July 26, 1927. 1,637,090

A. C. RUMBLE

AUTOMATIC DISCONNECTING POTHEAD

Filed Nov. 5, 1926

Fig. 1

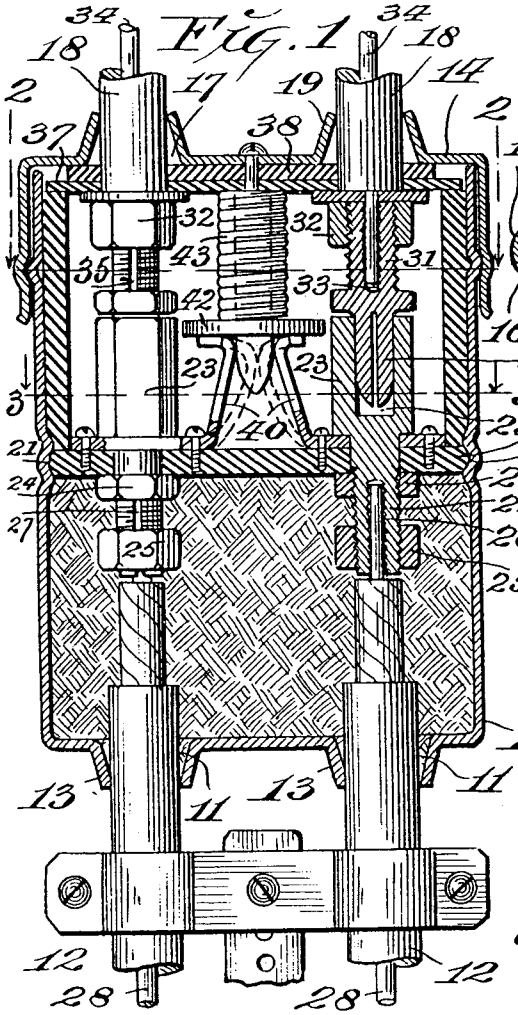


Fig. 2.

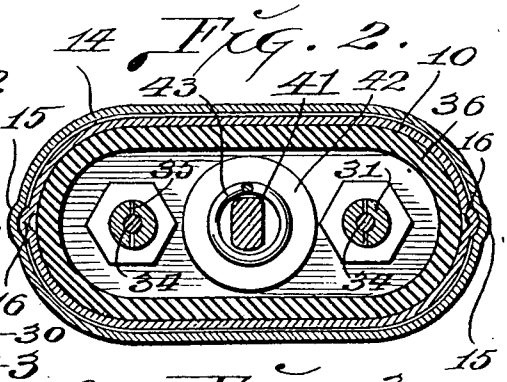


Fig. 3.

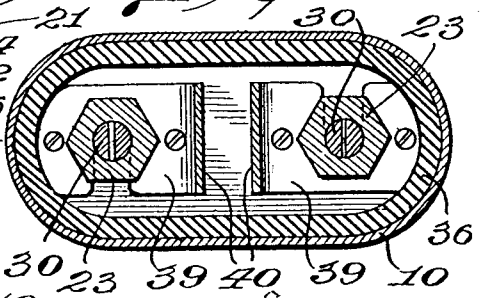


Fig. 4.

