

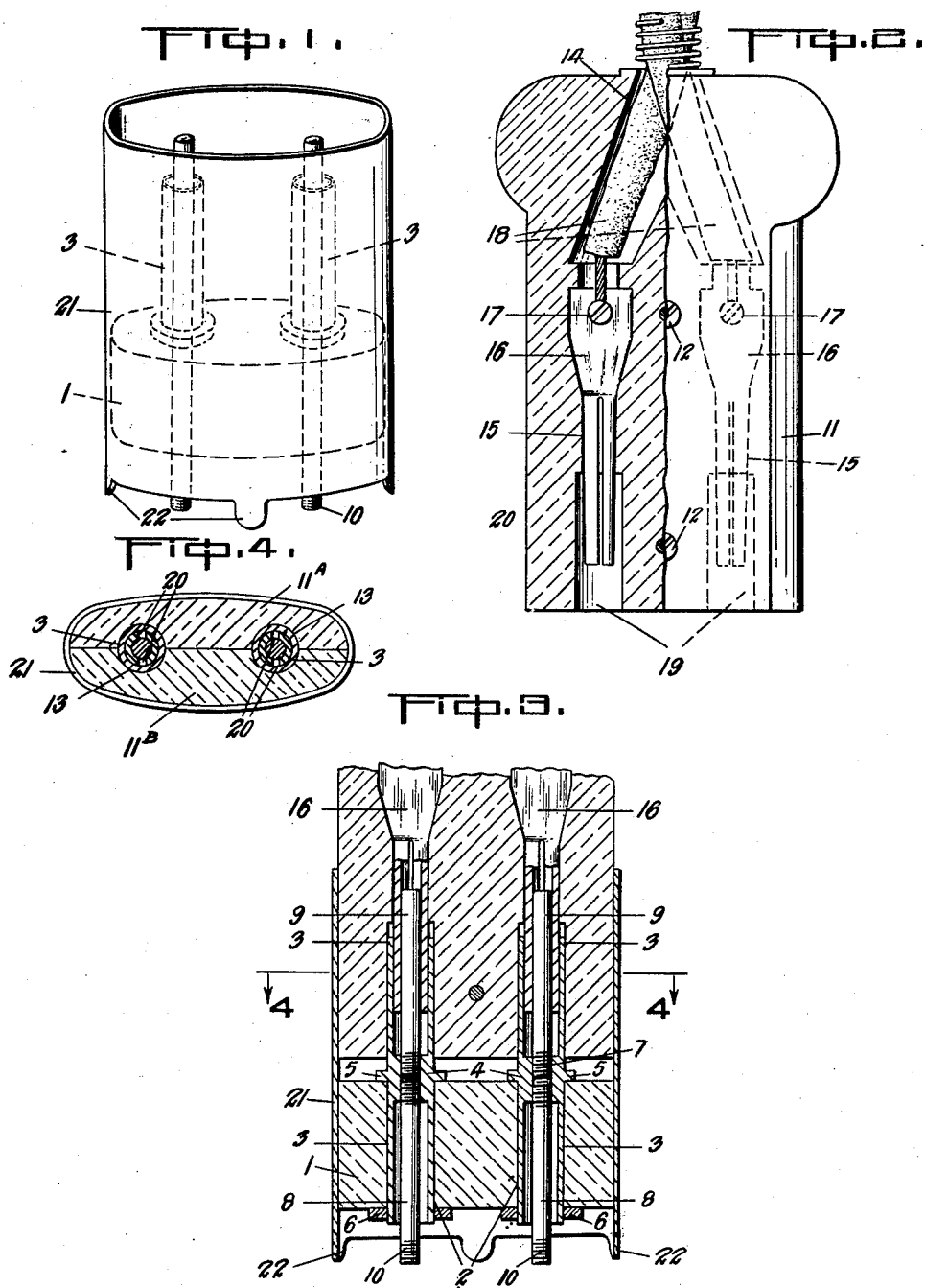
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ATTACHMENT PLUG FOR ELECTRICAL APPLIANCES

