

J. B. STRAUSS.
ELECTRIC HOSE COUPLING.

No. 469,283.

Patented Feb. 23, 1892.

FIG. 1.

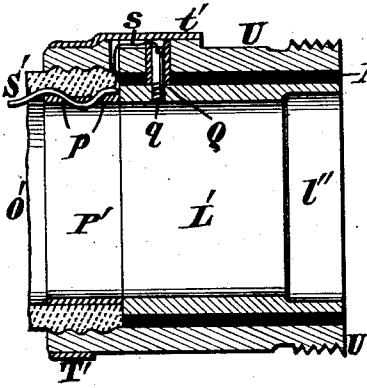


FIG. 3.

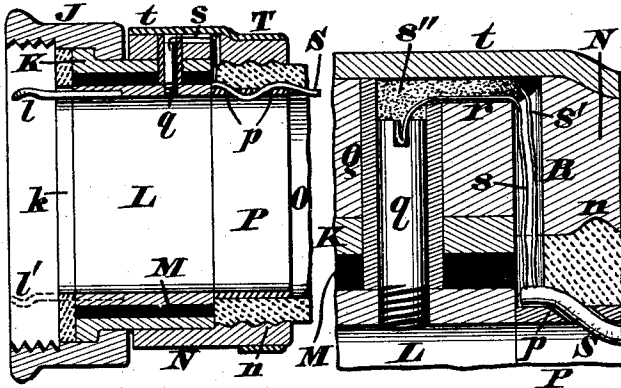


FIG. 2.

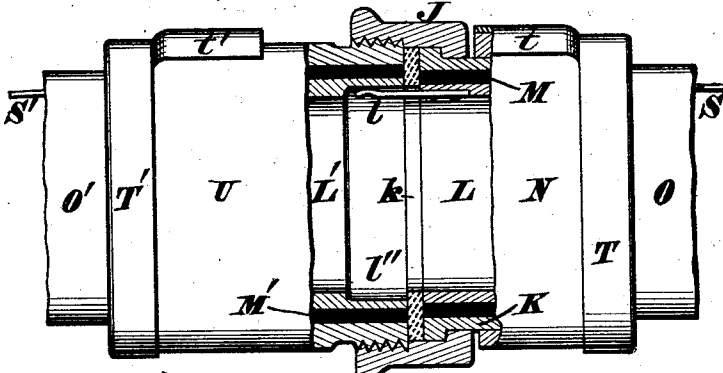


FIG. 4.

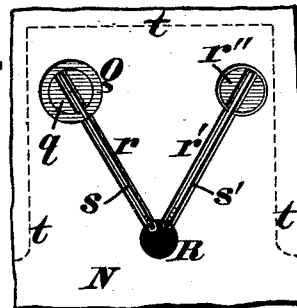


FIG. 5.

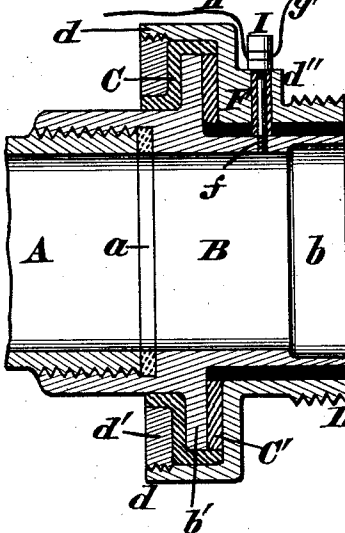


FIG. 6.

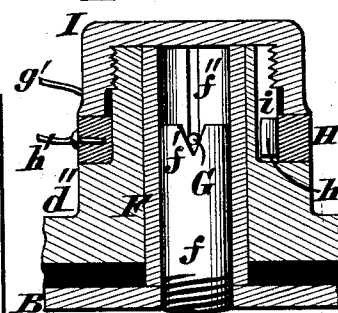


FIG. 7.

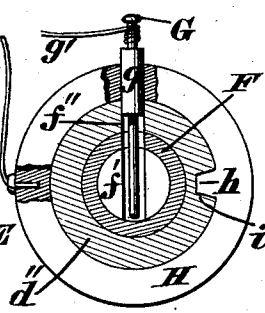


FIG. 8.

