F. J. RUSSELL.

WEATHERPROOF ELECTRICAL RECEPTACLE.

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992,993.

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Fig. 1.

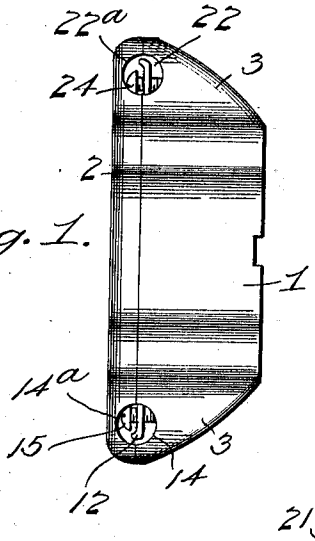


Fig. 2.

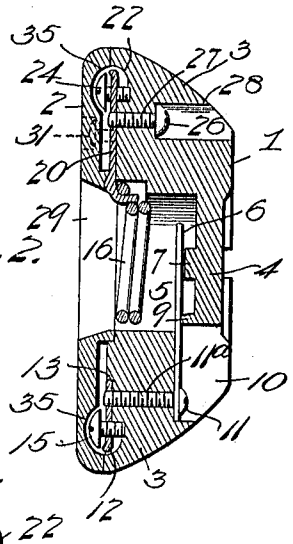


Fig. 3.

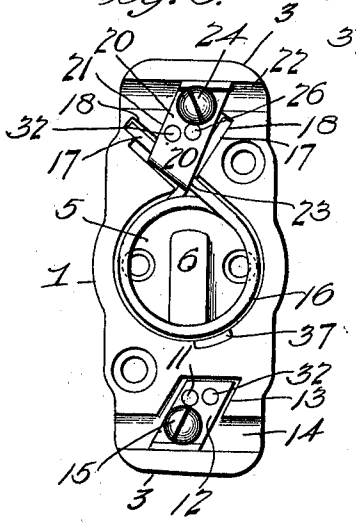


Fig. 4.

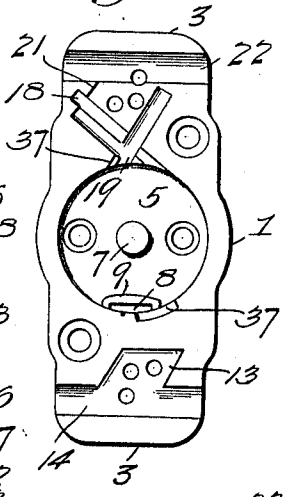


Fig. 5.

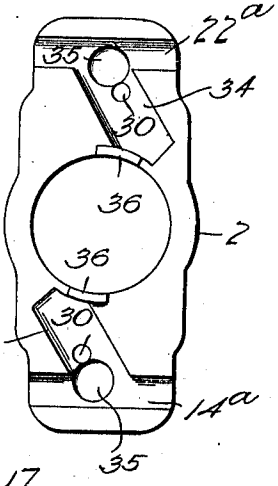
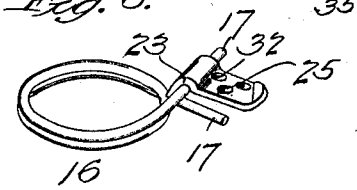


Fig. 6.



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WEATHERPROOF ELECTRICAL RECEPTACLE.

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Application filed March 18, 1908. Serial No. 421,781.

To all whom it may concern:

Be it known that I, FRANK J. RUSSELL, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Weatherproof Electrical Receptacles, of which the following is a specification.

This invention relates to that class of electrical receptacles which receive and connect with the standard forms of electrical connecting plugs, such as the common incandescent lamp plugs and extension circuit plugs, and has particularly in view certain novel and practical improvements in the weatherproof type of receptacles that are usually employed as a "cleat" receptacle.

To this end the invention contemplates a receptacle embodying in its organization an exceedingly simple and practical construction and arrangement of parts so related as to afford the most satisfactory and reliable service, while at the same time providing an effectual weatherproof structure possessing special utility in connection with incandescent lamps intended for use out of doors, or located in places exposed to weather conditions. At the same time, the improved construction, though capable of application in various ways, is particularly well adapted for employment as a cleat receptacle.

In the aspect of a weatherproof receptacle, the present invention provides for such a thorough and complete housing of the wire terminals, the wire terminal connections, and the plug contacts, that when the electrical connecting plug is screwed in place, no contacts or wire terminal connections whatever are exposed at any point upon the outside of the receptacle body.

