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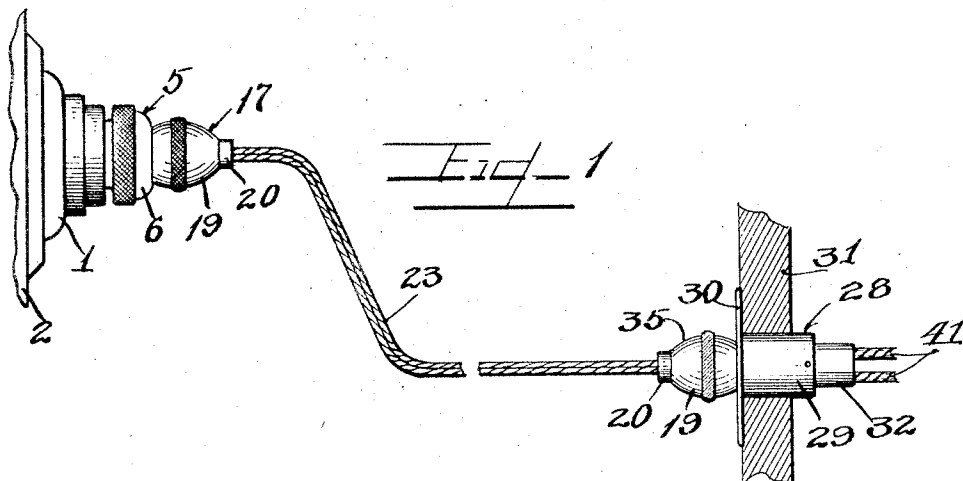
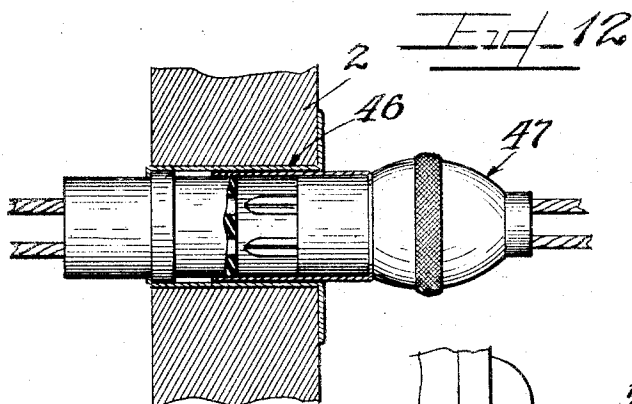
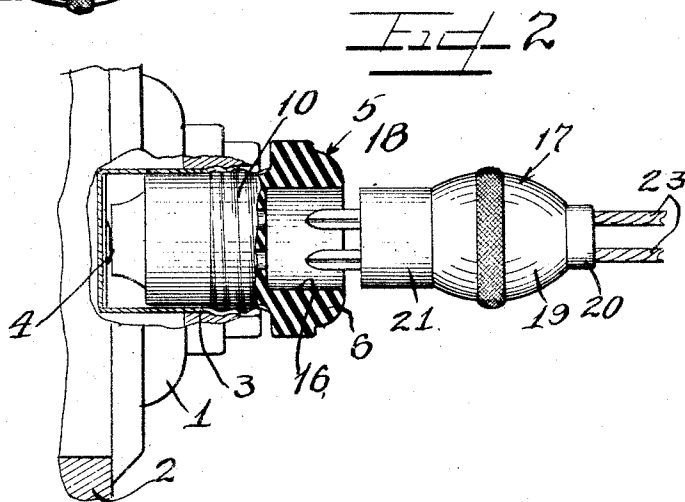
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J. B. GLOWACKI

