No. 701,210. Patented May 27, 1902.

C. LUKE.

CABLE CONNECTION FOR COVERING SPLICED JOINTS.

(Application filed Mar. 10, 1902.)

(No Model.)

Fig. 1.

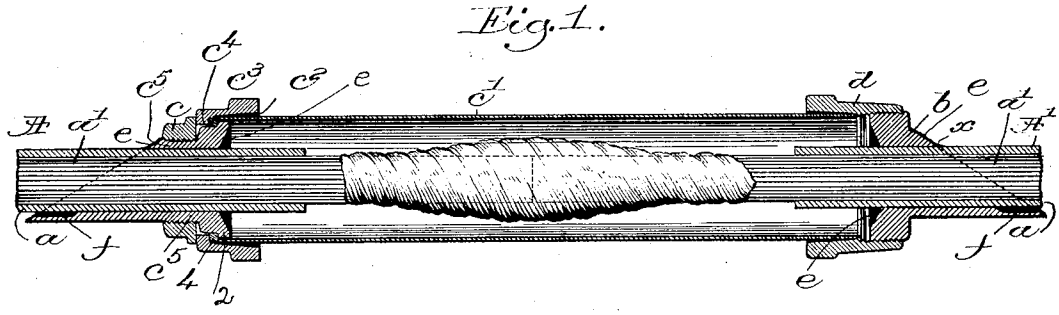



Fig. 2.

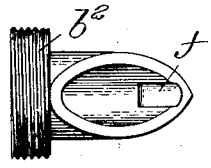
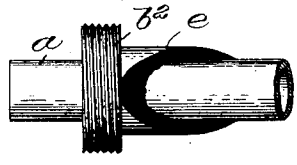



Fig. 3.




Witnesses,
Edward F. Allen.
Fred. J. Grundy.

Inventor;
Charles Luke,
by Dewey & Gregory,
attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

CHARLES LUKE, OF MILFORD, CONNECTICUT, ASSIGNOR TO THE NEW HAVEN NOVELTY MACHINE COMPANY, OF NEW HAVEN, CONNECTICUT.

## CABLE CONNECTION FOR COVERING SPLICED JOINTS.

SPECIFICATION forming part of Letters Patent No. 701,210, dated May 27, 1902.

Application filed March 10, 1902. Serial No. 97,533. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES LUKE, a citizen of the United States, residing at Milford, county of New Haven, State of Connecticut, have invented an Improvement in Cable Connections to Cover Spliced Joints, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention is intended as an improvement on the connection shown and described in application, Serial No. 89,942, filed January 16, 1902. In that application the wires of the cable adapted for use with telephones and low-tension currents are incased in a sheath supposed to be a piece of lead pipe, and the pipe is clamped at its ends between the exterior and interior of coupling parts. Herein I have dispensed with the pipe-clamping means and have connected screw-threaded hubs to the exterior of the pipes by means of solder, thus precluding the passage of water and moisture into the sleeve between the hubs and the pipe.

The sleeve has tightly connected with it at one end by solder or otherwise a threaded collar, and at its opposite end the sleeve has secured to it firmly, preferably by solder, a second collar having an inturned flange that sustains a packing-ring. The inner edge of the packing-ring is acted upon by an external flange of one of the hubs secured to the pipe. A running-nut on one of the hubs causes the packing referred to be clamped sufficiently tight to make a water and moisture tight joint.

Figure 1, in section, shows my novel joint and covering for electric cables. Fig. 2 is a detail showing the inner side of one of the hubs detached, chiefly to illustrate how the solder will cross the hub between its inner surface and the exterior of the pipe at the under side; and Fig. 3 is a plan view looking upon the pipe with its surrounding sleeve, showing the inclined surface down which the solder may travel freely by gravity.

The two lengths of cable A A′ are composed each of a lead-pipe covering $a$ and a plurality of wires $a'$, each preferably wrapped in usual manner by a fibrous wrapper that may be composed either of cotton or paper or other usual material. To join the wires of one length of cable to wires of another length of cable, it is customary to cut off the lead pipe and expose the ends of the wires, and thereafter the wrapping on the wires is removed and the wires are electrically united by solder or otherwise to enable the current to pass through the cable of whatever length, and usually thereafter the joint is incased in lead and two wipe-joints are made between the said lead and the lead pipe. Herein after removing the ends of the lead pipe back of the ends of the wires the pipe of the cable A′ has slipped over it a hub $b$, shown as threaded externally, and the cable A has first slipped over it the running-nut $c$, and then the sleeve $c'$, having fixed to one end of it by solder $c^2$ a collar $c^3$, having an internal flange $c^4$, and having soldered to its other end a threaded collar $d$, and thereafter the hub $c^5$, threaded externally and having at one end an outturned flange 2, is passed over the cable A, and all the parts so slipped over the cable A are pushed back away from the ends of the cable to enable the workman to solder the wires together. The wires having been soldered together, the joint so made must be covered and protected, so that water or moisture cannot get into the covering of the wire, and thus destroy the effectiveness of the cable as an electric conductor. To cover the joints so made, the hub $b$ is put into substantially the position that it should occupy in the completed joint and is soldered to the pipe A′, as will be described. After this the sleeve $c'$ is moved to the right into substantially the position shown in the drawings, so that the threaded collar $d$ at the right-hand end of the sleeve will engage the exterior threads of the hub $b$, and in this condition the sleeve $c'$ is rotated, so that the threads of the collar $d$ may be made to engage firmly and water-tight the threads of the hub $b$, the threaded parts of the collar and hub being cut to a taper, as with usual gas-joints, that they may be screwed up water and moisture tight.

