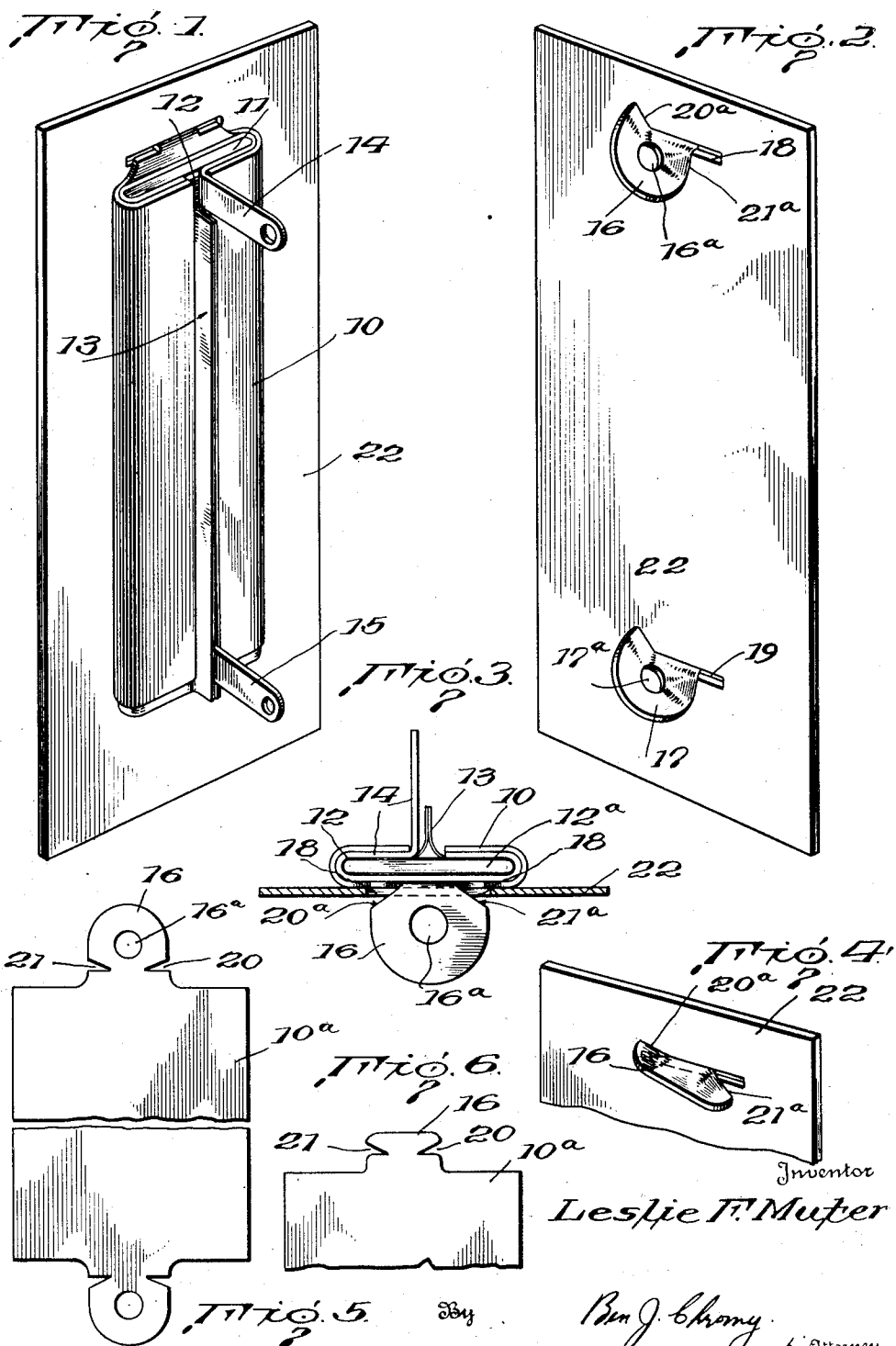


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ELECTRICAL RESISTANCE UNIT

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ELECTRICAL RESISTANCE UNIT

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5 Claims. (Cl. 201-63)

This invention relates to electrical resistance units generally. More particularly this invention relates to metal casings for holding and/or enclosing and attaching resistance elements to supports.

An object of this invention is to provide a resistance unit with a casing adapted to enclose the resistance element, said casing being provided with integral tongue-like members which are adapted to be inserted into suitable slots formed in a supporting panel or chassis and twisted to fasten said casing to the supporting panel or chassis in a firm and vibration-free manner, yet permitting said resistance unit to be easily removed from the supporting panel or chassis, if desired.

