

Jan. 11, 1927.

O. W. GROSE ET AL

1,613,994

MULTIRHEOSTAT

Filed June 2, 1926

2 Sheets-Sheet 1

Fig. 1.

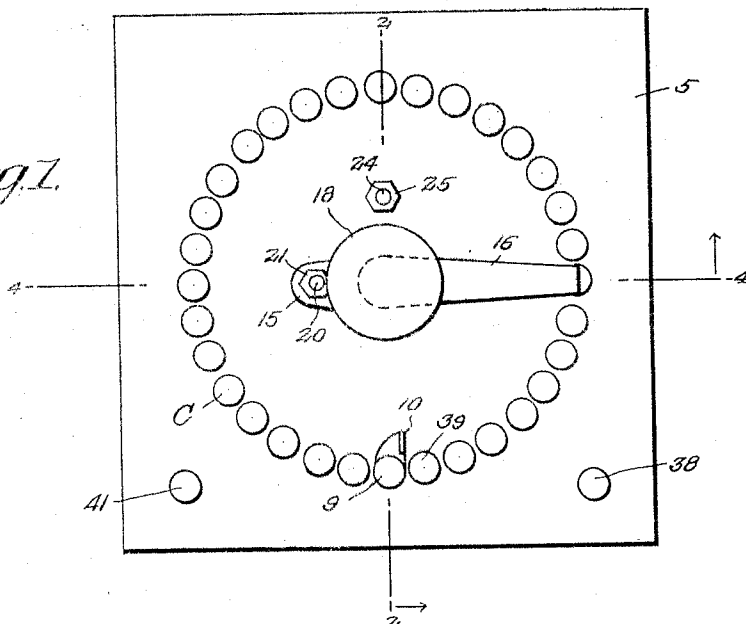
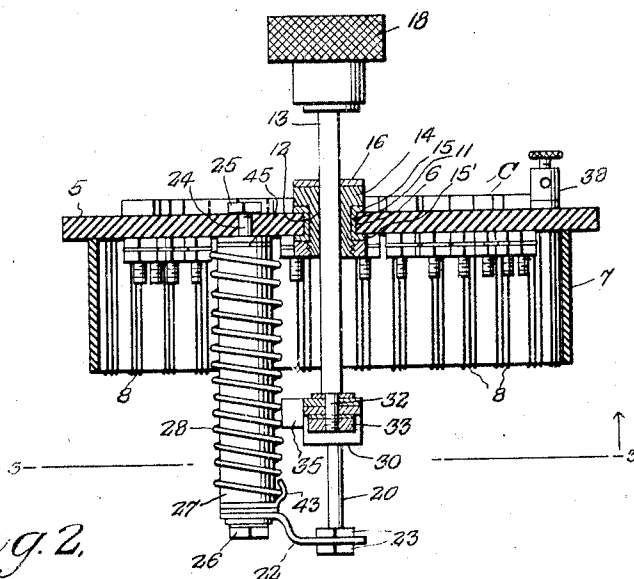


Fig. 2.



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Fig. 3.

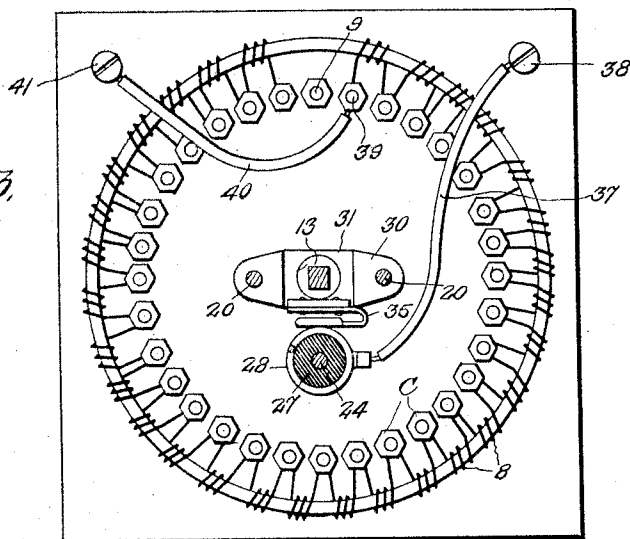


Fig. 4.

