

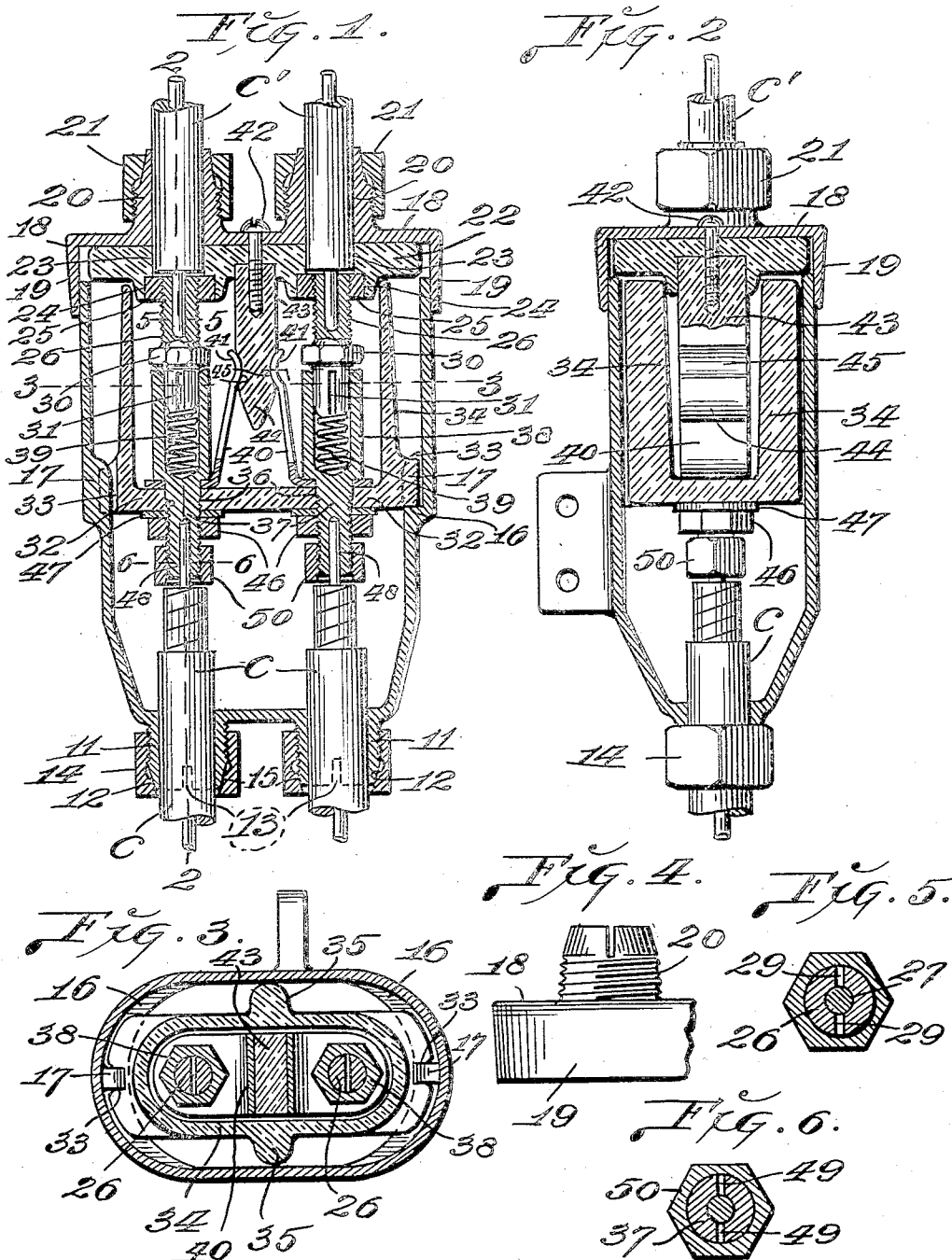
April 30, 1929.

A. C. RUMBLE

1,711,397

AUTOMATIC DISCONNECTING POTHEAD

Filed April 4, 1927



INVENTOR,
Alex C. Rumble.
By Martin P. Smith atty.

