G. L. SCHEEL.

ELECTRICAL CONNECTION.

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1,280,867. Patented Oct. 8, 1918.

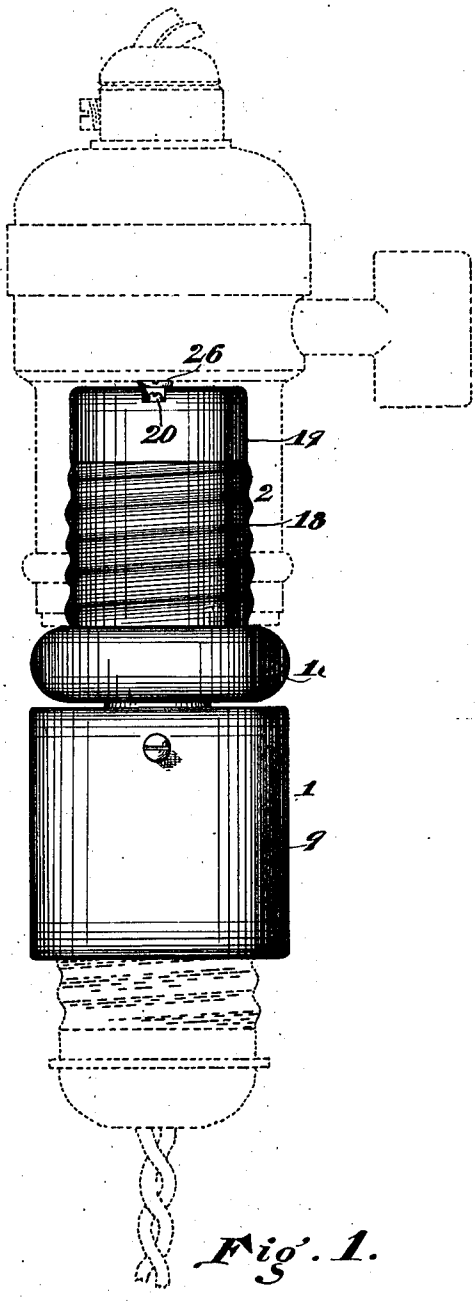


Fig. 1.

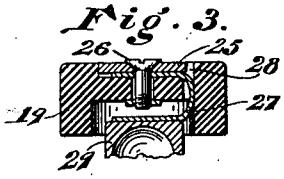


Fig. 3.

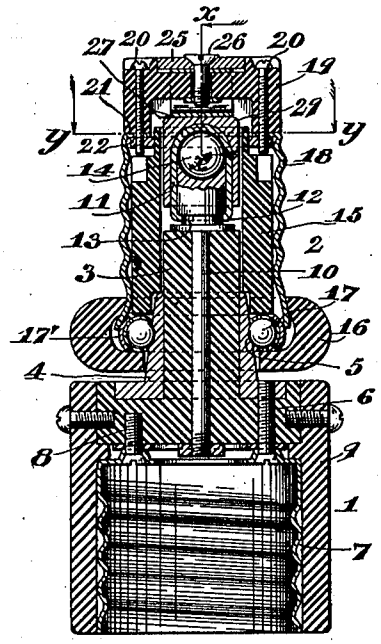


Fig. 2.

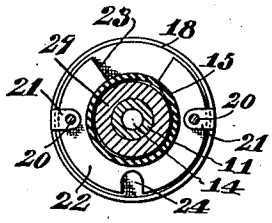


Fig. 4.

WITNESSES:

J. M. Haines.

E. A. Olson

INVENTOR.

George L. Scheel.

BY Joshua R. H. Potts

his ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE L. SCHEEL, OF CHICAGO, ILLINOIS.

ELECTRICAL CONNECTION.

1,280,867. Specification of Letters Patent. Patented Oct. 8, 1918.

Application filed November 6, 1916. Serial No. 129,882.

To all whom it may concern:

Be it known that I, GEORGE L. SCHEEL, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Electrical Connections, of which the following is a specification.

My invention relates to improvements in electrical connections, and has for its object the production of a device of this character which will be adapted to serve as a means of electrically connecting two elements in a manner to permit of relative rotary movement if desired.

A further object is the production of a connecting device as mentioned, which will be of durable and economical construction, and efficient in use.

Other objects will appear hereinafter.

