R. E. ZANNOTH & V. B. DICKESON.

TERMINAL PLUG.

APPLICATION FILED APR. 12, 1915.

1,169,314. Patented Jan. 25, 1916.

Fig. 1.

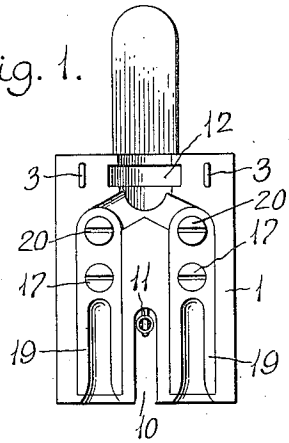


Fig. 3.

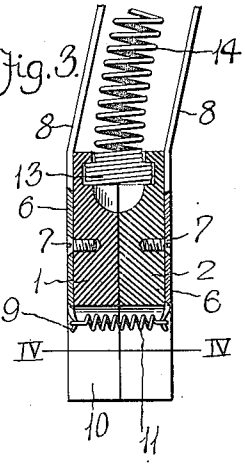


Fig. 2.

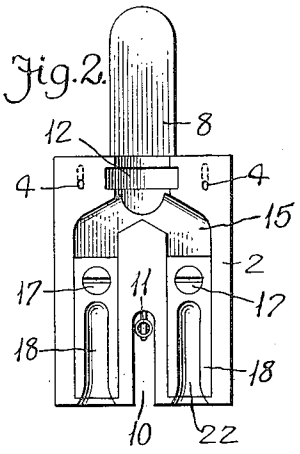


Fig. 5.

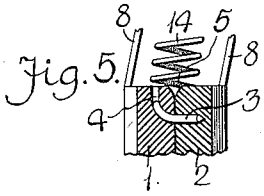


Fig. 4.

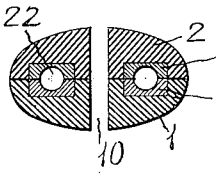


Fig. 14.

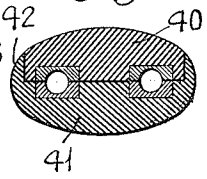


Fig. 9.

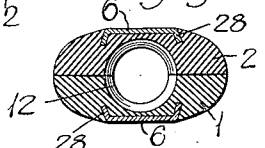
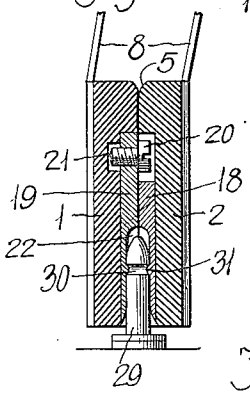


Fig. 11.



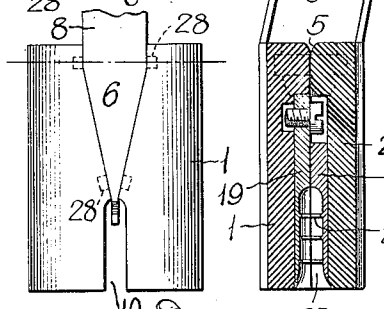


Fig. 6.

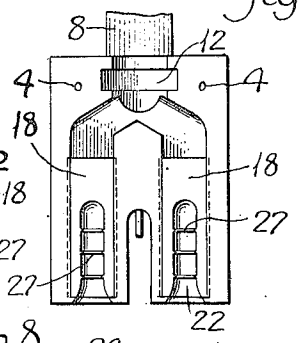
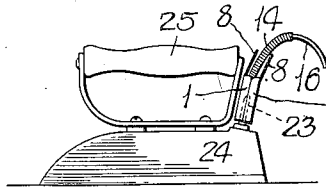


Fig. 10.



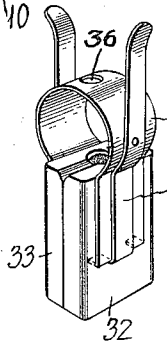


Fig. 8.

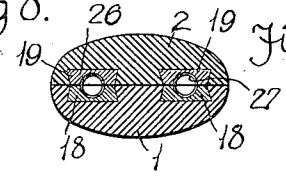


Fig. 7.

Fig. 12.

Fig. 13.

Witnesses

Chas. W. Stauffiger

Karl A. Butler

Inventor

Robert E. Zappoth,

Verna B. Dickeson,

By Parker & Burton

Attorneys

UNITED STATES PATENT OFFICE.

ROBERT E. ZANNOTH AND VERNA B. DICKESON, OF DETROIT, MICHIGAN.

TERMINAL PLUG.

1,169,314. Specification of Letters Patent. Patented Jan. 25, 1916.