PULL OFF PLUG

Filed August 11, 1919

2 Sheets-Sheet 1



Witnesses

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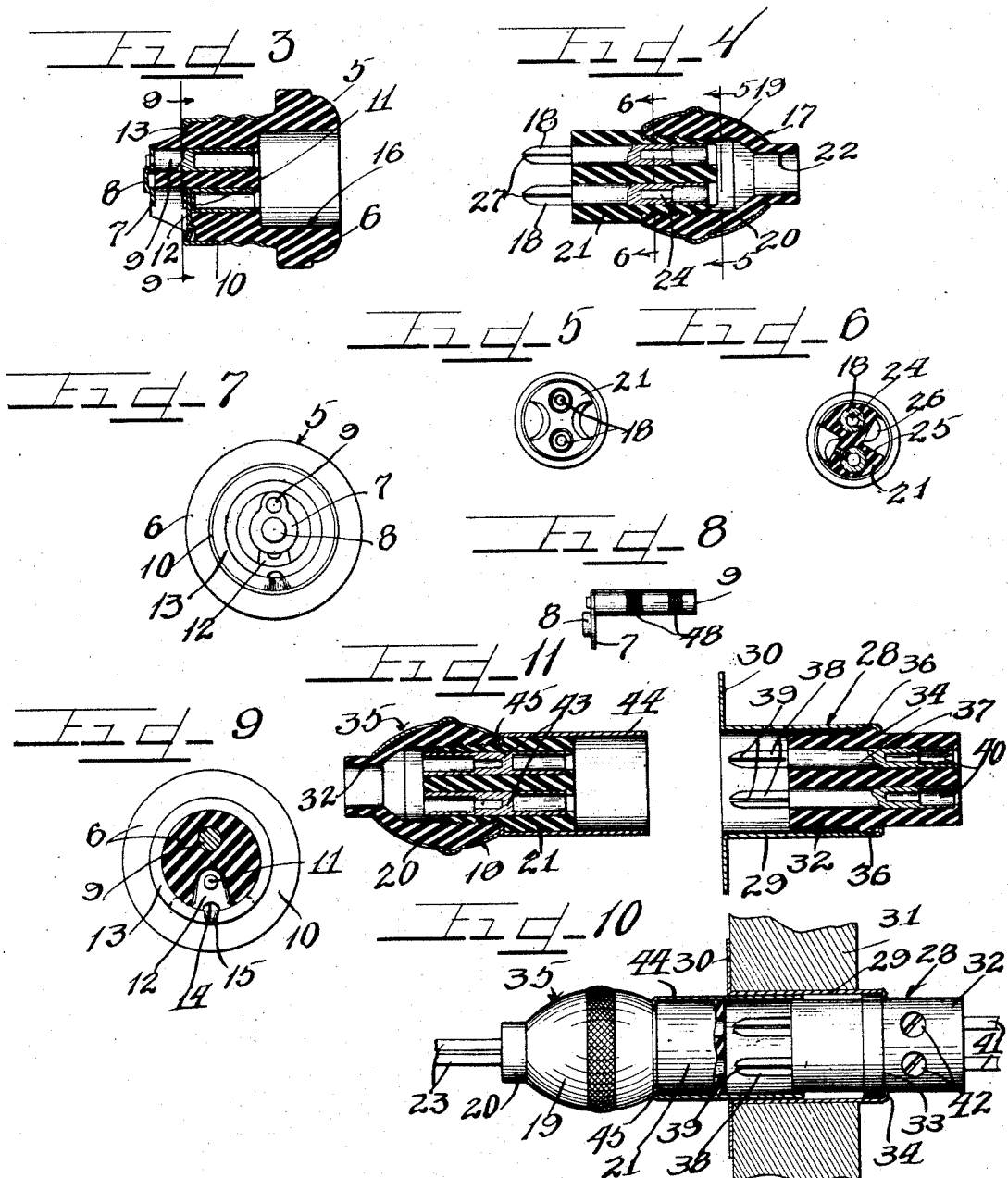
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2 Sheets-Sheet 2



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN B. GLOWACKI, OF CHICAGO, ILLINOIS.

PULL-OFF PLUG.

Application filed August 11, 1919. Serial No. 316,663.

To all whom it may concern:

Be it known that I, JOHN B. GLOWACKI, a subject of the Republic of Poland, having declared my intention to become a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Pull-Off Plug, and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to screw and pull off plugs and pockets therefor, and although not limited to such use, is particularly adapted for use for connecting electric current to electrical devices.

With plugs, as heretofore constructed, the contacts on either the socket or the plug have frequently been so exposed that the person operating them has received electrical shocks therefrom.

A further difficulty frequently experienced is the breaking off of one or other of the contacts due to the fact that the contacts have been the sole means of connection between the plug and the socket.

One of the principal objects therefore of the present invention has been the provision of a plug and socket in which there can be no electrical connection between the two parts until the contacts have been completely shielded from contact with the fingers of the operator.

A further object of the invention is the provision of sockets and plugs in which the live contacts are so arranged that they cannot be short-circuited by the fingers.

Another object of the invention is the provision of a plug and socket having mutually supporting parts in addition to the contacts.

It is also an object of the invention to provide a simple, cheap and strong form of construction of socket and plug.