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## UNITED STATES PATENT OFFICE

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## ATTACHMENT PLUG FOR ELECTRICAL APPLIANCES

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My invention relates to improvements in attachment plugs for electrical appliances, and the object of my invention is to construct a plug which is particularly adaptable for household use wherein the flexible connection wire is frequently disconnected and attached to various appliances such as smoothing irons, toasters, coffee percolators, etc. In general household use the flexible cord is left permanently attached to the wall plug and the disconnection made at the appliance so that when the cord is attached to the appliance by the insertion of the plug the electrical circuit is completed with the result that when the plug has been pushed in the current arcs between the plug receiving points on the appliance and the contact sleeves in the plug into which such points enter. This continued arcing eventually eats away the points and the heat from the appliance, especially in the case of irons, reduces the gripping resiliency of the point receiving sleeves to a minimum so that eventually the plug sleeves make a very poor contact with the points which, particularly in the case of an appliance which is moved to and from as in an electric iron, causes a continued arcing due to the rattling of the plug.

The object of my invention is to eliminate the foregoing defects in providing a plug of this type in which the plug sleeves make an inner contact with the appliance points and also an outer contact with sleeves which surround such points, the appliance points projecting outwardly beyond their surrounding sleeves. By this construction a tight connection is always made.

A further object of my invention is to so form and support my appliance points that they can be readily removed and replaced by new points if they become pitted or eaten away through being repeatedly connected and disconnected.

A further object of my invention is to so construct my complete plug unit that it can be attached to most standard electrical appliances in place of the plug connections of the standard type.

My invention consists of an attachment plug constructed and arranged all as here-

inafter more particularly described and illustrated in the accompanying drawings in which,

Fig. 1 is a perspective view of the male portion of my plug.

Fig. 2 is a side elevational view of the female portion of my plug, part of such portion being broken away to disclose the interior thereof.

Fig. 3 is a vertical cross-sectional view through my plug assembly showing the electrical contacts, and

Fig. 4 is a transverse sectional view taken through the line 4—4, Fig. 3.

Like characters of reference indicate corresponding parts in the different views.

The male portion of my plug comprises a supporting member 1 formed of suitable insulating material such as porcelain and can be of any desired form such as of substantially oval cross-section as illustrated in the drawings. This member is formed with a pair of parallel orifices 2 which extend through and are adapted to receive a pair of metal sleeves 3 which extend through such orifices and project upwardly from the top face of the member 1.

The sleeves 3 are of reduced diameter at their inner central portions 4 and are also formed with flanges 5 which are provided to rest upon the upper face of the member 1. The lower ends of the sleeves which project beyond the lower face of the member 1 are threaded and receive nuts 6 which form a means in conjunction with the flanges 5 for securing the sleeves within such member 1.

The bores 7 of the central portions 4 of the sleeves are threaded and are each adapted to receive a pair of pins 8 and 9, the pins 8 being threaded at each end and at their upper ends inserted into the bores 7 and are of greater length than the lengths of the sleeve portions in the member 1 so that their lower ends 10 project therebeyond and form a means whereby the male portion of my plug is electrically connected to the appliance. The pins 9 which are of greater length than the length of the sleeve portions projecting upwardly from the member 1 and therefore project above the ends of such sleeves are

threaded upon their lower ends and received in the bores 7.

The female portion of my plug consists of a member 11 formed of suitable insulating material and follows standard practice in outside appearance. The portion 11 also follows standard practice in that it is constructed of two parts, 11<sup>a</sup> and 11<sup>b</sup>, which are secured together by means of screws or bolts 12.

Interiorly of the member 11 and recessed from the abutting faces of the members 11<sup>a</sup> and 11<sup>b</sup> I form female plug containing portions 13 which open at their lower ends into the lower face of the plug member 11 and at their upper ends are connected to a V-shaped flexible cord wire receiving portion 14.

