Nov. 26, 1935. S. F. FRENCH 2,022,497

ELECTRICAL APPLIANCE PLUG

Filed Nov. 14, 1934

Fig. 1.

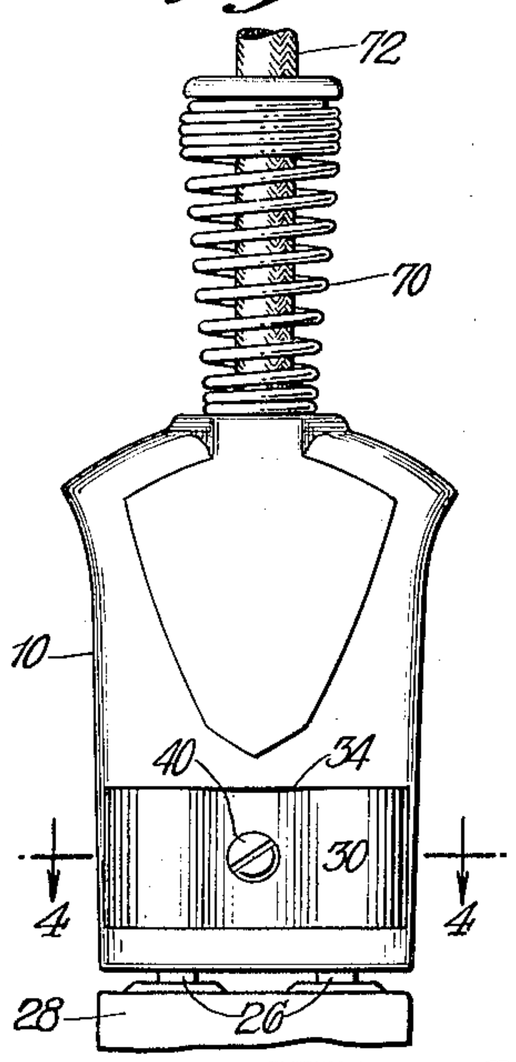


Fig. 2.

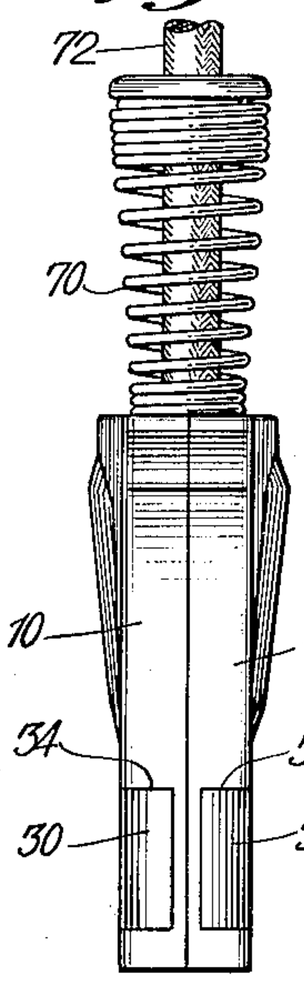


Fig. 3.

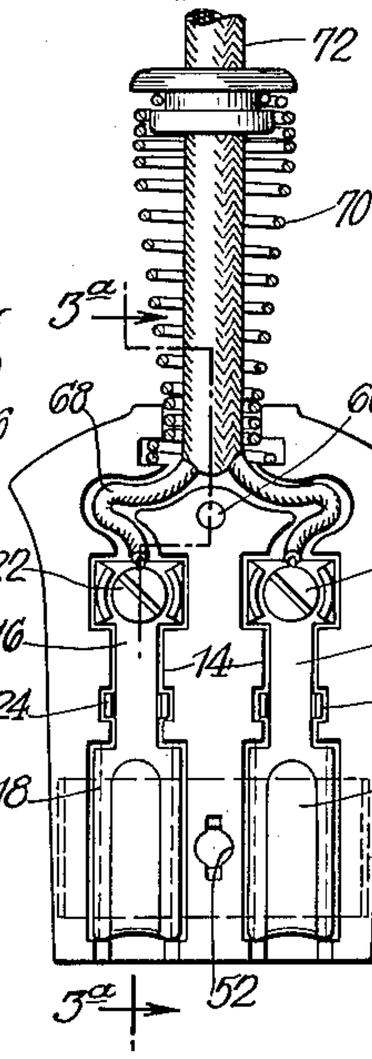


Fig. 3a.

