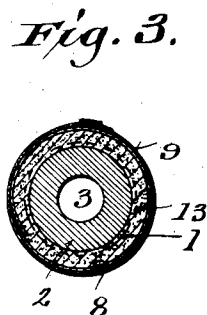
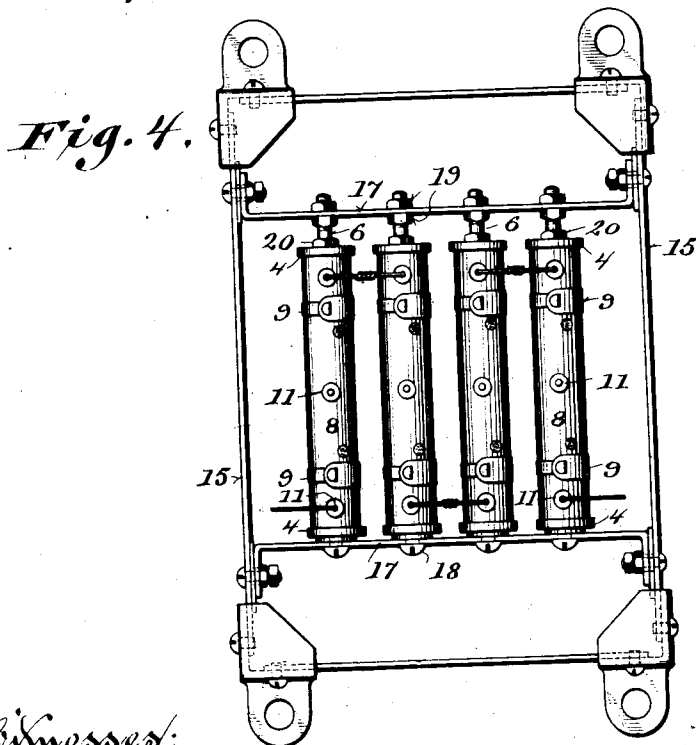
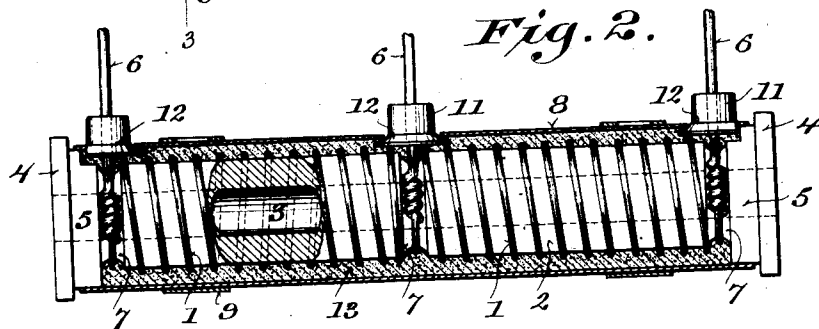
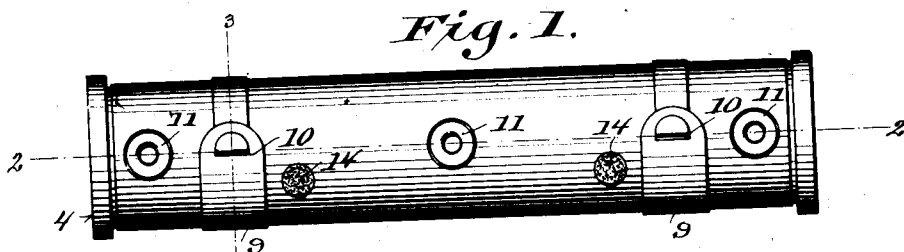


No. 872,208.

PATENTED NOV. 26, 1907.

H. J. WIEGAND.
INCLOSED RESISTANCE.
APPLICATION FILED OCT. 30, 1905.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY J. WIEGAND, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE CUTLER-HAMMER MANUFACTURING COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

INCLOSED RESISTANCE.

No. 872,208.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed October 30, 1905. Serial No. 285,034.

