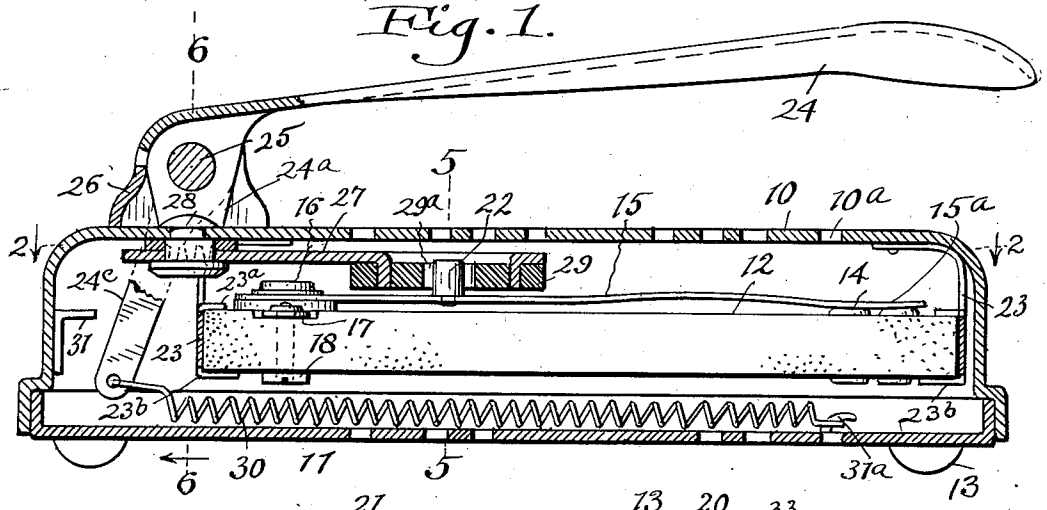
July 2, 1929. F. F. HILLIX 1,718,957

RHEOSTAT

Filed Nov. 25, 1922 2 Sheets-Sheet 1

Fig. 1.



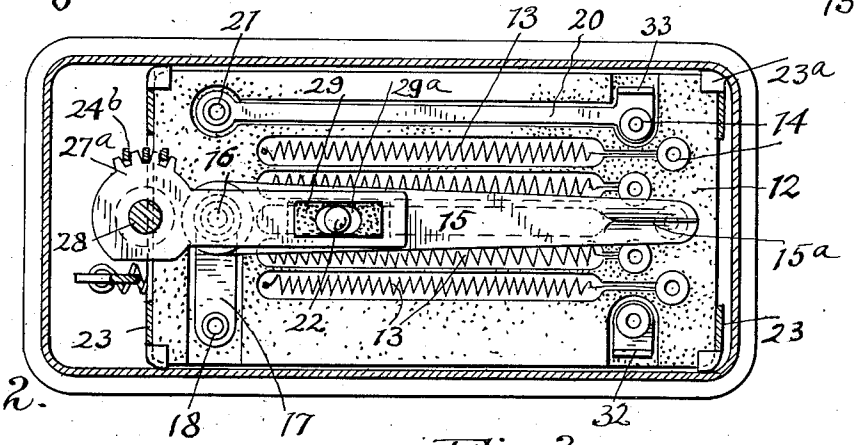


Fig. 2.

Fig. 3.

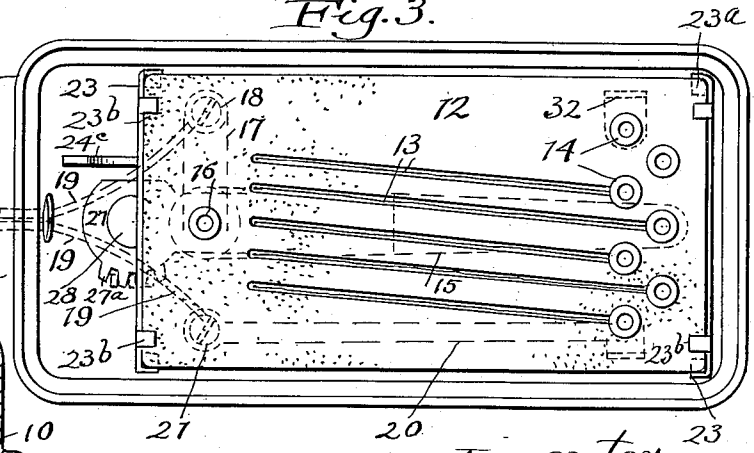
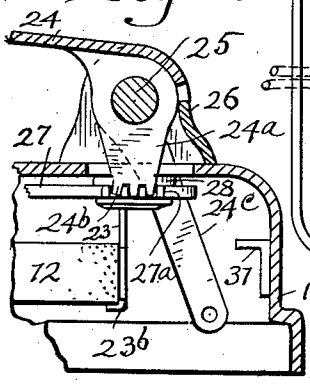