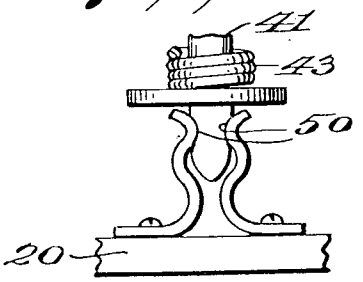
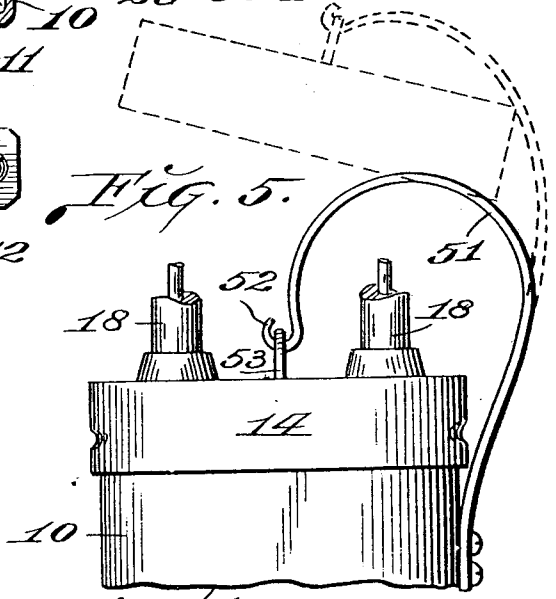


Fig. 5.



Inventor:—
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By Martin P. Smith Atty

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UNITED STATES PATENT OFFICE.

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AUTOMATIC DISCONNECTING POT HEAD.

Application filed November 5, 1926. Serial No. 146,374.

My invention relates to a pot-head or housing for the detachable connections between underground electric cables and the branch cables or conductors that lead to a lighting fixture, for instance a lamp supporting post or standard, the principal objects of my invention being to provide a pot-head of the character referred to that will act automatically to effect a disconnection between the underground cables and the cables or conductors that extend upwardly in the lamp supporting post or standard in the event that the latter should be accidentally struck and over-turned or broken; further, to generally improve upon and simplify the existing forms of disconnecting pot-heads; and further, to provide a device of the character referred to that is relatively simple in construction, inexpensive of manufacture and which may be readily assembled and installed for use.

It will be understood that disconnecting pot-heads of the type to which my invention relates are generally used in the base portions of the lamp supporting posts and standards that form a part of street lighting systems and, in view of the fact that the lamp posts or standards are sometimes struck and over-turned or broken, it is highly desirable and in some instances obligatory that the connection between the underground cables and conductors that lead upwardly through the posts or standards be of such nature that an automatic disconnection be effected in the event that the post or standard is broken or over-turned and at the same time that the underground cables be short-circuited within the base of the posts or standards.

It is therefore one of the principal objects of my invention to provide a disconnecting pot-head that may be readily installed in the lamp carrying posts and standards of street lighting systems and the like and which pot-head will act automatically in the event that the post or standard is over-turned or broken, to instantly effect a disconnection of the parts that conduct the current to the lamps of the post or standard and parts of which pot-head are effective in short-circuiting the underground cables, thereby eliminating a source of danger that would otherwise exist by reason of an open circuit in the lighting circuit.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts that will hereinafter be more fully described and claimed and illustrated in the accompanying drawing, in which—

Fig. 1 is a vertical section taken on a central line through a disconnecting pot-head of my improved construction.

Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1.

Fig. 4 is a detail elevational view of a modified form of the automatic circuit closure forming a part of my invention.

Fig. 5 is an elevational view of a modified form of the automatically acting disconnecting means.

Referring by numerals to the accompanying drawing which illustrates a practical embodiment of my invention, 10 designates the body of a shell or housing that is formed of suitable non-corrodible material, preferably copper, and said shell or housing being substantially oval shaped in horizontal section. The bottom of the housing is provided with spaced openings 11 for the reception of the end portions of a pair of under-ground cables 12. Surrounding the openings 11 are depending flanges 13 and the lower portions of the latter are firmly clamped to the cables 12.

A cap or cover 14 is removably seated on the upper end of the body of the shell or housing 10 and in order to retain said cap or cover on the housing, portions of the end walls of said cover are pressed outwardly as designated by 15 in order to receive corresponding projecting portions 16 that are pressed outwardly from the end portions of the housing 10, it being understood that the portions 16 occupy the outwardly pressed portions 15 when the cover is properly positioned on the housing. The top of cover 14 is provided with spaced openings 17, which accommodate the cables 18 that extend upwardly in the lamp post or standard and surrounding these openings 17 are upwardly projecting flanges 19 that are firmly clamped to the cables 18.

