

Sept. 13, 1949.

V. E. PAYNE

2,481,682

ADJUSTABLE RESISTOR

Filed Sept. 13, 1948

Fig. 1

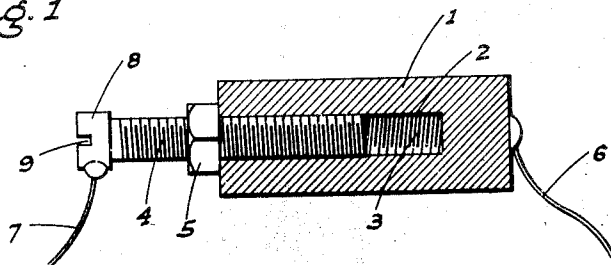


Fig. 2

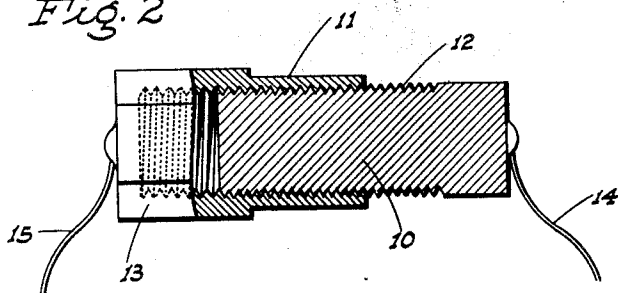


Fig. 3

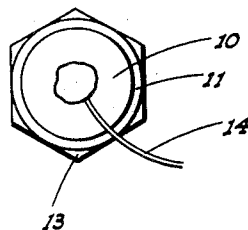


Fig. 4

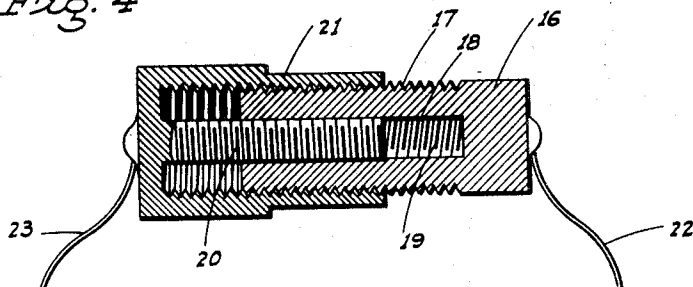
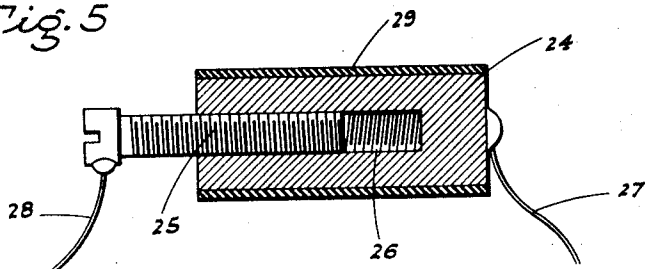


Fig. 5



INVENTOR

Viron E. Payne

BY

Robert H. Roberts

ATTORNEYS

UNITED STATES PATENT OFFICE

2,481,682

ADJUSTABLE RESISTOR

Viron E. Payne, Mather Field, Calif.

Application September 13, 1948, Serial No. 49,103

2 Claims. (Cl. 201—58)

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This invention is directed to, and it is an object to provide, a novel adjustable resistor for use in the circuits of electronic devices or the like, such as radios; the resistor being normally fixed, but manually adjustable, to a selected capacity.

Another object of the present invention is to provide an adjustable resistor, for use in radio circuits or the like, which is sufficiently small in size to be usable within the limited space usually available.

A further object of the present invention is to provide an adjustable resistor, of the type described, which is designed so that once set or adjusted, it retains its set value over a long period of time, and through reasonably rough handling, within the tolerances usually associated with fixed resistors.

An additional object of the invention is to provide an adjustable resistor designed primarily for the purpose of, but not limited to, substitution for worn or defective fixed resistors in radio circuits or the like.

As a still further object the present invention fills a need for an adjustable resistor felt especially by the radio repair man, to the end that he may stock only a few replacement resistors, and still be able to replace worn or defective resistors, of wide capacity, in any radio or other electronic device brought to him for repair. The adjustable resistor, which comprises the present invention, also is of value to the experimenter and engineer in experimental and design work where the exact value of resistance for a certain application must be determined by trial, and wherein various factors, such as lack of space, prevent the use of ordinary large-size variable resistors.

Other advantages of the adjustable resistor are its simplicity; low cost of manufacture; wide range of possible resistance values; and the fact that it is noninductive.

A further object of the invention is to provide a practical and reliable adjustable 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 claims.

In the drawings:

Fig. 1 is an enlarged sectional elevation of one embodiment of the invention.

Fig. 2 is an enlarged sectional elevation of a modification of the invention.

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Fig. 3 is an end view of the modification of Fig. 2.

Fig. 4 is an enlarged sectional elevation of a further modification of the invention.

Fig. 5 is an enlarged sectional elevation of a still further modification of the invention.

Referring now more particularly to the characters of reference on the drawings, and at present to Fig. 1, the adjustable resistor comprises a cylindrical body 1 formed of relatively high resistance material, such as a carbon compound or a metallic resistance material.