The pair of female plug members each consists of a tapered metal sleeve 15 contained within the portions 13, such sleeves being formed at their upper ends into flattened members 16 which are provided with terminal screws 17 whereby they are connected to the ends of the flexible wire 18. The portions 13 in which the sleeves 15 are contained are of enlarged diameter at their lower ends 19 and are of a size sufficient to receive the projecting ends of the sleeves 3 of the male member, and upon reference to Fig. 2 it will be seen that such sleeves 15 only project downwardly intermediately of the length of such enlarged portions 19. As the tapered sleeves 15 are intended to have certain expansion and contraction in their diameter upon their insertion into contact with the sleeves and pins of the male member such sleeves 15 are formed with longitudinal slots 20 which extend upwardly from their lower edges.

In order that the male portion of the plug may be attached to an appliance I surround its insulating member 1 with a sleeve 21 which is formed with tongues 22 upon its lower edge which are adapted to be inserted into and turned over in slits in the appliance in the usual manner. The upper end of this sleeve 21 projects upwardly beyond the height of the projecting portions of the sleeves 3 and is adapted to receive the female plug portion 11 as illustrated in Fig. 3.

When the female plug portion is being inserted into contact with the male plug portion the upper ends of the pins 9 first come into contact with the lower ends of the sleeves 15, and as such pins 9 are in electrical connection with the appliance and the sleeves 15 in electrical contact with the flexible wire 14 an electrical contact will immediately be made, and the arcing which invariably results in making this type of contact will pass between the lower ends of the sleeves 15 and the pins 9. As the female plug portion is pushed down to a further degree the pins 9 will enter the sleeves 15 and such sleeves 15 will enter the sleeves 3. As the sleeves 15 are tapered and formed with the slots 20 they will slidably grip the pins 9, and upon being

moved downwardly will, owing to their taper, come into tight contact with the sleeves 3 and form a second electrical connection therewith. In this manner the sleeves 15 tightly engage both the pins 9 and the sleeves 3 thus forming a rigid contact in which vibratory movement is entirely eliminated.

From the foregoing description and upon reference to the drawings it will be readily understood that my plug in no way depends upon a spring grip as does the standard plug of this type in that the taper of the sleeves 15 permits them to be inserted into the sleeves 3 until they are in tight engagement therewith, and the provision of the pins 9 which enter the sleeves 15 will insure against any possibility of such sleeves 15 becoming a loose fit in the sleeves 3 as such pins must necessarily force the sleeves together.

It is well known that the continued arcing action resulting from making plug connections will gradually eat away the plug points which, in the standard form of plug, form the only electrical connection with the sleeves into which they are inserted, and after such pins become pitted and eaten away they form a very poor connection with the sleeves, and particularly in the case of electric irons which receive quite a little jolting, such poor connections cause a continued arcing between the pins and the sleeves.

In my particular type of plug the permanent electrical plug connection is made between the sleeves of the male and female portions and the primary arcing contact is made between the sleeves 15 and pins 9, and if these pins should become excessively eaten away through prolonged use in which many connections and disconnections were made they can be readily unthreaded from the bores of the portions 4 and replaced without taking the male portion of the plug apart.

From the foregoing description it will be apparent that I have devised a very simple form of attachment plug for electrical appliances, in which the possibilities of loose plug connections through wear and loss of clip resiliency through heat are entirely obviated, and in which the useful life of my plug connection is for all ordinary purposes indefinite, and although I have shown and described a particular embodiment and construction of my invention it is to be understood that I can make such changes and alterations as I may deem necessary without departing from the spirit of my invention as set forth in the appended claims.

What I claim as my invention is:

1. An attachment plug of the character described comprising a pair of members adapted to be attached together, a pair of contact pins extending outwardly from one member, a pair of resilient sleeves supported by the second member and into which the

pins are resiliently received and gripped, and means supported by the first member and adapted to engage the sleeves of the second member for retaining such sleeves in close contact with the pins.