An important object of the invention is to provide a flexible electric connection which may be detached from both the wall socket and fixture.

Other and further important objects of the invention will be apparent from the disclosures in the drawings and specification.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a side elevation of a system of plugs and connectors embodying the features of the present invention.

Figure 2 is a partial central longitudinal section through the left hand socket and plug of Figure 1.

Figure 3 is an axial section through the screw plug shown in Figures 1 and 2.

Figure 4 is an axial section through the pull off plug shown in Figures 1 and 2.

Figure 5 is a view on the line 5—5 of Figure 4 with parts removed.

Figure 6 is a section on the line 6—6 of Figure 4 with parts removed.

Figure 7 is a left hand end view of the plug shown in Figure 3.

Figure 8 is a side elevation of one of the contacts of the plug shown in Figure 3.

Figure 9 is a section on the line 9—9 of Figure 3.

Figure 10 is a partial central longitudinal section through the right hand socket and plug of Figure 1.

Figure 11 is an axial section through the socket and plug shown in Figure 10 with the parts in separated relation.

Figure 12 is a partial central section through a further form of construction of socket and plug.

As shown in the drawings:

The general arrangement of a system of sockets and plugs constructed in accordance with this invention is shown in Figure 1. In this arrangement, a socket 1, is secured to a wall 2, in any suitable manner. This socket is provided with a threaded metallic lining 3, forming one contact and a second contact 4, centrally arranged in the bottom of the socket. The lining 3 and contact 4, are connected to the mains in any convenient way.

Threaded into the lining 3, of the socket 1, is a plug generally designated as 5, having a body 6, formed of suitable insulating material. On one end of this body portion is arranged a plate 7, having a central boss, 8, adapted to engage the contact 4 of the socket 1. The plate is riveted or otherwise suitably connected to a metallic cylinder 9, embedded in the body 6, as shown more particularly in Figures 3 and 8. The outside of the cylinder may be roughened or knurled as at 48, so that when the insulating material is mounted therearound it will be firmly held in place. Around the body por-

tion 6, is arranged a threaded metallic sleeve or casing 10. This sleeve 10 is electrically connected to a second metallic cylinder 11, also embedded in the body 6, parallel to the cylinder 9. For this purpose, a plate 12, is riveted onto the end of the cylinder 11. This plate is arranged to extend beneath the flange 13, on the sleeve 10, so that when the latter is screwed onto the body 6, the flange 13, will contact with the plate 12. In order to lock the sleeve 10 in position, a portion of the outer margin of the plate 12, is cut away as at 14, so that the adjacent portion 15, of the flange may be struck downwards to form a locking lug or projection which will effectually prevent rotation of the sleeve 10, on the body 6, of the plug.

The opposite or outer end of the plug 5, is recessed as at 16, for the reception of a second plug generally designated as 17. This plug 17, is provided with projecting split cylindrical contacts 18, and to accommodate these contacts, the cylinders 9 and 11, are recessed as shown in Figure 3. It will be observed that the ends of the cylinders 9 and 11, do not extend as far as the bottom of the recess 16, so that the two cylinders cannot be short-circuited by the insertion of a finger into this recess. Further, the recess 16, is deeper than the length of the projecting ends of the contacts 18, so that before the latter engage the cylinders 9 and 11, the end of the block 21 has slid into the recess 16 and effectually prevented contact of the fingers with the contacts 18, after the latter have become live.

Referring now to the construction of the plug shown in Figure 4, it will be seen that it comprises two main parts, an outer metallic casing 19, with a lining 20, of insulating material and a cylindrical block 21, carrying the contacts 18.

The casing 19, is conveniently barrel-shaped in form to allow an enlarged threaded aperture to be formed in one end of the lining 20, for the reception of the block 21, while also allowing the diameter of the other end of the casing and lining to be suitably reduced around the restricted aperture 22 for the passage of the leads 23.

The contacts 18, extend through the block 21, and are provided with apertures 24, at their inner ends for the reception of the ends of the leads 23. Recesses 25, are arranged on either side of the block to accommodate the heads of set-screws 26, by which the ends of the leads are secured in the apertures 24. Slits 27, are formed in the projecting ends of the contacts 18, to give the desired resiliency for proper frictional engagement with the apertures in the cylinders 9 and 11 of the plug 5.

