Jan. 9, 1934. D. T. SIEGEL 1,942,496

ELECTRICAL RESISTANCE UNIT

Filed Feb. 6, 1933

Fig. 1.

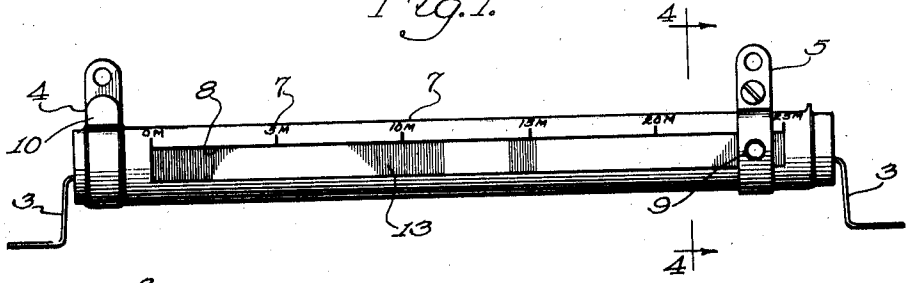


Fig. 2.

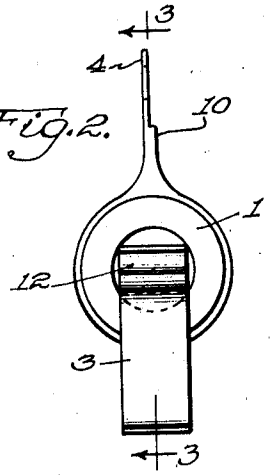


Fig. 3.

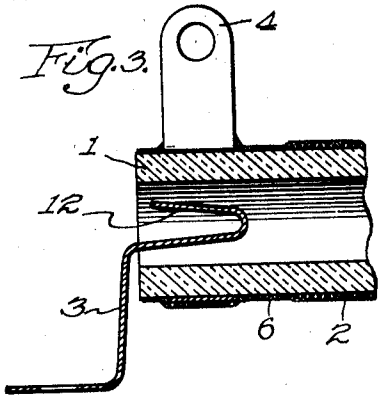


Fig. 4.

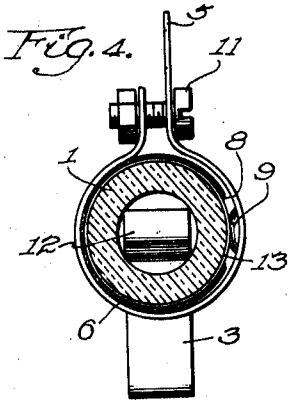


Fig. 5.

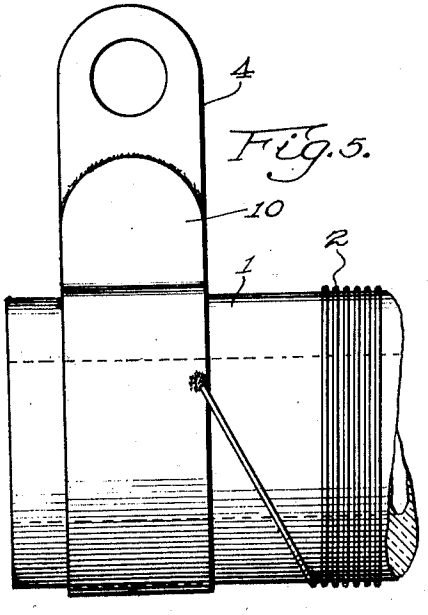
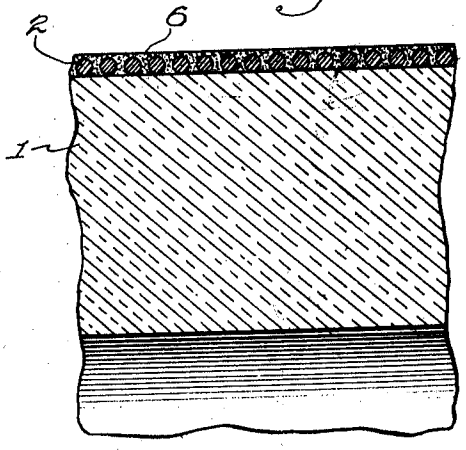


Fig. 6.



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ELECTRICAL RESISTANCE UNIT

David T. Siegel, Chicago, Ill.

