Jan. 12, 1932. H. E. KRANZ 1,841,332

RESISTANCE DEVICE

Filed May 9, 1929

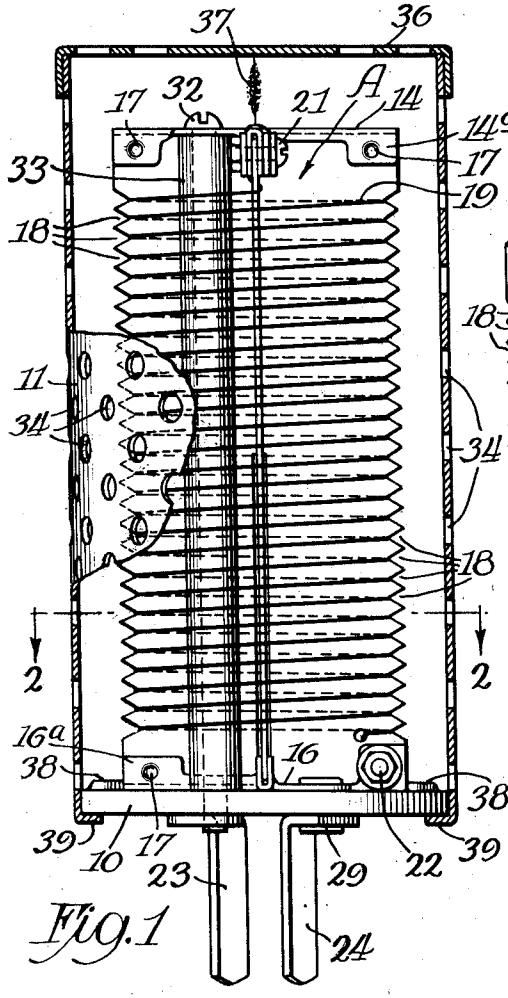


Fig. 1

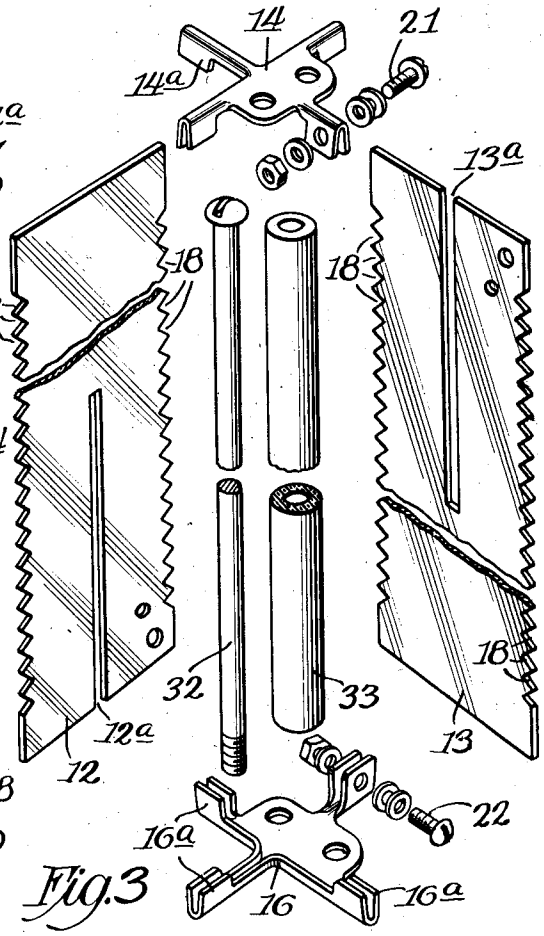


Fig. 3

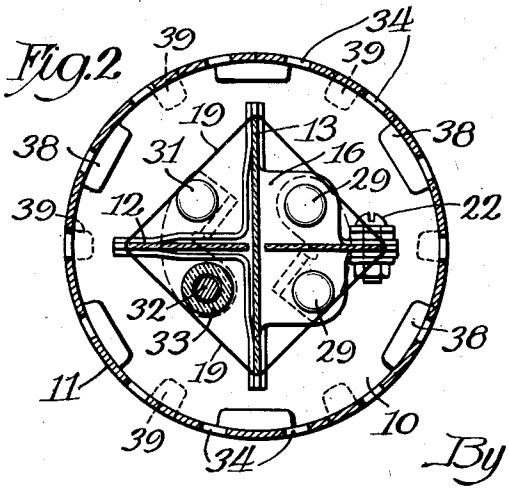
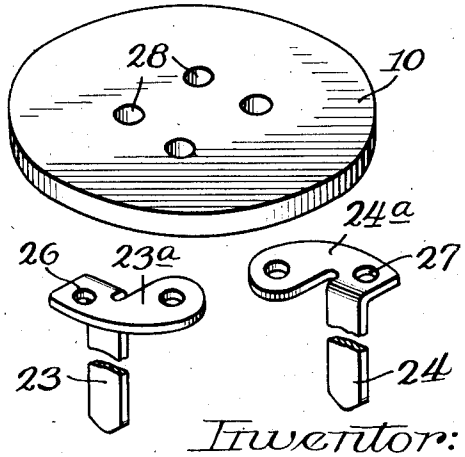


