T. A. C. BOTH.

UNIVERSAL FLUSH RECEPTACLE AND PLUG.

APPLICATION FILED SEPT. 17, 1912.

1,219,908. Patented Mar. 20, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

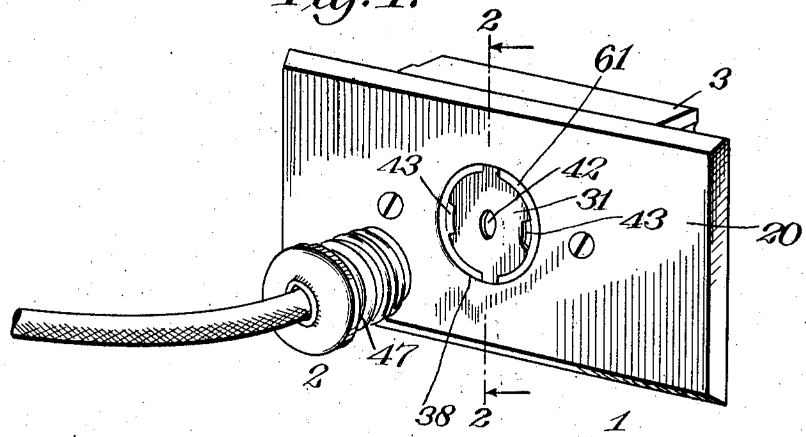


Fig. 2.

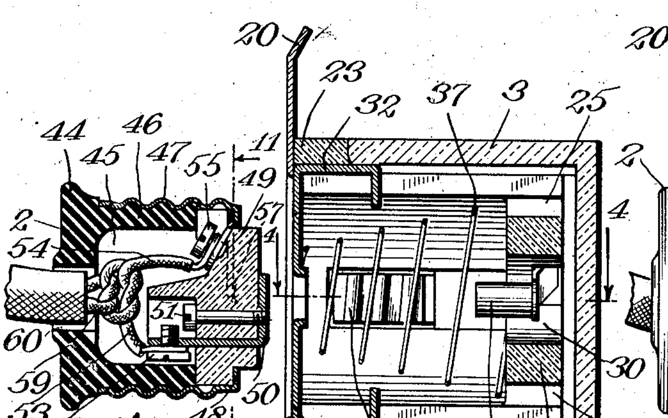


Fig. 3.

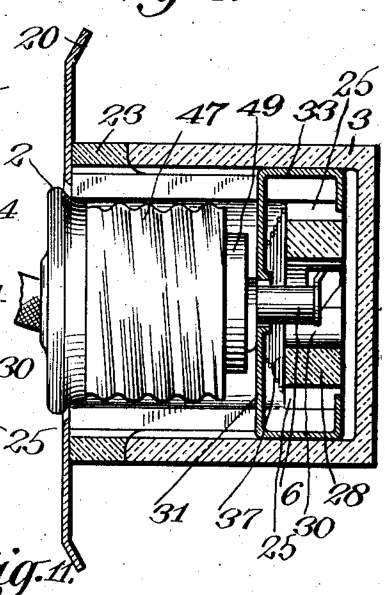


Fig. 9

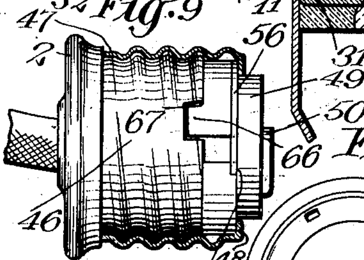


Fig. 10.