Application filed April 12, 1915. Serial No. 20,651.

To all whom it may concern:

Be it known that we, ROBERT E. ZANNOTH and VERNA B. DICKESON, citizens of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Terminal Plugs, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a terminal plug especially designed for electric heating devices.

The primary object of our invention is to provide a novel sectional plug wherein simple and effective means are employed, in a manner as hereinafter set forth, for moving the sections of the plug, relative to each other, when the plug is removed from terminals or placed thereon, thus preventing wear and tear upon the contacts of the plug due to stripping the plug from terminals or forcibly placing the plug upon terminals.

Another object of our invention is to provide a sectional terminal plug wherein the sections of the plug are disposed to frictionally grip terminals and insure a positive electrical connection between terminals and the plug.

A further object of our invention is to furnish a terminal plug with means adapted to permit of the plug's ready removal from terminals, thus precluding any injury to a cord or electrical conductor connected to the plug, it being a well known fact that when an ordinary plug is placed upon terminals or removed therefrom that the cord or electrical conductor connected to the plug is often gripped and subjected to stresses and strains eventually impairing the usefulness of the cord.

A still further object of our invention is to provide a terminal plug in the form of a clamp that can be quickly and easily placed in engagement with terminals, the clamp in one form embodying connected members or sections which have contacts connected thereto by suitable fastening means, and in another form the contacts are embedded and suitably anchored in the body of each member or section of the clamp. Various forms are illustrated, but in the general make-up of all of these forms, the parts are constructed with a view of reducing the cost of manufacture and at the same time retain the features by which safety, durability and ease of assembling are secured and with such ends in view, our invention resides in the novel construction, combination and arrangement of parts to be hereinafter specifically described and then claimed.

Reference will now be had to the drawings wherein—

Figure 1 is an elevation of one of the sections of the plug; Fig. 2 is a similar view of another section of the plug; Fig. 3 is a longitudinal sectional view of the plug showing the sections thereof as holding a cord guard; Fig. 4 is a cross sectional view taken on the line IV—IV of Fig. 3; Fig. 5 is a longitudinal sectional view of a portion of the plug showing the hinge or pivotal connection between the sections thereof; Fig. 6 is an elevation of a section of a plug, illustrating a modification of our invention; Fig. 7 is a cross sectional view of a plug composed of sections such as illustrated in Fig. 6; Fig. 8 is a longitudinal sectional view of the modified form of plug; Fig. 9 is a cross sectional view of a further modified form of plug; Fig. 10 is a side elevation of the same; Fig. 11 is a longitudinal sectional view of a still further modified form of plug; Fig. 12 is a perspective view illustrating a still further modified form of plug, Fig. 13 is a side elevation of an electric heating device, as a flat iron, provided with a terminal plug in accordance with our invention, and Fig. 14 is a cross sectional view of a plug having inter-engaging sections.

Reference will first be had to Figs. 1 to 5 inclusive showing a plug composed of two confronting sections 1 and 2 made of an insulation material, as red fiber, bakelite or any non-conducting composition. The sections 1 and 2 have the outer sides thereof rounded and the confronting faces thereof flat in order to provide a plug that is oval in cross section and of such shape as to be conveniently manipulated.

The face of the section 2, at the inner end thereof, and contiguous to the side edges of said section, is provided with curved pins 3 adapted to extend into curved openings 4 provided therefor in the face of the section 1, and with the inner end of the sections 1 and 2, rounded as at 5, the pins 3 constitute a hinge or pivotal means for connecting the inner ends of sections, whereby the outer ends of said sections can be opened or separated.

To facilitate opening or separating the outer ends of the sections, the outer sides of the sections are provided with countersunk plates 6 secured to said sections by screws 7 or other fastening means. The plates 6 have their inner ends terminating in angularly disposed finger pieces 8 and the outer ends of said plates terminate in hooks 9 at the inner end of a transverse slot 10 in the outer ends of the sections 1 and 2. This slot permits of a coiled retractile spring 11 connecting the side plates 6, said spring being of sufficient tension to hold the sections 1 and 2 closed, as best shown in Fig. 3. The retractile spring 11 also insures a positive electrical connection between the plug and terminals upon which it is mounted.

The confronting faces of the sections 1 and 2, at the inner end of the plug, are recessed, as at 12 to hold the inner large end 13 of the flexible cord guard 14. The cord guard is preferably in the form of a spiral spring and the convolutions at the inner end of the spring are enlarged to provide a head which will be held in the recesses 12 of the sections 1 and 2, when said sections are connected together. The confronting faces of the sections 1 and 2 are also provided with sets of grooves 15 converging to the recesses 12, said grooves providing clearance for the bared ends of insulated leading in wires composing a cord or electric conductor 16 that extends through the guard 14.