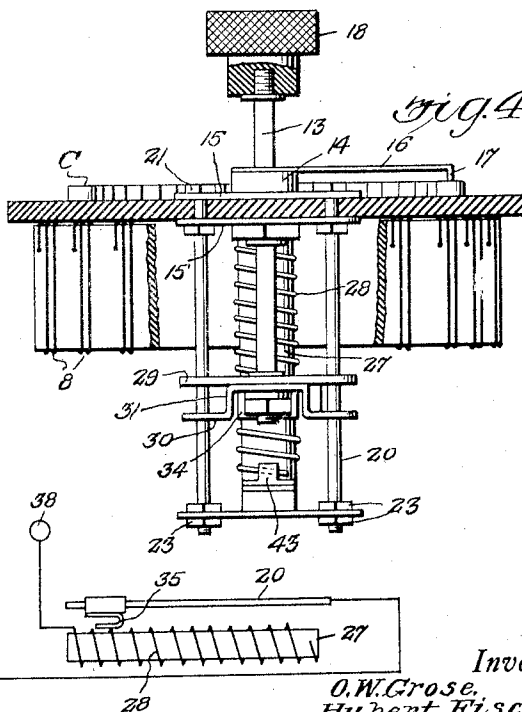
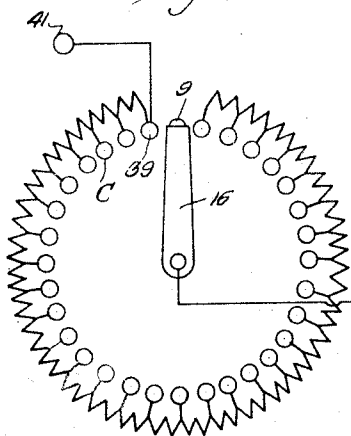


Fig. 5.



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MULTIRHEOSTAT.

Application filed June 2, 1926. Serial No. 113,203.

The present invention relates to a rheostat and aims to provide a device of this nature capable of fine adjustments, and provided with a compact and simple construction that may be manufactured at a low cost.

Another very important object of the invention resides in the provision of a device of this nature with an adjustable structure that is easy to manipulate, thoroughly efficient and reliable in operation, not likely to easily become out of order, and otherwise well adapted to the purpose for which it is designed.

With the above and numerous other objects in view as will appear as the description proceeds, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing:—

Figure 1 is a top plan view of the rheostat embodying the features of my invention,

Fig. 2 is a vertical section therethrough, taken substantially on the line 2—2 of Fig. 1,

Fig. 3 is a sectional view taken substantially on the line 3—3 of Fig. 2, looking upwardly,

Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 1, and

Fig. 5 is a diagrammatic showing of the rheostat.

Referring to the drawing in detail, it will be seen that the numeral 5 denotes a panel of insulating material, in the present instance, shaped square but, of course, may be made of any other suitable formation. A circular series of fixed contacts C is provided on the panel 5, concentrically disposed about an opening 6. A ring 7 of insulating material is fixed to the under surface of the panel 5 and is disposed concentrically with the series of contacts C, and has preferably a larger diameter than said series, so that the shanks of the contacts C which extend through openings provided in the panels, may be positioned within the confines of the ring 7, as is illustrated clearly in Figs. 2 and 3.

A wire is coiled about the ring 7 and has its convolutions grouped, each group being denoted by the numeral 8, and having a resistance of predetermined value, for in-

stance, one-half ohm. Each group 8 is in electrical engagement with the adjacent contact C, as is more clearly shown in Fig. 5. It will be noted in Figs. 3 and 5, that the contact C denoted specifically by the numeral 9, is a dead contact, that is, has no connection with any group of the wire on ring 7.

A stop 10 is mounted on this contact 9. A bearing 11 is mounted in the opening 6 of the panel 5 and has rotatable therein a bushing 12 having a square bore for the reception of a square shank 13 which may slide therethrough, but is rotatable therewith. A head 14 is formed on the bushing 12 above the upper plate 15 of the bearing 11, and an arm 16 is fixed or formed thereon to project laterally therefrom terminating in a downward extension 17 for engaging on top of the contact C. This arm 16 will preferably be constructed of spring metal. An operating knob 18 is fixed on the upper end of the shank 13, so that the said shank may be readily rotated for swinging the contact arm 16 and engage its extension 17 with any one of the contacts C.

A pair of guide rods pierce openings in plates 15 and 15' of the spring 11, and registering openings in the panel 5 to depend downwardly from the panels. These guide rods 20 are held rigid to the panel by means of nuts 21 as is clearly illustrated in Fig. 4. The rods 20 are disposed in spaced parallelism, one to each side of the center opening 6. A bracket 22 is fixed to the lower ends of the guide rods 20 by nuts 23. A bolt 24 pierces the panel 5 and is engaged therewith by a nut 25, and also pierces the bracket 22, and is held in engagement therewith by nut 26.

