No. 696,529. Patented Apr. 1, 1902.

G. G. WEITZ.

ELECTRICAL HOSE SIGNALING APPARATUS.

(Application filed Dec. 5, 1900.)

(No Model.)

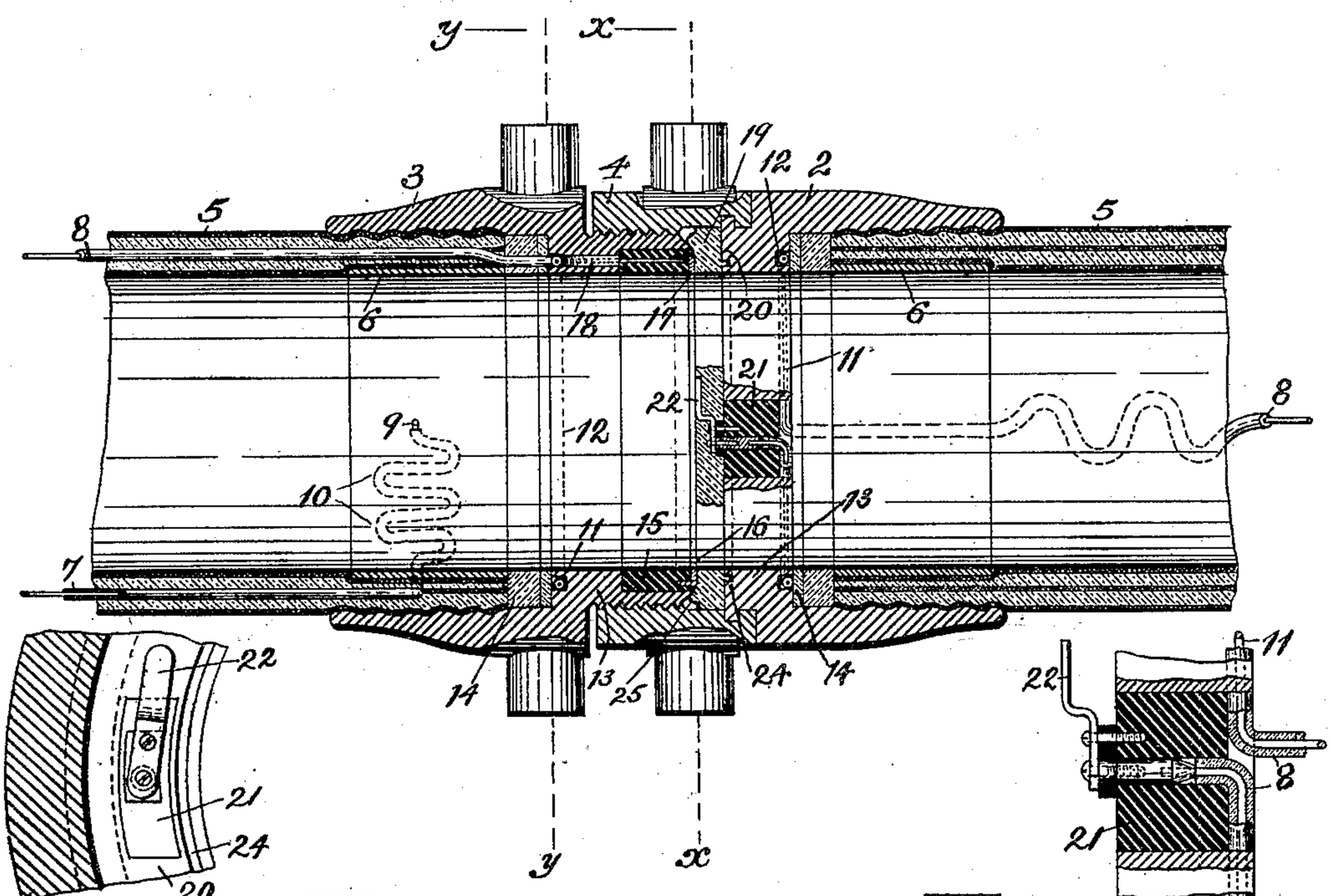
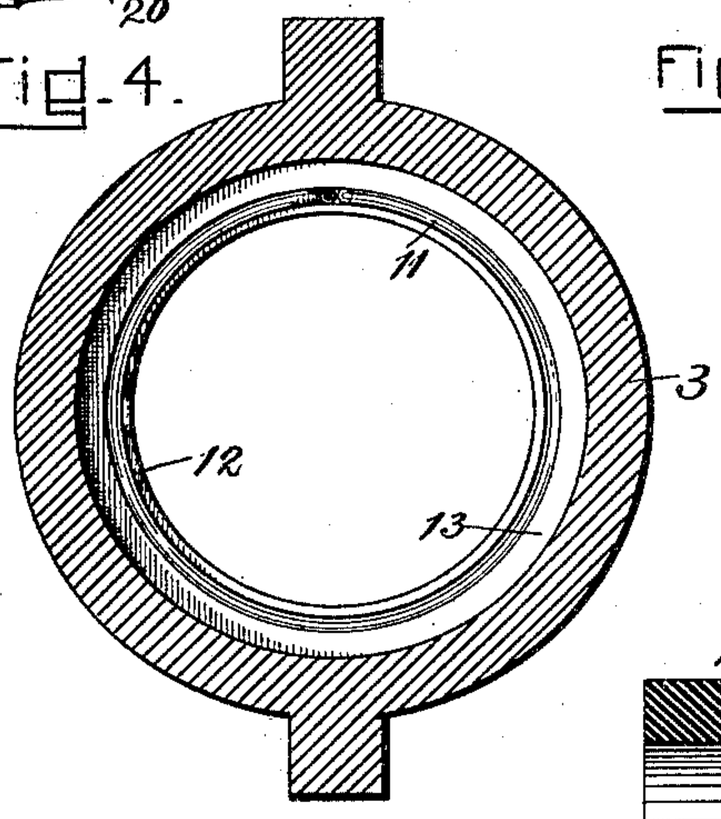
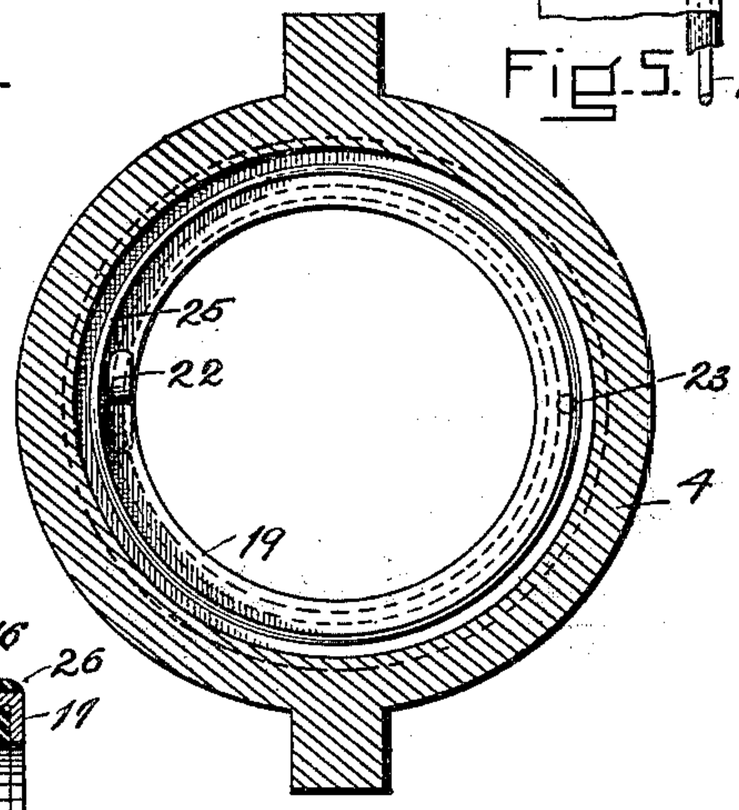


Fig. 1.