- 5 close contact with the pins.
2. An attachment plug of the character described comprising a pair of members adapted to be attached together, a pair of contact pins extending outwardly from one member, sleeves surrounding said pins but being of a less height so that the pins project therebeyond, a second pair of sleeves supported by the second member and into which the pins are received, said second pair of sleeves being adapted to first surround and engage the projecting ends of the pins and then enter and contact with the sleeves surrounding the pins.
- 10 sleeves surrounding said pins but being of a less height so that the pins project therebeyond, a second pair of sleeves supported by the second member and into which the pins are received, said second pair of sleeves being adapted to first surround and engage the projecting ends of the pins and then enter and contact with the sleeves surrounding the pins.
- 15 adapted to first surround and engage the projecting ends of the pins and then enter and contact with the sleeves surrounding the pins.
3. An attachment plug of the character described comprising a pair of members adapted to be attached together, a pair of electrical contact pins extending outwardly from one member, electrical contact sleeves surrounding said pins, a second pair of electrical contact sleeves contained within the second member and extending into cylindrical orifices in such member which are of a diameter adapted to receive the sleeves surrounding the pins, said second pair of sleeves being adapted to enter the sleeves surrounding the pins.
- 20 described comprising a pair of members adapted to be attached together, a pair of electrical contact pins extending outwardly from one member, electrical contact sleeves surrounding said pins, a second pair of electrical contact sleeves contained within the second member and extending into cylindrical orifices in such member which are of a diameter adapted to receive the sleeves surrounding the pins, said second pair of sleeves being adapted to enter the sleeves surrounding the pins.
- 25 contact sleeves contained within the second member and extending into cylindrical orifices in such member which are of a diameter adapted to receive the sleeves surrounding the pins, said second pair of sleeves being adapted to enter the sleeves surrounding the pins.
- 30 enter the sleeves surrounding the pins.
4. An attachment plug of the character described comprising a pair of members adapted to be attached together, a pair of electrical contact pins extending outwardly from one member, electrical contact sleeves surrounding said pins, a second pair of tapered electrical contact sleeves contained within the second member and extending into cylindrical orifices in such member which are of a diameter adapted to receive the sleeves surrounding the pins, said second pair of sleeves being adapted to wedgeably enter the sleeves surrounding the pins.
- 35 member, electrical contact sleeves surrounding said pins, a second pair of tapered electrical contact sleeves contained within the second member and extending into cylindrical orifices in such member which are of a diameter adapted to receive the sleeves surrounding the pins, said second pair of sleeves being adapted to wedgeably enter the sleeves surrounding the pins.
- 40 diameter adapted to receive the sleeves surrounding the pins, said second pair of sleeves being adapted to wedgeably enter the sleeves surrounding the pins.
5. An attachment plug of the character described comprising a pair of members adapted to be attached together, a pair of sleeves contained in one of said members and projecting therefrom, a pair of pins contained within and spaced apart from the sleeves and projecting beyond the ends thereof, and a second pair of sleeves contained within orifices in the second member and spaced apart from the walls of said orifices and adapted to receive the pins and be contained within the pin surrounding sleeves of the first member.
- 45 described comprising a pair of members adapted to be attached together, a pair of sleeves contained in one of said members and projecting therefrom, a pair of pins contained within and spaced apart from the sleeves and projecting beyond the ends thereof, and a second pair of sleeves contained within orifices in the second member and spaced apart from the walls of said orifices and adapted to receive the pins and be contained within the pin surrounding sleeves of the first member.
- 50 and spaced apart from the sleeves and projecting beyond the ends thereof, and a second pair of sleeves contained within orifices in the second member and spaced apart from the walls of said orifices and adapted to receive the pins and be contained within the pin surrounding sleeves of the first member.
- 55 receive the pins and be contained within the pin surrounding sleeves of the first member.
6. An attachment plug of the character described comprising a pair of members adapted to be attached together, a pair of sleeves contained in one of said members and projecting therefrom, a pair of pins contained within and spaced apart from the sleeves and projecting beyond the ends thereof, and a second pair of tapered resilient sleeves contained within orifices in the second member and

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