Feb. 23, 1926. **1,574,521**

C. STERN ET AL.

RHEOSTAT

Filed Dec. 5, 1924

Fig. 1.

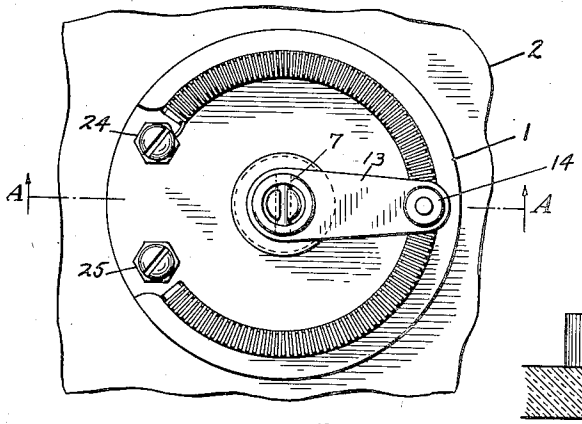
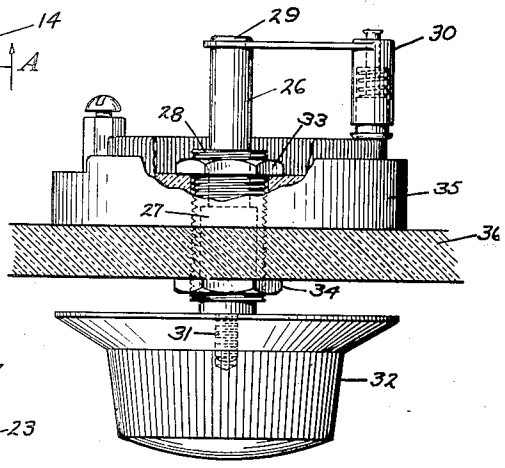


Fig. 3.



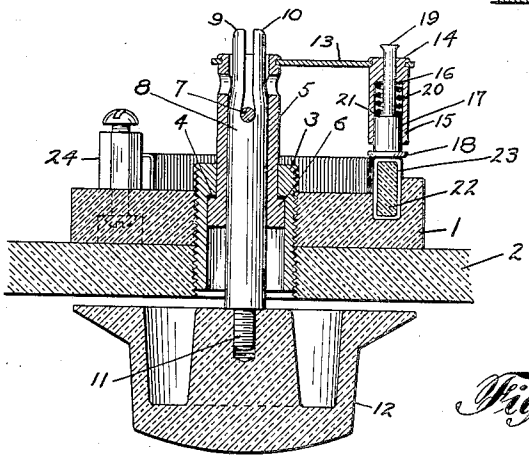


Fig. 2.

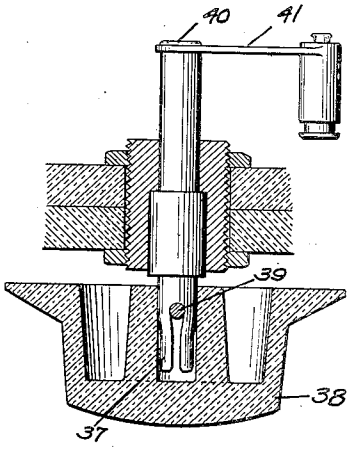


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES STERN AND DAVID BROWN, OF NEW YORK, N. Y.

RHEOSTAT.

Application filed December 5, 1924. Serial No. 754,196.

To all whom it may concern:

Be it known that we, CHARLES STERN and DAVID BROWN, citizens of the United States, and residents of Manhattan, in the county of New York and State of New York (whose post-office addresses are, respectively, 204 West 108th St., New York city, and 1432 University Ave., New York city), have invented certain new and useful Improvements in Rheostats, of which the following is a specification.

Our invention relates to rheostats suitable for a variety of purposes, but especially adaptable for use in radio sets; and it has for its object to provide a construction embodying a simple, convenient and positive means of making and retaining contact of the movable contact member with the resistance element. Further objects will appear from the description hereinafter given.

In the accompanying drawings, Figure 1 is a plan view of the rheostat; Figure 2 is a sectional elevation on the line A—A of Fig. 1; Figure 3 is an elevation of another form of the invention, part of the base being shown broken away; and Figure 4 is an elevation showing another possible arrangement of some of the parts of this improved rheostat.

Referring to the drawings, 1 is the base of the rheostat made of insulating material, and 2 is the panel, said base and panel each containing a hole adapted to receive the externally threaded supporting member 3. The said supporting member shown has a cylindrical hole of one diameter extending into a bore of a greater diameter, forming an annular abutment or stop 4. The hollow sleeve 5 fits within member 3, and contains an expanded portion or collar 6, and a pin 7 placed transversely through it as shown. The shaft 8 is split at one end, and inserted into the sleeve in such manner that the prongs 9 and 10 are separated by said pin 7. The other end 11 of said shaft is suitably secured to the knob 12. Attached to the sleeve 5 is a connecting member 13 suitably secured to the contact member 14. This contact member consists of a casing 15 having an open-ended cylindrical bore with an abutment 16, and a contact piston 17 at one end of which is a contact point 18, the other end 19 being swedged and protruding outside of said casing. A helical spring 20 is placed on said piston and positioned between the abutment 16 and a shoulder 21 on the piston.

The base 2 is grooved to accommodate the flexible insulating strip 22 around which is wound the resistance wire 23. The perforated posts 24 and 25 are secured by set screws as shown, and are adapted to serve as binding posts for the ends of the resistance wire, and as stops for the contact member 14.