A sleeve of insulation 27 is disposed on the bolt 24 and has a coil of wire 28 positioned thereabout. A slide plate 29 has openings pierced by the guide rods 20. A second slide plate 30 also has openings pierced by the rods 20, and the intermediate portion thereof is of an inverted U-shaped formation as is indicated at 31. The lower end of the shank 13 is reduced and rounded as is indicated at 32 and pierces openings in the centers of the plates 29 and 30, and is securely engaged therewith by a nut 33. The bight portion of the plate 30 is preferably welded or otherwise fixed to the inter-

mediate portion of the plate 29, these connected portions being provided with a depending extension 34 having a spring brush 35 mounted thereon for engagement with the 5 convolutions of the coil 28. The shank 30 is moved up and down through the panel 5.

The uppermost convolution or end of coil 28 is electrically engaged with a conductor 37 leading to a terminal 38 in the panel 5. 10 The contact C denoted specifically by the numeral 39 next adjacent the contact seat specifically denoted by the numeral 9, has a congestor 40 engaged therewith leading to the terminal 41 on the panel. These terminals 38 and 41 provide the terminals of the 15 rheostat, in order that it may be placed in any desirable circuit.

When the contact arm 16 is engaged with the contact C denoted specifically by the 20 numeral 9, it will be seen that the circuit is opened in which the rheostat is disposed. By moving the contact arm in a clockwise direction, referring to Fig. 1, it will be seen that the current will flow from the terminal 41 25 through conductor 40, through one or more groups 8, through the arm 16, through the shank 13, through the brush 35, through contact 43, through bolt 24, and through conductor 37 to the terminal 38. This, of 30 course, is presuming that the shank is in its lowermost position. However, if the shank is raised so as to engage one of the convolutions of the coil 38, it will be seen that the current must also pass through a portion of 35 said coil, so that the resistance is increased. The coil 28 has a resistance of one-half ohm.

This one-half ohm is divided into fourteen equal parts by the fourteen convolutions of the coil 28, but of course the number of the 40 divisions may be varied in accordance with the number of convolutions as may be desired. It is to be noted that the contact 43 is engaged with the bolt 24 while said bolt 24 is engaged with the conductor 37 through 45 the ring 45.

It is thought that the construction, operation, and advantages of this invention will now be clearly understood by those skilled in this art. The rheostat provides for a 50 very fine adjustment in because of its compactness may be made smaller than other rheostats having the same adjustability. The structure is capable of being manufactured very cheaply and has been found 55 useful in the radio art, as a control for gen-

erator seals in laboratories work, but, of course, is adaptable to general application in the electrical field.

The present embodiment of the invention has been disclosed in detail merely by way 60 of example, since in actual practice it attains the features of advantage enumerated as desirable in the statement of the invention and the above description. It will be apparent that numerous changes in the details of construction, and in the combination and arrangement of parts and in the sizes thereof 65 may be resorted to without departing from the spirit or scope of the invention as herein-after claimed, or sacrificing any of its advantages. 70

Having thus described our invention, what we claim as new is:—

1. A rheostat of the class described including, in combination, an insulating panel, 75 having an opening, a hub structure rotatable in the opening, said hub structure having a square bore, a square shank slidable through the bore, a contact arm fixed to the hub, an annular series of contacts on the panel concentric about the hub and engageable by 80 the contact arms, a ring on the panel concentric about the opening therein, a coil forming a resistance unit disposed about the ring and having its convolutions arranged in groups, taps leading from the groups to 85 the contacts, a bolt projecting from the panel, a coil forming a second resistance unit mounted on the bolt, and a brush on the shank engageable with the convolutions of 90 the second coil.

2. A rheostat of the class described including, in combination, a contact arm, means for mounting the contact arm to swing in a predetermined plane, a shank 95 slidably engaged with the contact arm to rotate therewith and to slide perpendicularly to said predetermined plane, an annular resistance disposed so that the end of the contact arm engages therewith, a contact member 100 journaled on the shank to move rectilinearly therewith, an elongated resistance disposed perpendicularly to the predetermined plane, and guide means for maintaining the end of the contact member in engagement with the elongated resistance. 105

In testimony whereof we affix our signatures.

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