Fig. 4.



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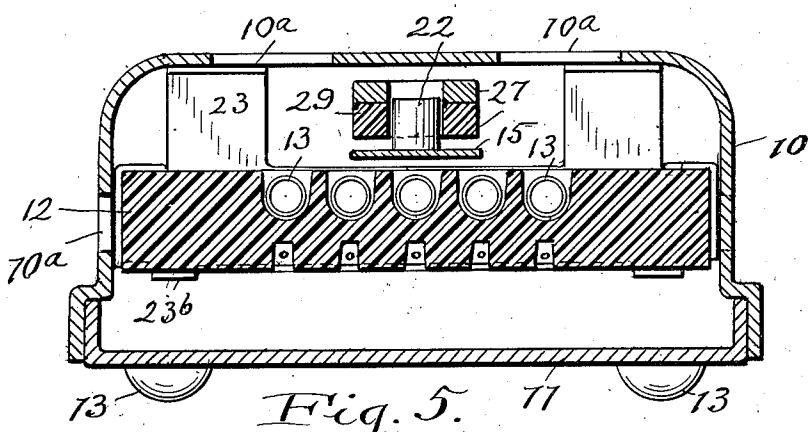


Fig. 5.

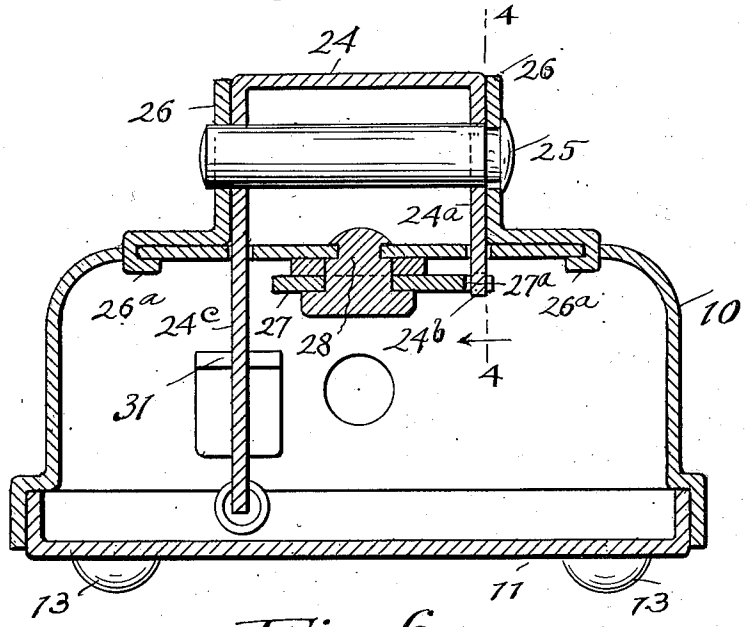


Fig. 6.

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UNITED STATES PATENT OFFICE.

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RHEOSTAT.

Application filed November 25, 1922. Serial No. 603,265.

This invention relates to improvements in rheostats particularly those adapted for controlling small motors such as are employed for operating sewing machines and other motor driven apparatus.

More particularly the invention aims to provide an improved rheostat having certain advantages to be referred to presently adapted to rest on the floor so as to be controlled by the foot of the operator, though many features of the invention may be utilized in rheostats adapted to be otherwise located and controlled or operated.

Among the objects of the present invention are to obtain a rheostat which is highly efficient and durable and in which are embodied the features of compactness, light weight, simplicity of construction and ease and cheapness of assembly and disassembly making it possible to manufacture the rheostat at low cost. A further and closely allied object is to provide a construction adapted particularly for quantity production.