One of the distinctive features of the present invention resides in an improvement in the construction and mounting of the plug holder, commonly termed the lamp holder of the receptacle. In this connection, the invention contemplates a plug holder of the spiral or coiled wire type, so constructed and arranged as to be decidedly more durable than the common form of thin screw shell terminal, and which also provides for receiving the lamp plug under tension to hold the same more firmly than is possible with the said shell form of holder.

Also, a further feature of the invention resides in the novel mounting of the spiral plug holder in such relation to the wire terminals and the center plug contact as to secure an extra wide separation of opposite-polarity parts, while at the same time being well housed within the receptacle body, though in such proximity to the mouth of the plug receiving socket, that the lamp plug or neck is likewise permitted to be well housed inside of the receptacle body, and in a position close to the surface on which the receptacle is mounted.

Another object of the invention is to provide a construction of receptacle wherein the fastening or bolting up screws are completely housed and thoroughly insulated in positions away from current carrying parts.

In addition to the foregoing objects, the invention contemplates a general improvement in the construction and arrangement of the various parts making up the receptacle and its appurtenances.

With these and other objects in view, which will readily appear to those familiar with the art as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features involved in carrying out the objects above indicated are necessarily susceptible to structural modification, and also to embodiment in different forms of receptacles without departing from the scope of the invention, but a preferred construction is shown in the accompanying drawings, in which:

Figure 1 is a side elevation of a weatherproof electrical receptacle constructed in accordance with the present invention. Fig. 2 is a longitudinal sectional view thereof. Fig. 3 is a plan view of the base section of the receptacle, showing the cover section removed and exposing the mounting of the plug contacts and wire terminal plates. Fig. 4 is a plan view of the base section of the receptacle with the plug contacts and wire terminal plates removed. Fig. 5 is an inner face or plan view of the cover section. Fig. 6 is a detail in perspective of the spiral plug holder, preferably employed in carrying out the invention.

Like references designate corresponding parts in the several figures of the drawings.

The receptacle body may be said to consist of two parts, viz: a base section 1 and a cover section 2, said body being constructed of porcelain or equivalent insulating ma-

terial and preferably of an approximate rectangular oblong form, so as to better adapt the fitting for use as a cleat receptacle, although it will be understood that the improvements claimed herein are necessarily applicable to an electrical receptacle designed for general use with lamp plugs or extension circuit plugs.

In the preferred and practical embodiment of the invention, shown in the accompanying drawings, the oblong porcelain base section 1 of the receptacle is formed with integral solid end portions 3 and a solid or closed bottom portion 4 so that the said base section is entirely closed upon all sides with the exception of what may be termed its front side, in which latter side the base section has formed therein a comparatively deep plug receiving socket 5 which is closed in at the bottom by the comparatively thin, though substantially solid, closed bottom portion 4 above referred to.

The plug receiving socket 5 of the receptacle base section 1 accommodates within the bottom thereof a center plug contact designated by the numeral 6. This contact may be of any suitable form, but preferably consists of a single spring blade arranged substantially parallel with the bottom 4 of the socket 5 and having its free end exposed within said socket for engagement by the electrical connection plug when screwed into the receptacle. A preferable construction also involves the thought of providing the solid bottom portion 4 of the base section with a central, inwardly projecting abutment boss 7 lying behind the free end portion of the center spring plug contact 6 so as to support and brace this contact when the electrical plug is forced firmly against the same, thereby insuring a good substantial contact between the center plug contact 6 and the plug, as will be apparent to those familiar with the art. The center plug contact 6 does not extend entirely across the plug receiving socket 5, and to provide for the proper mounting of such contact and the connecting up of the same with a suitable wire terminal, it will be observed that the present invention provides for extending the said contact through a side receiving opening 8 formed in one side wall of the socket 5 at a bottom corner thereof, and at one side of this opening 8 the bottom portion 4 of the base is preferably formed with an inwardly extending supporting lug 9 which constitutes a supporting or rest point for the intermediate portion of the blade forming the plug contact 6, all of which plainly appears in Fig. 2 of the drawings. And, contiguous to the said side receiving opening 8 and the center plug contact 6, the rear side of the receptacle base 1 has formed therein a deep seating cavity 10 in open communication with the said opening 8 so that the outer end portion of the contact 6 may be held flatly upon the base of the said cavity 10 through the medium of a fastening screw 11, passing through a screw hole 11ª formed in one of the solid end portions 3 of the base, and having its threaded extremity engaging a threaded opening in a wire terminal plate 12. This wire terminal plate 12 constitutes one of the wire terminals for the receptacle, and is seated in an obliquely arranged plate seat 13 recessed in the front face of one solid end portion 3 of the receptacle base and intersecting the transversely arranged line wire groove 14 also formed in the front face of the said end portion of the base, as clearly shown in Figs. 2, 3, and 4 of the drawings. By reason of the relative positions of the seat or recess 13 and the transversely disposed wire groove 14, the said wire terminal plate 12 is held fast at one end, by the screw 11, within its seat 13 while the other end portion of said plate extends across and is exposed within the wire groove 14, and said portion of the wire terminal plate 12 lying within the wire groove 14 is equipped with a binding screw 15 or equivalent device for effecting the usual metallic connection between the conductor and the said wire terminal of the receptacle.

