April 28, 1936. J. O. WETZEL 2,038,816

APPLIANCE PLUG

Filed July 30, 1935

FIG. 1.

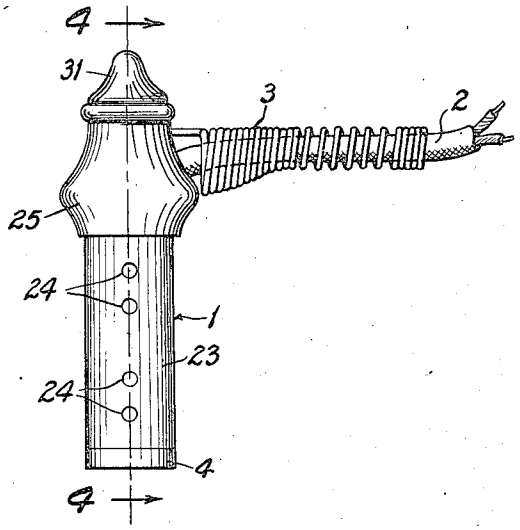


FIG. 2.

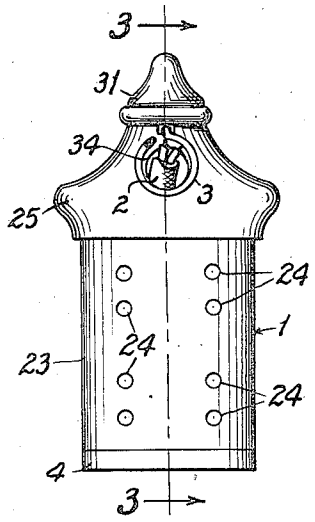


FIG. 3.

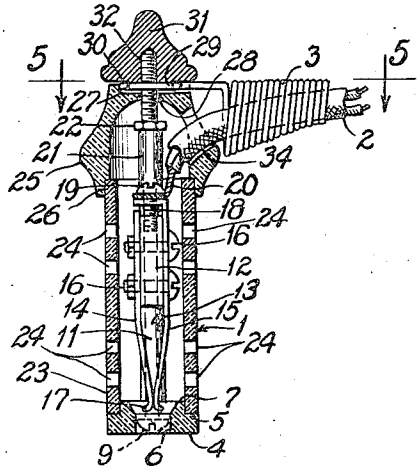


FIG. 4.

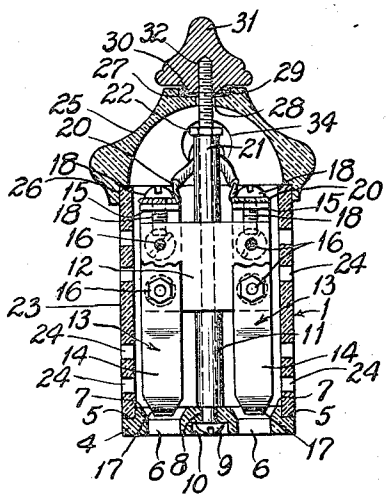
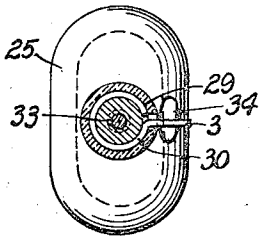


FIG. 5.



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APPLIANCE PLUG

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Application July 30, 1935, Serial No. 33,845

5 Claims. (Cl. 173—332)

This invention relates to appliance plugs, and with regard to certain more specific features, to appliance plugs for effecting connections to electrical devices.

This application is in part a continuation of my copending application, Serial No. 16,847, filed April 17, 1935.

Among the several objects of the invention may be noted the provision of an appliance plug of the class described which is provided with means for keeping the plug cool by dissipating the heat from the internal elements thereof; the provision of an appliance plug of the class described which is made up of a number of elements assembled in a novel manner such that the completed plug is less likely to come apart under service conditions than prior plugs; the provision of an appliance plug of the class described in which the contacting elements are mounted with improved rigidity, whereby the life of the plug while affording good electrical connections, is greatly increased; the provision of an appliance plug in which the connection of the exterior wire to the contact elements of the plug is effected in a rigid manner whereby bending stresses and consequent wear on the said wire are minimized; and the provision of an appliance plug which is economical to manufacture. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing, in which is illustrated one of various possible embodiments of the invention,

Fig. 1 is a side elevation of an appliance plug embodying the present invention;

Fig. 2 is a front elevation of the plug of Fig. 1;

Fig. 3 is a vertical cross-section taken substantially along line 3—3 of Fig. 2;

Fig. 4 is a vertical cross-section at right angles to the Fig. 3 view, and taken substantially along line 4—4 of Fig. 1; and,

Fig. 5 is a horizontal cross-section taken substantially along line 5—5 of Fig. 3.

