

W. FOWLER.

ELECTRICAL HOSE SIGNALING APPARATUS.

No. 470,752.

Patented Mar. 15, 1892.

Fig. 1.

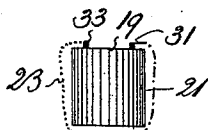
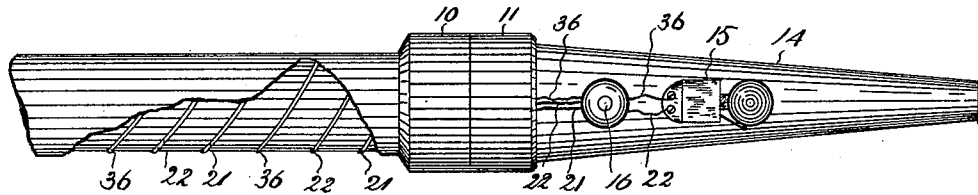


Fig. 2.

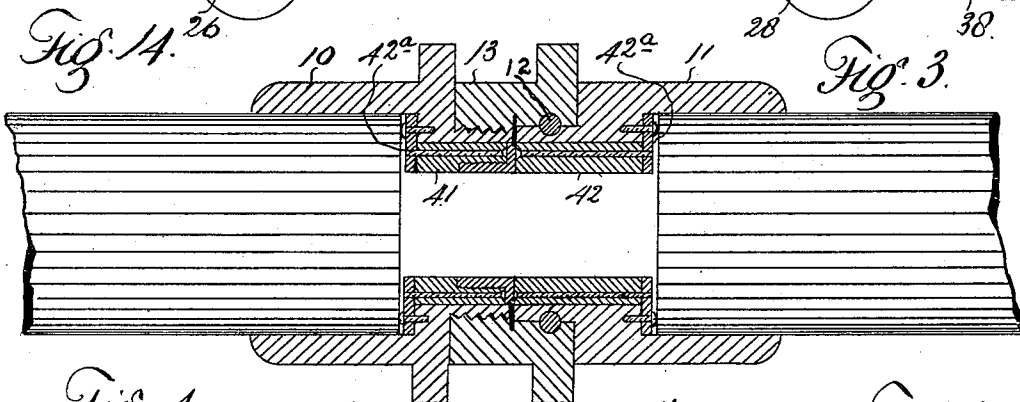
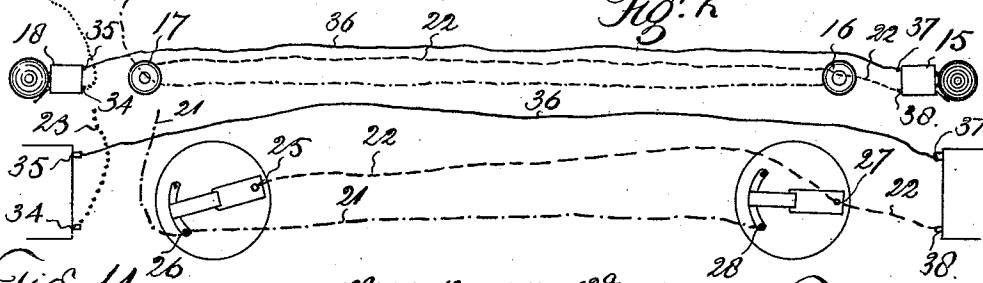


Fig. 4.

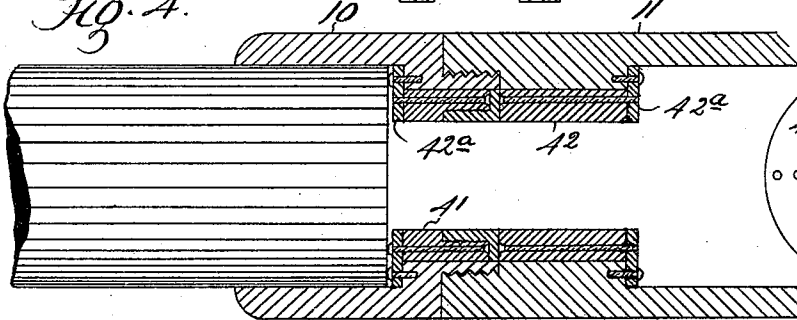
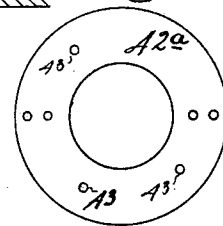


Fig. 5.