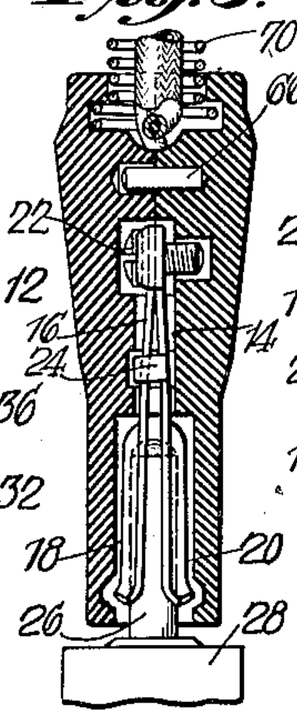


Fig. 4.

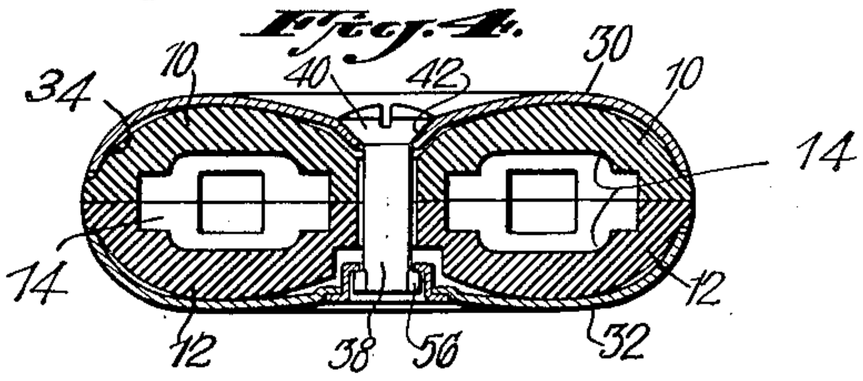


Fig. 7.

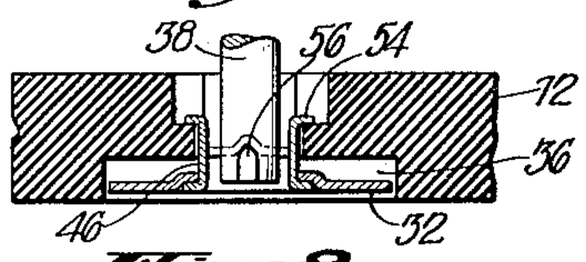


Fig. 8.

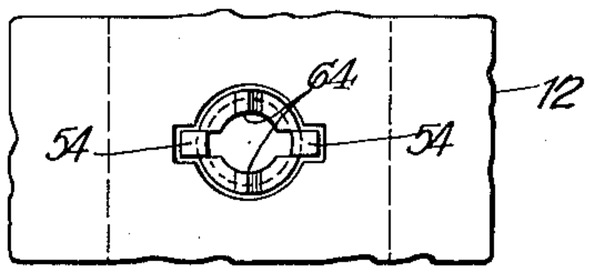


Fig. 5.

