Nov. 27, 1934. J. J. MUCHER 1,982,475

RESISTANCE UNIT

Original Filed April 18, 1933

Fig. 1.

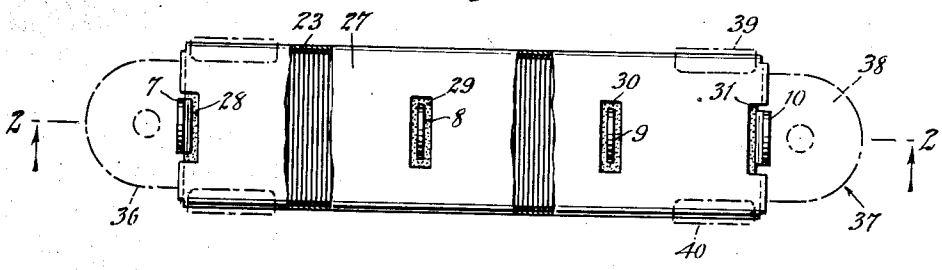


Fig. 2.

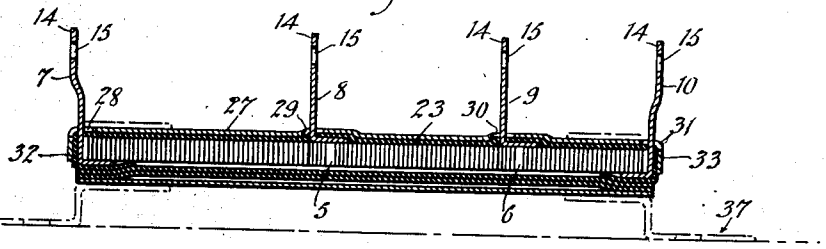


Fig. 3.

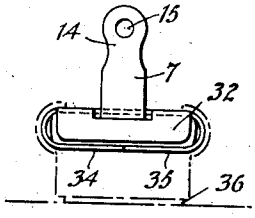


Fig. 4.

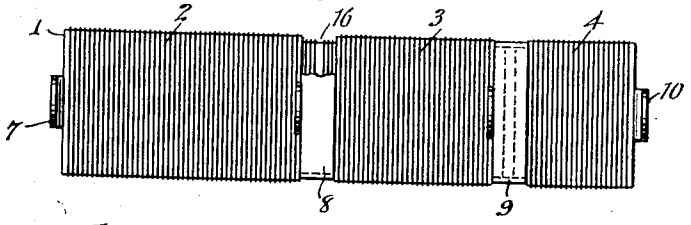


Fig. 5.

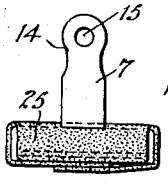


Fig. 6.

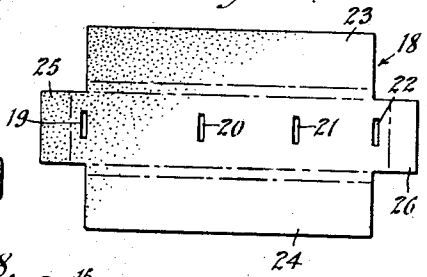


Fig. 7.

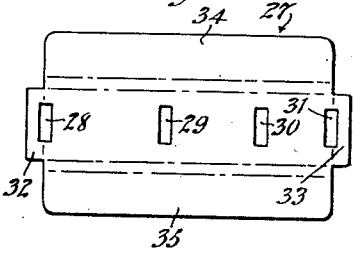
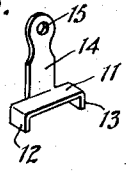


Fig. 8.



WITNESSES

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Patented Nov. 27, 1934 1,982,475

UNITED STATES PATENT OFFICE

1,982,475

RESISTANCE UNIT

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Original application April 18, 1933, Serial No. 666,765, now Patent No. 1,976,624, October 9, 1934. Divided and this application September 23, 1933, Serial No. 690,730

3 Claims. (Cl. 201—63)

This invention relates to electrical resistance devices, and more particularly to an electrical resistance device for radio apparatus and other electrical devices in circuits requiring one or more fixed resistances capable of being readily inserted into the circuit.

An object of the invention is to provide an improved constuction of resistance mounted on a single core and provided with a number of taps or terminals at spaced points so that various amounts of resistance may be secured within the limits of the device according to which pair of terminals are being used.

Another object of the invention is to provide a desired flexibility in combining different resistance ranges to constitute the resistance requirements of one or more circuits.

This application is a division of my prior application Serial No. 666,765, filed April 18, 1933, which issued as Patent 1,976,624, October 9, 1934.

In the present invention there is provided means for presenting a resistance for various purposes and dividing this resistance up into sections or units as far as the resistance is concerned while maintaining a single resistance body.

In forming a structure of this kind a resistance element as, for instance, a resistance wire is wound on a core divided into different sections the sections being, if desired, of the same resistance or a different resistance, and connected by terminals so that by the use of different terminals different resistances may be provided for different circuits without moving or adjusting any of the parts.

In the accompanying drawing—

Figure 1 is a plan view of a resistance disclosing an embodiment of the invention, certain parts being broken away to better illustrate the construction.

Figure 2 is a longitudinal vertical sectional view through Figure 1 on the line 2—2.

Figure 3 is an end view of the resistance unit shown in Figure 1.

Figure 4 is a plan view of the resistance element removed, the same having the terminals associated therewith.

Figure 5 is an end view of the resistance element shown in Figure 4 together with an insulating wrapping therefor.

Figure 6 is a plan view on a reduced scale of the insulating wrapping shown in Figure 5.