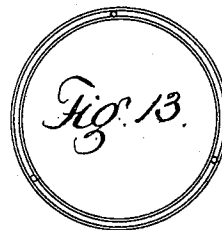
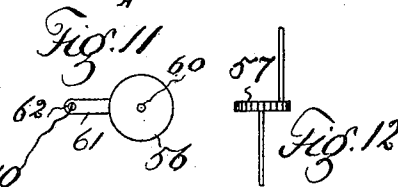
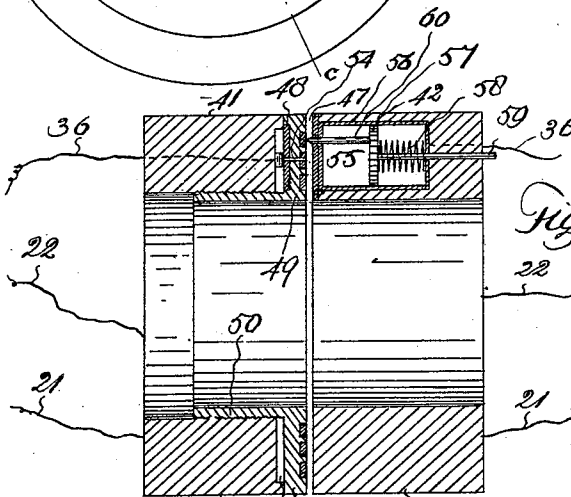
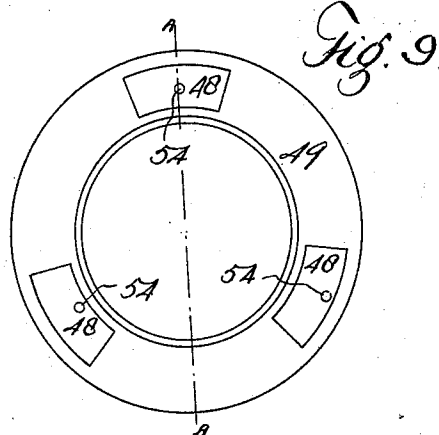
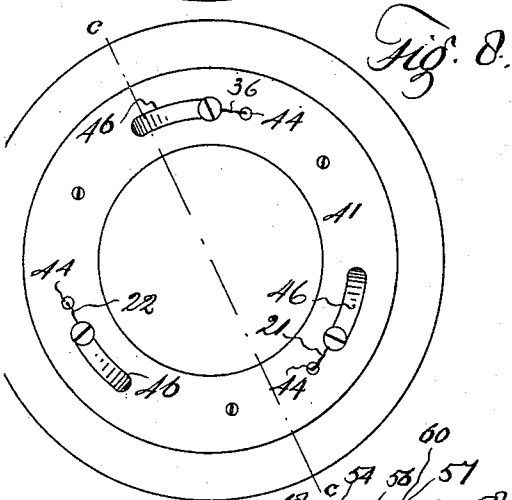
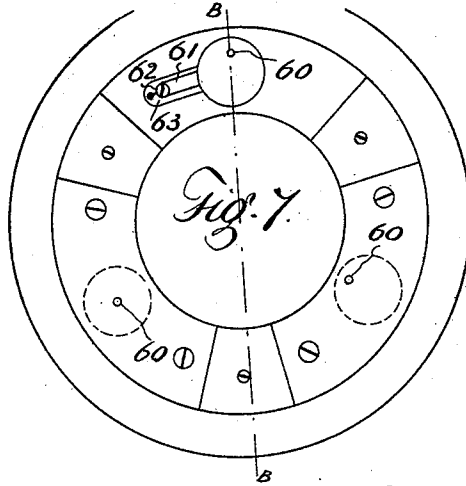
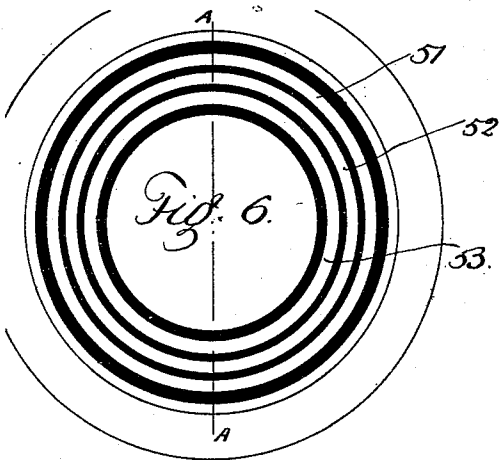
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UNITED STATES PATENT OFFICE.

