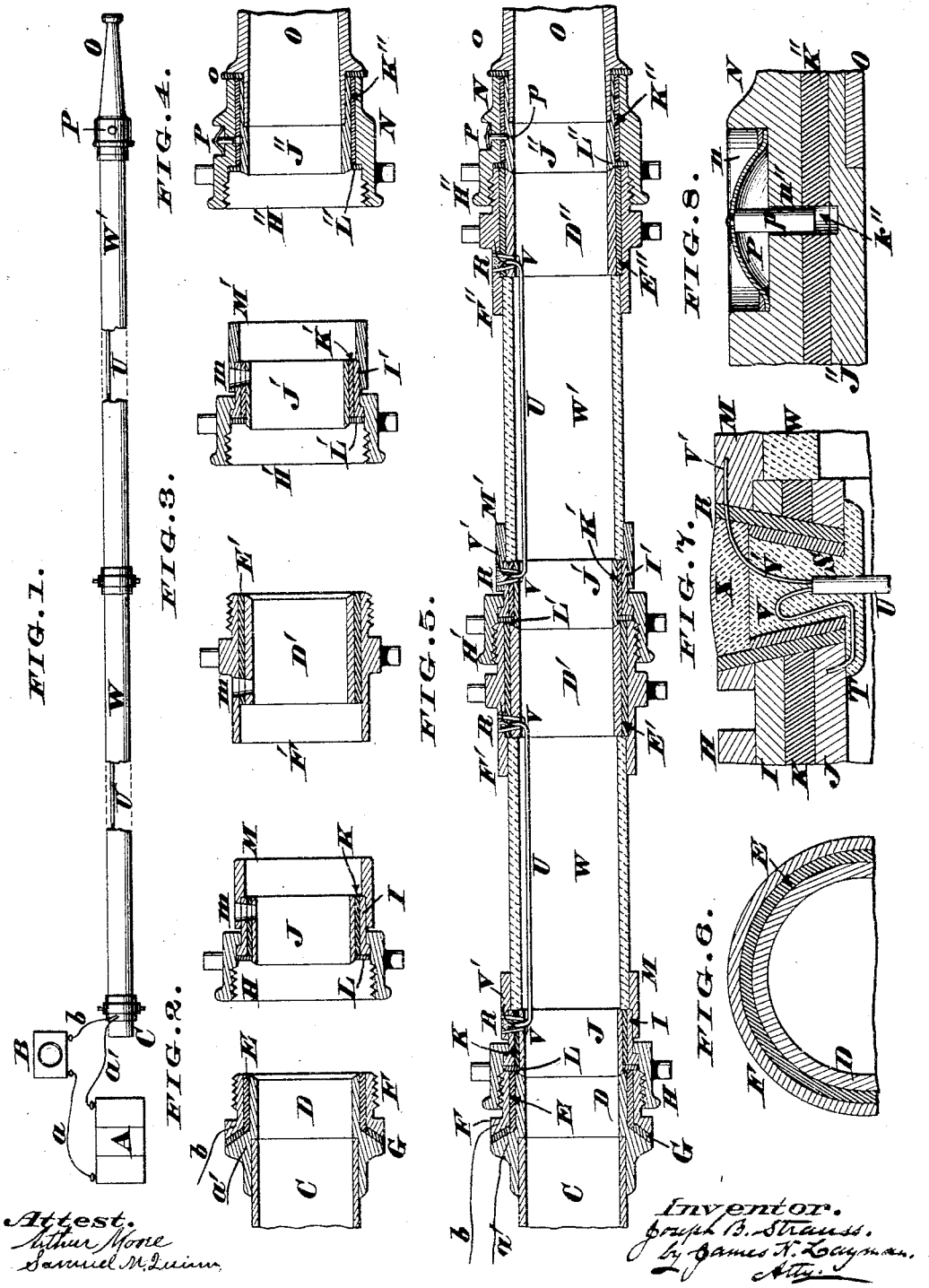
(No Model.)