Still further the invention aims to provide what may be termed a multiple unit rheostat in the sense that it is composed of units consisting particularly of the casing with the motion imparting member applied to it, and the resistor unit consisting of a self-contained unitary element adapted to be applied as a unit to the casing or removed therefrom, and including the insulating base, the resistance material and the contact mechanism.

The invention may be briefly summarized as consisting in certain novel details of construction, and combinations and arrangements of parts which will be described in the specification and pointed out in the appended claim.

In the accompanying sheets of drawings wherein I have illustrated the preferred embodiment of the invention, Fig. 1 is a vertical sectional view of my improved rheostat; Fig. 2 is a horizontal sectional view substantially along the line 2—2 of Fig. 1 looking in the direction indicated by the arrows; Fig. 3 is a bottom view of the lower half of the casing removed and looking up at the bottom of the resistor unit; Fig. 4 is a detail sectional view substantially along the line 4—4 of Fig. 6 showing how the vertical rocking movement of the foot controlled lever on top of the casing is transmitted to the horizontal swinging member on the inner side of the casing which shifts the arm of the resistor unit; Fig. 5 is an enlarged transverse sectional view substantially along the line 5—5 of Fig. 1; and Fig. 6 is a sectional view substantially along the line 6—6 of Fig. 1 looking in the direction indicated by the arrows.

In this instance my improved rheostat is adapted to rest on the floor and to be foot operated as mentioned above, though as before stated, that is not an essential characteristic or feature of my improved rheostat. This rheostat is composed of a casing formed in this instance of two telescopic parts, preferably stamped from sheet metal, and including an upper main body portion 10 and a lower or bottom portion 11 which telescopically engage each other as clearly shown in the drawings, and may, if desired, be held together simply by the frictional engagement of the parts. In this case the lower part of the body member 10 is somewhat distended, and the base or bottom member 11 fits into it. The lower member 11 is provided with rubber feet 13 so that the rheostat will not readily slide over the floor or mar a highly polished floor. The upper or body member 10 is preferably provided with perforations and slots 10^a punched in it principally to provide for circulation of air.

The casing described above with the motion imparting mechanism to be referred to presently may be regarded as one unit of the rheostat.

The resistance and contact portions constitute a second unit adapted to be applied to or removed as a whole from the casing unit. This second unit, which will be termed the resistor unit, consists in this case of a flat body or base 12 of porcelain or other suitable insulating material, suitably grooved or slotted to receive the resistance wire 13. At one end of the base 12 these wires are connected to a series of contacts or buttons 14. The resistor unit also includes a metal rheostat arm 15 whose free end 15^a is adapted to sweep over the contacts 14 to gradually cut the resistance section out of or into the circuit in the usual manner depending upon whether the arm is swung from or toward off position. The arm 15 is pivoted at 16 to the end of the insulating base 12 opposite to that having the contacts 14, and this arm is electrically connected to a contact strip 17, in turn electrically connected to a binding post screw 18 to which one of a pair of conductors 19 is adapted to be connected. One end of the

resistance wire 13 is connected to a contact strip 20 which extends lengthwise of the insulating base 12 and is connected to a similar binding post screw 21 to which the other conductor 19 is adapted to be connected.

Intermediate the ends of the rheostat arm 15 is an upstanding pin 22 by which motion is transmitted to the arm by the motion imparting mechanism to be referred to presently.

The resistor unit above described is supported from the upper or body member 10 of the casing by a pair of supporting straps 23 which are secured to and extend down from the inside of the top wall of the casing member 10. These straps may be secured to the casing member 10 by being spot welded or otherwise. These supporting straps or brackets 23 are spaced apart lengthwise of the casing a distance substantially equal to the insulating base 12 and when the resistor unit is set into the casing member 10 it engages inwardly extending ears 23^a which project inwardly from the straps 23. When the resistor unit is set in, additional ears 23^b are bent inwardly over the bottom of the base 12 so as to hold it in place. To remove the resistor unit it is simply necessary to straighten out the bottom ears 23^b and lift the resistor unit out of the casing.