WILLIAM FOWLER, OF COLORADO SPRINGS, COLORADO.

ELECTRICAL HOSE-SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 470,752, dated March 15, 1892.

Application filed August 24, 1891. Serial No. 403,624. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FOWLER, a citizen of the United States of America, residing at Colorado Springs, in the county of El Paso and State of Colorado, have invented certain new and useful Improvements in Electrical Hose-Signaling Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to an improved electrical signaling apparatus for use in connection with the hose employed to carry water for extinguishing fires; and the object of the invention is to provide means whereby signals may be instantly passed back and forth between the men at the engine and those at the nozzle of the hose by simply pressing a button suitably located at either point.

The noise and confusion almost invariably accompanying conflagrations render the giving of verbal signals very difficult and unsatisfactory, as is well known to all who are at all familiar with the matter, either from experience or observation. It is believed that this difficulty is effectually overcome by the use of my present invention, since the action of the electric current is undisturbed by the vibrations of the atmosphere.

In practicing my improved signaling system I attach a bell or enunciator to the hose-nozzle and another to the engine at a suitable point, these bells being both located in the same circuit, which is formed by running wires from a galvanic battery or other suitable source of electricity, preferably located on the engine, along the hose, which forms their support, the circuit being so established with reference to the bells or alarm mechanism that both enunciators—that is, those at the engine and nozzle—are simultaneously sounded by pressing a button at either point, whereby the person giving the signal is assured that the apparatus is in working order.

The invention will be fully understood by reference to the accompanying drawings, in connection with the description hereinafter given.

In the drawings, Figure 1 is an elevation of a nozzle coupled to a section of hose, the parts being provided with my improvement. In this view one layer of the hose is partially broken away to illustrate the circuit-wires. Fig. 2 is a diagrammatic view illustrating the signaling mechanism. Figs. 3 and 4 are enlarged longitudinal sections of two different styles of hose-couplings, showing my attachments for completing the circuit throughout. Fig. 5 is an end view of a washer attached to each section of the coupling. Fig. 6 is an end view of one section of the coupling, showing the contact-rings. Fig. 7 is a similar view of the opposite section of the coupling. Fig. 8 is an end view of the coupling-section shown in Fig. 6. In this view, however, the plate carrying the contact-rings is removed. Fig. 9 is a rear view of this plate. In this view are shown the contact-plates which engage the springs illustrated in Fig. 8. Fig. 10 is a longitudinal section taken through the coupling on the lines C C, A A, and B B, Figs. 6, 7, 8, and 9. Fig. 11 is a top view of one of the piston-chambers, showing the contact-pin located in the center thereof. Fig. 12 is a detail view of a piston, showing the contact and guide pins attached thereto. In this case the contact-pin is located to one side of the center, as shown at Fig. 10. Fig. 13 is an end view of the hose, showing the location of the circuit-wires between the two layers of material forming the same. Fig. 14 is a diagrammatic view showing the push-button contacts on an enlarged scale.