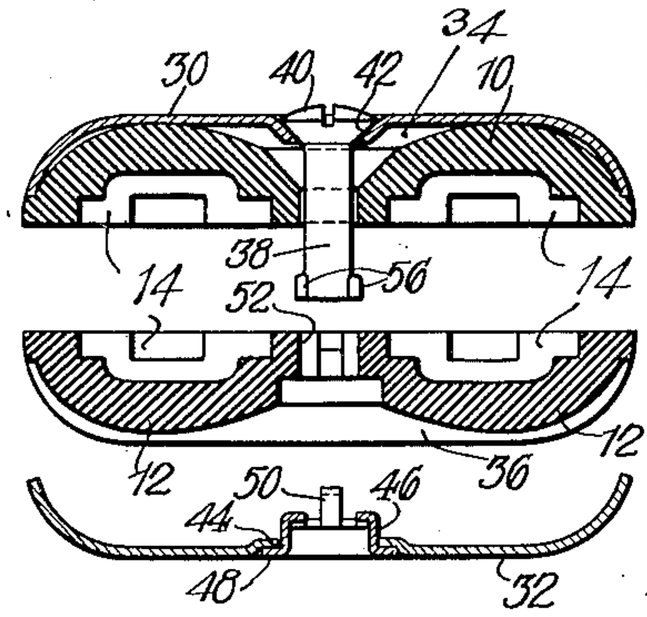


Fig. 6.

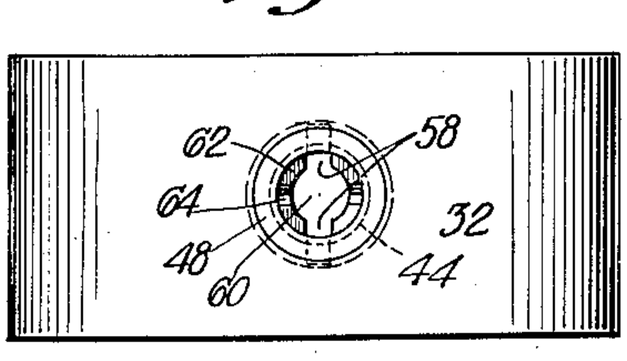


Fig. 9.

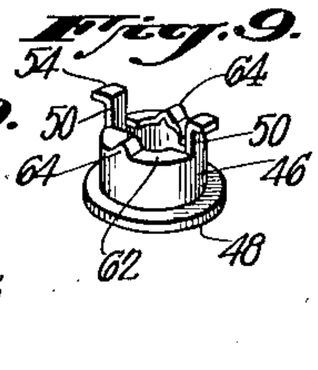
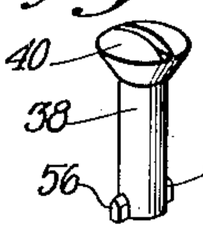


Fig. 10.



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ELECTRICAL APPLIANCE PLUG

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Application November 14, 1934, Serial No. 752,931

2 Claims. (Cl. 173—332)

This invention relates to improvements in plugs adapted to make a detachable electrical connection between the supply line and the contact prongs of various electrical appliances, such as electric irons, electric stoves, toasters and the like.

Heretofore, plugs of this general character have employed jointed or articulated contact members having some degree of inherent resiliency, so that such contact members, due to their inherent spring qualities, would firmly engage the contact prongs on the appliances to which they were connected. However, in practice, it has been found that the heating of the articulated contact members had a tendency to destroy the spring characteristics thereof. This often resulted in poor contact with a resultant arcing and pitting. The present invention obviates this disadvantage by the provision of spring means spaced away and insulated from the current carrying members.

The appliance plugs heretofore made have frequently been formed of separable parts secured to one another having a headed stud passing transversely through the same and having a nut screwed on the end thereof. In use, the screw connection between the nut and the stud frequently loosens and the parts, being small, are readily lost, with consequent annoyance to householders or other users attempting to reassemble the same. The present invention provides an improvement in this respect whereby the usual nut for holding the parts is dispensed with and the members for holding the parts in assembled relationship are so arranged that, after the original assembly, they cannot readily fall away or become detached from their associated parts. The above and other features of the invention will be readily apparent from the following detailed description when read in connection with the accompanying drawing.