J. B. STRAUSS.

ELECTRIC HOSE COUPLING.

No. 454,669. Patented June 23, 1891.



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ELECTRIC HOSE-COUPLING.

SPECIFICATION forming part of Letters Patent No. 454,669, dated June 23, 1891.

Application filed March 19, 1891. Serial No. 385,628. (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 a part of this specification.

This invention relates to those hose-couplings which are provided with connections that enable a pipe-man to communicate electrically with an engineer; and my improvement comprises a novel arrangement and construction of parts whereby the two electrical circuits necessary to operate the system are kept separate and distinct, so as not to interfere with each other, while at the same time the couplings can be attached and detached without special manipulation of the electrical appliances, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a plan showing the general arrangement of my invention, the details of the hose-couplings not being rigidly adhered to. Fig. 2 is an enlarged axial section of the two principal parts that couple the hose to the engine. Fig. 3 is a similar section of the two principal parts that couple the various lengths of hose together. Fig. 4 is a similar section of the nozzle-coupling, the circuit-closer thereof being seen in its normal or retracted position. Fig. 5 is a similar section showing two lengths of hose coupled to an engine and nozzle, the circuit-closer being advanced to form a connection between the outer and inner electric systems. Fig. 6 is a transverse section through a portion of one of the couplings. Fig. 7 is a vertical section through the connections that unite the wires to the outer and inner parts of the hose-coupling. Fig. 8 is an enlarged section of the retracted circuit-closer.

Referring to Fig. 1, A represents a battery or other suitable source of electrical power conveniently mounted upon an engine, and B is a bell-ringer or similar signaling-instrument situated in the circuit formed by the wires *a a' b*.

C represents one of the discharge-pipes of a fire-engine, and D is a cylindrical extension soldered thereto and surrounded by a non-conducting cylinder E, the latter being surrounded by a sleeve F, having an external thread.

G is a non-conducting ring interposed between the ends of extension D and sleeve F, which ring, in conjunction with the cylinder E, prevents any metallic contact of said members D and F, thereby forming the beginning of an outer and inner circuit, which systems are carried out to the nozzle, as will presently appear. Wire *a'* connects with the pipe C or its extension D, while the other wire *b* is attached to the sleeve F. Furthermore, the cylinder E and sleeve F are forced upon the extension D by hydraulic pressure or other powerful means, so as to retain said members E F immovably in place and prevent any possible expansion or contraction of said non-conducting cylinder E, which is preferably of hard rubber, although any equivalent material may be substituted therefor.

The counterpart coupling to engage with the engine connection consists of an ordinary internally-threaded collar H, revolving around a short cylinder I, inclosing a thimble J, a non-conducting cylinder K being interposed between this outer cylinder I and thimble J. The thimble and non-conducting member are forced into the cylinder I by powerful pressure, so as to afford the necessary insulation.

L is an ordinary packing-ring or gasket applied at the meeting end of cylinder I.

M is a cylinder fitted around the cylinder I and having one end of a length of hose secured within it by means of ordinary expansion-rings or otherwise.

The sleeve F seen in Fig. 2 is duplicated at F' in Fig. 3 and made to serve as a cylinder that admits one end of a length of hose, the non-conducting cylinder E being also duplicated at E'. Again, the extension D seen in Fig. 2 has its duty performed by a thimble D' in Fig. 3.

H', I', J', K', L', and M' in Fig. 3 are exact duplicates of the devices H, I, J, K, L, and M seen in Fig. 2, which arrangement of coupling and counterparts is carried out with every length of hose, the internally-threaded collar, non-conducting cylinder, thimble, and packing-ring being repeated at H'', K'', J'', and L'' in Fig. 4; but in this last illustration

said collar has an extension N to admit the butt-end of nozzle O. This nozzle is securely fitted within said extension N and bears against a non-conducting gasket *o*. The collar-extension is chambered out at *n*, as more clearly seen in Fig. 8, to receive a disk-spring P, whose margin is secured water-tight in said chamber and normally retracts a circuit-closer consisting of a short metallic plug *p*, traversing coincident bores *n''* and *k''* of said extension and non-conducting cylinder; but when this spring is compressed said plug is advanced and then connection is made with the thimble J'', as represented in Fig. 5.

m are holes drilled transversely of all the couplings attached to the various sections of hose, which holes have non-conducting bushings R forced into them, one of these bushings being more clearly seen in Fig. 7. These bushings are made conical, being smaller at their inner than at their outer ends, and have metallic ferrules S fitted within them and secured by pressure.