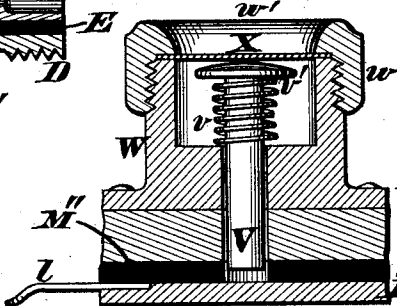
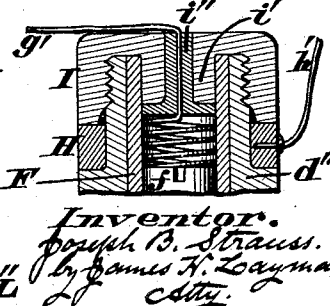


FIG. 9.



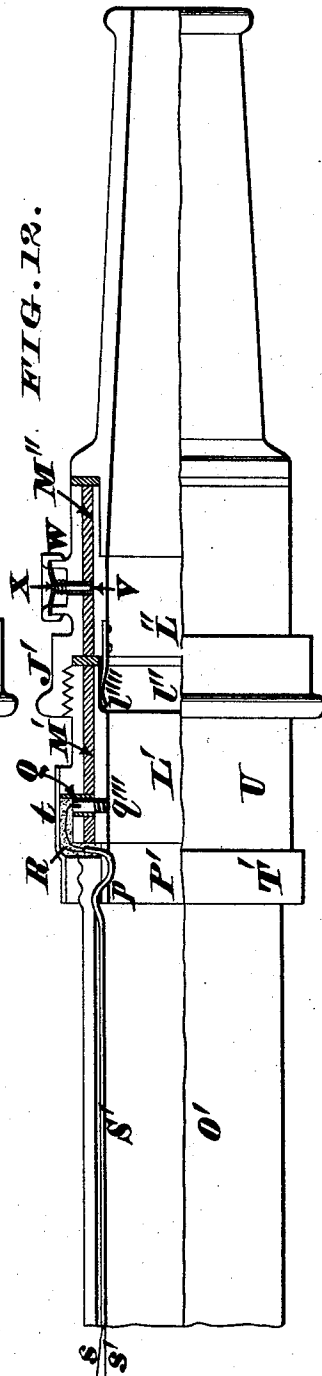
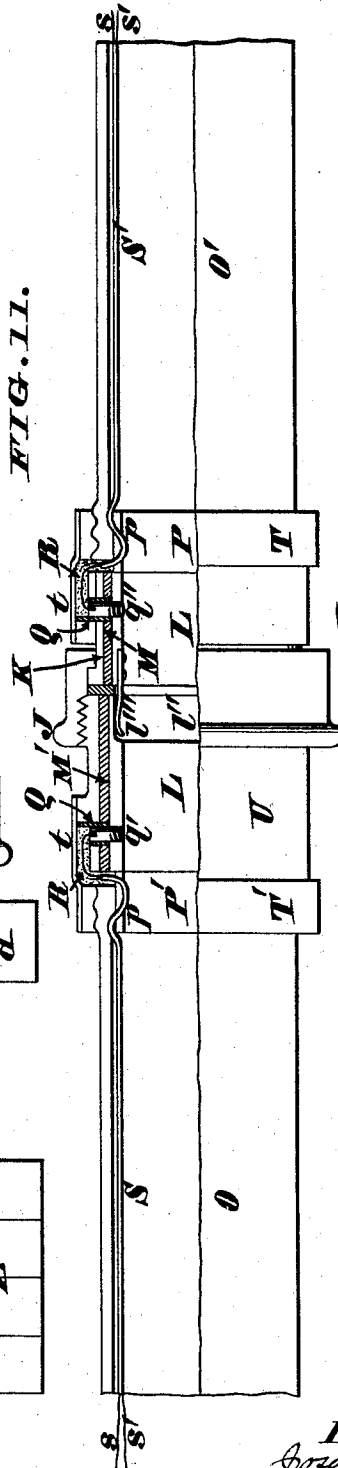
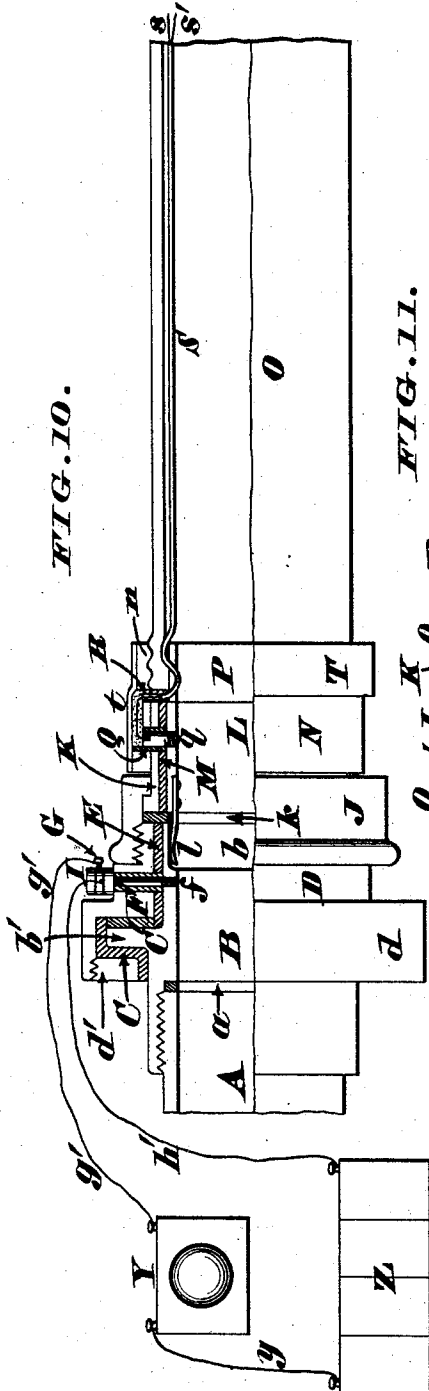
Attest.
Arthur Moore
Samuel H. Quinn.

