June 11, 1929. P. F. WILLIAMS 1,717,329

ELECTRICAL CIRCUIT CONNECTING DEVICE

Original Filed Oct. 18, 1922 2 Sheets-Sheet 1

Fig. 1

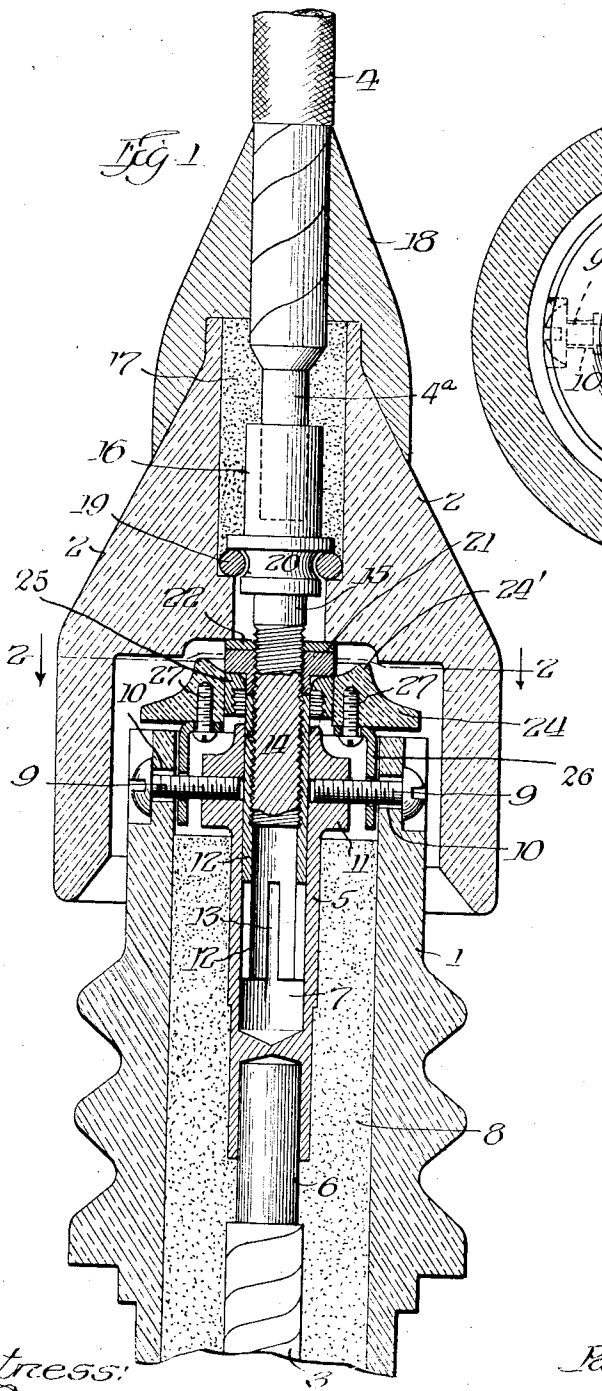
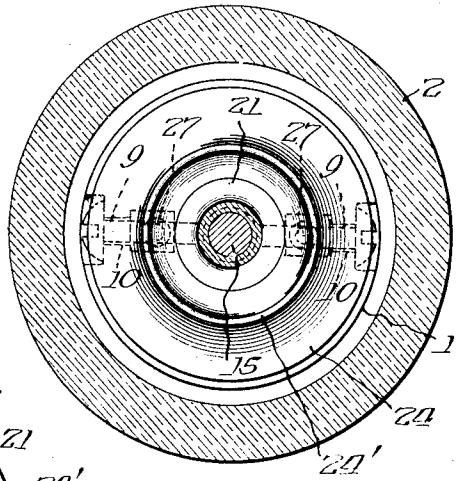