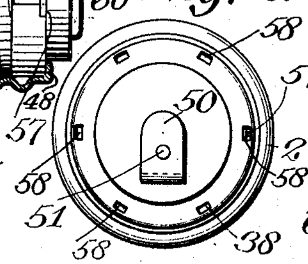
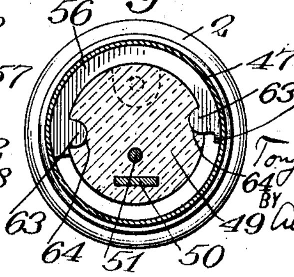


Fig. 11.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

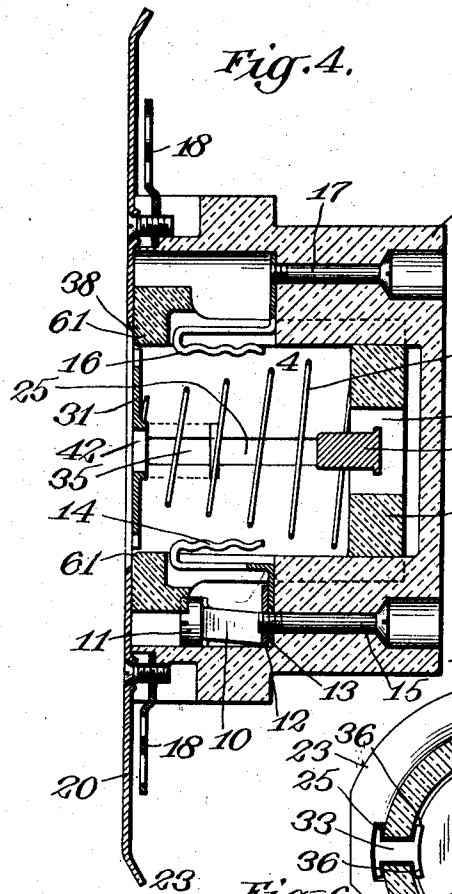


Fig. 5.

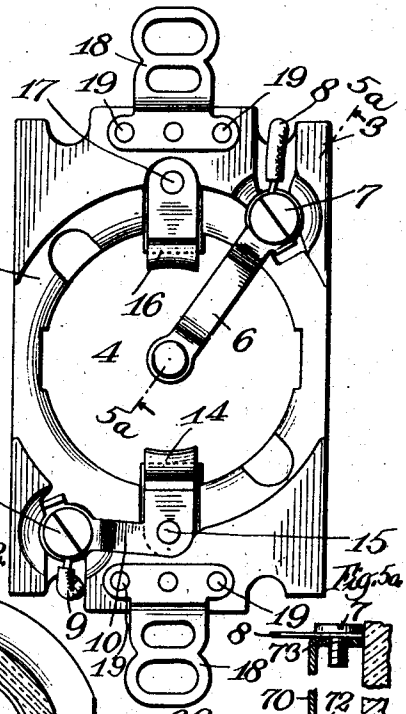


Fig. 12.

Fig. 5a.

Fig. 6.

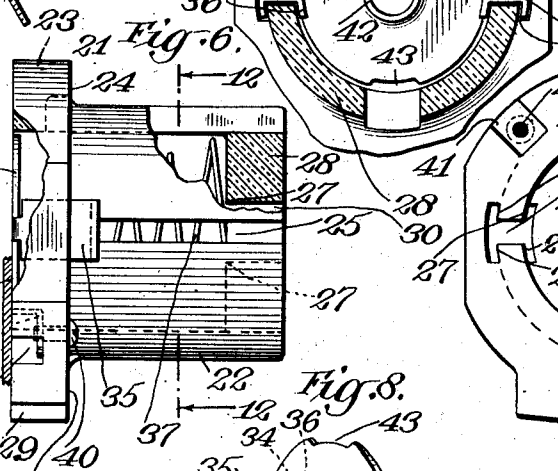
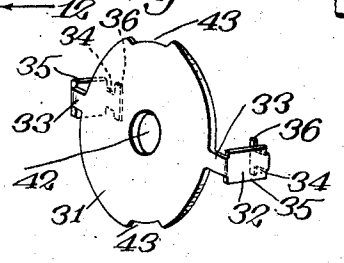


Fig. 7.

Fig. 8.



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TONJES AUGUST CARL BOTH, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO THE ZEE SOCKET AND MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

UNIVERSAL FLUSH RECEPTACLE AND PLUG.