Inventor.
Joseph B. Strauss.
By James H. Layman.
Att'y.

J. B. STRAUSS.
ELECTRIC HOSE COUPLING.

No. 469,283.

Patented Feb. 23, 1892.



Attest.
Amos Moore.
Samuel H. Quinn.

Inventor.
Joseph B. Strauss.
By James H. Gayman.
Atty.

UNITED STATES PATENT OFFICE.

JOSEPH B. STRAUSS, OF CINCINNATI, OHIO.

ELECTRIC HOSE-COUPLING.

SPECIFICATION forming part of Letters Patent No. 469,283, dated February 23, 1892.

Application filed September 14, 1891. Serial No. 405,719. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH B. STRAUSS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Electric Hose-Couplings; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the annexed drawings, which form part of this specification.

My present invention comprises a number of improvements on the electric hose-coupling seen in Letters Patent No. 454,669, issued to me June 23, 1891, the details of said improvements being hereinafter more fully described, and then pointed out in the claims.

In the annexed drawings, Figure 1 is an axial section of a male and female coupling embodying my invention, said members being separated from each other. Fig. 2 is a sectionized elevation showing these members coupled together. Fig. 3 is an enlarged vertical section through the connections that unite the electric wires to the outer and inner parts of the coupling. Fig. 4 is a plan of a portion of said connections. Fig. 5 is an axial section of the special coupling secured to the discharge-pipe of a steam fire-engine. Fig. 6 is an enlarged axial section of the connections that unite the electric wires to this discharge-pipe. Fig. 7 is a horizontal section of said connections, taken directly above the ring H. Fig. 8 is an enlarged axial section showing the circuit-closer of the nozzle in its retracted position. Fig. 9 is a modification of the invention. Fig. 10 shows the battery, bell-ringer, and wire connections of the engine and the couplings, wherewith one section of hose is attached to said engine. Fig. 11 shows this first section of hose coupled to a second section. Fig. 12 shows this second section of hose coupled to a nozzle, the circuit-maker of the latter being advanced to complete the circuit.

In Figs. 10, 11, and 12 the non-conducting parts of the couplings are sectioned to distinguish them from the metallic portions.

Referring to Figs. 5 and 10, A represents the discharge pipe or outlet of a steam fire-engine, and B is a cylindrical extension screwed thereto, an annular gasket *a* being interposed between these members A B and

the outer end of the latter being counter-bored at *b* for a purpose that will presently appear. Furthermore, this extension B has an annular flange *b'*, against whose opposite sides are firmly clamped a pair of non-conducting packing-rims C C', of which the former surrounds a portion of said extension and the edge of said flange *b'* in the manner shown.

D is a sleeve having an external screw-thread and a bell mouth or hub *d*, inclosing the packings C C', an annular cap *d'* being screwed into the mouth *d* for the double purpose of clamping said packings and assisting in retaining said sleeve upon the extension B.

