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VARIABLE RESISTOR

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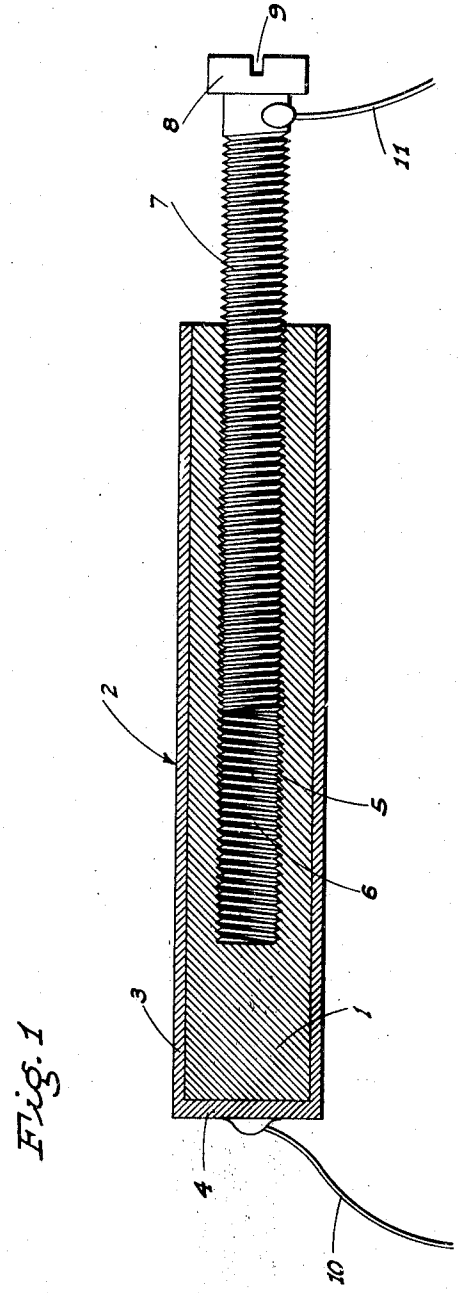


Fig. 1

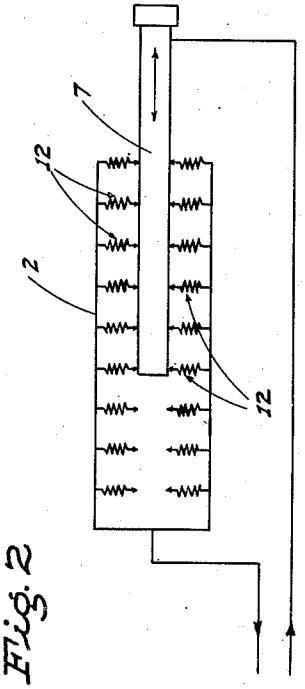


Fig. 2

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VARIABLE RESISTOR

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1 Claim. (Cl. 201—58)

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The present invention has for an object the provision of a simple, small-size resistor—normally set but manually variable as to capacity—primarily, but not limited, for use as a replacement for worn or defective fixed resistors included in electronic circuits, as in radios or the like. The small size permits use of the device in limited space, and the variability of capacity makes it possible for a single type of resistor to be readily set for different capacities and through a wide range. This is an advantage to the radio repair man, as it greatly reduces the needed stock of resistors.

Another object of the instant invention is to provide a resistor of novel construction; the arrangement of parts being such that variance in the capacity of the device is accomplished by an increase or decrease in electrical flow radially through a cylindrical resistance body between a central metal part in said body and another metal part exteriorly of the latter.

A further object of the invention is to provide a variable resistor whose design is such that when said resistor is adjusted to decrease the resistance, its ability to carry a large current, in a safe and effective manner, is increased in proportion.

An additional object of the invention is to provide a variable resistor which is designed for convenience and economy of manufacture, and the device is readily adaptable to mass production.

A further object of the invention is to provide a practical and reliable variable resistor, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claim.

