Jan. 11, 1927. 1,613,606

H. A. FLAMMER

ELECTRICAL REGULATING DEVICE

Filed June 25, 1923

Fig. 1.

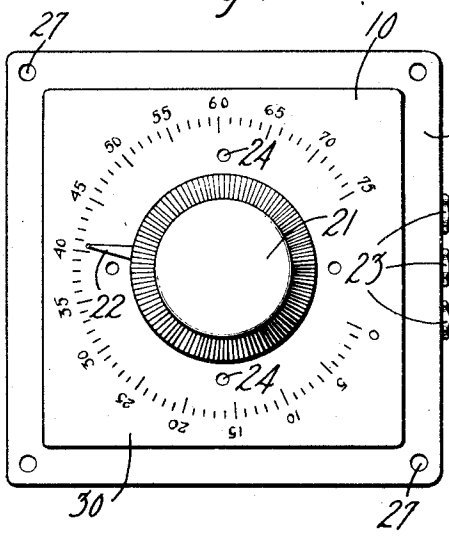


Fig. 2.

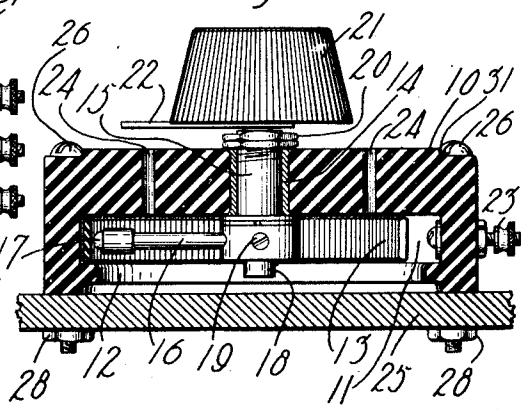


Fig. 3.

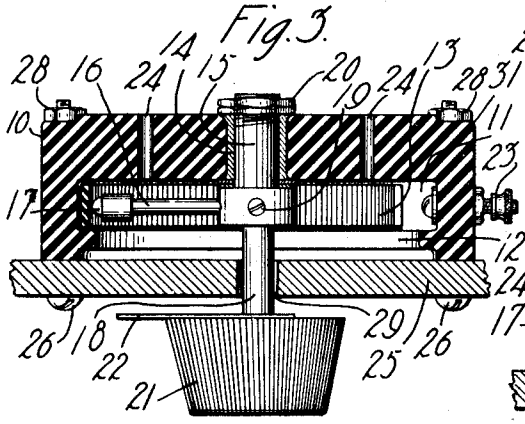


Fig. 4.

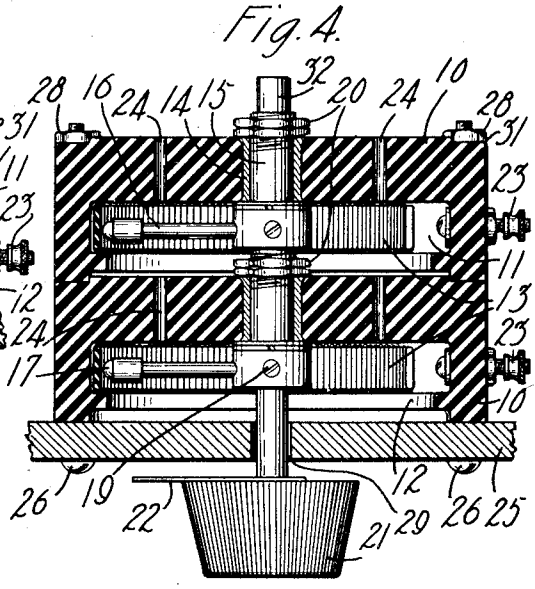
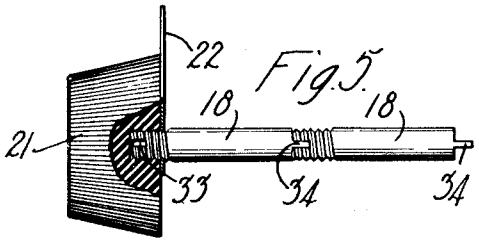


Fig. 5.



Inventor:
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by Joel C. R. Palmer Atty.

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UNITED STATES PATENT OFFICE.

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ELECTRICAL REGULATING DEVICE.

Application filed June 25, 1923. Serial No. 647,507.

This invention relates to electrical regulating devices, the object being to provide a simple economical structure adapted for convenient mounting and the easy addition of units.

In accordance with one of the features of this invention there is provided a reversible operating shaft for connecting the operating knobs with the movable contact thereby providing a structure which may be operated without structural changes from either the back or the front of the supporting panel.

According to another feature of this invention, the casing of the regulating unit is provided with means for permitting a second unit to be superposed thereon and the shaft of the movable contact of one unit is constructed to receive an extension to the movable contact of the additional unit thereby providing for the ready increase of the regulating device.

Other features and advantages of the invention will appear from a consideration of the following description taken in connection with the accompanying drawing, which shows one embodiment of the invention as applied to a variable rheostat, and in which—

Fig. 1 is a plan view of the rheostat.

Fig. 2 is a side sectional view showing the rheostat mounted on top of a supporting panel.

Fig. 3 is a view similar to Fig. 2, but showing the rheostat mounted on the under side of a supporting panel with the operating shaft extending therethrough.

Fig. 4 is a side sectional view showing two rheostats mounted in superimposed relation under the control of a common operating shaft.

Fig. 5 is a detailed view of an alternative arrangement for coupling two or more operating shafts together.