Motion is transmitted to the rheostat arm 15 by an outside controlling member here shown as a foot pedal or lever 24. This member which is preferably pressed out of sheet metal is pivotally connected by a transverse pin 25 to a pair of upstanding ears of a pair of brackets 26 secured to the top of the casing as clearly shown in Fig. 6. These brackets may be secured in various ways to the casing, but in this instance they are provided with tongues 26^a which are extended through slots in the casing and are bent laterally to hold them in place.

The part of the pedal or lever 24 which is pivoted to the brackets 26 is provided with a pair of downwardly extending ears through which the pivot pin 25 passes. One of these ears is provided with an extension 24^a which projects through a slot in the top of the casing member 10 and imparts motion to a horizontally disposed and horizontally swinging shifting member 27 pivotally connected by a short pin 28 to the under side of the upper casing member 10. This shifting member 27 carries a fibre or other suitable insulating block 29 which has a centrally disposed slot 29^a into which projects the pin 22 extending up from the rheostat arm 15. In this instance the bottom of the extension 24^a at the pivoted end of the lever or pedal 24 is provided with a short gear segment 24^b which meshes with a companion gear segment 27^a projecting laterally from the horizontally disposed shifting member 27. Thus when the foot lever is rocked vertically horizontal swinging motion is imparted to the shifting member 27 and the latter in turn imparts horizontal swinging motion to the rheostat arm 15.

The other ear at the pivoted end of the lever or pedal 24 is provided with an extension 24^c which projects down through a slot in the top of the upper casing member 10 toward the bottom of the rheostat, and the lower end of this extension has connected to it a spring 30 which extends along the bottom of the casing and has its opposite end anchored at 31^a. This spring which is normally under tension, keeps the free end of the pedal 24 elevated, and therefore normally holds the rheostat arm in its off position. When the pedal is depressed the rheostat arm is swung as already explained until finally the free end of the rheostat arm engages the final contact or button 14. The downward movement of the pedal is stopped by an abutment 31 on the end of the casing, which abutment is in this instance engaged by an extension 24^c. When the pedal is released, the spring 30 restores the parts to normal position including off position for the rheostat arm 15. It might be stated at this point that the movements of the rheostat arm are limited by a pair of upstanding ears 32 and 33 shown in Fig. 2, one of these ears being on a clip to which the "off" button or contact is connected, and the other ear being formed as a part of the conducting strip 20 extending lengthwise of and along the top of the base 12 as already explained.

It will be seen from the above that the casing, and particularly the upper casing member 10 and the motion transmitting mechanism for the rheostat arm may be formed as one part or unit and the resistance part may be formed as a second unit, and that the latter can be slipped into place and thus operatively connected to the motion transmitting mechanism and can be readily removed from the casing as a unit without disturbing the motion transmitting mechanism.

Likewise it will be seen that the parts can be formed very largely of stampings and that the construction is such that the assembly of the parts can be very readily made. Furthermore, notwithstanding the fact that the parts can be formed and assembled inexpensively, a rheostat which is efficient and possesses to a high degree the feature of durability is provided.

The manner in which the resistor unit can be applied and removed from the casing is an important feature of my improved construction for should the resistance wire be burned out or should the rheostat otherwise need repairs, the resistor unit can be removed by an inexperienced person and repaired and replaced, or replaced with a new resistor unit if the latter be necessitated.

In conclusion it might be stated that to render this device effective, and particularly

to prevent the rheostat being pushed along the floor when the operator intends to depress the lever, it is desirable that the top of the lever be smooth, and that the free end of the lever be given a downward curvature substantially as shown in the drawings so that when the operator places his foot on the lever and rocks his foot on the rear point of the heel the foot will slide over the lever and at the same time depress it. It might be mentioned that in the drawings the lever is shown partly depressed or in substantially its mid position to economize space, but it will be apparent that when the lever is in its highest position the curvature which is given to the lever and its smooth surface will materially assist the depression of the lever as the foot which engages it is rocked.

While I have shown the preferred construction, I do not desire to be confined to the exact details shown, but aim in my claim to cover all modifications which do not involve a departure from the spirit and scope of my invention in its broadest aspect.

Having described my invention, I claim:

A rheostat comprising a casing, a resistor unit within said casing and including a movable contact arm, and a member mounted on the exterior of said casing and operatively connected with said movable arm and adapted to move in a plane at substantially right angles to said arm.

In testimony whereof, I hereunto affix my signature.

FOSTER F. HILLIX.