From the construction so far described, it will be observed that the outer end portion of the center plug contact 6 is well housed at the base of the deep seating cavity 10, and the fastening screw 11 and the wire terminal plate 12 are likewise thoroughly insulated, as well as remotely removed, from all parts of opposite polarity, which is a feature of practical importance in a receptacle of the type being described.

An important feature of the present invention resides in the side plug contact which is also designed to act in the capacity of a holder for the lamp or other electrical plug. This combined plug holder and said plug contact consists of a spiral or spirally coiled length of wire designated in the drawings by the number 16 and adapted to be arranged within the mouth or front opening of the plug receiving socket 5 so as to receive and contact with the electrical plug and thus constitute an electrical holder therefor, while at the same time being quite widely removed and insulated from the center plug contact 6 and the other opposite polarity parts 11 and 12.

The spirally coiled body of the spiral wire plug holder 16 is of a sufficient length to provide an effective holder and contact for the electrical plug, while at the same time the spiral convolutions of the holder necessarily form threads engaging those of the plug, but it is the intention of the present invention to construct the coiled body of the holder 16 with a minimum number of con-

volutions, as for instance, of two convolutions such as suggested in the drawings so that the spiral wire holder, as an entirety, will only occupy a position within the mouth or front opening of the plug receiving socket 5, and hence, widely removed from the center plug contact so that an unbroken wall of insulation material lies between the fasteners for the spiral wire holder and the fasteners for all opposite polarity parts. It is also the purpose of the present invention to have the convolutions or turns of the coiled body of the wire holder closely wound in relation to each other so that the wire plug holder will receive the lamp plug under tension and thereby hold the same much more firmly than the common screw shell contacts generally used in electrical receptacles.

Another distinctive feature of the invention resides in the novel manner which the present invention provides for supporting the wire plug holder from both ends within the front opening or mouth of the plug receiving socket. To provide for this, the spirally coiled body of the plug holder preferably has both of the wire ends 17 arranged to project from the same side of the coil and disposed in crossing relation. Hence, the ends of the coiled body 16 constituting the wire plug holder may be properly termed supporting wire ends, and by reason of their crossing relation, the same are angularly disposed to each other and are adapted to be received in the comparatively deep, similarly disposed retaining grooves or kerfs 18 formed in the front side of face of the solid end portion 3 of the base opposite that end portion carrying the wire terminal plate 12. It will be seen, particularly by reference to Fig. 4 of the drawings, that the retaining grooves or kerfs 18 are formed sufficiently deep in the front side or face of the receptacle base, to permit the coiled body of the plug holder to lie directly within what has been termed the front opening or mouth of the plug receiving socket 5 for the reasons hereinbefore set forth, and said pair of angularly disposed grooves or kerfs 18 intersect each other, as at 19, at their point of communication to the plug receiving socket 5 so that the wire plug holder is readily removable and replaceable, though when in position is most rigidly held and locked against displacement not only by reason of the interlocking engagement of the wire ends 17 within the grooves or kerfs 18, but also by reason of the supplemental fastening provided for through the medium of the other wire terminal plate 20.

The wire terminal plate 20 is adapted to be seated in an obliquely arranged plate seat 21 recessed in the front side or face of the end 3 having the grooves 18 therein, and said plate seat 21 preserves the same relation to a contiguous transverse wire groove 22 as the plate seat 13 preserves to the wire groove 14 previously described. One end portion of the said wire terminal plate 20 is soldered or otherwise permanently connected as at 23 to one of the wire ends 17 of the wire plug holder, while the other end portion of the said wire terminal plate crosses the line of the grooves 22, and is fitted with a binding screw or equivalent device 24 for engagement with the electrical conductor. Also, the wire terminal plate 20 is provided with a threaded opening 25 receiving one end of a fastening screw 26 passing through a screw holder 27 in one end 3 of the base and having its head housed within a deep housing socket 28 formed in the said end of the base in line of the hole 27.