Removably positioned at an intermediate point within the housing 10 is a horizontally disposed partition 20 of suitable insulating material, preferably fiber, and which partition is retained in position by the engage-

ment of its end portions in grooves or indentations 21 that are formed in the end portions of the wall of housing 10.

Extending through the partition 20 and in vertical alignment with the cables 12 are the lower portions 22 of socket members 23 and the lower portions 22 of said socket members are externally threaded for the reception of upper and lower clamping nuts 24 and 25 respectively.

The upper clamping nuts, when tightened, engage against the underface of partition 20, thereby securely clamping the sockets to said partition. The lower portion of each socket 22 is provided with an axially disposed bore or recess 26 that is internally threaded and said lower portion 22 is provided with a centrally arranged longitudinally disposed slot 27. The threaded bore 26 receives the end portion of the conductor 28 that passes through cable 12 and when the lower one of the nuts 25 on the lower portion of the socket member is screwed downwardly on said lower portion, the divided parts of the split lower portion 22 are clamped upon the conductor 28 so that the latter is very firmly secured to the socket member.

The upper portion 23 of each socket member projects upwardly into the chamber within the housing above the partition 20 and said upper portion is provided with an axially disposed bore or recess 29 that receives the longitudinally slotted lower portion 30 of a contact plug 31. The upper portion of the body of this plug 31 is externally threaded for the reception of a clamping nut 32 and said upper portion is also provided with an axially disposed threaded bore or recess 33 that receives the end portion of the conductor 34 and which latter projects from the end of the corresponding cable 18.

The upper portion of each plug 31 is provided with a centrally arranged longitudinally disposed slot 35 and thus when nut 32 is screwed upwardly on the threaded portion of the plug, the split end thereof will very securely clamp the engaged end of conductor 34 so that said plug is practically locked to the conductor.

Arranged within the chamber in housing 10 above the partition 20 therein and immediately adjacent to the wall of the housing is a lining member 36 of suitable insulation, preferably rubber, and positioned on the top thereof is a horizontally disposed section 37 of suitable insulating material, preferably fiber. Interposed between the insulating member 37 and the top of cover 15 is a section 38 of suitable insulating material, preferably rubber, and the insulating members 37 and 38 are perforated at the proper point for the accommodation of cables 18.

Secured in any suitable manner to the upper surface of partition 20 are the base portions 39 of short-circuiting members, said base portions being in direct contact with the intermediate portions of the socket members and the inner ends of the base portions 39 are extended upwardly to form spring contact fingers 40. Secured in any suitable manner to the central portion of the top 14 and extending downwardly therefrom is a pin or finger 41 of suitable insulating material, either hard rubber or fiber, and when cover 14 is properly positioned on the housing, the lower portion of this insulating pin or finger occupies a position between the upper portions of the contact fingers 40 and holds the same out of contact with each other.

Positioned on top of the contact fingers 40 is a disk 42 of suitable insulating material through the center of which projects the lower portion of the finger 41 and interposed between this disk and the section 37 of insulating material is an expansive coil spring 43 that surrounds the stem or finger 41. Under normal conditions, or while cap 14 is positioned on the housing, spring 43 is compressed and under tension, but, as the cover is clamped to the cables 18 and the latter normally occupy fixed positions within the post or standard, the spring 43 will be retained under compression as long as the cover occupies its normal position on the housing 10.

The entire space in the housing 10 beneath the insulation partition 20 is filled with a suitable insulating compound.

Thus, when my improved pot-head is properly assembled and applied for use, it will be seen that the terminal portions of the underground cables are in direct alignment with and are directly connected to the terminal portions of the cables 18 that extend upwardly into the lamp post or standard and that the conductors and connections on one side of the circuit are thoroughly insulated from the conductors and connections on the other side.