Fig. 4.

Fig. 5.





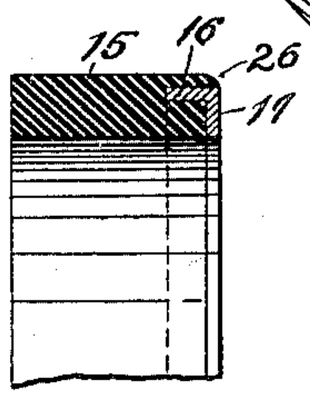


Fig. 2.

Fig. 6.

Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE G. WEITZ, OF MEDFORD, MASSACHUSETTS, ASSIGNOR TO THE NATIONAL ELECTRIC HOSE SIGNALING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF DELAWARE.

ELECTRICAL HOSE-SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 696,529, dated April 1, 1902.

Application filed December 5, 1900. Serial No. 38,776. (No model.)

To all whom it may concern:

Be it known that I, GEORGE G. WEITZ, a citizen of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electrical Hose-Signaling Apparatus, of which the following is a specification.

My invention relates to electric signaling apparatus such as is used in connection with fire-hose to enable the hosemen to transmit signals from the nozzle of the hose to the engine, pump, or other source of supply, and is herein shown and described as applied to fire-hose of that kind in which the body portions of the coulplings themselves are included in and form a part of the electric circuit, such being the common construction.

The features of my invention relate more particularly to the construction of the couplings themselves and of their attached electrical connections, a main feature being designed to improve upon prior couplings in respect to the insulation of the electric-circuit connections and to their protection from accident.

Other features of my invention relate to the construction of the contact-terminals themselves and to packing devices whereby the escape of water between and around the couplings may be prevented.

A preferred form of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal section through the two parts of a coupling united. Figs. 2 and 3 are transverse sections taken on the lines *x x* and *y y*, respectively, in Fig. 1. Figs. 4 and 5 are detail views on an enlarged scale, showing one of the contact-terminals hereinafter described; and Fig. 6 is an enlarged detail view in section of the coöperating contact-terminal.

Except as hereinafter described, the two halves 2 and 3 of the coupling proper are of the usual construction, one of the half-couplings, as 2, having a swiveled screw-threaded collar 4, adapted to engage the screw-threaded end of the half-couplings 3 in the usual manner when the parts are coupled together. To each of the half-couplings 2 and 3 the end of a length of hose 5 is secured by expanding a collar 6 against the inside of the hose, and thereby tightly clamping it against the surrounding end of the half-coupling, as shown, or in any other suitable manner. The insulated wires 7 and 8, which are included in and form parts of the circuit leading to the hose-nozzle, extend along each hose length between the half-couplings secured thereto and are preferably embedded in the body of the hose itself, so that they will not be located within the waterway, but will be protected by the hose itself from the water and from accidental damage. One of the wires, as 7, is secured at its ends directly to the half-couplings to which it leads, as at 9, so that each coupling is itself made to form a part of the circuit, and the other wire 8 is secured at its ends to insulated contact-terminals presently to be described.

It happens occasionally that the end of a length of hose becomes partly or wholly detached or started away from the half-coupling to which it is normally secured by reason of accidents to which the hose is exposed when in use, and one of the features of my invention is intended to prevent injury to the contact-terminals and to preserve the continuity of the electric circuit in case such an accident occurs. To this end I form one or more coils or loops in one or both of the wires 7 and 8 near their ends, said ends being attached to the corresponding circuit-terminals, so that in case the end of the hose is accidentally pulled away from the coupling it will result merely in straightening out the coils or loops referred to, and hence will not put any strain on the connections between the ends of the wires and their respective terminal connections sufficient to separate the same. Thus, as shown, the wire 7 is provided with a number of loops 10, located within the half-coupling 3 between the hose and the point of attachment 9, and the wire 8 is coiled circumferentially adjacent to the end of the hose, as at 11. For the reception of the coil 11 I prefer to provide a groove 12 in the annular