E is a non-conducting cylinder interposed between the extension B and sleeve D, which sleeve and cylinder may be forced upon said extension by hydraulic pressure or other means. Projecting from one side of this sleeve is a nipple *d''*, (more clearly seen in Fig. 6,) which nipple has a tightly-fitting cylindrical bushing F, of hard rubber or other non-conducting material, the inner end of said bushing being in contact with the extension B. *f* is a metal plug inserted within this bushing F and nicked at its upper end, as at *f'*, while its lower end is screw-threaded and engages with the extension B, said plug being considerably shorter than its inclosing bushing.

G is a rod fitting closely within the nick *f'* of the plug and passing horizontally through the nipple *d''*, bushing F, and ring H, a non-conducting tube *g* surrounding a sufficient portion of this rod to prevent any improper passage of the electric current which is transmitted from said rod by a wire *g'*. (Seen in Figs. 7 and 10.) Nipple *d''* is reduced in diameter to support said ring H, which ring has an internal tongue *h* and a wire *h'*, a metallic cap I being screwed to this nipple, so as to keep said ring in place and to exclude moisture and dust from the bushing F.

i is a longitudinal groove of the nipple that admits the tongue *h*, and thereby prevents the rod G being bent by the turning in either direction of the ring H. The wires *g' h'* communicate, respectively, with a bell-ringer Y and battery Z, said ringer and battery being connected by a wire *y*, the wire *g'* establishing an electric connection with the inner me-

tallic path of the hose-couplings, while the other wire h' transmits a current through the outer metallic path.

The female coupling to be attached either to the discharge-pipe of the engine or to the male coupling of the hose is seen in Figs. 1, 2, and 10, where J represents an internally-threaded collar capable of being readily engaged with the external thread of sleeve D. This collar is swiveled on a short cylinder K, between which and a thimble L a non-conducting cylinder M is secured, an annular gasket k being arranged to abut against one end of said thimble and cylinders. Projecting from one end of thimble L is a plate-spring l , adapted to form a metallic connection either with the extension B or a male member of the coupling, which spring plays in a notch at the inner edge of gasket k , and may be duplicated, as indicated by the dotted lines l' in Fig. 1. Firmly fastened around cylinder K is an outer cylinder N, a portion of whose inner surface is corrugated at n to afford a secure hold on one end of a section of hose O, the hose being forced into these corrugations by an ordinary expansion-ring P, as more clearly seen in Fig. 3.

P' is the expansion-ring of the male coupling.

Q is a non-conducting bushing secured in a hole made in the metallic cylinders K N and non-conducting cylinder M, a metallic plug q being inserted within said bushing and having its inner end in contact with thimble L, to which it is usually secured.

r is a channel or groove extending from the bushing Q to a passage R, made in the outer cylinder N, and r' is a similar groove running from this passage to a screw r'' , the latter being sunk a slight distance below the surface of said cylinder. (See Fig. 4.)

S is a small tube inclosing a pair of insulated wires s s' , one of which s is carried up the passage R, thence along the channel r and attached to the head of screw-plug q , the wire being both protected and insulated by pitch s'' or its equivalent material. The other wire s' is also carried up the passage R, thence along the other channel r' , and attached to the screw r'' , this wire s' being also protected and insulated by pitch. Consequently the wire s forms part of an inner metallic path by communicating with the thimble L, while the other wire s' forms part of an outer metallic path by connecting with the external cylinder N.

T is a hoop secured around one end of cylinder N and having a lateral projection t , that houses in the grooves r r' and their inclosed wires, as indicated by dotted lines in Fig. 4. The expansion-ring P is slotted in two places, as at p , to enable the tube S to be fastened to said ring in such a secure manner as to prevent said tube being dislodged by the rapid current of water forced through the hose.

U in Figs. 1, 2, 11, and 12 are the sleeves

of the male couplings, and L' and M' the thimbles and non-conducting cylinders of the same, the ends of said thimbles being counterbored at l'' .

O' is a section of hose extending from the second coupling (seen in Fig. 11) to the nozzle-coupling represented in Fig. 12, and S' is the tube that carries the electric wires through said section.

T' is the hoop of the male coupling, each of which latter must have a plug, passage, and pair of grooves precisely like those applied to the female couplings.