This resistance body 1 is formed with a central bore 2 open to one end of said body. The bore 2 is tapped, throughout its length, as at 3, for the threading engagement therein of a metal screw 4, to a selective extent. The metal screw 4 has a tight threading fit in the tapped bore 2, whereby to assure of proper contact between said metal screw 4 and the resistance body 1.

The metal screw 4 is locked, in any selected position of adjustment, by means of a lock nut 5 on such screw, which is tightened against the adjacent end of the resistance body 1.

The above described adjustable resistor is adapted to be wired in circuit by a terminal wire 6 connected to the end of the resistance body 1 opposite the screw 4, and another terminal wire 7 connected to the head 8 of such screw. The head 8 is slotted, as at 9, for adjustment by a screw driver.

To adjust the resistor, the lock nut 5 is loosened, and the metal screw 4 is then rotated in a direction to vary the extent of its engagement in the resistance body 1, whereby to correspondingly alter the capacity of the device. In other words, the greater the distance between the inner end of the metal screw and the end of the resistance body 1 to which the terminal wire is connected, the greater the resistance of the device.

After the resistor has been set to desired capacity, the lock nut 5 is again reset.

In the modification of Figs. 2 and 3, the resistor similarly includes a cylindrical body 10 of relatively high resistance material, but here instead of a metal screw working in a tapped bore, the device includes a metal sleeve 11 internally tapped and adjustably threadingly engaged on the resistance body 10 from one end thereof; such body being threaded, as at 12, for a major portion of its length from said end. The metal sleeve 11 has a tight threading fit on the resistance body 10 to maintain the proper electrical contact between these parts.

At its outer end, the metal sleeve 11 is in the

form of a multi-sided nut 13, whereby a small wrench may be employed to effect rotation of the sleeve 11 with respect to the resistance body 1; such nut being closed at its outer end.

A terminal wire 14 is secured to the end of the resistance body 10 opposite the nut 13, and another terminal wire 15 is secured to said nut.

In this embodiment of the invention the capacity of the resistor is varied by turning the sleeve 11 on the resistance body 10, whereby to alter the distance between the inner end of said sleeve and the end of the resistance body 10 to which the terminal wire 14 is connected.

In Fig. 4 there is a modification of the invention, which comprises a combination of the adjustable elements of Figs. 1 and 2. Here the adjustable resistor comprises a cylindrical body 16 of relatively high resistance material threaded externally from one end for a major portion of its length, as at 17, and having a central bore 18 opening said end; the bore being tapped, as at 19.

A metal screw 20, corresponding to the metal screw 4 of Fig. 1, is adjustably threaded into the central bore 18, and a metal sleeve 21, corresponding to the sleeve 11 of Fig. 2, is adjustably threaded exteriorly on the resistance body 16. The screw 20 is integral at its outer end with the sleeve 21, as shown, whereby said screw and sleeve may be adjusted simultaneously with respect to the cylindrical body 16, and for the purpose of selectively varying the capacity of the resistor. This type of the adjustable resistor may be preferred in those instances where a large area of electrical contact is desired between the relatively adjustable parts of the device. This modification includes, as before, terminal wires 22 and 23 at opposite ends thereof.

In Fig. 5 the resistor is similar to the embodiment of Fig. 1, but here the cylindrical body 24 is of metal rather than resistance material, and the screw 25, which runs in the tapped bore 26, is of relatively high resistance material. Terminal leads 27 and 28 connect to the cylindrical metal 24 and resistance screw 25 at opposite ends. This modification of the device is adjusted to alter the capacity, in the same manner as the embodiment of Fig. 1.

In Fig. 5 the cylindrical metallic body 24 is preferably protected externally by a sheath or sleeve 29 of insulating material, whereby to prevent possible short circuiting. All of the modifications may likewise be protected by insulation, at exposed surfaces, except those which have relative movement with respect to each other.

The adjustable resistor, in its several modifications, is so designed that it may be manufac-

tured, simply and economically, for use as a replacement resistor in electronic circuits or the like; the device, being relatively fixed, yet manually adjustable, through a relatively wide range to meet different circuit requirements. As the relatively movable parts of the device are in tight threaded engagement, the resistor will maintain its setting for long periods of time and under conditions of movement, as by vibration, jarring, etc.

From the foregoing description it will be readily seen that there has been produced such an adjustable 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 adjustable resistor, still in practice such deviations therefrom may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. An adjustable resistor for electronic circuits or the like comprising an elongated body of resistance material, said body being provided with a central longitudinal bore for the major portion of its length, the outer surface of the body being threaded, a terminal element fixed to the body at the end thereof adjacent the inner end of the bore, a metallic sleeve, such sleeve being interiorly threaded and engaging the threads on the body whereby the sleeve may be selectively moved along the length of the body, a pin formed integrally with the inner end of the sleeve and extending through the length of the sleeve concentrically with the latter, said pin projecting into the bore of the body and movable longitudinally of the body with the movement of the sleeve relative to the body, and a terminal element fixed to the outer end of the sleeve.

2. A resistor as in claim 1 in which the bore in the body is threaded, the pin being likewise threaded and being in threaded engagement with the threads of the bore.

VIRON E. PAYNE.

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