Fig. 2



Witness:
Fred C. Dawson

Inventor
Paul F. Williams
By A. Miller Beagle Atty

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Fig 4

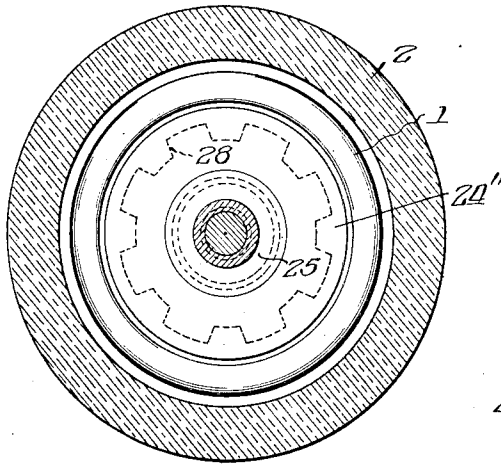


Fig 6

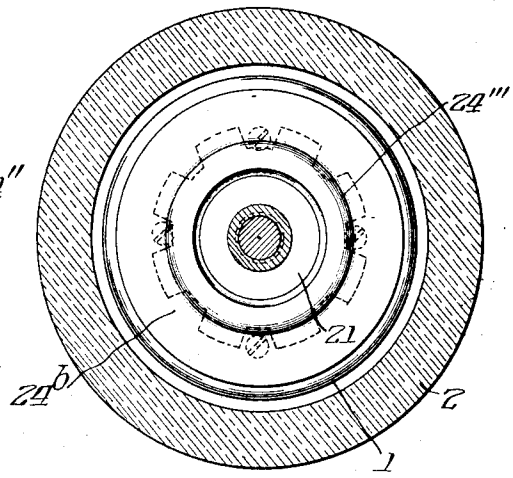


Fig 3.

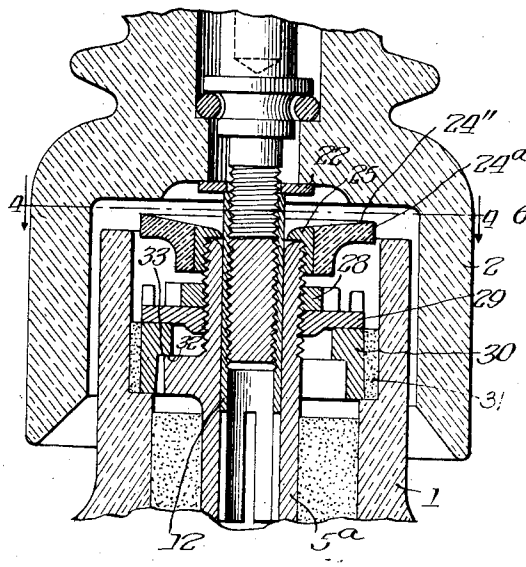
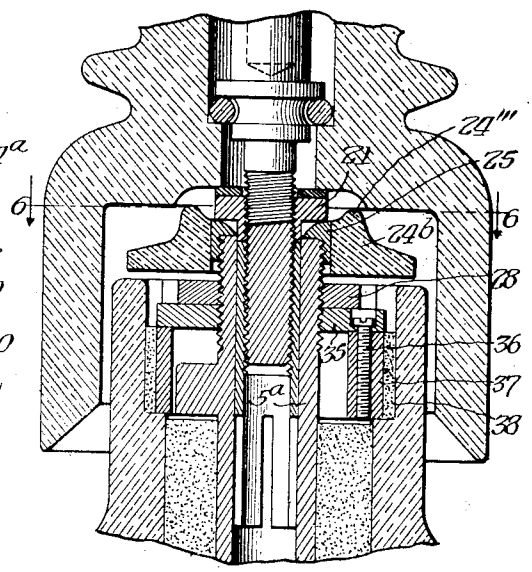


Fig 5.



Witness:

Inventor
Paul F. Williams

By A. Miller Belfield Atty

Patented June 11, 1929. 1,717,329

UNITED STATES PATENT OFFICE.

PAUL F. WILLIAMS, OF CHICAGO, ILLINOIS, ASSIGNOR TO G & W ELECTRIC SPECIALTY CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ELECTRICAL-CIRCUIT-CONNECTING DEVICE.

Application filed October 18, 1922, Serial No. 595,229. Renewed May 31, 1927.

My invention relates to electrical circuit connecting devices, and particularly to a form thereof commonly known as potheads.

One of the objects of the invention is to provide a practicable and serviceable device of the class specified.

Another object of the invention is to secure simplicity of construction and effectiveness and efficiency in operation.

Another object of the invention is to provide a simple, practical and advantageous construction for taking care of the arc at the break when the circuit is opened, and protecting the lineman or user of the device from injury by contact with line parts when the cover is removed.

In the accompanying drawings, Fig. 1 is a longitudinal section of a portion of a pothead embodying my present invention;

Fig. 2 is a cross-section taken on line 2—2 in Fig. 1;

Fig. 3 is a view similar to Fig. 1 of a less portion of a modified form of device;

Fig. 4 is a cross-section taken on line 4—4 in Fig. 3;

Fig. 5 is a view similar to Fig. 3 of a still further modification; and

Fig. 6 is a cross-section taken on line 6—6 in Fig. 5.

Referring to the drawings, and particularly to Figs. 1 and 2, I show a pothead having a lower or base tubular insulating member 1, preferably porcelain, and an upper or cap member 2, also preferably porcelain, fitted on the upper end of member 1. The end of a cable 3 is run into the lower end of member 1, and an overhead conductor 4 is run to cap 2. The two members 1 and 2 are provided with connecting devices for connecting cable 3 and conductor 4 together and permitting disconnection of the same.