abutment 13, commonly found in each half-coupling, in which groove the coil 11 is cemented. I also prefer to place one or more rubber rings or washers 14 between the abutment 13 and the end of the hose, thereby forming a packing for preventing the leakage of water around the end of the hose and out between it and that portion of the coupling which surrounds it. This rubber packing 14 being yielding and readily removable from its position after the hose has been removed will not interfere with the straightening out of the coil 11 in case of accident, as above described.

I construct the insulated circuit-terminals of my coupling as follows: A ring 15, of hard rubber or other insulating material, has a metal ring 16 embedded in it and is driven into the suitably-recessed end of the half-coupling 3, the ring 16 being provided at its outer end with a flange 17, which is thus located at the top edge of said ring 15 and is thereby insulated from the body of the coupling. One end of the wire 8 is carried through the abutment 13, as at 18, and through a hole drilled longitudinally through the ring 15 and is secured to the metal flange 17, which is thus adapted to act as a contact-terminal and is securely held in place by the ring 16, embedded in insulation. A rubber packing-ring 19 is carried by and covers the outer face 20 of the annular abutment 13 of the part 2 of the coupling in such position that it is opposed to and bears against the metal ring 17 when the parts of the coupling are united, and the end of the wire 8 corresponding to this part of the coupling is carried through an insulating-bushing 21, set into the abutment 13, and has a flexible metallic strip 22 secured to its end and supported and insulated by said bushing, which strip projects through a hole formed in the rubber ring 19 and lies flat against its outer face. Thus when the parts of the coupling are screwed together said strip is brought in contact with the metal ring 17 and is supported and held against the same by the rubber ring 19, which acts as a yielding backing therefor, and thus provides at the same time a packing to prevent the escape of water, a yielding backing for the metal terminal strip 22, and an efficient insulation therefor. Lest the rubber ring 19 be rotated by friction when the parts of the coupling are screwed together, and thus be drawn off the terminal strip 22, I provide means for preventing such rotation, such as a pin 23, secured to the abutment 13, on which the ring 19 rests and projecting into a hole formed therein.

By the construction just described the circuit-wires 8 are kept wholly out of the waterway of the hose and couplings and for some distance from their ends are incased within the material of the couplings themselves, and thus protected from accident, and therefore from all danger of having their insulation worn off, and thus causing a short circuit. The contact-terminals also are wholly outside of the waterway of the hose and when in contact are completely surrounded by and embedded in insulating material, so that a short circuit is rendered impossible. Also the metallic strip 22 is always certain to make an efficient contact with the ring 17 when the parts of the coupling are united and cannot clog or stick because of dirt or sediment, and thus be rendered inoperative, as spring-pressed contact-pins such as hitherto used have been found liable to do.

In order to make the yielding ring 19 more efficient as a packing-ring to prevent the escape of water between the parts 2 and 3 of the coupling, I prefer to provide a narrow annular groove 24 in the abutment 13, directly beneath and near the inner edge of the ring 19 and under the coöperating end of the other half of the coupling. As thus constructed, when the parts 2 and 3 are screwed together and the inner end of the part 3 bears against the ring 19 it compresses the material of the same into the groove 24, and thus forms a very efficient packing and prevents any leakage of water between the parts 2 and 3. In addition to the groove 24 I sometimes provide the ring 19 with an annular rib 25, located near its outer edge, the end of the half-coupling 3 outside of the ring 17 being rounded or beveled, as at 26, so that it will fit inside of the rib 25 and expand it outwardly when the parts of the coupling are screwed together, thus forming a tight packing on this side also of the ring 19. These features of my invention may be applied to couplings which are not provided with electrical connections and still be useful as a packing. Also the loops 10 and the circumferential coils 11 may be used independently of each other, and either or both of them may be used in couplings provided with differently-constructed circuit-terminals, as will be evident.

