H. P. DONLE.

VARIABLE RESISTANCE.

APPLICATION FILED DEC. 15, 1921.

1,415,534. Patented May 9, 1922.

Fig. 1.

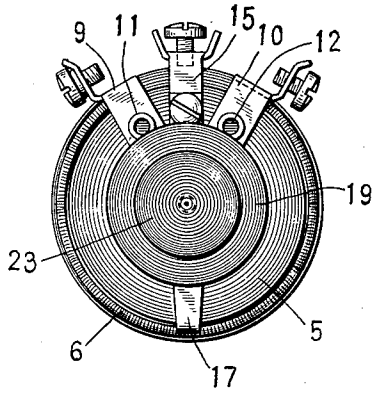


Fig. 2.

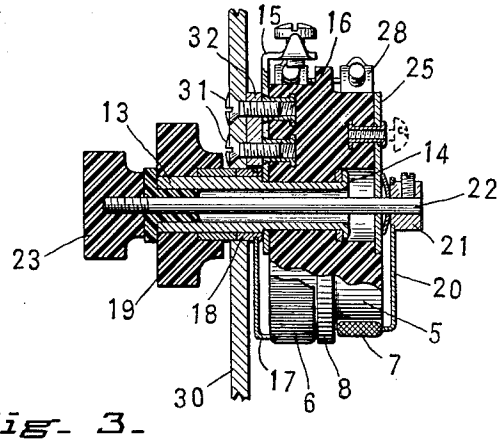


Fig. 3.

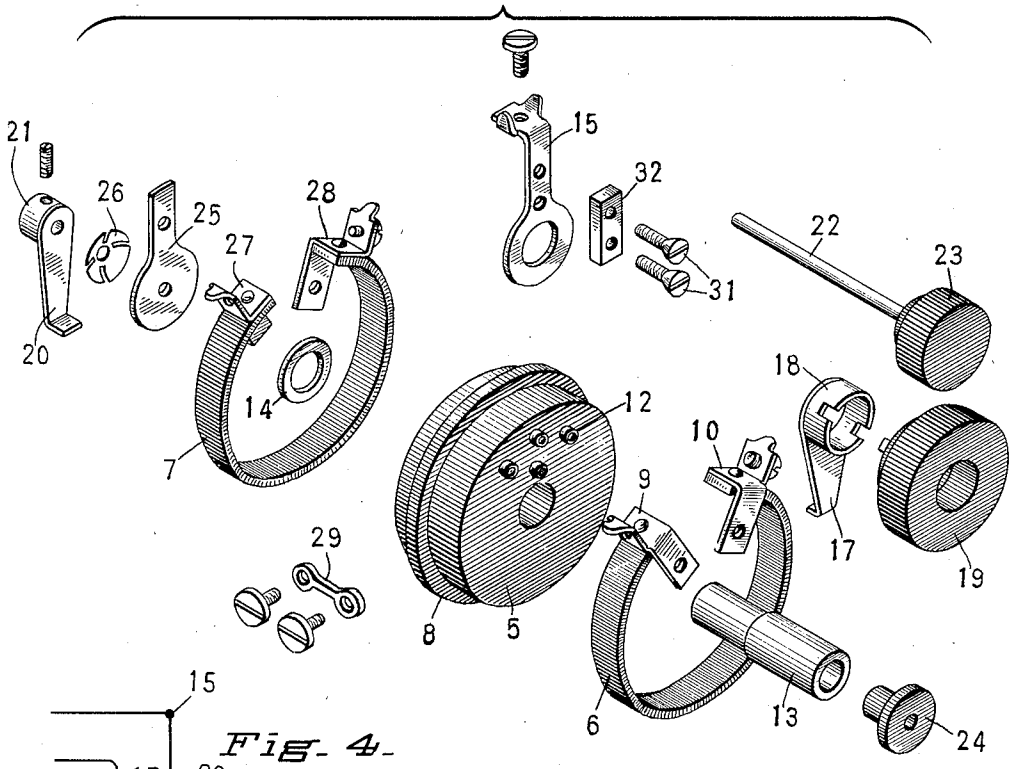
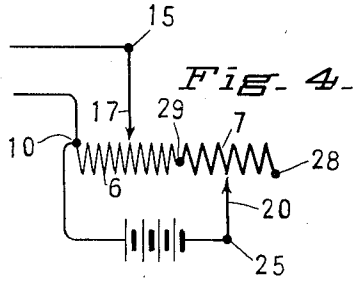


Fig. 4.



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UNITED STATES PATENT OFFICE.

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VARIABLE RESISTANCE.

1,415,534. Specification of Letters Patent. **Patented May 9, 1922.**

Application filed December 15, 1921. Serial No. 522,460.

To all whom it may concern:

Be it known that I, HAROLD P. DONLE, a citizen of the United States of America, residing at Meriden, Connecticut, have invented a new and useful Variable Resistance, of which the following is a specification.

The main object of my invention is to provide a simple, compact structure having two independently adjustable coils.

Another object is to so construct such a device that it may be readily mounted behind a panel board but be readily operated from the front of the board.

Another object is to facilitate the construction, assembly and adjustment of a resistance device suitable particularly for radio work.

In the preferred form of my invention, as illustrated in the accompanying drawings, I mount two coils on an insulating block, the coils being disposed at the front and rear of the block, respectively. Each coil is provided with a rotatable contact arm and a knob for operating the same. The coils and knobs have a common axis, and the shaft of one knob passes longitudinally through the hollow shaft of the other knob.