Secured in the grooves 15 of the sections 1 and 2 by screws 17 are contact members 18 and 19, preferably made of copper. The contact members 18 and 19 are countersunk in the confronting faces of the sections 1 and 2 and are disposed at the sides of slots 10 of said sections. The contact members 19 of the section 1 are of a greater length than the contact members 18 of the section 2 so as to accommodate screws or binding posts 20 to which the bared ends of the leading in wires can be connected. The grooves 15 of the section 2 provide clearance for the heads of the screws or binding posts 20 and the section 1 is recessed, as at 21, to provide clearance for the inner ends of the screws or binding posts.

The contact members 18 and 19 are grooved, as at 22, with the outer ends of the grooves open and flared to receive terminals 23 of an electric heating device, as a flat iron 24. The terminals 23 are clearly shown in Fig. 13 and it is to be noted in connection with this figure that the finger pieces 8 of the plug are disposed at an angle directed rearwardly from the handle 25 of the flat iron, thus permitting of the finger pieces being easily gripped and pressed or squeezed toward each other to open the sections 1 and 2 and permit of easy removal of the plug from the terminals 23.

A slight modification of our invention is shown in Figs. 7 and 8, wherein the contact members 18 and 19 are dovetailed, as at 26, to become interlocked with the sections 1 and 2, without the use of screws or similar fastening means. The contact members 18 and 19 also have the walls of the grooves 22 thereof circumferentially ribbed, as at 27, or otherwise roughened to afford a positive gripping of said contact members when placed in engagement with the terminals. Besides obviating the necessity of using screws or similar fastening means in connection with the contact members, we also dispense with screws in connection with the side plates, as shown in Figs. 9 and 10. The side plates in this instance have inwardly projecting lugs 28 adapted to be embedded in the sections 1 and 2 to firmly hold the side plates countersunk in said sections.

In Fig. 11 there is illustrated another modification of our invention, wherein terminals 29 have annular grooves 30 to receive ribs 31 carried by the contact members of the plug. By interlocking the sections of the plug with the terminals in this manner it is impossible to strip the plug from the terminals, since it is necessary to open or separate the outer ends of the plug sections to remove the same.

A still further modification of our invention is shown in Fig. 12, wherein the sections 32 and 33 of the plug are held together by a band spring 34 provided with finger pieces 35 and an opening 36 which provides clearance for a cord guard.

From the foregoing it will be observed that we have devised a sectional terminal plug wherein the sections are yieldably connected together and can be easily and quickly placed upon terminals and removed therefrom, without any strain upon the cord or electric conductor connected to the plug. We not only obviate repeated repair in connection with the terminal plug, but provide a plug in which electrical connections are easily established and maintained in operable condition. By molding the sections of the plug from an insulation composition it is possible to anchor the contact members and other elements and thereby avoid using screws or similar fastening means. Such construction reduces the cost of manufacture and provides a plug whose longevity is equal to the electric heating device in connection with which it is used. The construction of the plug further permits of easy access being had to elements carried by the confronting faces of the plug sections, consequently it is an extremely easy matter for a person to repair the plug should it be necessary.

To prevent a person from inserting an obstruction or spacing member between the sections of the plug, to maintain the same separated a desired distance, whereby the plug could be easily placed on terminals and

removed therefrom we inclose the side edges of the plug, as shown in Fig. 14 by making a section 40 of less width than a section 41 whereby the section 41 can be provided with side flanges 42 to engage the side edges of the section 40. These sections are therefore interengaging and present a novel construction.

What we claim is:—

1. A terminal plug comprising sections having the ends thereof pivotally connected together, finger pieces carried by the pivoted ends of said sections, and a cord guard supported by the pivoted ends of said sections.

2. A terminal plug comprising sections having ends thereof connected whereby other ends of said sections can be separated, contact members carried by the confronting faces of said sections, means at an end of said plug to facilitate moving said sections relative to each other, and means connecting said sections to hold said sections normally closed.

3. A terminal plug comprising sections having ends thereof connected whereby said sections can be separated to facilitate placing said plug on terminals, a cord guard having an end thereof held between said sections, contact members carried by the confronting faces of said sections, and means connecting said sections adapted to hold the contact members of one section normally in engagement with the contact members of the other section.

In testimony whereof we affix our signatures in presence of two witnesses.

ROBERT E. ZANNOTH.
VERNA B. DICKESON.

Witnesses:
KARL H. BUTLER,
ANNA M. DORR.