Referring to the drawing, the body of the rheostat, which may be formed of any suitable insulating material, such as moulded composition, comprises a cup-shaped block or casing 10. The block or casing 10 is preferably either circular or rectangular in cross-section, the latter construction being shown in the drawing. The casing 10 is provided with an inner annular recess 11 provided near its lower end with a circular ridge 12, which may be formed integral with the casing. A resistance coil 13, formed of wire wound around a suitable insulating strip, is seated within the recess 11 between the ridge 12 and the upper inner face of the casing 10 and is held in position against the inner cylindrical wall of the casing as by means of small studs, not shown. A bushing 14 is mounted centrally in the top face of the casing 10 and serves as a bearing for a second bushing 15. A contact arm 16 is formed integral with the bushing 15, and is provided at its end with a spring-pressed contact ball 17, which engages the inner face of the cylindrical coil 13. A shaft 18 passes centrally through the bushing 15 and is fixed thereto by means of a set screw 19. The bushing 15 is held in position in the bearing bushing 14 by means of suitable lock nuts 20. An operating knob 21, provided with a pointer 22, is threaded or otherwise supported on the operating shaft 18. When it is desired to remove the contact arm 16, the knob 21 is first removed, after which the nuts 20 are removed and the contact arm 16, bushing 15 and operating shaft 18 are withdrawn as a unit. The operating shaft 18 may then be freed from the bushing 15 by removing the set screw 19, which might be inaccessible and difficult to remove when the parts are assembled for operation. Electrical contact may be made with outside connections by means of binding posts 23, the outer two of which are connected to either end of the coil 13 while the inner one is connected to the contact arm 16 through the stationary bushing 14. Ventilation for the coil 13 and contact mechanism is furnished by means of a plurality of holes 24 projecting through the casing 10 into the annular recess 11.

The above described rheostat may be mounted in an upright position on a supporting panel 25 and held in such position by means of bolts 26 passing through suitable holes 27 in the casing 10 and clamped underneath the panel 25 by means of nuts 28. It frequently happens, however, that it is desirable to have the rheostat mounted in back of its supporting panel with only the operating knob and pointer projecting therethrough. In accordance with a feature of the invention, this may readily be accomplished by removing the operating shaft 18 in the manner described above and simply reversing its position so that the end thereof will extend through a suitable

circular opening 29 formed in the panel 25 as shown in Fig. 3. In this case, the bolts 26 may be extended through the panel 25 and casing 10 and be clamped against the face of the casing by means of the nuts 28. A scale 30 may be provided on the face of the casing 10 and may be calibrated to indicate, by means of the pointer 22, the electrical condition of the circuit.

One of the features of the invention resides in the construction whereby a plurality of rheostats such as that described above may be superposed one upon the other and all controlled by a single operating shaft, thus providing an efficient multiple rheostat. To accomplish this, the outer face of the rheostat casing 10 is provided with a slightly recessed portion 31 about its rim to serve as a seat for the lower edge of another of these cup-shaped units. In Fig. 4, one rheostat is shown mounted in back of panel 25 in the same manner as that shown in Fig. 3, while a second rheostat is shown mounted on top of the first and having its lower edge seated in the recess 31 thereof, the two rheostats being joined together and held upon the panel 25 by means of bolts 26 which are clamped by means of nuts 28 in the same manner as described above. In joining two such rheostats together, the shafts 18 thereof may be removed and an elongated shaft 32 may be substituted therefor which passes through both rheostat units and is joined to the contact arms thereof by set screws 19 in the same manner as described above. When two or more rheostats are formed into a unitary structure of this type, the lock nuts 20 may be adjusted in place before the next casing 10 is slipped over the controlling shaft 32. It will readily be seen that any reasonable number of rheostats may thus be superposed one upon the other to serve as an efficient multiple rheostat.

An alternative arrangement of controlling shafts, which may be used in place of the elongated shaft 32, is shown in Fig. 5. In this construction, one end of the shaft 18 is provided with a reduced flat portion 34 and the other end is provided with a recess 33. When two rheostats are superposed as shown in Fig. 4, the end 34 on one shaft may readily be inserted in the recess 33 of the other shaft, which recess has been exposed by the removal of the knob 21 thereof.

Certain changes in the details of construction herein shown and described may obviously be made without departing from the scope and spirit of the invention, as defined by the following claims.

The invention claimed is:

1. An electrical regulating device comprising a number of casings, a sectional shaft mounted therein, current controlling devices mounted in said casings, contact arms supported by each shaft section and engaging said controlling devices, recesses in the faces of said casings whereby said casings are superposed, and means on opposite ends of said sections which engage each other whereby a plurality of said sections may be joined together.

2. An electrical regulating device comprising a cup-shaped casing, a shaft mounted therein, a current controlling device mounted in said casing, a contact arm supported by said shaft and engaging said controlling device, a recess in the outer face of said casing adapted to serve as a seat for the base of a similar regulating device when said devices are mounted in superposed relation, and a slot in one end of said shaft and a reduced portion on the other end thereof whereby a plurality of said shafts may be joined together.

3. A rheostat comprising a cup-shaped casing, a shaft removably mounted therein, an electrical coil mounted in said casing and engaging the inner surface thereof, a contact arm supported by said shaft in engagement with said coil, a recess disposed about the outer face of said rheostat and adapted to serve as a seat for the lower edge of a similar cup-shaped rheostat, and a slot in one end of said shaft and a reduced portion in the other end thereof whereby a plurality of such shafts may be joined together when said rheostats are mounted in superposed relation.

In witness whereof, I hereunto subscribe my name this 21st day of June, A. D. 1923.

HOWARD A. FLAMMER.