

J. BUCHEL.

Electric Signal Fire-Hose.

No. 211,833.

Patented Feb. 4, 1879.

Fig. 2.

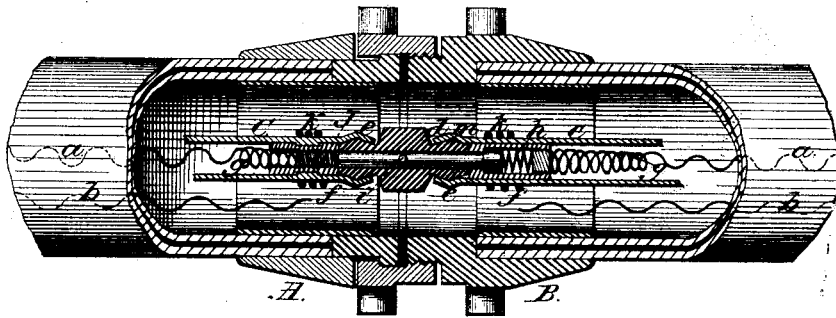


Fig. 6.

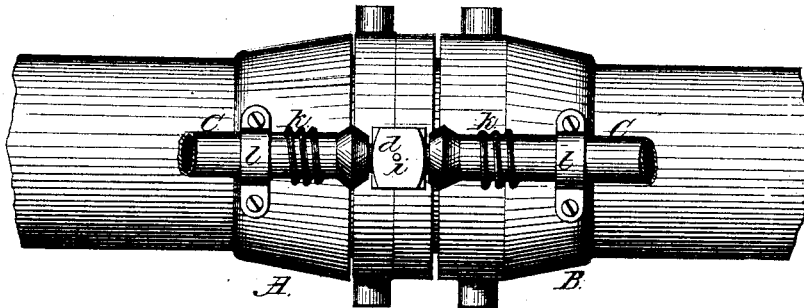


Fig. 4.

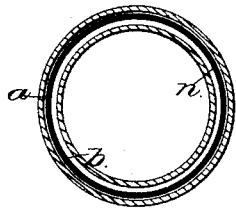


Fig. 5.

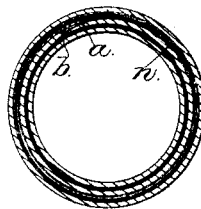
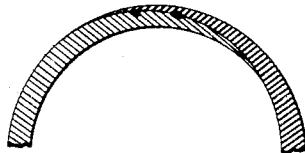


Fig. 3.



Fig. 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN ELECTRIC-SIGNAL FIRE-HOSE.

Specification forming part of Letters Patent No. **211,833**, dated February 4, 1879; application filed December 28, 1878.

To all whom it may concern:

Be it known that I, JOSEPH BUCHEL, of Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Invention or Improvement in Electric-Signal Fire-Hose, which invention and improvement are fully set forth in the following specification and accompanying drawings.

The nature of this invention will be more aptly shown by the drawings, where—

Figure 1 is a large section, showing the "lap" of Fig. 5; Fig. 2, a section through a fire-hose coupling. Fig. 3 is a short length of serpentine wire. Fig. 4 is an end view of hose; Fig. 5, a representation of the lap and embedding material about the signal-wires *a b*, and Fig. 6 represents the coupling as in actual use.

Since the original patent was granted petitioner he has changed and altered his plans, and at different times improved or modified them, and the present presentation embodies some important features not altogether known at the beginning.

The most important is the one which prevents the rotting of the hose, it having been found that at the places where the wires were embedded in the rubber between the hose material decay had been effectually resisted in the following manner: As the hose was first manufactured there was an exterior and interior rubber covering of the canvas, and between the layers of gummed canvas the insulating-strips were placed, one above and one under the wire, and these two were pressed together, so as to completely envelop the wires. After a time it was found that moisture penetrated the gummed canvas ducking or hose material through punctures or fractures variously caused in the exterior or interior rubber covering, and in that way induced a species of rottenness to some of the hose, but that the portion of the hose behind the insulating-strips had been kept strong and good, and did not break there, and from this the inventor proceeded to have the insulating substance carried fully around the hose, and placed the signal-wires in the lap where one edge overlies the other, the laps being pressed upon and enveloping and embedding the wires, as in the first instance.

This interior layer of rubber very much improves the hose in durability and strength, and by this device the canvas is completely separated into two divisions—interior and exterior to the insulation; and should a spot rot about a hole or fracture on the inside, for instance, the outside layers cannot be reached by its moisture; and from the outside in the same manner the central insulator forms a protection to the inside, it being very seldom, if ever, that two such breaks will come opposite each other.

In Fig. 2, where a section of the coupling is shown, and also a crossing for the signal-wires *c c*, are short pieces of thick rubber hose, insulating and carrying the ends of the signal-wires *a a* from the battery on the engine. *b b* are signal-wires for return-circuit, connected with the metal of the coupling. *d* is a bone, ivory, or other non-conductor for a thumb-screw. *m* is a metal bolt, having a nut at one end and a swivel-head at the other, operated against by a spring, *h*, of wire, to make sure of a good contact in the swivel-case. *e e* are enlargements of the ends *d*, which readily spread the rubber pipe and force a tight joint, to prevent water from entering the insulator. *d* is fastened to *m* by a pin, *i*, to keep it from turning around the screw-shank *j* while screwing the ends together. The swivel-case and the opposite nut are held in place by winding wire coils *f* about them. Near the joint between these short pieces of small hose and the points where the wire from the large hose join the crossing wires are formed into a helix or coil, *g*, to prevent their being broken from twisting aside while the main couplings are being brought together, where they strike the "spanner." The coils *f* fit into slight depressions *k* turned on the swivel-case and nut.

In Fig. 6 the crossing pipes *c* are secured to the metal part of the coupling A or B by two clips, *l*, fastened at each end by a screw screwed into the coupling.

In Fig. 1 the signal-wires *a b* are seen lying embedded serpentinely in the proper manner in the lap.

Fig. 3 shows the serpentine shape of the signal-wires, which are span in a loose manner, and are from one to sixteen or more in

number, and, after spinning, are given this wavy or serpentine shape. This prevents their breaking when the hose is suddenly pulled, bent, kinked, or stretched unduly.

The above has been fully tested in actual use, and has been found unfailing in its action during the most trying circumstances of actual practice; and it is desired that the features briefly stated herein shall be protected by Letters Patent as an invention and improvement on former Letters Patent granted.

I claim—

The improved insulating-layer *n*, consisting of the extra rubber tube, similar to the rubber tube on the inside of the hose next to the water, the whole being made substantially as described, and for the purposes set forth.

JOSEPH BUCHEL.

Witnesses:

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