respect to the contact 4 whenever the shaft 16 is turned. The outer end of the shaft is desirably assembled with a knob 22 that is employed for turning it. This knob is preferably of insulation, being brought into assembly with the shaft by means of the bushing 23 upon which the knob is threaded and which bushing is placed in fixed relation with the shaft by means of the set screw 24. Said bushing may carry a pointer 25 to indicate to the user the relative positions of the resistance and its contact. If desired, the resistance support 3 may have a plate 26 applied thereto upon which may be placed a spring anchorage 27 that is co-axial with the shaft 17. A coiled spring 28 may have one end fastened upon the anchorage and its other end stationarily held by a stationary anchorage 29. The plate 26 may have an ear 30 formed upon its outer end with which the live end of the resistance may be connected, as illustrated clearly in Figs. 1 and 4. The circuit is continued from the plate 26 through the spring 28 to the support 29 which is unchangeably connected with one end of the circuit, as illustrated in Fig. 5, the other end of the circuit being connected with the contact 4 as clearly appears.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. In a rheostat, the combination with a resistance; of a contact engaging the resistance, said contact and resistance being relatively movable to change the included resistance; and a stop for engaging the contact at the connected end of the resistance and overhanging a portion thereof to prevent total exclusion of the resistance from circuit.

2. In a rheostat, the combination with a resistance: of a contact engaging the resistance, said contact and resistance being relatively movable to change the included resistance; and a stop at the connected end of the resistance, said stop being engageable by said contact, one of these two latter elements of the device overhanging a terminating portion of the connected end of the resistance to prevent total exclusion of the resistance from circuit.

In witness whereof, I hereunto subscribe my name this 13th day of October A. D., 1922.

ERNEST E. YAXLEY.