UNITED STATES PATENT OFFICE.

ALEX C. RUMBLE, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO WILLIAM EDWARD LAUER, OF LOS ANGELES, CALIFORNIA.

AUTOMATIC DISCONNECTING POT HEAD.

Application filed April 4, 1927. Serial No. 180,841.

My invention relates to an automatic disconnecting pothead of the same type that forms the subject matter of a co-pending application for U. S. Letters Patent filed by me November 5, 1926, Serial No. 146,374, and the principal objects of my present invention are to generally improve upon and simplify the construction of the pothead disclosed in my aforesaid application, as well as other existing forms of similar devices 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 potheads 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 pothead that may be readily installed in the lamp carrying posts and standards of street lighting systems and the like, and which pothead 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 pothead 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 plane through a disconnecting pothead of my improved construction.

Fig. 2 is a vertical transverse 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 portion of the cap or cover of the pothead and showing one of the cable receiving and clamping nipples that is carried thereby.

Fig. 5 is an enlarged horizontal section taken on the line 5—5 of Fig. 1.

Fig. 6 is an enlarged horizontal section taken on the line 6—6 of Fig. 1.

Referring by numerals to the accompanying drawings, which illustrate a practical embodiment of my invention, 10 designates a shell or housing, preferably formed of metal and which serves as the body of the pothead, said body being substantially oval in horizontal section, and provided with a closed bottom from which depends a pair of cable receiving and clamping nipples 11.

The upper portions of the bodies of these nipples are externally threaded and the lower portions taper toward their lower ends, as designated by 12, and the tapered portions of said nipples are provided with two or more longitudinally disposed slots such as 13. These nipples receive the internally threaded portions of tubular nuts 14 and the lower portions of the latter are provided with internally arranged tapered surfaces 15 that are adapted to engage the tapered lower portions of the nipples 11 and exert inward pressure thereon as the nuts as are tightened and which action necessarily clamps the cables C that pass through the nipples.

Formed on the interior of the end portions of the wall of shell or housing 10 at a point approximately midway between its ends, are horizontally disposed shoulders 16 and projecting upwardly from said shoulders on the inner faces of the rounded ends of the housing are short vertically disposed lugs 17.

The top of the shell or housing receives a cap or cover 18 having a depending marginal flange 19 that extends downwardly over the upper end of the wall of housing 10 and formed integral with and projecting upwardly from the cap or cover, are nipples 20 having externally threaded portions that receive the internally threaded portions of tubular nuts 21.

10 The nipples 20 and nuts 21 are identical in construction with the nipples 11 and nuts 14 that are arranged on the bottom of the housing and when the nuts 21 are tightened on the nipples 20, the cable C' that pass 15 through said nipples are securely clamped therein.

Positioned on the underside of cap or cover 18, is a plate 22 of porcelain or suitable insulating material such as compressed 20 fibre, hard rubber, or the like, and formed therein are apertures 23 for the accommodation of the cables C'.

Formed in the under face of plate 22 around the apertures 23 therethrough are recesses 24 for the accommodation of nuts 25, 25 the latter being screw seated on the threaded upper portions of contact pins 26. The upper portions of these pins are provided with axially disposed recesses 27 for the 30 accommodation of the conductors 28 that project from the lower ends of cables C' and the upper portions of said pins 26 are provided with longitudinally disposed slots 29 which intersect the recesses 27 and which 35 arrangement enables the upper portion of the pins to firmly clamp the ends of the conductors that occupy the recesses 27 when the nuts 25 are screwed upwardly on the threaded portions of the pins.

40 When the parts are properly assembled, the nuts 25 occupy positions on the upper ends of the pins 26 and said nuts are positioned in the recesses 24.

Formed on the intermediate portions of 45 the pins 26, are flanges 30 provided with wrench receiving faces and the lower portions of said pins below said flanges are provided with longitudinally disposed slots 31.

Positioned within housing 10 with its ends 50 resting on the shoulders 16, is a plate 32 of porcelain or suitable insulating material such as compressed fibre, hard rubber, or the like, and the ends of said plate are provided with notches 33 that receive the lugs 17 and which 55 arrangement retains the plate 32 in proper position within the housing.