In the event that the lamp supporting post or standard with which my improved pot-head is associated is struck and overturned, the cables 18 will, as the post or standard swings downwardly, exert an upward pull on the parts of the pot-head to which said cables are connected and which parts include the cover 14 and the contact plugs 31 and, as this upward pull continues, the cover will be drawn from the housing 10 and the split lower portions 30 of the contact plugs will be withdrawn from the recesses 29 in the upper portions of the sockets 23 and this disconnecting movement is greatly accelerated and made positive by the action of coil spring 43, which exerts an upward pressure on the cover of the pot-head simultaneous with the upward pulling movement exerted by the cables 18.

Thus with the existence of the power stored in the coil spring 43, a disconnection between the underground cables and the cables 18 is instantly effected and simultaneous with this disconnecting action, or the instant that the lower end of finger 41 is withdrawn from between the contact springs 40, the latter will spring into engagement with each other, thereby short-circuiting the conductors within the underground cables 12. By thus automatically short-circuiting the conductors within the underground cables, the danger of injury to persons engaged in removing the broken lamp post or standard or in making repairs thereto is entirely eliminated.

In Fig. 4, I have shown a modified form of the automatically acting contact springs that are normally held apart by the stem or finger 41 and in this construction the lower portion of the stem or finger is provided on its opposite faces with recesses 50 that receive correspondingly shaped portions of the spring fingers and which construction is effective in gripping the stem or finger so as to prevent withdrawal thereof and consequently firmly holding the cover in position on the housing of the pot-head. In this construction the lower portions of the spring fingers are extended toward each other below the lower end of the finger 41 so that said portions will make direct contact with each other as soon as the insulating finger has been withdrawn.

In Fig. 5, I have shown an externally arranged bow spring 51 that takes the place of the coil spring 43 in exerting upward pressure on the cover when the pot-head is disconnected as a result of the accidental overturning of the lamp supporting post or standard and in this modified structure, one end of the spring is connected to the housing of the pot-head while the other end terminates in a hook 52 that engages a ring 53 on the top of cover 14.

Among the exceptional advantages of my improved construction of pot-head are the formation of the shell or housing of non-corrodible and non-breakable material and which provision enables the pot-head to be made relatively small and comparatively light in weight and therefore capable of being sustained within a single lighting post without supports other than the cables that enter and extend through the post.

The housing of the pot-head is constructed so that the use of all screws is eliminated; likewise there is no requirement for the sweating on of lugs or the taping of joints and there are no cork closed apertures through which filling compound might leak.

The socket members and contact plug members are firmly clamped to the parts of the housing without the use of screws and said sockets and plug members are arranged in direct alignment with each other so that direct and straight or axially disposed connections are made between the cables that come from the underground conduits to the cables or conduits that pass upwardly into the post. Further, the use of a disconnecting pot-head of my improved construction enables the direct splicing of the lead sheathed cables that are brought into the lower portions of lamp posts and standards to the rubber covered cables that carry the current upward through the posts to the lamps supported thereby.

Thus it will be seen that I have provided a disconnecting pot-head that is especially designed for service between the terminals of underground current carrying cables and the cables that extend upward into a street lighting fixture, such as a lamp carrying post or standard, which pot-head will be effective in instantly effecting a disconnection between the current carrying conductors in the event that the lighting fixture is struck and overturned and the construction of said pot-head being such that it may be readily assembled and applied for use.

It will be understood that minor changes in the size, form and construction of the various parts of my improved automatic disconnecting pot-head may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. In a disconnecting pot-head, a housing formed in two parts, each of which is adapted to receive a pair of cables, means within the pot-head for detachably connecting the terminals of the conductors in said cables and means associated with said pot-head for normally exerting pressure on the parts thereof tending to separate the same and effect a disconnection of the parts that connect the conductors within said cables.