In the drawing—

Fig. 1 is a front view of a plug embodying the present invention; Fig. 2 is an end view thereof; Fig. 3 is a view similar to Fig. 1, with one of the half sections of the plug body removed to reveal the interior construction; Fig. 3ª is a fragmentary section on line 3ª—3ª of Fig. 3; Fig. 4 is a horizontal section on line 4—4 of Fig. 1; Fig. 5 is a view showing the principal component parts of the plug before assembly, but omitting the contact members in the interest of clearness; Fig. 6 is an elevation of the lowermost element shown in Fig. 5; Fig. 7 is an enlarged fragmentary detail illustrating the connection between the securing stud and the spring element; Fig. 8 is a top view of Fig. 7 with the stud omitted; Fig. 9 is a perspective view of a thimble adapted to coact with the securing stud; Fig. 10 is a perspective detail view of the securing stud.

Referring in detail to the drawing, the plug body includes a pair of complementary body sections 10 and 12 formed of suitable insulating material and provided with recessed portions 14 for the accommodation of the articulated contact members 16. There are two of these contact members, as shown in Fig. 3, and as they are of identical construction a description of one will suffice for both.

Each contact member 16 includes contact elements 18 and 20 hingedly connected with one another by the terminal screw 22. The member 20 is provided with a pair of projections 24 which serve to maintain proper registry between the parts. These articulated contact members are somewhat similar to those conventionally used with the exception that they are of materially greater length, so as to reduce the angularity between them due to the hinged connection when pushed into engagement with contact prong 26 of the appliance 28 to which the plug is adapted to be connected. Moreover, heretofore, the contact elements have usually been formed of spring copper, brass, or the like and the inherent resiliency has been depended upon to secure a good contact between such elements and the coacting contact prong 26. In the plug of my invention, the contact elements need not necessarily be formed of spring tempered metal, although such metal can be used, if desired. However, the contact elements of my invention may be made of relatively rigid cast parts. This is because the spring action for yieldingly pressing such contact elements into good electrical contact with the contact prong 26 is secured by non-conducting means insulated electrically and also heat insulated from the contact members and the contact prongs.

The electrical contact members are usually made of copper, brass, or other metal of high elec-

trical conductivity. But, such metal is also a good heat conductor. And when the plug is used on heating appliances, such as electric irons, electric stoves and the like, it will be readily apparent that the heat of the appliance itself is readily transmitted by heat conduction to the coacting metallic electric contact members. Hence, such heat in the devices heretofore used would readily have a detrimental effect on the spring temper of the contact parts. To overcome this objectionable feature of prior devices, I provide the spring elements **30** and **32**, which are located exteriorly of the plug. Moreover, these spring elements do not carry current and they do not make any metal to metal contact with the prongs of the appliance. And because such spring elements need not carry current they can be made of various metal, such as iron or steel, which can be spring tempered in such a way that the spring qualities thereof will not be detrimentally effected by the temperatures to which they are normally subjected in practice.

The member **30** is in the form of a leaf spring seated in a recess **34** formed in the outer face of the body section **10**. The member **32** is a somewhat similar leaf spring seated in a recess **36** formed in the body section **12**. The ends of the spring members, as clearly shown in Figs. 4 and 5, are curved to conform generally in outline to the cross sectional shape of the body members.

A securing stud **38** passes transversely through the two body members and is so related to the parts that the assemblage provides means for yieldingly pressing the two elements **18** and **20**, of the articulated contact member, toward one another.

The securing stud has a head **40** slotted for screw driver engagement. This head is tapered on its underside and the spring member **30** is provided with a tapered seat portion **42** to coact therewith, as shown.