In Figures 10 and 11, are shown in section, the socket and plug at the right-hand side

of Figure 1. In this case the socket, generally designated as 28, comprises a metallic sleeve 29, provided with a flange 30 by which it may be secured by screws or the like to a wall of suitable fixture 31. Within this sleeve is arranged a cylinder 32, of insulating material of smaller diameter than the sleeve but provided with an annular ridge 33, about its mid-portion adapted to fit closely against the walls of the sleeve 29. To aid in securing this cylinder to the sleeve a flange 34 is formed on the sleeve 29, for engagement with the rear edge of the ridge 33. This flange takes any inward thrust upon the cylinder produced by forcing the plug 35 home. Outward movement of the cylinder may be prevented by punching portions 36 of the sleeve into the material forming the ridge 33, as shown in Figure 11.

A pair of holes are formed longitudinally within the cylinder 32 for the reception of metallic contacts 37, having outwardly projecting ends 38, slotted at 39, for engagement with complementary contacts in the plug 35. The other ends of these contacts 37, are apertured at 40, to receive the ends of leads 41, which are secured therein by set-screws 42.

The plug 35, is similar in construction to the plug 17, shown in Figure 4, and includes the same casing 19 and lining 20, therefor. The cylindrical block 21, is also of the same construction but instead of projecting male contacts 18, female contacts 43, are provided for engagement with the male contacts 38, on the socket 28. Further a metallic sleeve 44, is provided around and projecting beyond the outer end of the block 21 and adapted to enter the space between the end of the cylinder 32, and the sleeve 29, surrounding the same. This sleeve 44, has a flange 45, at its inner end for holding it in position on the plug 35.

The sleeve 44, is of such diameter that it fits closely within the sleeve 29 of the socket so as to form a support for the plug independent of the contacts 38 and 43.

It will be seen that the sleeve 44, must be brought into engagement with the sleeve 29, before the contacts 38 and 43, engage each other so that there is no possibility of getting a shock through the fingers. Further, until the connection is completed the plug 35 only is alive and in view of the sunken arrangement of the ends of the contacts 43, the latter cannot be short-circuited by the fingers.

In all parts of the circuit it is impossible for the fingers to produce a short-circuit since all the live contacts are female and dead contacts male and before the latter are made live by engagement with the former they are completely shielded from the fingers.

In Figure 12 is shown a modified form of socket and plug, generally designated as 46 and 47, respectively, for attachment to the wall or other fixture 2, in place of the socket 1 and plugs 5 and 17. The construction of this socket and plug is the same as that of the socket 28 and plug 35, shown in Figures 10 and 11, except that the position of the male and female contacts are reversed since the socket 46, is live and the socket 28, is dead, so that no further illustration or description is necessary.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

I claim as my invention:

1. A device of the class described, including in combination a socket comprising a threaded metallic sleeve, a cylinder of insulating material within said sleeve, a pair of parallel metallic contacts arranged in apertures within said cylinder, a central boss at the end of said cylinder, an electrical connection between one of said contacts and said boss, and another electrical connection between the other of said contacts and said sleeve, a plug comprising a metallic sleeve, an insulating lining within said sleeve, and a pair of parallel metallic contacts fitting into and projecting from said lining to engage the pair of first mentioned contacts, said second pair of contacts being apertured in their inner ends detachably to receive a pair of leads.

2. In a device of the class described, the combination with a socket having contacts, of a plug comprising a contact carrying member of insulating material having a

pair of passages therethrough, a pair of similarly shaped contacts in said passages, a block of insulating material having a restricted aperture at one end for the passage of leads therethrough and an enlarged threaded aperture at the other end for receiving said contact carrying member, said contact carrying member embodying an integral cylindrical extension projecting from said block with said similarly shaped contacts projecting therefrom to engage in the contacts of said socket when the extension of said contact carrying member is inserted into said socket.

3. In a device of the class described, a socket having a depression in one end thereof and metallic contacts at the bottom of said depression, a plug comprising a barrel-shaped metallic casing, a lining of insulating material therefor having a restricted aperture at one end for the passage of leads therethrough and an enlarged threaded aperture in the other end, a block of insulating material in threaded engagement with said large threaded aperture and projecting therefrom, said block having a pair of passages extending longitudinally therethrough, metallic members within said passages each member having an aperture in the inner end for the reception of the end of a lead and a slit in the outer projecting end, and means for securing the ends of the leads in said inner end apertures of said metallic members, said block and its extending metallic members arranged to prevent engagement thereof in the metallic contacts of said socket until said metallic members are shielded in said socket against contact by the fingers of a person.

In testimony whereof I have hereunto subscribed my name.

JOHN B. GLOWACKI.