To all whom it may concern:

Be it known that I, HENRY J. WIEGAND, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Inclosed Resistances, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in inclosed resistances. It applies especially to structures wherein the resistance is carried by a base which is made of porcelain, soapstone, slate, glass or other fragile and brittle material. These structures have heretofore been objectionable, due to the fact that the base might be easily broken, and if it were broken the structure would be rendered unfit for use. According to the preferred form of my invention, the base and the resistance are surrounded by a casing which is filled with a solid filler. A structure is thus formed wherein the base, the resistance and the casing are practically so united as to form substantially an integral structure, wherein the base is so protected that it is not liable to be broken, and if it becomes broken the structure may still be used.

It will, of course, be understood that my invention embodies various features besides that which has previously been set forth, and the same will be apparent from the explanation thereof which is hereinafter contained. Furthermore, it will be understood that my invention may be applied to structures of various forms.

For the purpose of explaining my invention, I shall show and describe a resistance unit which has been worked out in practice to embody the various features of my invention.

The several views in the accompanying drawing are as follows:

Figure 1 is an elevation of the resistance unit. Fig. 2 is a longitudinal sectional view on the line 2—2 of Fig. 1. Fig. 3 is a cross sectional view on the line 3—3 of Fig. 1, and Fig. 4 is an elevation of several of the resistance units mounted upon a supporting frame.

The resistance 1 is preferably wound upon a base 2, which may be composed of porcelain, slate, glass, soapstone or any other suitable material. The base may be cylindrical

in form as shown in the drawing, and it is preferably provided with an axial hole or passage 3.

Each end of the base is preferably provided with an outwardly extending flange 4, which is provided with a depressed shoulder 5. The resistance is preferably provided with leads or terminals 6, which may be connected thereto at any suitable points, and the base 2 is preferably provided with recesses 7 to receive the attached portions of the resistance and the leads.

The base and the resistance are preferably surrounded by a casing or shell 8. The ends of the casing preferably rest upon the shoulders 5, so that the same set below the edges of the flange to be insulated as shall be hereinafter set forth. The casing is preferably formed from a piece of sheet metal which is bent into cylindrical form, and it is preferably held in shape by means of straps 9. One end of each strap is preferably provided with a slot 10 through which the other end thereof is passed and then bent over so as to fasten the ends together.

The leads 4 extend through bushings 11, arranged within suitable holes or apertures in the casing 8, the same being thereby insulated from the casing. Each bushing is preferably provided with a flange 12 which bears against the inside of the casing, to prevent it from being displaced from position.

It will, of course, be understood that the base and the casing may be of various forms and that the same may be associated with each other in different ways.

The casing 8 is preferably filled with a solid filler 13 which will insulate the resistance from the casing. The casing is provided with a suitable aperture 14 through which the filler may be inserted. The filler may be composed of various materials, but it is preferably made of a cement or other suitable material which will set when hardened, thereby practically uniting the casing, the resistance and the base. Inasmuch as the filler will thus make the base, the resistance and the casing substantially an integral structure, it will be difficult to break the base, and if the base should ever be broken, the casing and the cement will hold the broken parts together, so that the structure may still be used.

It will, of course, be understood that the

arrangements and form of the parts of the structure shown herein to illustrate my invention, may be changed in various ways, and furthermore, that my invention may be applied to inclosed resistances of various types.

Another embodiment of the present invention is illustrated in my application filed October 30, 1905, Serial No. 285,035.

Fig. 4 illustrates the way in which I may mount my inclosed resistance unit upon a support, and shows a supporting frame 15 by means of which a plurality of resistance units may be carried. Each unit is preferably mounted upon a rod or bolt 16 which extends between cross-pieces 17 and passes through the hole 3 in the base 2. The bolt is preferably held in position upon the cross-pieces by means of the head 18 which engages the lower cross-piece, and the nuts 19 which engage the upper cross-piece. The rod is preferably provided with a nut 20 by means of which the resistance unit is held against the lower cross-piece.