Similar reference characters indicate corresponding parts throughout the several views of the drawing.

Referring now more particularly to Fig. 1, numeral 1 indicates the body of the appliance plug which is of a flattened cylindrical shape as is customary in this art. A cord 2 comprising electrical connecting wires enters the plug 1 near the top but at a side thereof. A coil spring 3 is provided for helping to provide a rigid connection for the cord 2 as will be described more particularly hereinafter.

Whereas, in the prior art, the assembly of plugs of this general character has generally been made from opposite halves joined together along a vertical plane, the present invention, in contradistinction, comprises an assembly the parts of which separate vertically. This permits certain advantages as will be more apparent hereinafter.

Referring now more particularly to Figures 1 to 4, numeral 4 indicates a bottom plate for the plug. The plate 4 preferably comprises a phenolic condensation product or the like, such as "Bakelite". Its general shape is that of the flat cross-section of the plug. Around the periphery of its upper edge there is provided a shoulder or groove 5. A pair of circular openings 6 upwardly terminating in outwardly beveled portions 7, are provided to receive the prongs of the appliance to which the plug is to be attached. In the center of the plate 4 there is provided a hole 8 to receive a rather long machine screw 9, which screw 9 supports the assembly as a whole. A recess 10 accommodates the head 10 of the machine screw 9, so that it does not project beyond the under surface of the plate 4.

Immediately above the plate 4, on the screw 9, is a collar 11. Resting on the top of the collar 11 is a block 12 likewise preferably formed from an insulating material such as "Bakelite". The block 12 has a relatively thin rectangular cross-section, and extends substantially the width of the entire plug. The block 12 carries connecting elements 13, of which the customary pair is provided. The connecting elements 13 each comprise respectively, one spring blade 14 mounted on one face of the block 12 and another spring blade 15 mounted on the opposite face. The blades 14 and 15 are held together and rigidly on the block 12, by means of a pair of bolts 16 for each pair of blades 13. The lower ends of both blades 14 and 15 are bent toward each other and at the lower extremity, are flared outwardly as indicated at numeral 17 (see Fig. 3) in order to provide a spring engagement or grip for the prongs of the appliance to which the plug is fastened. The upper ends of blades 14 terminate substantially at the top of the block 12. On the other hand, the upper ends 18 of the blades 15 are bent at right angles over the top of

the block 12 and have suitably threaded holes to receive screws 19. The screws 19 serve to electrically connect the bare ends 20 of the wire or cord 2 to the respective connecting assemblies 13. This is likewise indicated in Fig. 4.

Above the block 12 on the central screw 9 there is slipped another collar 21, similar to the collar 11. A nut 22 is then threaded down on the screw 9 in such manner as to clamp the plate 4, the collar 11, the block 12 and the collar 21 in rigid assembly.

Surrounding the inner assembly thus far described is a flat, hollow cylindrical member 23, which comprises the casing of the plug. The casing 23 is preferably also made of "Bakelite" or the like, and has the same cross-section as the base plug 4; in other words, the flat cylindrical shape heretofore referred to. A particular feature of the casing 23 is that it is all in one piece, having no separate halves as is customary in prior-art plugs. In the casing 23 are provided a plurality of openings or holes 24, preferably distributed vertically as well as around the casing 23. The purpose of the openings 24 is to provide for the ready dissipation of heat by radiation from the interior of the plug. Further, these holes 24 provide for free circulation of outside air around the connecting elements of the plug, thus permitting ready cooling by convection currents. The provision of these openings or holes 24 is a particular feature of the present invention.

Resting on top of the casing 23 is a dome-shaped top member 25, likewise preferably formed of "Bakelite" or the like. Along its inner edge, the member 25 has a shoulder 26 which receives the upper end of the casing 23 with a sliding fit. The member 25 is desirably provided with a shoulder or gripping portion 27 extending out from its exterior to provide ready means by which the plug may be grasped for placing it in appliances and removing it therefrom. The top of the member 25 is flat as indicated at numeral 27, and is provided at its center with an opening 28 for the screw 9. In the upper face 27 of the member 25, there is also provided a circular indentation 29 (see also Fig. 5) which is of suitable diameter to receive a single loop 30 forming the end of the coil spring 3. An opening 34 is provided in the side of member 25 for the cord 2.