I claim as my invention—

1. In a device of the character described, the combination of a half-coupling and a conducting-wire electrically connected thereto and leading therefrom along a length of attached hose, said wire having a portion of its length between its attached end and the length of hose looped sufficiently to provide for the separation of the hose and coupling without breaking the connection between the latter and said wire, for the purpose set forth.

2. In a device of the character described, the combination of a half-coupling provided with a contact-terminal, and a conducting-wire secured to said terminal and leading therefrom along a length of hose attached to said half-coupling, said wire having a circumferential coil located between its terminal and the length of hose, for the purpose set forth.

3. In a device of the character described, the combination of a half-coupling provided with a contact-terminal, and conducting-wires

electrically connected to said half-coupling and contact-terminal respectively and leading therefrom along an attached length of hose, each of said wires having a portion of its length between its attached end and the length of hose looped or coiled sufficiently to provide for the separation of the hose and coupling without breaking the connections between said wires and the parts to which they are respectively connected, for the purpose set forth.

4. In a device of the character described, the combination of a half-coupling provided with a contact-terminal and with a circumferential groove, a conducting-wire secured to said terminal and having a coil lying in said groove, a length of hose secured to said half-coupling, and a packing-ring located between said coil of wire and the end of said hose.

5. In a device of the character described, the combination of a half-coupling provided with an annular abutment, a conducting-wire carried through said abutment and insulated therefrom and terminating in a metallic strip, and a yielding ring of insulating material interposed between said abutment and the free end of said strip and forming a support for the latter.

6. In a device of the character described, the combination of a half-coupling provided with an annular abutment, a conducting-wire carried through said abutment and insulated therefrom and terminating in a metallic strip, and a yielding ring of insulating material interposed between said abutment and the free end of said strip and forming a support for the latter, and means for preventing circumferential movement of said ring.

7. In a device of the character described, the combination of coöperating half-couplings one of which is provided with an abutment, a conducting-wire carried through said abutment and insulated therefrom and terminating in a flexible, metallic strip, a yielding cushion of insulating material interposed between said abutment and said strip and forming a support for the latter, and a contact-terminal carried by the other half-coupling and insulated therefrom, and adapted to make contact with said strip.

8. In a device of the character described, the combination of coöperating half-couplings one of which has an annular abutment provided with an annular groove, a rubber ring supported on said abutment over said groove and provided with an annular rib adapted to be expanded by the end of the opposing half-coupling, and coöperating contact-terminals carried by said half-couplings respectively, substantially as set forth.

9. In a device of the character described, a contact-terminal comprising a substantially rigid ring of insulating material, a metal ring embedded therein and flanged at its outer edge to provide a contact-surface, and a conducting-wire leading therefrom through said insulating-ring, for the purpose set forth.

10. In a device of the character described, a half-coupling provided with an internal, annular abutment, an insulating-ring supported thereon, a metal ring embedded in said insulating-ring and having a flange at its outer end, and a conducting-wire passed through the insulating-ring and its supporting-abutment and secured at its end to said flange, substantially as described.

11. In a device of the character described, in combination, two coöperating half-couplings one of which is provided with an insulating-ring having an annular conducting-ring secured to its edge and connected to a conducting-wire, the other half-coupling being provided with an annular abutment, an insulating-bushing secured thereon, a conducting-wire passing through said bushing and terminating in a metallic strip, and a yielding ring of insulating material located between said strip and abutment and forming a support for said strip, substantially as described.

In testimony whereof I have hereunto subscribed my name this 28th day of November, 1900.

GEO. G. WEITZ.

Witnesses:
E. D. CHADWICK,
ELLEN F. COLLINS.