The connecting device of the member 1 involves a metallic terminal 5 having its lower end provided with a socket into which the end 6 of the cable conductor is fitted and secured, as by soldering. The upper portion of this terminal 5 is also socket-like, having a bore 7. Insulating material 8 preferably is confined in the member 1, and surrounds and insulates terminal 5. Screws 9—9 are preferably used to hold terminal 5 in place, as by passing through apertures 10—10 in member 1, and into enlargement 11 on terminal 5.

The contact device on the cap involves a metallic terminal 12 adapted to fit in bore 7 of terminal 5. Said terminal 12 is tubular, with longitudinal slots 13 at its lower end, to secure compressibility to insure ready entry into and sliding within terminal 5. Member 12 has the upper end of its bore screw-threaded and same receives the threaded end 14 of a metallic stem which forms the lower end of a socket terminal 16 for the conductor 4^a of the overhead wire 4, said socket 16 being preferably embedded in compound 17 filling a cavity in the top of cap 2, and rubber tape 18 being preferably wound around upper end of cap 2 and lower end of wire 4. Also a gasket 19 is preferably arranged around the lower end of socket 16 in a groove 20 to make a tight joint for compound 17 and hold socket 16 in place. Thus socket 16, stem 15 and tubular member 12 form terminal arrangement for overhead line 4, mating and fitting slidably and detachably into cable terminal 5, to permit connection and disconnection of the circuit. Further, a metallic extension nut 21 is screw-threaded over stem 14 and washer 22 over nut 21.

Furthermore, arrangement is made for taking up the arc at break. In the arrangement shown for carrying out this feature of the invention, a ring 24 is shown at or near the upper end of base member 1. This ring 24 is preferably made of insulating material, such as bakelite, and is provided with a metallic arcing nut 25, the latter being preferably moulded into the bakelite ring 24. Thus the arc between lower end of cap terminal 12 and upper end of base terminal 5, when former is withdrawn from latter, will be taken by arcing nut 25, and consequently terminals 12 and 5 will not be damaged. This is due to the fact that an arc appears first between contacts 5 and 12. Later an arc is formed between 11 and arcing nut 25 and also between arcing nut 25 and terminal 12, so that there is a multiple arc gap formed. The bakelite ring 24 is preferably wide enough to form sort of a cover for the base 1 and the parts in its upper end, so that a lineman will be protected from contact with those line parts when cover is removed. Also ring 24 preferably has an elevated portion 24′ which will prevent lineman from coming in contact with nut 25 and thereby becoming injured. Since nut 25 and ring 24 are preferably mounted so as to be removable and replaceable, a new one can be put

in when the one in use becomes damaged sufficiently. By having bakelite ring 24 outside of nut 25, the arc is confined and the nut will not be exposed and may be moved for adjustment or replacement by touching ring 24 and not nut 25.

As a simple arrangement for holding ring 24 and nut 25 in place, I show metallic clips or supports 26—26, secured to ring 24 by screws 27—27, and in turn supported by screws 9—9, whereby combination ring 24 and nut 25 may be removed and replaced by manipulating screws 9—9 and 27—27.

In the modification shown in Figs. 3 and 4, the extension nut 21 is omitted and member 12 run clear up to washer 22. The bakelite ring 24^a, into which nut 25 is molded, is of slightly different shape from ring 24, but substantially covers the top of base 1 and has raised portion 24″, and said ring and nut are held in position by being screw-threaded on upper end of terminal 5^a, screws 9—9 being omitted. A serrated lock nut 28 is used, as is also a sealing plate 29 and a cemented locking ring 30 held by cement 31, whereby the terminal 5^a is held in position and upper end of base member 1 sealed. Terminal 5^a may be drawn up so that shoulder 32 may contact with shoulder 33 on ring 30, and then be held firmly in place by locking ring 28. Then combination ring 24^a and nut 25 may be screwed firmly down on top of terminal 5^a.

Referring to modification shown in Figs. 5 and 6, the extension nut 21 is shown in use, and a porcelain ring 24^b of very similar size and shape to one shown in Fig. 1, and arc nut 25 is screwed on top of member 5^a. A lock nut 28 is shown and also a locking plate 35 held by screws 36 upon a cemented ring 37 which is held in position by cement 38. This construction also holds the various parts in place and also seals the upper end of member 1.

It will be understood that changes and modifications may be made without departing from the spirit of the invention.

What I claim is:

1. A device of the class specified having separable terminals, and also having an arcing device comprising an inner annular metallic member and an outer insulating member, one of said separable terminals passing through said inner metallic member.