Fig. 2



Inventor:
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Patented Jan. 12, 1932 1,841,332

UNITED STATES PATENT OFFICE

HERMAN E. KRANZ, OF CHICAGO, ILLINOIS, ASSIGNOR TO GRIGSBY-GRUNOW COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

RESISTANCE DEVICE

Application filed May 9, 1929. Serial No. 361,589.

My invention relates to resistance devices, and more particularly to a novel type of resistance device which I have used very successfully as a ballast resistance for current supply units, such as those termed power packs, and used with alternating current radio receivers.

One of the principal objects of my invention is the provision of an improved ballast resistance.

Another object is the provision of a convenient means for introducing a ballast resistance in the incoming power line.

Another object is the provision of a resistance of this type which can be exchanged quickly in the event of its burning out or becoming useless for other reasons.

Another object is the provision of a cheap, compact, convenient and highly efficient resistance device for the purposes set forth.

Other objects and features of the invention will be apparent from a consideration of the detailed description taken with the accompanying drawings wherein

Fig. 1 is a vertical sectional view showing the invention, part of the casing being shown in full lines;

Fig. 2 is a plane sectional view taken along the line 2—2 of Fig. 1 looking in the direction of the arrows, and

Fig. 3 shows some of the principal parts of the device in perspective, and set out in their approximate relative positions.

Referring now to the drawings the device is built principally around a disc like base 10 of insulating material such as bakelite, the entire resistance carrying frame work A being supported on the base, and a cylindrical or cylinder like case 11 being mounted to the base and surrounding the resisting element.

Concerning the details of the structure the framework A is made up principally of two sheets 12 and 13 of insulating material such as mica and provided with longitudinal slots 12*a* and 13*a* by means of which the two sheets may be placed together to form a four edged figure as illustrated in Fig. 2. Retaining members 14 and 16 are disposed at the top and bottom of the mica sheets, the retaining members being of spider shape, and their arms 14*a* and 16*a* respectively being bent over to grip the end edges of the mica sheets. To make more intimate connection a center punch or similar tool is employed to form depressions 17 in the material of the retaining members to cause them to positively grip the ends of the mica. The edges of the mica sheets are provided with serrations 18 along which resistance wire 19 is disposed as it is wound on the frame. To secure the ends of the wire, nuts and bolts 21 and 22 are provided extending through suitable apertures and one of the arms 14*a* or 16*a* respectively so as to retain the ends of the wire, hold the wire taut, and at the same time form electrical contact with the retaining members 14 and 16.

I employ a novel and simple means for securing the framework to the base, effecting the necessary electric connections, and securing other advantageous results which will be apparent as the description proceeds. Prongs 23 and 24 are adapted to be secured to the outside face of the base 10, and they have flat right angular portions 23*a* and 24*a* each provided with a pair of apertures 26 and 27. Similarly the members 14 and 16 are provided with apertures which are so disposed that they may be matched up with the apertures in the prongs. Apertures 28 in the base 10 are always positioned with their centers the same distance apart, and rivets 29—29 are employed to secure the retaining member 16 and the prong 24 to opposite sides of the base 10 while also forming an electrical contact from the retaining member 16 to the prong 24. This also has the effect of securing the entire framework, carrying the resistance wire, to the base. To secure the prong 23 one rivet 31 is employed, this extending only through the base and the prong. Now in order to form an electrical connection with the member 14 I employ a long bolt 32 which is surrounded by an insulating tube 33 and extends from one of the apertures in the member 14 through the base and with its end threaded into one of the apertures 26 and the prong 23. This bolt therefore serves a triple purpose of aiding and securing the

prong 23 to the base, forming an electrical contact between the prong and the retaining member, and also aiding in strengthening the entire framework and holding the members 14 and 16 in proper relation.