V in Figs. 8 and 12 is a circuit-closer fitted within the butt-end of a pipe or nozzle, and adapted when advanced to bear against the thimble L' of said nozzle, which advancement is normally prevented by a coiled spring v , pressing under a head v' of this closer V. Said closing device is adapted to play within a cylindrical housing W, having at its outer end a cap w with a central opening w' to enable a pipeman to bend inwardly a metallic diaphragm X whenever he wishes to transmit any signal to the engineer.

M'' is a non-conducting cylinder fitted within the nozzle-butt J', which butt screws to a male coupling in the same manner as do the female couplings.

From the above description it is evident that when a line of hose is attached to an engine the spring l of the first female coupling makes contact with the counterbored portion b of outlet B, while the other similar springs of the remaining couplings bear within the counterbores l'' of the contiguous male couplings, as seen in Figs. 11 and 12. Consequently there is a continuous metallic path formed within the couplings by the thimbles and springs and an unbroken outer metallic path formed by contact of the external sleeves, collars, and cylinders, these two metallic paths being at all times kept separate and distinct on account of the intervening non-conducting cylinders M M' M''. Furthermore, the plugs q and their connecting-wires s complete the inner path from one coupling along the tube S to the next coupling, and so on throughout the entire line of hose; but the other path is completed from one coupling to the other by the wires s' and their connections.

Such being the arrangement of the various parts, it is evident there can be no communication between the outer and inner metallic paths while the circuit-closer V occupies its normal or retracted position, (seen in Fig. 8;) but the very instant the pipeman bends the diaphragm X inwardly said device V is advanced and its inner end brought in contact with the nozzle-thimble L', as seen in Fig. 12, which act connects said outer and inner paths and transmits the electric current to the bell-ringer Y, which latter sounds the signal. When the circuit-closer is thus advanced, the current first flows from battery Z along the wire h' into the ring H and from the latter into the nipple d'' , and as this nipple is usually

in one piece with sleeve D said sleeve is also charged. Now as collar J is screwed to sleeve D it is evident the current enters said collar, is then transmitted to cylinder K, passes from the latter to the outer cylinder N, traverses the screw r'' of this outer cylinder, and thus has access to the wire s' . This wire carries the current through tube S inside the hose to the next coupling, whose said wire emerges from the end of this tube and connects with the sleeve U of the male coupling, the connection being made with a screw in the same manner as seen at r'' in Fig. 4. From this sleeve the current passes to the collar J of the contiguous female coupling, and so on through every coupling and section of hose until the current reaches the nozzle-butt J', screwed to the last coupling, as seen in Fig. 12. Passing from this butt into the housing W, the current enters the metallic disk or diaphragm X, traverses the circuit-closer V, and as the latter is now advanced its inner end makes contact with the thimble L'', and thus leads the electricity into the inner metallic path. Spring l''' now leads the current from this thimble L'' to the male thimble L', and as the inner end of plug q''' is in direct contact with this thimble L' the electricity enters said plug and communicates with the wire s , attached thereto. Wire s leads the current from this plug, carries it through the tube S', and conducts it into the plug q'' of the female coupling at the opposite end of hose O'. Here the plug q'' conducts the current into the thimble L, whose spring l''' leads the electricity to the male thimble L', and as the inner end of plug q' is in contact with this thimble L' the current enters said plug q' . Wire s now leads the current from this plug, carries it through the tube S, and conducts it into the female coupling at the opposite end of hose O. Arriving at this point, the current escapes from said wire, enters the plug q , and then passes into the thimble L, whose spring l leads the electricity into the pipe-extension or outlet B of the engine, and as the inner end of plug f is screwed into said extension the current traverses said plug. Rod G now transmits the current from this last plug to the wire g' communicating with the ringer Y, the bell whereof is instantly sounded. When the current enters this last plug f , it cannot enter the cap I or ring H, because said plug is completely insulated by the bushing F, as seen in Fig. 6.

In a modification of my invention (seen in Fig. 9) the cap I, screwed on nipple d'' , has a neck i , that enters the bushing F, and said neck has a non-conducting lining i'' , traversed by the wire g' , the inner end of the latter being coiled so as to bear snugly upon the plug f , and thus complete the metallic path at this part of the coupling. Finally, it is preferred to pass the non-conducting tube g through the ring H and slot the bushing F longitudinally, as seen at f'' in Figs. 6 and 7, which construction permits the ready detach-

ment of said ring and its accessories after the cap I has been unscrewed.