2. A device of the class specified having separable terminals, and also having an arcing device comprising an inner annular metallic member and an outer insulating member, said inner and outer members being secured together, and one of said separable terminals passing through said annular metallic member.

3. A device of the class specified having separable terminals, and also having an arcing device comprising an inner annular metallic member one of said terminals passing through said metallic member and an outer insulating member, and means for detachably mounting said arcing device in proximity to the locus of separation of said terminals.

4. A pothead comprising a tubular insulating base and an insulating cap therefor, cooperating terminal devices carried by said base and cap, and an arcing device mounted at the upper end of the base and comprising a metallic arcing nut surrounding said terminals at their point of separation and a ring of insulating material secured to and surrounding said nut.

5. A pothead comprising a tubular insulating base and an insulating cap therefor, cooperating terminal devices carried by said base and cap, and an arcing device mounted at the upper end of the base and comprising a metallic arcing nut surrounding said terminals at their point of separation and a ring of insulating material secured to and surrounding said nut, said insulating ring being adapted to cover the upper end of the base to lessen likelihood of contact with parts therein.

6. A pothead comprising a tubular insulating base and an insulating cap therefor, cooperating terminal devices carried by said base and cap, and an arcing device mounted at the upper end of the base and comprising a metallic arcing nut surrounding said terminals at their point of separation and a ring of insulating material secured to and surrounding said nut, said insulating ring being adapted to cover the upper end of the base to lessen likelihood of contact with parts therein and having an elevated portion to prevent contact with said arcing nut.

7. A pothead comprising a tubular insulating base and an insulating cap therefor, cooperating terminal devices carried by said base and cap, and an arcing device mounted at the upper end of the base and comprising a metallic arcing nut surrounding said terminals and a ring of insulating material secured to and surrounding said nut, said nut being detachably mounted on upper end of base terminal.

8. A pothead comprising a tubular insulating base and an insulating cap therefor, cooperating terminal devices carried by said base and cap, and an arcing device mounted at the upper end of the base and comprising a metallic arcing nut surrounding said terminals at their point of separation and a ring of insulating material secured to and surrounding said nut, said nut having a screw-threaded connection with upper end of the base terminal.

9. A pothead comprising a tubular insulating base and an insulating cap therefor, cooperating terminal devices carried by said base and cap, and an arcing device mounted at the upper end of the base and comprising a

metallic arcing nut surrounding said terminals at their point of separation and a ring of insulating material secured to and surrounding said nut, and means for holding the base terminal in position.

10. A pothead comprising a tubular insulating base and an insulating cap therefor, cooperating terminal devices carried by said base and cap, and an arcing device mounted at the upper end of the base and comprising a metallic arcing nut surrounding said terminals at their point of separation and a ring of insulating material secured to and surrounding said nut, and means for holding the base terminal in position, and also for sealing the upper end of the base.

11. A pothead comprising a tubular insulating base and an insulating cap therefor, cooperating terminal devices carried by said base and cap, an arcing device mounted at the upper end of the base and comprising a metallic arcing nut surrounding said terminals at their point of separation and a ring of insulating material secured to and surrounding said nut, and means for holding the base terminal in position and also for sealing upper end of the base, said holding and sealing means comprising a lock nut having a threaded connection with the base terminal, a sealing plate below said lock nut, and a ring below the sealing plate, said ring being cemented to the interior of the base member.

12. A pothead comprising base and cap members and cooperating connecting devices carried by same and an insulating cover device at the top of the base to lessen likelihood of contact with the parts therein.

13. In a device of the class specified, separable terminals and an arcing device for use in connection with said terminals, said arcing device comprising inner and outer rings, one of which is of metal and the other of which is of insulating material.

14. In a device of the class specified, the combination of separable terminals and an arcing device for use in connection therewith, said arcing device comprising an inner metallic ring and an outer insulating ring.

15. In a device of the class specified, the combination with the outer casing of a terminal therein, a holding plate having threaded connection with said terminal, an annular member supporting said holding plate and in turn supported by the casing, and a lock nut also having threaded engagement with the terminal and arranged to lock the terminal and holding plate together, said terminal having a lateral projection adapted and arranged to engage said annular member.

16. A device of the class specified comprising separable terminals, and an arcing device comprising a ring of insulating material and a metallic arcing nut molded with said ring, one of said terminals passing through said arcing device.

17. In a device of the class specified, the combination with separable terminals of an arcing device comprising a removable arcing ring and an annular protecting member surrounding said ring and removable with the same.

18. In a device of the class specified, the combination of a socket terminal and an arcing device, mounted adjacent the open end of said socket terminal and comprising an inner arcing ring, and an outer ring arranged outside of said arcing ring.

In witness whereof, I hereunto subscribe my name this 19th day of September, A. D., 1922.

PAUL F. WILLIAMS.