With these objects in view, the invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings, forming a part of this specification, and in which,

Figure 1 is a side elevation of an electrical connection embodying the invention,

Fig. 2 is a central longitudinal section of the same, and

Figs. 3 and 4 are detail sections taken on lines x—x and y—y respectively of Fig. 2.

The preferred form of construction, as illustrated in the drawings, comprises male and female members 1 and 2 which are adapted to rotatably interlock with each other. The male member 1 comprises an elongated cylindrical body 3 of insulating material around the base of which is secured a tapering collar or sleeve 4 of conducting material, said member 4 being adapted to serve as a contact, as will be hereinafter set forth. For this purpose said member 4 is formed with a circumferential groove 5. The member 4 is locked to the enlarged base of member 3 by means of a screw 6, the latter also serving as a securing means for a threaded socket 7, of conducting material, which is mounted upon the opposite side of the base of member 3, said screw electrically connecting contact 4 and socket 7, as seen. A screw 8 also coöperates with socket 7 to fasten the same securely in position. Said socket 7 is surrounded by a protecting sleeve 9 of insulating material.

Extending centrally through the member 3, the entire length thereof, is a shaft or bar 10 of conducting material, the end of which, adjacent the socket 7, being adapted, when the device is in use, to serve as a contact for engagement with the central contact or pole of the plug which may be threaded into socket 7, as shown in dotted lines in Fig. 1. The outer end of member 10 is enlarged and cylindrically formed, the same being embraced by a cap 11 which is loosely rotatable thereon, being locked against relative longitudinal movement by engagement of the inwardly turned edge 12 of the same with a circumferential groove 13 formed in the outer end of said member 10. Interposed between the outer end of the member 11 and the corresponding extremity of the member 10 is a ball 14, said ball being of a diameter to nicely engage with the inner surface of the outer end portion of member 11, said extremity of member 10 being hemispherically recessed to snugly receive said ball, as seen.

The female member 2 comprises a sleeve 15 of insulating material, at one end of which is arranged a rounded end piece 16, also of insulating material, which is rigidly connected therewith. Provided in the member 16 is a series of balls 17 arranged in circular formation and yieldingly held in position by means of a resilient holder 17′ The balls 17, as will be seen, are arranged at the mouth of the socket which is constituted in the female member 2, said balls, upon insertion of the outer end of the male member into said female member, being adapted to engage with the groove 5 in contact member 4, in order to lock the parts of the device together in such a manner as to permit of relative rotary movement of the same.

Surrounding the member 15 is a screw-threaded sleeve 18 of conducting material which engages, at one end, with the holder 17′ so as to serve as a conductor for the current passed from the member 4 through the balls 17 and holder 17′.

Arranged at the opposite end of the member 18 is an end piece 19 of insulating material which is secured to the member 18

by means of screws 20. The inner ends of said screws pass, loosely, through diametric ears 21 provided upon the member 18, as seen in Fig. 4, and being threaded into an anchoring member 22 arranged under said ears, said anchoring member being slotted or cut away as at 23 and 24, in order to afford clearance for the ears 21 in assembling the parts. The member 22, after the same has passed the ears 21, in the assembling operation, is turned to the position shown for engagement of the screws 20 therewith.

Upon the outer end of end piece 19 is arranged an electrical terminal or contact constituted by a disk 25 of conducting material and a screw 26 also of conducting material, the latter, as seen, serving to secure the former in position. Said screw also serves as a means of securing the outer end of a substantially U-shaped spring 27, the inner end of which passes through an opening 28 formed in the member 19 in order to carry a cup 29 at its inner end which is securely fastened thereto as by soldering. The cup 29 serves as a contact, the recess therein being of such shape and proportions as to snugly receive the contact member 11 carried at the outer or forward end of the male member, as clearly shown in Fig. 2.

With the construction set forth, it will be seen, that the forward end of the male member will, upon insertion of the same into the female member, be engaged with the cup-shaped contact member 29 of the female member which will serve as a means of electrically connecting the forward end of the male member with the inner end of the female member, the connection being such as to permit of relative rotary movement of the parts, but to prevent relative lateral movement. The spring 27 serves to press the contact member 29 toward the end of the male member and thus to insure a constant secure engagement of the parts. The snug engagement of the members 11 and 29 insures an effective electrical connection of great capacity, and the provision of ball 14 alleviates friction so as to facilitate free relative rotary movement.