Figure 7 is a plan view on a reduced scale of the metal casing and clamping structure shown in Figures 1 and 2.

Figure 8 is a perspective view of one of the intermediate terminals illustrated in Figures 1, 2 and 3.

Referring to the accompanying drawing by numerals 1 indicates the core which is of some desired kind of insulating material, said core being provided with windings 2, 3 and 4 of wire forming resistance elements. These windings are preferably spaced apart at the points 5 and 6, though this is not essential. However, preferably the units 2, 3 and 4 have present different amounts of resistance so that there is presented a certain flexibility in connecting the device to one or more circuits through the terminals 7, 8, 9 and 10. Terminals 8 and 9 are as shown in Figure 8 and each of these terminals is formed with a base 11 and depending extensions 12 and 13. The terminal extension 14 extends upwardly from the base 11, said extension preferably having an aperture 15. These terminals are made of a proper size so that the depending portions 12 and 13 may fit into the respective notches 16 and 17 forming resistance unit 1, as shown in Figure 4.

By this arrangement the base 11 and depending portions 12 and 13 all contact firmly with adjacent ends of the resistance wires. Thus it will be seen that a certain resistance is secured when connecting the circuit with the terminals 7 and 8, while a different resistance may be secured by connecting the circuit with terminals 8 and 9, or terminals 9 and 10. Still other combinations may be secured by merely shifting the wires from one terminal to another so as to include more or less of the resistance.

After the parts have been arranged as shown in Figure 4 an insulating member 18 is applied. The various apertures 19, 20, 21 and 22 are formed to accommodate the various terminal extensions 14 of the respective terminals. The insulation 18 is, of course, of a proper size so that it may be forced flatwise down on top of the structure, as shown in Figure 4, and then the side flanges 23 and 24 are bent around as illustrated in Figure 5, the end flanges 25 and 26 being preferably first bent around so as to be overlapped somewhat by the side flanges. After this has been done the metal covering and clamping plate 27 is moved down flatwise over the structure, the members 14 projecting through the various apertures 28, 29, 30 and 31 without contacting therewith. The end members or the extensions 32 and 33 are then bent down as shown in Figure 3, so that in a certain sense there is provided a straddling action for the end terminals which holds them against moving longitudinally away from the core 1 or the resistance wires. The side members or

flanges 34 and 35 are then bent down and around as illustrated in Figure 3.

As the cover 27 is of metal and comparatively stiff though more or less resilient, there will be a clamping or pinching action when the parts are arranged as in Figure 3, whereupon all of the bases 11 will be clamped firmly against the wire. It will be noted that the bases 11 on the end terminals are arranged beneath the resistance elements, while the other terminals are arranged above (Fig. 2). Also preferably the bases 11 on the end terminals do not have the depending flanges 12 and 13 as shown in Fig. 3.

After the metal covering 27 has been firmly clamped in position so that it will appear as shown in Fig. 3, the device is complete and ready for use. If desired suitable end members 36 and 37 may be provided to hold the resistance device in the desired position. Each of these members consists of a flat piece 38 merging into side clamping members 39 and 40 which slide over the cover 27 and hold the parts in position by friction. It will be understood, of course, that the members 37 and 36 may be dispensed with without departing from the spirit of the invention.

I claim:—

1. A resistance unit comprising a substantially flat narrow insulating core, a winding thereon of resistance wire, said winding being in a plurality of sections, each section comprising a different resistance, a pair of terminal clips arranged at the ends of the core and in engagement with the ends of the winding, said core intermediate the ends having a notch at each side at the place where the sections change, a terminal for each pair of notches, each of said terminals having a pair of depending flanges fitting into said notches, an upstanding portion and a flat body acting to bridge adjacent ends of different sections, an insulating covering for said resistance wire and the terminals except the upwardly extending portions, and a metal sheathing for holding the insulating covering and the terminals in operative position said metal sheathing including an encircling portion and a depending lug at each end for overlapping the end part of said insulating covering and said end terminals.

2. A resistance unit comprising a flat insulating core having a plurality of pairs of notches on each side intermediate the ends, a resistance winding arranged on said core and extending substantially from one end thereof to the other, said winding fitting into said notches, an insulating covering for said winding, a metal sheathing for said insulating covering, a substantially U-shaped clip formed with a base positioned to straddle said sheathing at each end, a contact terminal for each pair of said notches, on each side substantially U-shaped to straddle the base and wires each of said terminals having a base and a pair of depending flanges fitting into said notches, and an upstanding portion, an insulating covering for said resistance wire and the base and flanges of said terminals, and a metal sheathing for holding the insulating covering and the terminals in operative position, said sheathing acting to press the bases of the terminals against the resistance wire whereby the terminals are held in engagement with said wires by friction only.

3. A resistance unit comprising an insulating core substantially rectangular in shape and provided with a plurality of pairs of notches arranged in each side, said notches being arranged in pairs, a winding of resistance wire arranged on said core, certain sections of said wiring being arranged between the ends of said core and certain of said notches, the remaining sections being arranged between the notches, a terminal for each end of said core, each of said terminals having a flat portion adapted to engage flatwise the wire at the respective ends of the core, a terminal for each pair of said notches, said last mentioned terminals having flat portions for engaging the adjacent sections of wire so as to electrically connect said wires, an insulating covering for said wires, said covering straddling said terminals with an extension at each end fitting over the ends of said terminals, and a metal sheathing having openings through which said terminals project, said sheathing enfolding said insulating covering and the parts arranged therebeneath, said sheathing at each end having a pair of extending lugs bent down to hold in place the extensions of the insulating covering and also the end terminals.

JOHN J. MUCHER.