When the knob 12 is turned, the prongs 9 and 10 of the shaft 8, in engagement with the pin 7, will actuate said sleeve 5 to rotate within the said supporting member 3 in the direction of the knob. This motion will be transmitted by the arm 13 to the contact member 14, causing an arcuate movement of the contact over the resistance wire. The spring 20, bearing down upon the shoulder 21 of said piston, will keep the point 18 in constant contact with the resistance wire 23. The spring is kept in its position within the casing by the abutment 16 and the shoulder 21. The swedged end 19 prevents the piston from going through the bore in casing 15.

The collar 6, abutting against the stop 4, sets a limit to the linear movement of the sleeve 5 in the direction of its longitudinal axis, thus preventing said sleeve from removing the contact member from its engagement with the resistance element. The position of the stop 4 with respect to the contact point 18 can be adjusted by turning the externally threaded supporting member 3 within the internally threaded holes in panel 2 and base 1, causing a linear adjustment of said member 3 in the direction of its longitudinal axis. Thus the pressure of the contact point 18 against the resistance wire 23 can be regulated and adjusted.

Figure 3 shows a construction wherein the aforementioned sleeve is entirely eliminated, the shaft 26 containing an expanded portion 27 free for rotary and linear movement within the supporting member 28. The smaller end 29 of this shaft is attached to the contact member 30, the other end 31 being suitably secured to a knob 32.

The supporting member 28 is externally threaded, and mounted thereon are two nuts, 33 and 34. These nuts bear against the base 35 and the panel 36, as shown, serving to lock them into position with the supporting

member 28. This arrangement is adaptable for use with panels of various thicknesses, as the position of these nuts on the supporting member can be adjusted to suit the conditions. Another feature of this construction is that it constitutes a one-hole mounting, that is, a construction wherein only one hole need be drilled into the panel to secure the rheostat to the panel. The supporting member 28 in conjunction with the nuts 33 and 34 is sufficient support as a mounting, thus obviating the necessity of drilling additional holes in the panel for attachment to the base of the rheostat.

Figure 4 indicates another possible construction, where the shaft is split, as in Fig. 1, the split end 37, however, being adapted for attachment to the knob 38 by engaging the pin 39, the other end 40 being adapted for attachment to the contact actuating arm 41.

What we claim is:

1. A rheostat comprising a base member of insulating material; a resistance wire wound around a suitably positioned insulating strip; a hollow tubular supporting member suitably secured to said base and containing integral with itself an internal annular abutment or stop; a hollow, cylindrical sleeve with an annular collar and containing a diametral pin transversely positioned with respect to the longitudinal axis of said sleeve; said sleeve being free for linear and rotary movement within said supporting member, and said collar being adapted to abut against said annular stop; a shaft with a slot at one end adapted to engage said pin, the other end of the shaft being adapted for attachment to a knob; a contact member movable over an arcuate path and comprising a hollow casing, a contact piston contained within said casing and free to move therein, one end of said piston serving as a contact point; a spring within said casing adapted to actuate said piston in the direction of said resistance wire, and to hold said contact point in co-operation with said resistance element; means for connecting said shaft with said contact member; and limiting contact stops on said base.

2. A rheostat comprising a base member of insulating material; a resistance wire wound around a suitably positioned insulating strip; a hollow tubular supporting member suitably secured to said base and containing integral with itself an internal annular abutment or stop; a shaft positioned within said supporting member, said shaft being free for linear and rotary movement within said supporting member; a knob suitably secured to one end of said shaft; a contact member movable over an arcuate path and comprising a hollow casing, a contact piston contained within said casing and free to move therein, one end of said piston serving as a contact point; a spring within said casing adapted to actuate said piston in the direction of said resistance wire, and to hold said contact point in co-operation with said resistance element; means for connecting said shaft with said contact member; and limiting contact stops on said base.

3. A rheostat comprising a base member of insulating material; a resistance wire wound around a suitably positioned insulating strip; a shaft adaptable for attachment at one end to a knob and at the other end to a contact member, said shaft having an annular collar on its lateral surface; an externally threaded member adapted to contain said shaft with said collar; said shaft being positioned within said supporting member so as to permit of the linear and rotary movement of the said shaft; said supporting member being placed within suitably placed holes in said base and in a suitably positioned panel board; a contact member movable over an arcuate path and comprising a hollow casing, a contact piston contained within said casing and free to move therein, one end of said piston serving as a contact point; a spring within said casing adapted to actuate said piston in the direction of said resistance wire, and to hold said contact point in cooperation with said resistance element; means for connecting said shaft with said contact member; and limiting contact stops on said base.

4. A rheostat comprising a base member of insulating material; a resistance wire wound around a suitably positioned insulating strip; a hollow, tubular supporting member suitably secured to said base and containing integral with itself an internal annular stop; a shaft positioned within said supporting member; said shaft having an annular collar on its lateral surface, said collar being adapted to abut against said annular stop; a knob adaptable for attachment to one end of said shaft; a contact member movable over an arcuate path and comprising a hollow casing, a contact piston contained within said casing and free to move therein, one end of said piston serving as a contact point; a spring within said casing adapted to actuate said piston in the direction of said resistance wire, and to hold said contact point in co-operation with said resistance element; means for connecting said shaft with said contact member; and limiting contact stops on said base.

In testimony whereof we affix our signatures.

CHARLES STERN.
DAVID BROWN.