Formed integral with and projecting upwardly from plate 32, is a wall 34, the height of which is such that its upper end terminates in a plane just below the under face 60 of plate 22 when the cap or cover is properly positioned on housing 10.

Formed integral with the sides of the wall 34 are vertically disposed ribs 35 that are 65 adapted to bear against the inner faces of

the side walls of housing 10 when the parts of the structure are properly assembled and thus said ribs serve as combined centering and bearing members.

Formed in plate 32, are apertures 36, 70 through which project threaded stems 37 that depend from tubular socket members 38, which latter project upwardly from plate 32 within the space surrounded by wall 34 and the upper portions of these socket mem- 75 bers are adapted to receive the slotted lower portions of pins 26. The lower ends of the contact pins are rounded in order that they may readily enter the upper ends of the socket members 38 and positioned within 80 the sockets are expansive coil springs 39 which are compressed and under tension when the lower ends of pins 26 are positioned in said sockets.

Thus, when the parts of the pothead are 85 properly assembled for use, the springs 39 normally exert upward pressure on the contact pins 26 and in the event that the cables C' connected to the cover of the pothead are drawn upwardly or laterally a sufficient dis- 90 tance to release the cap or cover, the springs 39 will act to instantly "kick" or eject the contact pins from the sockets.

The lower horizontally disposed portions of substantially L-shaped springs 40 are 95 clamped between the lower ends of the sockets 38 and the top of plate 32 and the upright portions of said springs extend upwardly between the sockets 38, and the upper terminal portions of said springs are 100 provided with short curved portions 41.

Secured in any suitable manner, preferably by means of a screw 42, to the under side of plate 22, is a depending member 43 105 of suitable insulating material such as bakelite, hard rubber, or the like, the lower portion of said member being pointed as designated by 44, and formed in the said faces of said member just above the pointed lower end, are shallow recesses 45 that receive the 110 curved ends 41 of the springs 40 when the parts of the structure are assembled for use.

Thus member 43 serves to separate the upper portions of the spring contacts 40, but in the event that the pothead is disconnected, member 43, when drawn upward, 115 will permit the springs 40 to instantly move toward and into contact with each other, thus short-circuiting the conductors that enter the pothead through cables C. 120

Stems 37 are firmly clamped to plate 32 by nuts 46 that are seated on the threaded portions of said stems and said nuts bearing 125 against fibre washers 47 that lie directly against the under face of plate 32. The lower portions of stems 37 are provided with axially disposed recesses 48 which receive the conductors that project from the ends of cables C and the lower portions of said stems are provided with longitudinally dis- 130

posed slots 49 that intersect the recesses 48. This slotting of the lower ends of the stems enables the bifurcated portions thereof to firmly clamp the conductors as the parts of the stems are moved toward each other by tubular nuts 50 that are screw seated on the lower portions of the stems.

If desired, the entire space within housing 10 beneath plate 32 may be filled with a suitable insulating compound.

When my improved pothead is properly assembled and applied for use, the terminal portions of the underground cables C are in direct vertical alignment with and are directly connected to the conductors of the cables C that extend upwardly into the lamp supporting post or standard and the conductors and connections on one side of the circuit are thoroughly insulated from the conductors and connections on the other side. The short-circuiting springs 40 are held out of contact with each other by the interposed lower portion of member 43 and the springs 39 are compressed and under tension by the lower portions of the pins 26 that occupy the sockets 38.

In the event that the lamp supporting post or standard with which my improved pothead is associated is accidentally struck and over-turned, the cable C will, as the post or standard swings downwardly, exert an upward pull on the cap or cover portion of the pothead and, as this upward pull is exerted, the power stored in the compressed coil springs 39 will act to "kick" or quickly force the contact pins 26 and the cover member upwardly so as to effect a disengagement of the contact pins from the sockets 38 and simultaneously with this disconnecting action, the lower portion of member 43 will be withdrawn from between the contact springs 40 and the latter will instantly move into engagement with each other, thereby short-circuiting the conductors that are carried by the underground cables C.

By thus automatically and instantaneously 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.