T is a conducting-solder poured into the ferrule to secure one end of a wrapped tube U, containing a pair of insulated wires V V', the wire V being in contact with the thimble J of the coupling, while the other wire V' communicates with the outer cylinder M. Furthermore, that portion of tube U inserted within the ferrule must be coated with asbestus or mineral wool or some other suitable non-conductor of heat to prevent said tube being burned when the solder T is poured into said ferrule. Each tube U is freely suspended within each section W W' of the hose, so as to accommodate themselves to every bend or twist thereof, and also to unite all the thimbles in one circuit and all the outer members of the couplings in another circuit by means of the wires embedded in said tube.

X is a water-proof non-conducting filling poured into the outer ends of bushings R.

When the hose is attached to an engine, as seen in Fig. 5, the thimble J of the first coupling abuts against the pipe-extension D, while the other thimbles D' and J' are in contact, as are also the thimbles D'' and J'', and so on for as many sections of hose as may be necessary to reach the fire. It is also evident that the gaskets L, L', and L'' interpose non-conducting mediums between the sleeves F F' F'' and cylinders I I' I'', and also prevent the escape of water at these joints. Furthermore, it is evident there is now an inner metallic circuit, formed by the thimbles and their connecting-wires V, and an outer metallic circuit, consisting of the sleeves F, collars H, cylinders I, cylinders M, and wires V', which circuits are separated from each other by non-conducting cylinders E K, E' K', and E'' K''. Consequently there can be no passage of electricity through these parts while the plug *p* is retracted, as seen in Figs. 4 and 8; but the very instant this plug is advanced, as seen in Fig. 5, a connection is made between the inner and outer circuits, and the desired signal is struck on the bell B. It will thus be seen that my attachments to a hose enable a pipe-man to communicate with an engineer, no matter how remote they may be from each other, and it will also be seen that this facility of communication is effected without the sligthest special manipulation of the couplings, the mere act of screwing them together being all that is necessary to bring all the electrical parts in their proper positions for use. It is further apparent that these parts can never be moved from such positions, except by an exertion of force sufficient to destroy the hose and its couplings.

I claim as my invention—

1. A hose-coupling one part of which consists of the thimble D' and externally-threaded sleeve F', with a non-conducting cylinder E immovably confined between them, and a counterpart composed of the internally-threaded collar H', cylinder I', and thimble J', with a non-conducting cylinder K' immovably confined between said members I' J', and one wire for carrying a current into the abutting thimbles and another wire for leading a current into said sleeve, collar, and connections, substantially as described.

2. The combination, in an electric hose-coupling, of one part composed of sleeve F', thimble D', and non-conducting cylinder E', a counterpart composed of collar H', cylinder I', thimble J', and non-conducting cylinder K', and a non-conducting bushing R, ferrule S, conducting-solder T, and insulated wires V V', embedded in said solder and forming an inner and outer circuit, substantially as herein described.

3. In an electric hose-coupling, an inner conducting part, an outer conducting part, a non-conducting medium secured between them, and a tube U, inclosing a pair of insulated wires V V', one of which communicates with said inner part and the other wire communicates with said outer part, for the purpose described.

4. In an electric hose-coupling, the collar H'', extension N *n*, thimble J'', non-conducting cylinder K'', nozzle O, secured to said thimble, and a circuit-closer, as *p*, for making connection, substantially as herein described.

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

JOSEPH B. STRAUSS.

Witnesses:

JAMES H. LAYMAN,

FRANK A. MCGEE.