In the views similar reference characters indicate corresponding parts or elements of the mechanism.

Let the numerals 10 and 11 designate the two sections of an ordinary hose-coupling. In Fig. 4 these sections are shown oppositely shouldered and correspondingly threaded. In this construction the two sections are directly connected with each other, while in Fig. 3 an intermediate nut 13 is swiveled to section 11 and forms the connection between the sections. In this style of section a rubber gasket 12 is placed between the engaging parts of the coupling, its outer edge being received within a circumferential recess formed in nut 13. The nozzle 14, which is suitably attached to section 11, is provided with an

electric bell 15 and a push-button 16. A similar button and bell 17 and 18 are located on the engine or in proximity to the extremity of the hose opposite from the nozzle.

5 A battery 19 or other suitable source of electricity is located, preferably, upon the engine. From a pole 31 of this battery leads a circuit-wire 21 to contact with a binding-screw 26 of the push-button 17, and thence
10 along the hose, preferably taking a spiral course around the same, as shown in Fig. 1, and thence by means of suitable connections through the coupling to contact 28 of push-button 16, located on the nozzle, wire 21 terminating at this point. From the other pole
15 33 of the battery leads the other circuit-wire 23 to binding-screw 34 of the bell 18. From the other binding-screw 35 of bell 18 leads another wire 36 to binding-screw 37 of bell
20 15, where said wire terminates. From the other binding-screw 38 of the last-named bell leads another wire 22 to contact 27 of push-button 16 and thence to contact 25 of button 17, where it terminates. All the wires
25 are supported by the hose and preferably take a spiral course around the same, as shown in Fig. 1, in order to avoid subjecting them to undue strain, as otherwise might happen if they took a direct course. Within the
30 coupling-sections are located the cylindrical rings 41 and 42, of insulating material, suitably secured to washers 42^a 42^a, made fast to the coupling-sections, as shown in Figs. 3 and 4. Each washer 42^a is provided with
35 three apertures 43, through which the wires 21, 22, and 36 pass after leaving the hose. After leaving the washer 42^a, located within section 10 of the coupling, these wires pass through apertures 44, formed in insulating-
40 ring 41, and terminate at screws 45, which hold the contact-springs 46 securely in place. Each of these springs is located within a hollow recess 47, and their free extremities normally project slightly therefrom, so as to insure perfect contact with the metal plates 48,
45 embedded in the engaging surface of an insulating-ring 49, provided with a collar 50, engaging ring 41 interiorly. In the outer face of ring 49 are embedded three metal contact-
50 rings 51, 52, and 53, insulated from each other and each connected with a spring 46 by a metallic rivet 54. Within the opposite insulating-ring 42 are formed three cylindrical chambers 55, provided with closed metallic casings
55 56, in which are located nicely-fitting pistons 57, engaged by coil-springs 58, surrounding the guide-rods 59, which pass through outlet-apertures formed in the bottom of the chamber's casing, and continued through the ring,
60 as shown in Fig. 10. The face of each piston opposite that engaged by the spring is provided with a metallic contact-pin 60, which protrudes through an aperture formed in the top of casing 56. It must be remembered
65 that these pins 60, as well as the apertures through which they pass, are so located that each pin engages a separate contact-ring

when the hose is coupled. For instance, one pin engages the outer ring 51, another pin the middle ring 52, and the third the innermost
70 ring 53. When the hose is uncoupled, the pins 60 are forced outward by the recoil of springs 58, so that they engage their respective rings in the opposite section of the coupling as soon as the sections are first placed to-
75 gether. Hence as the parts are screwed together these contacts engage each other more tightly and insure perfect contact at all times.