2. In a disconnecting pot-head, a housing, a cover therefor, said housing and cover being provided with openings for the accommodation of cables, socket members secured to the conductors of the cables entering the housing, contact plugs secured to the cables entering the cover, which contact plugs are adapted to be removably positioned in the socket members when the cover is properly positioned on the housing and a spring engaging said cover and normally tending to remove the same from said housing.

3. In a disconnecting pot-head, a housing, a cover therefor, said housing and cover being provided with openings for the accommodation of cables, socket members secured to the conductors of the cables entering the housing, contact plugs secured to the cables entering the cover, which contact plugs are adapted to be removably positioned in the

socket members when the cover is properly positioned on the housing, short-circuiting springs arranged within the housing and connected to the socket members therein and means carried by the cover for normally holding said contact members out of engagement with each other.

4. In a disconnecting pot-head, a housing, a cover therefor, said housing and cover being provided with openings for the reception of electric cables, socket members secured to the conductors of one pair of the cables, contact plugs secured to the conductors of the other pair of cables, which plugs are engaged in the socket members when the cover is properly positioned on the housing and yielding pressure means bearing on the cover and normally tending to force the same from said housing.

5. In a disconnecting pot-head, a housing, a cover therefor, said housing and cover being provided with openings for the reception of electric cables, socket members secured to the conductors of one pair of the cables, contact plugs secured to the conductors of the other pair of cables, which plugs are engaged in the socket members when the cover is properly positioned on the housing, yielding pressure means bearing on the cover and normally tending to force the same from said housing and means within the housing for short-circuiting the conductors that enter said housing when the cover is removed.

6. In a disconnecting pot-head, a housing, a cover therefor, said housing and cover being provided with openings for the reception of pairs of electric cables, a pair of socket members within the housing to which the conductors of a pair of the cables are connected, means for securing said socket members within the housing, contact plugs secured to the conductors of the cables that enter the cover, which plugs are adapted to engage the socket members and means for securing said contact plugs to the conductors of the cables that enter said cover.

7. In a disconnecting pot-head, a housing, a cover therefor, said housing and cover being provided with openings for the reception of pairs of electric cables, a pair of socket members within the housing to which the conductors of a pair of the cables are connected, means for securing said socket members within the housing, contact plugs secured to the conductors of the cables that enter the cover, which plugs are adapted to engage the socket members, means for securing said contact plugs to the conductors of the cables that enter said cover and a spring bearing on said cover and normally tending to remove the same from said housing.

8. In a disconnecting pot-head, a housing, a cover therefor, said housing and cover being provided with openings for the reception of pairs of electric cables, a pair of socket members within the housing to which the conductors of a pair of the cables are connected, means for securing said socket members within the housing, contact plugs secured to the conductors of the cables that enter the cover, which plugs are adapted to engage the socket members, means for securing said contact plugs to the conductors of the cables that enter said cover, short-circuiting members arranged within the housing and connecting said socket members and means carried by the cover for normally holding said short-circuiting members out of contact with each other.

9. In a disconnecting pot-head, a two-part housing formed of non-corrodible, non-breakable material, each part of the housing being adapted to receive a pair of cables, readily detachable means within the housing for connecting the conductors within said cables and means associated with said housing for normally exerting pressure on one of the parts thereof tending to remove said part and effect a disconnection of the parts that connect the conductors of the cables.

10. In a disconnecting pot-head, a two-part housing formed of non-corrodible, non-breakable material, each part of the housing being adapted to receive the terminal portions of a pair of cables, socket members detachably seated in one part of the housing and connected to the conductors of the cables that enter said part, a pair of contact members carried by the other part of the housing and connected to the conductors in the cables that enter said other part, which contact members are adapted to engage in the socket members and means associated with the two-part housing for normally exerting pressure on one part thereof, which pressure tends to separate said parts and effect a disconnection of the contact members from said socket members.

In testimony whereof I affix my signature.

ALEX C. RUMBLE.