Inasmuch as the casing 8 is carried by the base 2, it is so insulated that leakage will not take place through the casing to the supporting frame if the insulation between the resistance and the casing be defective. Where the resistance units which are mounted upon the supporting frame are electrically connected in series, the strain upon the insulating filler of each unit will be very small, due to the fact that the casing of each unit is insulated from the casing of the other units.

Where the resistance units are used in a rheostat, the leads thereof may be connected to the switch contacts in any suitable way. It will, of course, be understood that my invention is applicable to various purposes, and that certain features thereof may be applied to heating coils for electric heaters and to other devices.

Various changes may be made in the structure which has been particularly described herein without in any way departing from my invention, and it will be understood that the appended claims are intended to comprehend such changes.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. An inclosed resistance comprising a base, a resistance carried thereby, and a casing surrounding said base and said resistance, said casing being constructed and arranged to be filled with a cement adapted to be poured into said casing in a plastic state and to set when hardened, whereby said casing, said base and said resistance are united into practically an integral structure.

2. An inclosed resistance comprising a base having outwardly extending shouldered

flanges, a resistance carried by said base, and a casing surrounding said base and said resistance and having the ends thereof resting against said flanges.

3. An inclosed resistance comprising a base having outwardly extending flanges, a resistance carried by said base, a casing supported by said flanges and inclosing said resistance, said base being adapted to insulate said casing from a support.

4. An inclosed resistance comprising a base having outwardly extending flanges, a resistance carried by said base, a casing inclosing said resistance and supported by said flanges, said casing being constructed and arranged to be filled with an insulating material adapted to be poured into the casing in a plastic state and to set when hardened whereby the casing, the resistance material and the base are united into a practically integral structure.

5. An inclosed resistance comprising a base having outwardly extending flanges, a resistance carried by said base, a casing surrounding said resistance and said base and having the ends thereof resting upon said flanges, said casing being constructed and arranged to be filled with an insulating filler adapted to be poured into the casing in a plastic state and to set when hardened so as to make said base, said resistance and said casing practically an integral structure.

6. An inclosed resistance comprising an insulating supporting base having outwardly extending flanges, a casing supported by said flanges and inclosing said resistance, said casing being filled with a solid material so as to make said base, said resistance and said casing substantially an integral structure and said casing being adapted to be insulated from a support by said base.

7. An inclosed resistance comprising a substantially cylindrical base, a resistance wound upon said base, and a substantially cylindrical casing or shell surrounding said base and said resistance, said casing being filled with a solid insulating filler so as to make the base, the resistance, and the casing practically an integral structure and said base being adapted to insulate said casing from a support.

8. An inclosed resistance comprising a substantially cylindrical base, a resistance carried by said base, and a substantially cylindrical casing or shell surrounding said base and said resistance, said casing being carried by said base and said base being adapted to insulate said casing from a support.

9. An inclosed resistance comprising a substantially cylindrical base, a resistance wound upon said base, and a substantially cylindrical casing surrounding said resistance and said base and carried by said base

so as to be insulated thereby from a support, said casing being filled with a solid filler.

10. An inclosed resistance comprising a substantially cylindrical base, adapted to be mounted upon a support, a substantially cylindrical casing carried by said base and arranged to be insulated thereby from said support, and a resistance inclosed within said casing.

11. An inclosed resistance comprising a substantially cylindrical base adapted to be mounted upon a support, a substantially cylindrical casing or shell carried by said base and arranged to be insulated thereby from said support, and a resistance carried upon said base and inclosed within said casing, said casing being filled with a solid insulating filler.

12. An inclosed resistance comprising a base having an axial hole extending therethrough, said hole being adapted to receive a rod to support said base, a casing carried by said base and adapted to be insulated thereby from said rod, and a resistance inclosed within said casing.

13. An inclosed resistance comprising a substantially cylindrical base having an axial hole extending therethrough, said hole being adapted to receive a rod to support said base, and a casing carried by said base and insulated thereby from said rod, said casing being filled with a solid insulating filler.