1,219,908. Specification of Letters Patent. **Patented Mar. 20, 1917.**

Application filed September 17, 1912. Serial No. 720,845.

To all whom it may concern:

Be it known that I, TONJES AUGUST CARL BOTH, a citizen of the United States, and a resident of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Universal Flush Receptacles and Plugs, of which the following is a specification, taken in connection with the accompanying drawings, which form a part of the same.

This invention relates to flush receptacles, and more particularly to a universal flush receptacle which will receive and coöperate with any of the standard makes of plugs, and more particularly, though not necessarily, with plugs having screw shell contacts of standard or varying diameters.

My invention further relates to a novel form of attachment plug to be used with the flush receptacle.

My invention further relates to certain details of construcion of both the flush receptacle and the plug which will be more fully hereinafter described in the specification and set forth in the claims.

In the accompanying drawings showing illustrative embodiments of my invention and in which the same reference numerals refer to similar parts in the several figures,—

Figure 1 is a perspective view of my improved universal flush receptacle and plug, the latter being shown about to be inserted within the flush receptacle;

Fig. 2 is a transverse vertical section through both the attachment plug and the universal flush receptacle, the section of the receptacle being taken substantially on line 2—2 of Fig. 1. In this figure my improved receptacle and plug are illustrated together the same as in Fig. 1;

Fig. 3 is a transverse vertical section on the line 2—2 of Fig. 1 illustrating my improved plug mounted within the receptacle, the latter being shown in side elevation;

Fig. 4 is a longitudinal vertical section through my universal flush receptacle;

Fig. 5 is a plan view of the insulating base of the receptacle, the housing being removed;

Fig. 5ª is a broken sectional detail on line 5ª—5ª of Fig. 5;

Fig. 6 is a detail side elevation of the housing, partly broken away, also a portion of the escutcheon or face plate showing the manner of connecting the housing to the escutcheon or face plate, the door or shield being shown in elevation;

Fig. 7 is a plan view of the housing shown in Fig. 6;

Fig. 8 is a perspective view of the preferred form of door or shield;

Fig. 9 is a detail sectional view of the plug showing one form of locking means to secure the base of the plug and the shell against accidental relative rotation;

Fig. 10 is a face view of the plug;

Fig. 11 is a vertical section on the line 11—11 of Fig. 2, looking in the direction of the arrows;

Fig. 12 is a section on the line 12—12 of Fig. 6, looking in the direction of the arrows.

Flush receptacles are ordinarily permanently mounted in the walls, ceilings or floors and are connected to the feed wires in the building. These flush receptacles are meant to coöperate with particular forms of attachment plugs. It has been found in practice that when a building is equipped with a certain form of flush receptacles, to receive a certain form of attachment plug that, if other electrical consuming devices having somewhat different form or diameter of attachment plugs are attempted to be used it is impossible to use them without first removing the plug with which the consuming device is equipped and connecting its wires to another plug which will coöperate with the particular form of flush receptacle with which the building is equipped. The changing of these plugs usually requires the services of an electrician and entails delay and additional and unnecessary expense.

My flush receptacle will coöperate with attachment plugs of different shape and diameter, by simply thrusting the plug into the receptacle without the necessity of rotating the plug, provided it is of the usual screw threaded form, which rotation takes aditional time and serves to twist and snarl the wires connected to the plug with possible damage to the consuming device.

The plug is likewise removed by a pull in the direction of its longitudinal axis

without the necessity of rotating it, though it may be connected to my universal flush receptacle by rotating it if so desired, and disconnected in like manner.

By my invention the interior of the receptacle is provided with a door or shield which automatically closes the opening in the receptacle and guards the terminals besides serving to prevent dust or other foreign matter from getting into the receptacle and fouling it with the consequent danger of fire by short-circuiting the current.