An especially desirable feature of my improved construction of pothead is the formation of the shell or housing of non-breakable material, which provision enables the pothead to be made relatively small in size and comparatively light in weight and therefore capable of being sustained within a lighting post or standard without supports other than the cables that enter and extend through the post.

The housing of the pothead is constructed so that the use of all screws is eliminated, 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 pin members are firmly clamped in proper position without the use of screws and said sockets and contact pins are disposed in direct alignment with each other so that direct and straight connections are made between the cables that come from the underground conduits and the cables that extend upwardly into the post.

Further, the use of a disconnecting pothead of my improved construction enables the direct splicing of the lead sheathed cables that enter the lower portion of the lamp post from the underground conduits to the rubber covered cables that carry the conductors upward through the post to the lamps supported thereby.

Thus it will be seen that I have provided a disconnecting pothead 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 pothead will be effective in instantly effecting a disconnection between the current carrying conductors in the event that the lighting fixture is struck and over-turned and the construction of said pothead 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 pothead 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 pothead, a housing and a cover therefor, cable clamping means on said housing and cover, an insulating member arranged on the underside of the cover, a cup-shaped insulating member removably arranged within the housing, contact pins depending from the insulating member on the cover, contact sockets carried by the insulating member within the housing, said contact pins being directly connected to cables that pass through and are clamped to the cover, said contact sockets being directly connected to cables that enter and are clamped to said housing and expansive coil springs removably positioned in the contact socket members and which springs are engaged and placed under tension by the contact pins when the same are seated in said contact sockets.

2. In a disconnecting pothead, a housing, a cover therefor, cable clamping means on said housing and cover, an insulating member arranged on the underside of the cover, a cup-shaped insulating member removably

arranged within the housing, contact pins depending from the insulating member on the cover, contact sockets carried by the insulating member within the housing, said
 5 contact pins being directly connected to cables that pass through and are clamped to the cover, said contact sockets being directly connected to cables that enter and are clamped to said housing, expansive coil
 10 springs removably positioned in the contact socket members, which springs are engaged and placed under tension by the contact pins when the same are seated in said contact sockets, a pair of short-circuiting springs
 15 connected to the contact sockets and an insulating member carried by said cover and extending downwardly into the cup-shaped insulating member within said housing for holding said contact springs out of engage-
 20 ment with each other while the cover is in position on the housing.

3. In a disconnecting pothead, a housing, a cover therefor, said housing and cover being provided with openings for the recep-
 25 tion of cables, means comprising slotted nipples and nuts on the cover surrounding the openings therein for clamping the cables that pass through said cover, means comprising slotted nipples and nuts on the
 30 housing around the openings therein for clamping the cables that enter said housing, socket members connected to the conductors of the cables that enter the housing, contact pins connected to the conductors of the
 35 cables that pass through the cover, which pins are adapted to enter said sockets and expansive coil springs loosely seated in said sockets and adapted to exert pressure on the pins while the latter are positioned in said
 40 sockets.

4. In a disconnecting pothead, a housing, a cover therefor, said housing and cover being provided with openings for the reception
 45 of cables, means comprising slotted nipples and nuts on the cover surrounding the openings therein for clamping the cables that pass through said cover, means comprising slotted nipples and nuts on the housing
 50 around the openings therein for clamping the cables that enter said housing, socket members connected to the conductors of the cables that enter the housing, contact pins connected to the conductors of the cables that pass through the cover, which pins are
 55 adapted to enter said sockets, expansive coil springs loosely fitting within said sockets and adapted to exert pressure on the pins while the latter are positioned in said sockets and insulating members arranged within
 60 said cover and housing and enclosing said pins and sockets.

5. In a disconnecting pothead, a housing, a cover therefor, said housing and cover being provided with openings for the reception
 65 of cables, means comprising slotted nipples

and nuts on the cover surrounding the openings therein for clamping the cables that pass through said cover, means comprising
 slotted nipples and nuts on the housing around the openings therein for clamping the cables that enter said housing, socket
 members connected to the conductors of the cables that enter the housing, contact pins connected to the conductors of the cables
 that pass through the cover, which pins are adapted to enter said sockets, expansive coil
 75 springs arranged loosely seated in sockets and adapted to exert pressure on the pins while the latter are positioned in said
 sockets, short-circuiting springs arranged within the housing and connected to the sockets therein and an insulating member
 8 carried by the cover and separating said short-circuiting springs while the cover is in position on the housing.