In the drawings:

Fig. 1 is an enlarged sectional elevation of the variable resistor.

Fig. 2 is a diagram of the circuit of the device; i. e. its current flow pattern.

Referring now more particularly to the characters of reference on the drawings, and particularly at present to Fig. 1, the device comprises an elongated cylindrical body 1 of relatively high resistance material, as for example a carbon compound or a metallic resistance material.

The body 1 is encased, except at one end, by a metallic jacket 2, here in the form of a sleeve 3 closed at one end by an integral end wall 4;

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such sleeve being in direct and positive electrical contact with the exterior surface of said resistance body 1.

The body 1 is formed with a central, longitudinal bore 5 tapped, as at 6. The bore 5 opens to the end of the resistance body 1 opposite the end wall 4, and extends from said end for a major portion of the length of the body.

An elongated metallic screw 7 is adjustably threaded in the tapped bore 5, with a relatively tight fit, whereby proper and effective electrical contact is maintained between said screw 7 and the resistance body 1 in all positions of relative adjustment of these parts.

At its outer end the screw 7 is formed with a head 8, slotted, as at 9, for the reception of a screw driver, whereby the screw 7 can be readily manually adjusted. A terminal wire 10 is connected to the metallic end wall 4, and another terminal wire 11 is connected to the screw 7 adjacent the slotted head 8.

To adjust the described variable resistor, to alter its resistance or capacity, the screw 7 is run inwardly or outwardly in the bore 5.

The current flow pattern in the described variable resistor is indicated, diagrammatically and generally, in Fig. 2. One of the advantages gained by the device is the fact that the current flow is in radial paths, indicated diagrammatically at 12, which extend between the screw 7 and jacket 2, both of which are metallic.

By way of illustration, and by reference to Fig. 2, it will be seen that when the screw 7 is adjusted inwardly with respect to the resistance body 1, the number of radial current paths 12 is increased, whereby to decrease the resistance of the device. Conversely, when the screw 7 is adjusted so that it moves outwardly, the number of radial current paths 12 is decreased so as to increase the effective resistance.

By reason of the design of the variable resistor, including the metallic jacket 2, such resistor is able to safely and effectively withstand the current increase which occurs as the resistance is lowered.

By reason of the current flow pattern in the variable resistor, as represented by the diagram of Fig. 2, such resistor can be adjusted to very fine limits, and when so adjusted retains the setting, because of the tight threading of the screw 7 in bore 5. This tight fit can be enhanced by initially making the screw 7 slightly oversize so that it acts somewhat as a tap, or—in the alternative—the oversize screw can be split lengthwise to impart lateral resiliency thereto.

It will be recognized that as a modification, the resistor could be constructed with the element **7** fixed in the body **1**, and the element **2** threaded on the latter for axial adjustment; all without changing the characteristics of the device, as the current flow pattern would include radial current paths just as in the device when constructed as in Fig. 1.

The construction of the device is such that it can be manufactured readily, economically, and in a very small size; all as is desirable for resistors used in electronic circuits, such as radios, etc. The adjustable feature of the resistor makes it conveniently usable as a replacement unit for a fixed resistor in such a circuit. It is a simple task to adjust the resistor of the present invention to match any fixed resistor which it is to replace.

From the foregoing description it will be readily seen that there has been produced such a variable resistor as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

A variable resistor for electronic circuits or the like comprising an elongated body of resistance material provided with a central longitudinal threaded bore for the major portion of its length, a metallic sheath fixed about the outer surface of the body, such sheath being of a length substantially equal the length of the bore, an elongated metallic screw threaded into the threaded bore of the body for selective movement longitudinally of said body, the threads on the screw extending for the full length thereof so that such screw will be in full threaded contact with the body in any adjusted position therein, a terminal element connected with the sheath at the end thereof adjacent the inner end of the bore, and a terminal element connected with the outer end of the screw.

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The following references are of record in the file of this patent:

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