Another object of this invention is to provide a resistance unit casing member formed of an elongated sheet of metal and having two or more tongues formed therein which are adapted to fit into slots formed in a supporting member, and engage sides of said slots in cam-like fashion to hold the resistance unit on said supporting member in a firm and vibration-free manner.

A further object of this invention is to provide a resistance unit with a casing member adapted to be connected to one terminal of the resistance unit, and having tongue-like extensions formed integral with the casing member for fastening the resistance unit to the metal chassis of an instrument in which the resistance unit is to be used, in a firm manner so that an electrical circuit between the resistance unit and the metal chassis is maintained without interruption or partial interruption.

Other and further objects of this invention will be apparent from the following specification and the claims.

In accordance with this invention I provide a resistance unit of the metal jacketed type with convenient and economical fastening means whereby the resistance unit may be attached to and fastened in place upon a panel or chassis without the use of unusual or special tools.

My invention is especially adapted to use with resistance units which are to be used in sensitive electrical circuits, such as, electric discharge device amplifiers, in which even the slightest movement between electrical contacts is reproduced in the form of noise or interference in the amplifier reproducer. For example, in amplifier systems a large number of the resistance units employed are grounded or connected to the metal chassis of the amplifier. This is often done through the fastening device of the resistance unit inasmuch as the

metal jacket of the resistance unit is connected to one end or an intermediate point of the resistance winding. Since the resistance unit fastening device or devices are part of the electrical circuit vibration in the fastening device or devices will cause undesirable interference in the operation of the electrical circuit.

Furthermore, even in resistance units which are supported on a metal chassis by a metal frame or jacket which is not included in the electrical circuit of the amplifier, if the resistor fastening device or devices are loose or become loose through vibration, as in automobile radio receivers, for example, interference potentials develop at these loose contacts.

My invention eliminates all of these and other difficulties. Resistance units mounted in accordance with my invention cannot under any ordinary conditions vibrate loose because of the cam-like action that is produced between surfaces of the fastening tongue or tongues and the receiving slot or slots of the chassis.

These and other features of my invention will be apparent to those skilled in the art to which this invention relates from the following specification and the drawing in which, briefly, Fig. 1 illustrates a resistance unit made in accordance with this invention, in mounted position; Figure 2 is a view showing the manner in which the mounting tongues of the resistance unit casing are deformed to support the unit; Figure 3 is a view showing a mounting tongue of the resistance unit casing before twisting; Figure 4 illustrates another form of the resistance unit mounting tongue and Figures 5 and 6 illustrate sections of the resistance unit casing blank.

Referring to Figure 1 of the drawing in detail, reference numeral 10 designates an elongated metallic casing bent into a channel-like hollow member for housing the resistance winding 12 wound upon a suitable core 12a, therein. The winding 12 of the resistance unit is insulated from the casing 10 by the sheet-like insulating material 13, the ends of which project out of the casing 10 as shown. One end of the winding 12 contacting the terminal 14 of the resistance unit may be in electrical contact with the casing 10. The other terminal 15 is insulated from the casing. Where desired, a plurality of terminals such as 14 and 15 may be provided to the resistance unit to enable the user to make electrical connections to various parts of the resistance unit. This is especially desirable where the resistance unit is employed as a voltage divider.

The ends of the resistance unit casing 10 are

provided with tongues 16 and 17 adapted to be bent substantially at right angles to the base of the casing. The purpose of these tongues is to support the resistance unit upon and/or flat against the panel member 22 which is provided with two slots 18 and 19 adapted to receive the tongues 16 and 17, respectively. The panel member 22 may be part of the metal chassis of a radio receiving set or it may be any suitable panel member upon which the resistance unit is to be mounted for use.

The tongues 16 and 17 are made substantially alike in that each one is provided with cut-away sections 20 and 21, as shown in Figures 5 and 6. When the tongue 16, for example, is placed into the slot 18, the cut-away sections 20 and 21 permit the resistance unit to move sidewise inasmuch as the slots 18 and 19 are longer than the corresponding parts of the tongues 16 and 17 are wide. The tongue 16, for example, extends through the slot 18 a sufficient distance to the rear of the panel member 22 to enable the angular edges 20a and 21a of this tongue to engage side edges of the slot 18 when the tongue 16 is twisted side-wise into the position shown in Figure 2, to support the resistance unit.

When the tongues 16 and 17 are twisted side-wise to the positions shown in Figure 2, the angular edges thereof engage side edges of the slots 18 and 19, respectively, and produce a cam-like action which draws the base of the resistance unit casing into firm contact with surfaces of the panel 22. If the tongues 16 and 17 are twisted sufficiently, the resistance unit will be held in place against the supporting member 22 so that severe vibration of this supporting member will not loosen the resistance unit and cause it to vibrate with respect to said supporting member. The casing of the resistance unit is thus supported in firm contact with the support 22 and heat developed in the resistance unit may be readily transferred to the supporting panel 22, thus permitting the resistance unit to be operated at a lower temperature.