I claim as my invention—

1. The combination, in an electric hose-coupling, of the engine-outlet A, having an extension B secured in line therewith and carrying the insulating devices, an annular flange b' , projecting outwardly from said extension and surrounded by a pair of non-conducting packings C C', a sleeve D, screw-threaded at one end and provided at its opposite end with an annular cap d' , that bears against the packing C, a non-conducting cylinder E, secured between said extension and sleeve for the purpose of insulating them, a wire for conducting the electric current away from said extension B, and another wire for leading the current into said sleeve D, substantially as described.

2. The combination, in an electric hose-coupling, of a female coupling consisting of the collar J, internally threaded at one end, a cylinder K, to which the opposite end of said collar is swiveled, a cylinder N, fastened to said cylinder K and having means for attaching the hose, a thimble L, having a spring l projecting from one end, a non-conducting cylinder M, secured between said cylinder K and thimble L for the purpose of insulating them, a wire for conducting the electric current into said thimble, and another wire for leading the current into the outer cylinder N, substantially as described.

3. The combination, in an electric hose-coupling, of a male coupling consisting of the sleeve U, externally screw-threaded at one end and having means for attaching the hose at its opposite end, the thimble L', having a counterbore l'' at the threaded end of the coupling, a non-conducting cylinder M', secured between said thimble L' and sleeve U for the purpose of insulating them, a wire for conducting the electric current into said thimble, and another wire for leading the current into said sleeve, substantially as described.

4. The combination, in an electric hose-coupling, of the engine-outlet extension B, sleeve D, screw-threaded externally at one end and having a laterally-projecting nipple d'' , a non-conducting cylinder E, secured between said extension B and sleeve D for the purpose of insulating them, a non-conducting bushing F, fitted in said sleeve and nipple, a nicked plug $f f'$, inserted in said bushing and having its inner end engaged with said extension, a ring H, surrounding said nipple and secured in place by a cap I, a wire g' , communicating with the plug $f f'$ for the purpose of conducting the electric current into the extension B, and another wire h' , attached to the ring H, for the purpose of leading said current into said nipple d'' , substantially as described.

5. The combination, in an electric hose-coupling, of a nozzle-butt having an inner thimble L'', a non-conducting cylinder M'', se-

cured between said butt and thimble for the purpose of insulating them, a housing W, projecting laterally from said butt, a reciprocating circuit-closer V, fitted within said housing, a spring *v*, surrounding said closer and serving to retract it, an annular cap *w*, secured to said housing, and a yielding disk diaphragm X, having its margin clamped between said housing and caps, whereby when said diaphragm is pressed inwardly the circuit-closer V is brought in contact with said thimble L' to complete the circuit through the hose, substantially as herein described.

6. The combination, in an electric hose-coupling, of the collar J, internally threaded at one end, a cylinder K, to which the opposite end of said collar is swiveled, a cylinder N, fastened to said cylinder K and having means for attaching the hose, a thimble L, having a spring *l* projecting from one end, a non-conducting cylinder M, secured between said cylinder K and thimble L for the purpose of insulating them, a non-conducting bushing Q, fitted within said cylinders K M N, a plug *q*, inserted within said bushing and having its inner end engaged with said thimble, a wire *s*, connected to said plug for the purpose of carrying the electric current into said thimble, and another wire *s'*, connected to a screw *r''*, tapped in cylinder N, which wire *s'* leads the current into the outer parts of the coupling, all as herein described.

7. In combination with a hose-coupling including outer and inner members insulated

from each other by non-conducting cylinders, as herein described, the flexible tube S, enclosing a pair of insulated wires *s s'*, and an expansion-ring P, having a pair of slots *p*, with which slots said tube is engaged in the manner described, and for the purpose stated.

8. A male hose-coupling consisting of the sleeve U, externally screw-threaded at one end and having means for attaching the hose at its opposite end, the thimble L', having a counterbore *l''* at the threaded end of the coupling, a non-conducting cylinder M', secured between said thimble L' and sleeve U for the purpose of insulating them, and a female hose-coupling consisting of the collar J, internally threaded at one end, a cylinder K, to which the opposite end of said collar is swiveled, a cylinder N, fastened to said cylinder K and having means for attaching the hose, a thimble L, having a spring *l* projecting from one end, and a non-conducting cylinder M, secured between said cylinder K and thimble L for the purpose of insulating them, in combination with a wire that leads the electric current into said thimbles and another wire that leads the current into the outer members of the couplings, all as herein described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH B. STRAUSS.

Witnesses:

JAMES H. LAYMAN,
C. E. PRIOR.