6. In a disconnecting pothead, a housing, a cover therefor, said housing and cover being provided with openings for the recep-
 tion of cables, means comprising slotted nipples and nuts on the cover surrounding the
 openings therein for clamping the cables that pass through said cover, means comprising slotted nipples and nuts on the hous-
 ing around the openings therein for clamping the cables that enter said housing, socket
 1 members connected to the conductors of the cables that enter the housing, contact pins connected to the conductors of the cables that pass through the cover, which pins are
 adapted to enter said sockets, expansive coil
 1 springs loosely seated in said sockets and adapted to exert pressure on the pins while the latter are positioned in said sockets, insu-
 lating members arranged within said cover and housing and enclosing said pins and
 1 sockets, short-circuiting springs arranged within the housing and connected to the sockets therein and an insulating member
 carried by the cover and separating said
 short-circuiting springs while the cover is
 1 in position on the housing.

7. In a disconnecting pothead, a housing, a cover therefor, said housing and cover being provided with openings for the recep-
 tion of conductor carrying cables, slotted
 contact pins carried by and insulated from
 the cover, socket members carried by and insulated from the housing, which socket
 members are adapted to receive the slotted
 portions of said contact pins, and expansive
 1 springs arranged within the socket mem-
 bers and adapted to be compressed by the
 contact pins while the same are positioned in the socket members.

8. In a disconnecting pothead, a housing, a cover therefor, said housing and cover being provided with openings for the recep-
 tion of conductor carrying cables, slotted
 contact pins carried by and insulated from
 the cover, socket members carried by and

insulated from the housing, which socket members are adapted to receive the slotted portions of said contact pins, expansive springs arranged within the socket members and adapted to be compressed by the contact pins while the same are positioned in the socket members, a pair of short-circuiting springs connected to the socket members and an insulating member carried by the cover and adapted to occupy a position between the short-circuiting springs while the cover is in position on the housing.

9. In a disconnecting pothead, a housing, a cover therefor, a plate of insulation secured to the underside of the cover, contact pins carried by and depending from said plate of insulation, a cupshaped insulating member removably arranged within the housing, the open top of which cupshaped insulating member terminates adjacent to the underside of the insulating plate when the cover is applied to the housing, and contact sockets carried by the bottom of said cupshaped member and adapted to receive the lower ends of the depending contact pins when the cover is positioned on the housing.

10. In a disconnecting pothead, a housing, a cover therefor, a plate of insulation secured to the underside of the cover, contact pins carried by and depending from said plate of insulation, a cupshaped insulating member removably arranged within the housing, the open top of which cupshaped insulating member terminates adjacent to the underside of the insulating plate when the cover is applied to the housing, contact sockets carried by the bottom of said cup-

shaped member and adapted to receive the lower ends of the depending contact pins when the cover is positioned on the housing, and compression springs loosely arranged within said socket members and adapted to be engaged and placed under tension by the contact pins when the same are positioned in the socket contacts.

11. In a disconnecting pothead, a housing, a cover therefor, a plate of insulation secured to the underside of the cover, contact pins carried by and depending from said plate of insulation, a cupshaped insulating member removably arranged within the housing, the open top of which cupshaped insulating member terminates adjacent to the underside of the insulating plate when the cover is applied to the housing, contact sockets carried by the bottom of said cupshaped member and adapted to receive the lower ends of the depending contact pins when the cover is positioned on the housing, compression springs loosely arranged within said socket members and adapted to be engaged and placed under tension by the contact pins when the same are positioned in the socket contacts, a pair of short-circuiting springs carried by the bottom of the cupshaped insulating member and electrically connected to the sockets carried thereby, and an insulating member carried by said insulating plate and positioned between said short-circuiting springs while the cover is in position on the housing.

In testimony whereof I affix my signature.

ALEX C. RUMBLE.