In the illustrative embodiment of my invention shown in the drawing, 1 is my universal flush receptacle and 2 is the plug which is ordinarily meant to be used with the receptacle, though the receptacle will coöperate with other plugs.

The flush receptacle is provided with a base 3 of some insulating material, preferably porcelain. This base 3 is provided with a central aperture 4 having a ledge 5 for a purpose to be hereinafter described. Within the aperture 4 I mount a center contact 6, preferably formed of some yielding material, the center contact being secured in any suitable manner to the base 3 and provided with a binding screw 7 to coöperate with one of the feed wires 8, Fig. 5. The other feed wire 9 is secured to the binding post 10, Figs. 4 and 5, by means of the binding screw 11. This binding post 10 is provided with an angular bent portion 12 which fits over the angular portion 13 of the side contact 14, Fig. 4, the side contact and the binding post 10 being secured to the insulating base 3 by the screw 15. While my device will operate simply with one such side contact 14, I preferably provide an auxiliary yielding member 16 on the other side of the apertures 4 from that on which the side contact 14 is mounted. This auxiliary member 16 is substantially the same as the contact 14 except that one of the feed wires is not directly connected to it. It is secured to the insulating base 3 by means of the screw 17.

The spring side contact 14 serves to yieldingly engage the plug which is thrust into the insulating base 3. I preferably corrugate the engaging end of the contact 14, as shown in the drawings, Fig. 4, so that it may more readily coöperate with a plug having male screw threads as shown for example in the plug 2.

The insulating base is also provided with ears 18, 18 which are secured to it in any suitable manner as by the screws 19, 19.

The face or escutcheon plate 20 is provided with a housing 21, Fig. 6, preferably formed of some insulating material as porcelain. This housing is of substantially cylindrical shape, the portion 22 being of less diameter than the portion 23, thereby forming a shoulder 24 between the two which rests upon the ledge 5 in the insulating base 3. The housing is provided with two slots 25, 25, each having an enlarged portion with shoulders 26, 26 in the enlarged cylindrical portion and having an enlarged portion with shoulders 27, 27 in the end 28 of the housing 22, Fig. 6. The cylindrical portion 23 is preferably provided with an offset 29 or other irregularity, to insure the housing being properly positioned within the insulating base 3. The end 28 is provided with an opening 30, for the reception of the center contact 6 which extends up through the opening 30, Fig. 4.

Mounted within the housing 22 is a door or shield 31 which normally automatically closes the opening in the flush receptacle, protects the contacts in the receptacle and prevents dust or other foreign matter from accumulating therein, besides giving a pleasing and handsome appearance to the flush receptacle when the plug is removed.

This door or shield may be variously formed. Preferably I form it out of a stamping of sheet metal which is preferably the same material as that of the face plate or escutcheon 20, though, of course, it may be of different material, either form coming within the terms of my invention. For cheapness in manufacture, it is preferably stamped with integral arms 32, 32, these latter arms having reduced portions 33 and 34 and enlarged portions 35 and 36. By bending these arms back upon themselves as shown in Fig. 8, they can be readily assembled in the slots 25 of the housing 22. The smaller portion 33 of the arm will be received in the slot 25, Fig. 12, the enlarged portion 35 will be received in the enlarged portion of the slot 25, taking behind the shoulders 26, 26, Fig. 12.

When the door or shield 31 is pressed in against the action of the spring 37, the enlarged portion 35 passes through the enlarged cylindrical portion 23 of the housing 21. The portion 35 of the arms will then simply slide upon the exterior of the reduced cylindrical portion 22, Fig. 6. At the same time the enlarged portion 36 will slide upon the interior surface of the reduced portion 22 until it reaches the bottom portion 28 of the housing when it will pass behind the shoulders 27, 27, Fig. 7, which it will be noted are on the opposite side of the slot 25 from the shoulders 26, 26. In other words, the walls of the slot 25 coöperate with the reduced portions 33 and 34 of the arms, while the enlarged portion 35 coöperates with the shoulders 26, 26, when the door or shield is in its extended position and then with the exterior surface of the reduced portion 22, Fig. 6, the enlarged portion 36 sliding upon the interior of the reduced portion 22 until the door or shield is pressed down so as to force portions of the arms be-

low the level of the end 28 when the enlarged portion 36 will pass behind the shoulders 27, 27 in the end 28. By this simple arrangement I, at minimum expense, insure the shield or door 31, sliding freely within the housing 22 without binding or jamming in its housing. Of course, it is to be understood that various other means for guiding the door or shield may be employed, the one shown being simply by way of example.