14. An inclosed resistance comprising a base having an outwardly extending flange at each end thereof, each flange being provided with a depressed shoulder, a casing having the ends thereof resting upon said shoulders and against said flanges, and a resistance carried by said base and inclosed within said casing.

15. An inclosed resistance comprising a base having an outwardly extending flange at each end thereof and an axial hole extending therethrough, a resistance carried upon said base, and a casing or shell having the ends thereof resting upon said flanges, said base being adapted to insulate said casing from a support.

16. An inclosed resistance comprising an elongated base having an outwardly extending flange at each end thereof, and an axial hole extending therethrough, a resistance wound upon said base, and a tubular casing or shell having the ends thereof resting upon said flanges, said base being adapted to insulate said casing from a support and said casing being filled with an insulating material.

17. An inclosed resistance comprising a base having an outwardly extending flange at each end thereof and an axial hole extending therethrough, each flange being provided with a depressed shoulder, a resistance wound upon said base, and a casing or shell having the ends thereof resting upon said

shoulders, said base being adapted to insulate said casing from a support.

18. An inclosed resistance comprising an elongated insulating supporting base having an outwardly extending flange at each end thereof and an axial hole extending therethrough, each flange being provided with a depressed shoulder, a resistance carried upon said base, a casing or shell inclosing said resistance and having the ends thereof resting upon said shoulders, said base being adapted to insulate said casing from a support and said casing being filled with a solid material so as to make said base, said resistance and said casing substantially an integral structure, and leads extending through said casing and connected to said resistance.

19. An inclosed resistance comprising a substantially cylindrical base having an outwardly extending flange at each end thereof, each flange being provided with a depressed shoulder, a substantially cylindrical casing having the ends thereof resting upon said shoulders and against said flanges, and a resistance carried by said base and inclosed within said casing.

20. An inclosed resistance comprising a base, a resistance carried thereby, and a casing surrounding said base and said resistance, said casing being formed from a single piece of sheet metal, and straps extending around said casing to hold the same in shape.

21. An inclosed resistance comprising a base, a resistance carried thereby, and a casing surrounding said base and said resistance, said casing being formed from a single piece of sheet metal bent around said base and said resistance, straps extending around said casing to hold the same in shape, one end of each strap being provided with a slot through which the other end extends to fasten the ends of the strap together.

22. An inclosed resistance comprising a substantially cylindrical base having outwardly extending flanges, each flange being provided with a depressed shoulder, a substantially cylindrical casing having the ends thereof resting upon said shoulders, a resistance wound upon said base, and leads connected to said resistance, each lead being passed through a bushing arranged within a suitable hole in said casing.

23. An inclosed resistance comprising an elongated base having an outwardly extending flange at each end thereof and an axial passage therethrough, each flange being provided with a depressed shoulder, a tubular casing having the ends thereof resting upon said shoulders, a resistance wound upon said base, leads connected to said resistance, said leads being passed through bushings arranged within suitable apertures

in said casing, and a solid insulating filler surrounding said resistance.

24. An inclosed resistance comprising an elongated base having an outwardly extending flange at each end thereof, each flange being provided with a depressed shoulder, a resistance wound upon said base, a tubular casing formed from a single piece of sheet metal and having the ends thereof resting upon said shoulders, said casing being filled with a solid insulating material, and leads connected to said resistance, said leads being passed through insulating bushings arranged within suitable apertures in said casing.

25. An inclosed resistance comprising an elongated base having an outwardly extending flange at each end thereof and adapted to be mounted upon a support, a resistance wound upon said base, a tubular casing

formed from a single piece of sheet metal bent around said base to inclose said resistance, the ends of said casing being set upon said flange and said base being adapted to insulate said casing from said support, means for holding said casing in shape, and leads extending through said casing and connected to said resistance, said casing, said resistance and said base formed into substantially an integral structure by means of a solid material arranged within said casing and surrounding said resistance and said base.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

HENRY J. WIEGAND.

Witnesses:

A. H. BARNICKEL,
J. F. HAWKINS.