To solder the outer end of the hub $b$ to the pipe A′, obviating making a wipe-joint, I have cut the outer end of the hub transversely to the longitudinal axis of the hub, so as to leave

an inclined end, and solder dropped onto the pipe A′ at the point *x* will run down the inclined edges and clinging to the pipe will follow said inclined edges to the end of the hub and form a water and moisture tight seal between the hub and the pipe, so that neither water nor moisture can enter between the interior of the hub and the exterior of the pipe. I find it of advantage to cut away somewhat the interior of the outer end of the hub near its point, as represented in Fig. 2, so that as the solder travels by gravity down the inclined edges it may enter into the space crossing the under side of the pipe between the pipe and the interior of the hub. In Fig. 1, *f* represents the solder as it will cross the interior of the hub, the pipe being omitted.

As the collar *d* at the right-hand end of the sleeve *c′* is being screwed upon the threaded part of the hub *b* the sleeve is moved longitudinally or to the right and the inner side of the inturned flange $c^4$ of the collar $c^3$, fast to the left-hand end of the sleeve *c′*, meets one side of the lead packing 4 and moves said packing, causing it by its other side acting against the outturned flange 2 of the hub $c^5$ to draw the hub $c^5$ longitudinally over the pipe A, thus putting the hub $c^5$ in substantially the position it will occupy in the completed joint. After this I run onto the end of the hub $c^5$ the threaded nut *c*, securing the face of said nut firmly against the outer end of the collar $c^3$, causing the lead washer to be clamped firmly at its sides between the inturned collar 4 and the outturned collar 2. In this condition of the parts I apply solder to the inclined edge *e* of the hub $c^5$ and secure said hub firmly by solder to the pipe A, as described with relation to the hub *b*.

It will be noticed that the solder may be melted and dropped on the inclined edges of the outer ends of the hubs by unskilled labor, thus doing away with the wipe-joint, which can be produced only by skilled labor.

In Fig. 1, *e* shows solder applied to the exterior of the cables to further unite the hubs to the cable water and moisture tight.

It will be noticed that the sides of the lead washer are clamped firmly between the inturned and the outturned flanges referred to and that the periphery of the washer fits closely the interior of the collar $c^3$ and also that the inner edge of the washer fits accurately the exterior of the hub $c^5$, and in this condition pressure on the lead washer will prevent the same from crawling in any direction, and the joint so made by the lead washer may be made water and moisture tight. Heretofore great trouble has been experienced in the use of lead as a washer, because of the crawling of the lead due to the existence of pressure for any considerable time.

The washer 4 may be composed of any usual soft metal in which lead forms a part and as used in the manufacture of packing for steam-joints.

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

1. A cable connection to cover a splice therein, comprising externally-threaded hubs embracing the lead pipes of the two cables to be united, said hubs being soldered to said pipes, one of said hubs having an outturned flange 2; a sleeve having a collar at each end, one of said collars having at its outer end a screw-thread to engage the screw-thread of one of said hubs, and the other having at its outer end an inturned flange, a packing-ring sustained at one side by said inturned flange, and acted upon at its other side by said outturned flange, and a running-nut applied to the hub having the outturned flange.

2. In a cable connection for lead pipes, hubs having inclined outer ends surrounding and soldered to said pipes, and a device to engage both said hubs to prevent the separation of the lead pipes.

3. In a coupling for lead pipes, hubs having inclined outer ends surrounding and soldered to said pipes, said hubs being cut away at their lower sides to enable solder to pass between the interior of the hubs and the exterior of the pipes, and a device to engage both said hubs and prevent the longitudinal movement of one of said pipes with relation to another of said pipes.

4. In a lead-covered cable connection, hubs soldered to the lead covering of the cables to be united, a sleeve having at one end a threaded collar united by screw-threads to one of said hubs, said sleeve having at its opposite end a collar having an inturned flange and embracing loosely the other of said hubs, a lead washer surrounding the latter hub and interposed between the interior of the collar surrounding one end of the sleeve and between an inturned flange of said collar and an outturned flange of said hub, said washer being held snugly at both its sides and at its outer and inner edges against crawling, and a nut to clamp said washer tightly in its operative position.

5. A connection for spliced cables comprising a hub having its outer end beveled outwardly and soldered to the exterior of the cover of one cable back from the end thereof, and a sleeve embracing said hub and inclosing the splicing of the wires of the cables.

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

CHARLES LUKE.

Witnesses:
GEO. W. GREGORY,
THOMAS J. DRUMMOND.