The housing 21 with its door or shield is secured to the face plate 20 in any suitable manner. Preferably I provide the face plate with an opening 38, a portion of the material being left to form lugs 39, 39, which are bent back upon themselves away from the opening 38 and tapped to receiving screws or other securing members 40, the lugs 39 being received in the openings 41 in the enlarged cylindrical portion 23 of the housing 21, Figs. 6 and 7. Preferably I form the upper portion of the housing 21 of slightly less diameter than the diameter of the opening 38 in the face plate so as to leave an annular ring of insulating material 61 surrounding the opening 38 in the face plate.

When my universal flush receptacle is assembled and mounted within the wall, ceiling, or other location, any form of plug now on the market may be readily attached to it by simply getting the plug over the shield or door 31 and then pressing in on the plug with sufficient pressure to overcome the resiliency of the spring 37 and the resilient contact 14, and the auxiliary member 16 if one be used, which is the preferred construction.

Upon the insertion of such a plug, the shield or door 31 will recede against the action of the spring 37 until it reaches the lower portion of the housing 21 when it will assume the position shown in Fig. 3, the center contact 6 passing up through the opening 42 in the shield or door 31 to contact with the center contact of the plug. The resiliency of the side contact 14, either alone, or if used in connection with the auxiliary member 16, is greater than the resiliency of the spring 37 so that the plug will be retained within the flush receptacle until such time as it is given a pull when it will immediately become disengaged, the parts then assuming the position shown in Figs. 1, 2 and 4, the door or shield 31 automatically closing the opening in the receptacle. To permit the free passage of the door or shield 31, I preferably cut it away at 43, 43 to permit it to readily pass the spring contact 14 and the auxiliary member 16.

It is obvious therefore that plugs of standard diameter, or of a diameter somewhat greater or less than standard, will be readily received within my universal flush receptacle, the spring side contact 14 and the auxiliary member 16 readily contacting with plugs of comparatively small diameter and readily yielding to coöperate with plugs of the maximum diameter ordinarily employed, besides readily receiving plugs of diameters between the maximum and minimum.

Moreover, it is immaterial whether or not the plug is provided with the ordinary screw shell side contact provided the plug has some form of side contact which will coöperate with the contact 14 of the flush receptacle. Furthermore, it is immaterial what pitch the screw threads of the shell or side contact of the plug may have, the flush receptacle receiving and coöperating with plugs having screw shells of any pitch.

By simply thrusting in a plug provided with the ordinary form of screw shell contact, the annoyance and danger to the consuming device by twisting and snarling the wires connected to the plug, when such a plug is screwed within a flush receptacle, is avoided. It is, of course, to be understood, however, that if desired for any reason a plug having a screw shell contact can be screwed within my universal flush receptacle, the corrugations in the contact 14 and the auxiliary member 16 coöperating with the screw threads of the plug.

I preferably use with my universal flush receptacle my improved attachment plug 2 which is so constructed that it can be made of diminutive size and yet carry the ordinary current or even an extraordinary current such as required by a large vacuum cleaner, electric heater, or other consuming device.