In Figure 4 I have shown a slightly modified form of this invention in which the mounting tongue 16 is made of smaller size than that shown in Figure 2, for example. Both tongues may be made in this manner where the holes 16a and 17a are to be eliminated from the tongues 16 and 17, respectively. The purpose of these holes 16a and 17a is to permit the resistance unit to be mounted with small bolts if desired. These holes also may serve to receive a rod-like tool for the purpose of twisting the tongues 16 and 17 side-wise. Otherwise the tongues may be twisted by means of pliers, vices, or other tools. In Figures 5 and 6 I have shown the jacket or casing blanks 10a prior to bending. The longitudinal side portions of these blanks are bent over the resistance unit winding 12, insulation wrapper 13, and terminals 14 and 15 so that the casing formed of the blank 10a, houses the completed resistance winding. The resistance winding 12 is wound upon a core 12a of suitable material. Where desired, the tongue supports 16 and 17 of my invention may be provided to resistance units encased in trough-like members such as disclosed in application Serial No. 75,179 of Karl E. Rollefson and in that case, if desired, the tongues 16 and 17 may be punched by a punch press or other suitable machine from the bottom of the trough-like casing if it is not convenient to provide these tongues at the ends of the casing. This procedure may be employed to save material from which the blanks

10a are made and if desired, the tongues 16 and 17 may be cut from the inner body portion of these blanks instead of being made at the ends of the blanks.

While I have described this invention in detail with respect to certain embodiments thereof, it is, of course, understood that modifications within the scope and spirit of this invention may be made without departing therefrom and therefore I do not desire to limit the invention to the exact details shown except insofar as they are defined by the claims.

What I claim and desire to secure by Letters Patent of the United States is as follows:

1. A resistance unit casing of the type adapted to be used on resistance units suited for use in amplifying apparatus comprising a blank of elongated, substantially rectangular body portion, substantially parallel, longitudinal sections of the sides of said blank being adapted to be folded over a resistance element to embrace said resistance element, a pair of tongue-like elements extending from the ends of said blank, said tongue-like elements having the edges of the sides thereof diverging to form wedge-like elements adapted to be bent downward with respect to said blank body portion to be received in slots and engage sides of said slots in cam-like fashion.

2. A resistance unit casing of the type adapted to be used on resistance units suited for use in amplifying apparatus comprising a blank of elongated, substantially rectangular body portion, substantially parallel, longitudinal sections of the sides of said blank being adapted to be folded over a resistance element to embrace said resistance element, a pair of tongue-like elements extending from the ends of said blank, said tongue-like elements having wedge-like sections cut out of opposite sides thereof to decrease the width of said elements and facilitate bending of said tongue-like elements downward with respect to said blank body portion to be received in slots and engage sides of said slots in cam-like fashion.

3. A resistance unit casing of the type adapted to be used on resistance units suited for use in amplifying apparatus comprising a blank of elongated, substantially rectangular body portion, substantially parallel, longitudinal sections of the sides of said blank being adapted to be folded over a resistance element to embrace said resistance element, a pair of tongue-like elements extending from the ends of said blank and being adapted to be bent downward to be received in slots, said tongue-like elements having the edges of the sides thereof tapered at an angle with respect to the longitudinal axes thereof to engage sides of said slots in cam-like fashion when said tongue-like elements are twisted sidewise.

4. A resistance unit of the type adapted to be used in amplifying apparatus comprising a resistance element, an elongated sheet-like metallic member for snugly engaging said resistance element, said resistance element having a terminal thereof connected to said sheet-like metallic member, a metallic panel support adapted to form one of the circuit connections to said resistance element through said terminal, and means for supporting said sheet-like metallic member on said metallic panel support, said means including tongue means formed integral with said sheet-like metallic member and having wedge-like surfaces to engage slots formed in said metallic support and draw and hold said metallic member to said metallic panel support under tension by a cam-like action to prevent

said resistance element from shaking with respect to said metallic panel support.

5 A resistance unit of the type adapted for use in amplifying apparatus, comprising a resistance element, an elongated metallic member for snugly holding said resistance element and having means for fastening said resistance element to a substantially flat metal support, said means comprising tongues formed integral with said
10 elongated metallic member and tapered sides for engaging the sides of slots formed in said metal

support and for drawing said metallic member and said resistance element tightly and firmly against said metal support by a sliding and gradual cam-like action when each of said
5 tongues is twisted with respect to the longitudinal axis of the corresponding slot, said tapered sides of said tongues being formed in such a way that said fastening means may be employed with substantially flat supports of substantially
10 different thicknesses.

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