Application February 6, 1933. Serial No. 655,348

2 Claims. (Cl. 201—63)

The purposes of this invention are to provide a low-priced variable resistance element having conveniently marked thereon the resistance in ohms along its length and with reference to terminal members, one of which is shiftable relatively to a stationary terminal; and to provide a device of this class particularly suitable and convenient for use as a radio resistor.

The objects of the invention are accomplished by a construction as illustrated in the drawing in which:

Figure 1 shows a side view of the finished resistance unit.

Fig. 2 is a left end view of the construction shown in Fig. 1.

Fig. 3 is a fragmentary longitudinal section taken on the line 3—3 of Fig. 2.

Fig. 4 is a sectional detail taken on the line 4—4 of Fig. 1.

Fig. 5 is an enlarged fragmentary detail showing a portion of the unit as it appears before insulating enamel is baked on the element.

Fig. 6 is an enlarged fragmentary longitudinal section of the core element, resistance wire, and insulating enamel.

The resistor element herein disclosed is of a well known type, much used by electrical engineers in experimental radio work, and the device is calibrated for the purpose of indicating the value of the resistance which the device places in a circuit according to the position of an adjustable contactor element thereon. This element is in the form of a clamp so that it may be permanently set in any desired position.

The resistance is proportional to the length of the scale which is marked in equal divisions. Therefore, when the movable contactor is clamped in any position, the scale indicates the percentage of the resistance between the terminal elements with reference to the total resistance from end to end of the instrument.

It has been customary to make resistance units of the same general class with fixed terminal elements, a plurality of which are sometimes regularly spaced along the resistor for convenience in attaching wires of an electrical circuit at various points along the resistor so as to insert into the circuit a definite resistance.

The present construction requires only two terminal elements, one of which is slidable along the resistor with reference to the other. Both are made in band form to encircle the supporting core and resistance wire wound thereon.

In addition to this improvement is the form of supporting brackets which are inserted into the hollow ends of the core element and grip the same by resilient expansion therein.

The completed structure consists of the following: A core 1 in the form of a tube which may be molded or extruded porcelain, or other vitreous or non-conducting material suitable for permanently retaining resistance wire as originally set thereon; a resistance wire 2 evenly and tightly wound on the core by machine; supporting brackets 3; terminal elements 4 and 5, the latter being shiftable toward and away from the fixed terminal 4; a vitreous enamel 6 which insulates and maintains the spacing of the convolutions of the resistance wire; and the markings 7 in ohms which are impressed on the vitreous enamel and extend along the edge 8 of the enamel where it has been removed in the form of a strip to expose the wire along the path of travel of an inwardly pressed contact portion 9 of terminal 5.

Terminals 4 and 5 encircle the element. The end 10 of the terminal 4 is welded to the eye lug part of the terminal to which is attached one of the conducting wires of a circuit under control by the resistor. The sliding terminal 5 may be clamped in any set position on the tube by means of screw 11. This screw is of course loosened when it is desired to adjust terminal 5 along the resistance element.

The supporting brackets 3 are retained in the ends of the core 1 by permitting the U-end 12 thereof to expand against the inner wall of the tube, these brackets being formed of resilient metal.

Before the brackets 3 and the sliding contact member are placed on the tube, the ends of the resistance wire are secured in place, one end being welded to terminal element 4, as indicated in Figure 5, the other end being attached so that it will not unwind to the opposite end of core 1. The tube is then coated with vitreous enamel 6. The article is then baked for the purpose of hardening the enamel, so that it will permanently insulate the convolutions of winding 2 from each other.

The enamel is either wiped off along strip 13 before baking or after baking is ground away, sufficiently to leave the surface of the resistance wire exposed along the path 13 of contact 9 but still definitely spaced and held against shifting by the thread of enamel remaining between the convolutions.

In the use of this device, the wires of the circuit under test are attached to the terminal elements, one of which may be set to the desired ohm reading on the scale.

I claim:

1. An electrical resistance element comprising a core upon which is wound a resistance wire, spaced terminal elements clamped around said resistance wire and core, said core having hollow ends, and supporting brackets in the form of metallic strips having ends bent into V-shape with integral projections extending beyond the core to serve as legs, said brackets fitting the hollow ends of the core and by expansion securing the brackets in place.

2. An electrical resistance element comprising a core upon which is wound a resistance wire, vitreous enamel partially embedding said wire leaving an exposed strip of resistance wire, ohmic calibrations on said vitreous enamel, said core having hollow ends, and supporting brackets in the form of metallic strips having ends bent into V-shape with integral projections extending beyond the core to serve as legs, said brackets fitting the hollow ends of the core and by expansion securing the brackets in place.

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