The spring member **32** is provided with a central aperture **44** for the accommodation of the securing thimble **46**, shown in detail in Fig. 9. This thimble, at one end, has an annular flange **48**, which overlaps the central aperture in the plate **32**. At its opposite extremity, the thimble is provided with fingers **50—50** which pass through an opening **52** formed in the body section **12** and the extremities of said fingers are bent over, as indicated at **54** (Figs. 7 and 8) so as to secure the spring member to the body section **12**. There is sufficient length to the fingers **50** to allow for a certain amount of play between the spring **32** and the inner face of the recess **36**, in which the spring is mounted. The securing stud **38** is provided at the ends thereof with laterally extending lugs **56**, which during the assembly of the parts are adapted to pass freely through the lateral slots **58** opening into the central aperture **60** formed in the end wall **62** of the thimble **46**.

To secure the parts together, the stud **38** is given a quarter turn which brings the projections into position to seat in the notched portions **64** of the thimble. And when so seated the conjoint action of the various parts of the assemblage will yieldingly press the complementary sections of the body against the elements of the articulated contact member, so as to yieldingly press such elements into an effective electrical engagement with the contact prongs **26**.

The lugs **56** are preferably formed on the securing stud after the shank thereof has first been assembled with the spring **30** of the body section **10**, so that these parts cannot be readily lost after their initial assembly. It is also apparent that the manner of securing the thimble **46** to the body section **12** is such that the spring **32** and the thimble are permanently secured in place. It is thus apparent that, in the event that the complementary sections are taken apart, the securing members cannot be lost as is the case with prior devices, in which the parts are merely secured by a screw or stud and nut connection. It is also apparent that, because the securing stud passes through and engages two spring members which tend to move in opposite directions, the spring action serves to insure that the parts will not work loose, as frequently happens in the case of the plugs heretofore used, which are secured by screw threaded connections.

The two complementary parts of the body are also provided with a dowel connection, one of the parts having a dowel indicated at **66** in Fig. 3 and the other part being provided with a suitable aperture for engagement with the dowel. Suitable conductors **68** are adapted to be connected with the terminal screws **22** and the usual form of spring-like protection member **70** is provided, which surrounds the jacket **72** enclosing the conducting wires **68**.

While I have described quite precisely the specific construction of the embodiment of the invention herein illustrated, it is not to be construed that I am limited thereto since various modifications and substitutions of equivalents may be made by those skilled in the art without departure from the invention as defined in the appended claims.

What I claim is:—

1. An electric appliance plug comprising a pair of identical slab-like body sections of insulating material rounded at the opposite sides, a pair of articulated contacts enclosed and supported by the body sections, each body section having a recess formed in the exterior surface thereof, a respective leaf spring seated in each recess and having its extremities bent to conform to the contour of the rounded cross sectional form of said body sections and said springs being located in said recesses and the curved portions being substantially flush with the normal outer faces of the edge portions of said body sections, a securing stud piercing the body portions at a point between the contact members and having a head engaging one of said springs and a notched thimble engaging the other spring and securing it to its associated body section, said stud having projections for engagement with the notches in said thimble, and said thimble having slots therein of a size and shape to permit the passage therethrough of said stud projections, the thus connected springs being effective to yieldingly press the elements of said articulated contacts together.

2. An electric appliance plug comprising a pair of identical slab-like body sections of insulating material rounded at the opposite sides, a pair of articulated contacts enclosed and supported by the body sections, each body section having a recess formed in the exterior surface thereof, a respective leaf spring seated in each recess and having its extremities bent to conform to the contour of the rounded cross sectional form of said body sections and said springs being located in said recesses and the curved portions being substantially flush with the normal outer faces of the edge portions of said body sections, a thimble having a portion extending through an aperture

in one of said springs and having a radial flange engaging the surface of the spring adjacent the aperture therein, said thimble having notched seats therein, a securing stud having a head engaging the other spring and being provided on its opposite extremity with lugs for detachable engagement with the notched seats in said thimble, said thimble having fingers adapted to freely pass through a notch formed in one of said body sections and said fingers having bent over extremities overlapping a portion of said body section, the thimble also having slots therein of a size and shape to permit the passage therethrough of the said stud projections.

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