Screwed onto the outer end of the screw 9 and holding the casing 23 and top 25 in rigid assembly with the remainder of the plug, and likewise clamping the single coil 30 of the coil spring 3 into position, is a cap or acorn nut 31, which is provided with a central opening 32 for the end of screw 9. The lower face of the cap nut 31 has a circular projection 33 which fits into the circular groove 29 of the member 25, more rigidly to hold the single loop 30 of the coil spring 3 in position. The cap nut 31 may be of metal or of "Bakelite" with equal facility.

From the foregoing, it will be seen that there is provided an appliance plug which is assembled and held together as a unit on a single, vertical central screw. The inner connecting elements, comprising a sub-assembly, are rigidly supported on said screw while the outer casing elements are likewise supported rigidly on said screw, surrounding said inner sub-assembly. This arrangement makes it possible to achieve a much more rigid disposition of the contacting elements per se and likewise provides for much easier assembly with accurate positioning of parts, than in prior-art plugs. The manner of this assembly likewise permits the inclusion of the ventilating openings 24 which provide for maintaining the interior contacting elements of the plug in a much cooler condition.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. An appliance plug comprising a central mounting member having a head, a base plate resting against said head, a terminal contact assembly rigidly supported on said mounting member above said base plate, casing means enclosing said contact assembly and resting against said base plate, a top member resting against the opposite end of said casing means, and means secured to the other end of said mounting member and holding said top member and casing in rigid assembly with said mounting member, said base plate having openings therethrough for admitting prongs to contact with said connecting assembly.

2. An appliance plug comprising a central screw, a base plate resting against the head of said screw, a connecting assembly rigidly supported on said screw above said base plate, casing means surrounding said connecting assembly and resting against said base plate, a top member resting against the opposite end of said casing means, and means threaded on the other end of said screw holding said top member and casing in rigid assembly with said screw, said base plate having openings therethrough for admitting prongs to contact with said connecting assembly, said connecting assembly comprising a block mounted on said screw and a contact device on each end of said block, each of said contacting devices comprising a pair of springs mounted on said block and having free ends extending toward said base plate.

3. An appliance plug comprising a relatively long central screw, a base plate on said screw and resting against the head thereof, a collar surmounting said base plate on said screw, a block of insulating material surmounting said collar on said screw and a second collar surmounting said block on said screw, a nut threaded on said screw and holding said base plate, collars and block in rigid assembly, connecting devices mounted on said block, a casing of hollow cylindrical shape surrounding said block and resting at one end against the outer periphery of said base plate, a top resting on the opposite end of said casing, said top being provided with an opening for passing the threaded end of said central screw, and a nut threaded on the outer end of said screw holding said top and casing member in rigid assembly with said base member, said base plate having openings therein permitting the insertion of prongs to connect with said connecting elements.

4. An appliance plug comprising a relatively long central screw, a base plate on said screw and resting against the head thereof, a collar surmounting said base plate on said screw, a block of insulating material surmounting said collar on said screw and a second collar surmounting said block on said screw, a nut threaded on said screw and holding said base plate, collars

and block in rigid assembly, a casing of hollow cylindrical shape surrounding said block and resting at one end against the outer periphery of said base plate, a dome-shaped top resting on the opposite end of said casing, said top being provided with a central opening in its top for passing the threaded end of said central screw, a nut threaded on the outer end of said screw holding said top and casing members in rigid assembly with said base member, said block carrying a pair of electrical connecting elements thereon, and means in said top for permitting the entrance of a connecting wire to be attached to said connecting elements, said base plate having openings therein permitting the insertion of prongs to connect with said connecting elements.

5. An appliance plug comprising a relatively long central screw, a base plate on said screw and resting against the head thereof, a collar surmounting said base plate on said screw, a block of insulating materials surmounting said collar on said screw and a second collar surrounding said block on said screw, a nut threaded on said screw and holding said base plate, collars and block in rigid assembly, a casing of hollow cylindrical shape surrounding said block and resting at one end against the outer periphery of said base plate, a dome-shaped top resting on the opposite end of said casing, said top being provided with a central opening in its top for passing the threaded end of said central screw, a nut threaded on the outer end of said screw holding said top and casing members in rigid assembly with said base member, said block carrying a pair of electrical connecting elements thereon, means in said top for permitting the entrance of a connecting wire to be attached to said contacting elements, each of said connecting elements comprising a pair of spring plates mounted on opposite sides of said block and having free ends extending to a point of approximate juxtaposition with said base member, said base member being provided with openings for admitting prongs of an appliance to said free ends of said connecting elements.

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