The cover or cap section 2 corresponds in formation to the outline and shape of the front side of the base 1 and is provided with a central plug opening 29 registering with the plug receiving socket 5 of the base and in its end portions with the screw holes 30 receiving suitable fastener screws 31 detachably engaging threaded openings 32 provided in the wire terminal plates 12 and 20, thus affording simple and convenient means for removing and replacing the cover section 2. This cover section, while in place, completely covers and houses the wire terminal parts of the receptacle, and to provide for this it is preferable to form in the inner side of the opposite end portions of the cover section, the obliquely arranged housing and clearance recesses 33 and 34 taking over and receiving the wire terminal plates 12 and 20 respectively, and the transversely disposed wire grooves 14^a and 22^a registering with the corresponding grooves 14 and 22 of the base section and completing the conductor holes or passages through the end portions of the receptacle. In addition to these details, the end portions of the cover section 2 are also preferably provided upon their inner sides with the clearance depressions 35 for the heads of the binding screws 15 and 24, and also, at diametrically opposite edge portions of the central plug opening 29 thereof, the said cover section is preferably provided with the inwardly projecting combined guide and holding lugs 36 adapted to interlock with corresponding, and correspondingly arranged keeper notches 37 provided in opposite edge portions of the front opening of the plug receiving socket 5. This interlocking engagement between the cover and the base provides means for accurately positioning the cover section when applied to the base, while at the same time the position of the cover is such, through the arrangement of the lugs 36 and the notches 37 as to effectually prevent the spiral wire holder from raising when the lamp is screwed in.

It will be observed from the construction described that the spiral wire plug holder is mounted entirely from the outside of the plug receiving socket of the receptacle, and has electrical connection with only one of the wire terminals, which terminal is utilized as a fastening means for holding the plug holder in its interlocked relation with the base or body portion of the receptacle, all of which contributes material to the structural and electrical practicability of the invention.

From the foregoing, it is thought that the construction, action, and many advantages of the herein described receptacle will be readily apparent without further description, and it will be understood that changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

I claim:

1. An electrical receptacle comprising a chambered body, a spiral wire plug holder lying within the chambered body and having both ends seated on the body and serving as supports for the holder, and a line wire terminal mounted on the body and engaging one of said ends to retain the holder in place.

2. In an electrical receptacle, the body provided in one face thereof with retaining grooves, and a spiral wire plug holder having ends seated in said grooves.

3. In an electrical receptacle, a base section having a plug receiving socket, a spiral wire plug holder arranged within the mouth of said socket and supported from the front side of the base section, and a cover section arranged over the front side of the base section and overlying said spiral wire plug holder.

4. In an electrical receptacle, the body provided in one face thereof with angularly disposed retaining grooves, and a spiral wire plug holder having angularly related ends seated in said grooves.

5. In an electrical receptacle, the body having in one face thereof angularly related retaining grooves, a spiral wire plug holder having crossing ends seated in said grooves, and a wire terminal element connected with one of said wire ends.

6. In an electrical receptacle, the body having opposite end portions provided in the front face thereof with intersecting plate seats and wire grooves, and in one of said end portions with angularly related retaining grooves, wire terminal plates arranged in said plate seats, a center plug contact arranged within the body and having connection with one of said wire terminal plates, and a spiral wire plug holder having crossing supporting wire ends seated in said retaining grooves, and one of which ends has a rigid connection with the other of said wire terminal plates.

7. In an electrical receptacle, a base section having a plug receiving socket, a spiral wire plug holder arranged within the mouth of said socket and supported from the front side of the base section, and a cover section arranged over the front side of the base section and overlying said spiral wire plug holder and guarding the same from raising when the lamp is screwed in.

8. In an electrical receptacle, a base section having a plug receiving socket in the front side thereof, a removable center plug contact projecting from the side into the bottom portion of said socket, a wire terminal plate seated in the front side of the base section at one end thereof and having a screw connection with the center plug contact, a spiral wire plug holder arranged within the mouth or front opening of said socket, a second wire terminal plate fastened on the base section opposite the other wire terminal plate and having a rigid supporting connection with said plug holder, and a detachable cover section secured over the front side of the base section and having upon its inner face suitable clearance for the opposite wire terminal fittings.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

FRANK J. RUSSELL.

Witnesses:

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DAVID E. DANIELSON.