The casing 11 is provided with perforations 34 which have the effect of permitting free circulation of air for cooling, and a cap 36 is provided also provided with perforations for cooling. The cylindrical portion of the casing has its edges meeting without overlapping, and joined together by spot welding as at 37. The cap 36 is also spot welded to the casing so that an extremely light but strong structure is obtained. At the open end of the casing projections 38—38 and 39—39 are provided, the projections 38 being bent down considerably below the end edge of the casing, and all being in a common plane so as to engage the inside face of the base 10. The projections 39 are bent over to engage the outside face of the base 10 so that a quick and durable connection is obtained by the base and casing.

When assembled the device is handled as a unit, the plug connecting prongs being of standard type so that they may be connected to any standard type of receptacle. Such a receptacle is secured in the power pack, preferably in the incoming line, that is the primary of the transformer (not shown). In case of any difficulty whatsoever in the unit, either through burning out on account of encountering an unusually high voltage, or for other reasons, it is a very simple matter to replace the unit with a new one.

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

1. A resistance device for the purpose described comprising an insulating base, a framework secured to the base and consisting of two sheets of insulating material longitudinally slotted and disposed together at right angles to form four generally parallel edges, retaining members at the ends of the framework, said retaining members being formed of metal and extending entirely over the end edges of said insulating sheets, resistance wire wound on the parallel edges and having its ends connected to the metal retaining members, standard plug connecting prongs secured to the base, and means for forming electrical connections between the metal retaining members and the connecting prongs.

2. A resistance device for the purpose described comprising an insulating base, a framework secured to the base and consisting of two sheets of insulating material longitudinally slotted and disposed together at right angles to form four generally parallel edges, retaining members at the ends of the framework, said retaining members being formed of metal and extending entirely over the end edges of said insulating sheets, resistance wire wound on the parallel edges and having its ends connected to the metal retaining members, a pair of standard plug connecting prongs disposed on the outside face of the base, one of said prongs being secured by rivets which also extend through the adjacent retaining member on the opposite side of the base and so serve to connect the framework to the base and also form an electrical connection to the prong, the other prong being secured by a long bolt extending from the other retaining member, through the base and threaded into the prong whereby the retaining members are partly held together, electrical contact made with the prong and the entire framework partly secured to the base.

3. A resistance device for the purpose described comprising an insulating base, a framework secured to the base and consisting of two sheets of insulating material longitudinally slotted and disposed together at right angles to form four generally parallel edges, retaining members at the ends of the framework, said retaining members being formed of metal and extending entirely over the end edges of said insulating sheets, resistance wire wound on the parallel edges and having its ends connected to the metal retaining members, a pair of standard plug connecting prongs disposed on the outside face of the base, one of said prongs being secured by rivets which also extend through the adjacent retaining member on the opposite side of the base and so serve to connect the framework to the base and also form an electrical connection to the prong, the other prong being secured by a long bolt extending from the other retaining member, through the base and threaded into the prong whereby the retaining members are partly held together, electrical contact made with the prong, the entire framework partly secured to the base, and a perforated metal casing secured to the base and surrounding the resistance wire and supporting frame, connection to the base being by lugs bent from the end edge of the casing to engage both faces of the base.

4. A resistance device for the purpose described comprising an insulating base, a framework secured to the base and consisting of two sheets of insulating material longitudinally slotted and disposed together at right angles to form four generally parallel edges, retaining members at the ends of the framework, said retaining members being formed of metal and extending entirely over the end edges of said insulating sheets, resistance wire wound on the parallel edges and having its ends connected to the metal retaining members, a pair of standard plug connecting prongs disposed on the outside face of the base, one of said prongs being secured by rivets which also extend through the adja-

cent retaining member on the opposite side of the base and so serve to connect the framework to the base and also form an electrical connection to the prong, the other prong being secured by a long bolt extending from the other retaining member, through the base and threaded into the prong whereby the retaining members are partly held together, electrical contact made with the prong, the entire framework partly secured to the base, a perforated metal casing secured to the base and surrounding the resistance wire and supporting frame, connection to the base being by lugs bent from the end edge of the casing to engage both faces of the base and a tubular insulator surrounding the bolt between the retaining members.

5. A resistance device comprising an insulating frame, end members for said frame, means for spacing and supporting said end members comprising an insulating tube therebetween, a rod for holding the end members in engagement with said tube, a resistance element on said frame, said rod forming a conductor connected to one end of the resistance element.

In witness whereof, I hereunto subscribe my name this 1 day of May, 1929.

HERMAN E. KRANZ.