Figure 1 is a front view of a construction embodying the improvements of my invention;

Fig. 2 is a longitudinal sectional view of the same, showing the construction mounted on a panel board or support;

Fig. 3 is a perspective view showing various parts of the device disassembled; and

Fig. 4 is a diagram showing one circuit arrangement in which the device may be used.

The insulating block or body 5 may be formed of any suitable material, such as molded composition. The wire of the coils 6 and 7 is wound on insulating strips adapted to fit the front and rear ends, respectively, of the insulating block on opposite sides of the flange 8. Each coil strip is provided with terminal pieces, such as 9 and 10, which are adapted to be anchored to the insulating block in a suitable manner, as, for instance, by means of rivets 11 and 12 which are embedded in the insulating block.

A tubular member 13 is mounted in the insulating block and secured in place by having its rear end spun over or upset behind the washer 14.

On the front of the block 5 I mount a conducting terminal 15, which may be secured by one or more rivets, such as 16, embedded in the block.

Upon the sleeve 13 I mount a contact member 17, having a hub 18. This contact member effects electrical connection between the terminal plate 15 and the coil 6. The insulating operating knob 19, mounted to rotate on the front end of the sleeve 13, has a tongue and groove connection with the hub 18, so that the two rotate together, although the knob may be removed separately.

The contact member 20 for the coil 7 has a hub 21, which is suitably secured on the rear end of the central shaft 22. An insulating operating knob 23 is provided for the shaft 22, and the shaft is supported on an insulating bushing 24, which fits in the sleeve 13 and in the rear terminal plate 25. A spring washer 26 may be provided to frictionally hold the parts in position.

The terminal members 9 and 10 serve as stops to limit the rotative movement of the front contact arm 17, and the terminal pieces 27 and 28 of the rear coil 7 serve as stops to limit the movement of the rear contact arm 20. In the form shown the two terminal pieces 9 and 27 are electrically connected by a link 29.

The method of assembling and separating the parts will be readily understood from the foregoing description of the construction.

The construction may be supported on a standard or panel 30, as indicated in Fig. 2. For this purpose screws, such as 31, are provided, which are adapted to pass through a spacer 32 and screw into the eyelets or studs 16, which also secure the terminal plate 15 to the insulating block 5. The member 32 serves to space the parts so as to leave room for operation of the contact arm 17. From this it will be seen that the only parts exposed at the front of the panel 30 are the insulating operating handles or knobs 19 and 23. By properly wiring the device the two coils may be separately used, or they may be connected together, but in any event the resistance of each coil is adjustable independently of the other coil.

I claim:

1. A resistance device of the character described, comprising an insulating body, resistance coils mounted on the front and rear

thereof, adjustable contact arms for said coils, and operating knobs for such contact arms having a common axis.

2. A resistance device comprising an insulating block, resistance coils on the front and rear thereof, a hollow sleeve secured to said block, a contact arm rotatably mounted on said sleeve for co-acting with one coil, a rotatable shaft extending through said sleeve, and a contact arm carried by said shaft for co-acting with the other coil.

3. In a device of the character described, an insulating block, resistance coils on the front and rear thereof, an insulating flange between said coils, and independently adjustable contact arms for said coils.

4. In a device of the character described, an insulating block, circular coils mounted on the front and rear thereof, terminal pieces for each coil secured to said block, and independently rotatable contact arms for said coils, said terminal pieces serving as stops to limit the movement of said arms.

5. In a device of the character described, an insulating block, a circular coil having a core embracing said block with its ends secured thereto, a sleeve having one end upset in said block, a terminal plate secured to said block about said sleeve, a contact arm having a hub rotatably mounted on said sleeve in contact with said plate, and an insulating operating knob rotatably mounted on said sleeve and having a tongue and groove connection with said hub.

6. In a device of the character described, an insulating block, coils mounted on the front and rear thereof, a sleeve secured to said block, a contact arm rotatably mounted on said sleeve, an insulating knob connected to said arm, a shaft supported within said sleeve but insulated therefrom, an operating knob for the front end of said shaft, and a contact arm secured to the rear end of said shaft to co-operate with the coil at the rear of said block.

7. In a device of the character described, an insulating block, coils mounted on the front and rear thereof, a panel plate secured at the rear of said block, a terminal plate secured to the front of said block, and independently adjustable contact arms rotatably mounted in contact with said plates.

8. In a resistance device, a block coils and central terminal plates on opposite ends thereof, contact arms rotatively mounted with respect to said plates, and co-axial operating knobs for said arms.

9. In a resistance device, a block, coils and central terminal plates on opposite ends thereof, contact arms rotatively mounted with respect to said plates, an operating knob for one arm, and a shaft extending through said knob to operate the other arm.

10. A resistance device comprising a block, coils on opposite sides thereof, independent contact arms co-acting with said coils, and separate operating knobs detachably connected with said arms.

11. In a resistance device, an insulating block having a passage, a sleeve supported therein, a rotatable contact arm and operating knob on said sleeve, a shaft extending through said sleeve, and a contact arm and knob on said shaft.

12. In a resistance device, an insulating block, rotatable contact arms on opposite ends thereof, and co-axially mounted operating knobs for said arms.

13. In a resistance device, a block, a coil carried thereby, a sleeve mounted in said block, an insulating bushing in said sleeve, a contact arm, and an operating shaft therefor supported in said bushing.

HAROLD POTTER DONLE.