The male member is formed at its rearward end into a socket which is adapted for engagement with a conventional connecting plug, and the rearward end of the female member is formed, as seen, for engagement with a conventional electrical connection socket. The device is thus adapted for insertion between the parts of a conventional screw-threaded connection, the employment of a device as described, rendering the connection freely rotatable, as will be readily understood.

The construction described is simple and economical especially the connection of the forward end of the male member with the inner end of the female member.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A connecting device for electrical conductors comprising a pair of male and female connecting members adapted to rotatably engage one within the other; means for locking said members together so as to permit of relative rotary movement of said members; means electrically connecting the outer end of said male member with the inner end of said female member so as to permit of relative rotary movement of said parts and prevent relative lateral movement thereof, said last mentioned means comprising a contact rotatably mounted on one of said members; and a contact on the other member embracing said first mentioned contact, substantially as described.

2. A connecting device for electrical conductors comprising a pair of male and female connecting members adapted to rotatably engage one within the other; means for locking said members together so as to permit of relative rotary movement of said members; means electrically connecting the outer end of said male member with the inner end of said female member so as to permit of relative rotary movement of said parts and prevent relative lateral movement thereof, said last mentioned means comprising a contact in the form of a cap rotatably embracing said end of said male member; and a recessed contact in said female member snugly embracing said first mentioned contact, substantially as described.

3. A connecting device for electrical conductors comprising a pair of male and female connecting members adapted to rotatably engage one within the other; means for locking said members together so as to permit of relative rotary movement of said members; means electrically connecting the outer end of said male member with the inner end of said female member so as to permit of relative rotary movement of said parts and prevent relative lateral movement thereof, said last mentioned means comprising a contact in the form of a cap rotatably embracing said end of said male member; a ball arranged loosely in said contact and interposed between the outer end of the same and the outer extremity of said male member; and a contact on said female member

embracing said first mentioned contact, substantially as described.

4. A connecting device for electrical conductors comprising a pair of male and female connecting members adapted to rotatably engage one within the other; means for locking said members together so as to permit of relative rotary movement of said members; means electrically connecting the outer end of said male member with the inner end of said female member so as to permit of relative rotary movement of said parts and prevent relative lateral movement thereof, said last mentioned means comprising a contact in the form of a cap rotatably embracing said end of said male member; a ball arranged loosely in said contact and interposed between the outer end of the same and the outer extremity of said male member; a contact on said female member having a cylindrical recess snugly embracing said first mentioned contact; and a spring carrying said second mentioned contact and serving to hold the same in yielding engagement with said first mentioned contact, substantially as described.

5. A connecting device for electrical conductors comprising a pair of male and female connecting members adapted to rotatably engage one within the other; means for locking said members together so as to permit of relative rotary movement of said members; means electrically connecting the outer end of said male member with the inner end of said female member so as to permit of relative rotary movement of said parts and prevent relative lateral movement thereof, said last mentioned means comprising a contact in the form of a cap rotatably embracing said end of said male member; a circumferential groove in said male member; an in-turned edge on said contact loosely engaging in said groove; and a recessed contact in said female member snugly embracing said first mentioned contact, substantially as described.

6. A connecting device for electrical conductors comprising a pair of male and female connecting members adapted to rotatably engage one within the other; means for locking said members together so as to permit of relative rotary movement of said members; means electrically connecting the outer end of said male member with the inner end of said female member so as to permit of relative rotary movement of said parts and prevent lateral movement thereof, said last mentioned means comprising a contact rotatably mounted on one of said members; and a contact on the other member engaged by said first mentioned contact, substantially as described.

7. A connecting device for electrical conductors comprising a pair of male and female connecting members adapted to rotatably engage one within the other; means for locking said members together so as to permit of relative rotary movement of said members; means electrically connecting the outer end of said male member with the inner end of said female member so as to permit of relative rotary movement of said parts and prevent lateral movement thereof, said last mentioned means comprising a contact rotatably mounted on one of said members; a contact on the other member engaged by said first mentioned contact; and resilient means for holding said contacts in yielding engagement with each other, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE L. SCHEEL.

Witnesses:
JOSHUA R. H. POTTS,
HELEN F. LILLIS.