My plug 2 comprises an insulating cap 44 having an enlarged opening 45 and provided with an exterior screw threaded body member 46 to directly coöperate with the screw threaded shell 47 which is the side contact of my plug. This screw shell 47 is provided with an inturned annular shoulder 48 to receive and hold the insulating base 49 which preferably protrudes slightly beyond the shoulder 48. Within this insulating base 49 I mount the center contact 50 holding it to the base in any suitable manner as by means of the screw 51. The center contact is provided with a binding screw 52 to receive one of the wires 53, the other wire 54 coöperating with the binding screw 55 which is carried by the plate 56. This plate 56 contacts with the inturned shoulder 48 of the screw shell 47, and is preferably provided with some means to prevent relative movement between it and the insulating base 49. For example, I provide the plate with the enlargements 63 63 fitting into the recesses 64 64 in the insulating base 49, Fig. 11.

I provide some form of locking means to secure the screw shell and insulating base together to prevent their relative accidental rotation. One such locking means, to which my invention is not to be confined, is to provide the plate 56 with a detent or finger 57

and provide the annular shoulder 48 of the shell 47 with one or more small apertures 58 to coöperate with the finger or detent 57.

To prevent relative rotation between the insulating base 49 and the cap 44 I provide them with engaging members as for example providing the insulating base 49 with a lug 66 to be received in the recess 67 in the member 46, Fig. 9.

In my improved plug, I provide relatively a very large opening 45 so as to enable a large knot to be tied in the wires and one which will not pull out of the opening 60 in the cap 44. This large knot 59 serves as a strain relief and transmits all strain upon the wires 53 and 54 to the cap 44, thereby protecting the electrical connections with the binding screws 52 and 55.

In my improved plug the electrical connections are mounted on the separable insulating base 49, where the connections can be readily made with the minimum expense of time and labor by disassociating the base from the cap 44 and shell 47 and then, after the connections have been made and a large knot formed as a strain relief, the base 49, cap 44 and shell 47 can be immediately connected together by simply screwing the shell 47 to the cap.

This structure permits me to make a very short or shallow attachment plug of midget size and yet one which will carry large currents. Such a diminutive plug when mounted in the receptacle 1 is hardly noticeable and never obtrusive. This feature also insures that the plug will not be hit or knocked accidentally by doors, furniture, or other objects in the building.

Having thus described this invention in connection with the several illustrative embodiments thereof to the details of which I do not desire to be limited, what is claimed as new and what it is desired to secure by Letters Patent is set forth in the appended claims:

1. An article of manufacture for a flush receptacle comprising a door or shield provided with integral arms, each arm having two reduced portions and two enlarged portions.

2. In a universal flush receptacle, the combination of a base, and electrical connections carried by the base adapted to receive and coöperate with screw threaded plugs of different diameters or screw threads of different pitch, and a screw threaded plug to coöperate with the electrical connections in the receptacle.

3. In a flush receptacle, the combination of a base provided with an opening and with a yielding electrical side contact and a center contact, a housing, and a sliding door or shield mounted in the housing.

4. In a flush receptacle, the combination of a base provided with an opening and with a yielding electrical side contact, a face plate, a housing, means to secure the housing to the face plate, a door or shield mounted in the housing, and means to normally cause the door or shield to close the opening in the housing.

5. In a flush receptacle, the combination of a base provided with an opening and with a yielding electrical side contact, a face plate, an insulating housing, means to secure the housing to the face plate, a sliding door or shield mounted in the housing, and means to normally cause the door or shield to close the opening in the insulating housing.

6. In a flush receptacle, the combination of a hollow insulating base provided with a center contact and with a yielding side contact extending into the hollow portion of the base, a housing having guide slots for a sliding door or shield, an opening for the yielding side contact, and center contact, respectively, a door or shield mounted in the housing, and resilient means normally operating the door in one direction.

7. In a flush receptacle, the combination of a hollow insulating base provided with a center contact and with a yielding side contact and an auxiliary yielding member extending into the hollow portion of the base, a housing having guide slots for a sliding door or shield, an opening for the yielding side contact and the auxiliary yielding member and center contact, respectively, a door or shield mounted in the housing, and resilient means normally operating the door in one direction.

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Witnesses:

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