Each metallic casing 56 is provided with a metal arm 61, to which leads one of the wires 80 21, 22, or 36, as the case may be, since said wires pass through suitable apertures 63, formed in rings 42, and extend to arms 61, where they are secured by screws 62, thus completing the circuit through both sections
85 of the coupling. Hence when button 17 is pressed the current passes from pole 31 of the battery through wire 21, contacts 26 and 25 of the same button, wire 22, a spring 46, plate 48, rivet 54, a ring 51, 52, or 53, a con-
90 tact-pin 55, piston 57, casing 56, and arm 61 to contact 27 of button 16, and thence through the same wire to binding-screw 38 of the bell, through the magnet to binding-screw
95 37, and thence *via* wire 36 back through the coupling in the reverse direction to binding-screw 35 of bell 18, through the magnet to the other binding-screw of the bell, and thence
100 *via* wire 23 to the other pole of the battery, completing the circuit and ringing both bells. Again, when button 16 is pressed the current may be said to pass from pole 31 of the bat-
tery through wire 21 to contact 26 of the but-
ton 17, and thence through the same wire 21
105 to and through the coupling, as before, and thence through wire 21 and contacts 28 and 27 and wire 22 to binding-screw 38 of the bell
15, thence through the magnet to binding-screw 37, and thence through wire 36 back
110 through the coupling to bell 18 and through the magnet to wire 23, and thence to the other pole 33 of the battery, completing the circuit and ringing both bells, as before.

It will be observed that instead of three sets of conductors for carrying the current
115 through the coupling separate from the coupling itself the metallic parts 10 and 11, or 10, 13, and 11, as the case may be, may be utilized instead of one of these sets of separate
120 conductors shown in the drawings. In this case one of the contact-rings 51, 52, or 53 and its corresponding connecting parts may be dispensed with and the wires connected directly to the metallic sections 10 and 11 of
125 the ordinary hose-coupling.

It may be well to state that the covering of the circuit-wires, or the insulation, or the wires themselves, if uninsulated, should be of different colors in order to assist in making the
130 proper connections at the bells, buttons, and electric source after the wires leave the hose in which they are concealed throughout its length. This of course is a mere matter of convenience.

Having thus described my invention, what I claim is—

1. In an electrical hose-signaling apparatus, the combination, with the alarm mechanism, the hose-sections, and the conducting-wires attached thereto, of an insulating-ring attached to the engaging-coupling extremities of the hose-section, one of these rings being provided with metallic springs 46, to which the circuit-wires lead, and the other with metal-cased chambers connected with the circuit-wires, and spring-actuated pistons having contact-pins 60 normally projecting from the outer surface of the ring, and an intermediate circumferential insulating-plate provided on one face with metal contact-plates 48, adapted to engage springs 46, respectively, and on the opposite face with separate contact-rings respectively connected electrically with plates 48 and pins 60 when the hose-sections are coupled, substantially as described.

2. In a hose-signaling apparatus, the combination, with a source of electricity, of enunciators and intermediate circuit-wires wound spirally around the hose and couplings, constructed with reference to completing the circuit therethrough and consisting of insulating-rings 41 and 42 attached to the coupling extremities of the hose-sections, ring 41 being provided with contact-springs 46, normally projecting beyond the plane of its outer face and connected with the circuit-wires, ring 42 being provided with metal-walled chambers to which the circuit-wires lead and in which are located the spring-actuated pistons having contact-pins 60 normally protruding from the face of the rings and an intermediate circumferential insulating-plate provided with metal contact-plates 48 on one face, adapted to engage springs 46, respectively, and separate contact-rings secured to the opposite face and respectively connected electrically with the springs 46 and pins 60 when the hose-sections are coupled, substantially as described.

3. In a hose-signaling apparatus, an electrically-arranged coupling consisting of two insulating-rings 41 and 42, ring 41 being provided with springs 46, normally projecting be-

yond the plane of its outer face and to which the circuit-wires lead, ring 42 being provided with metal-walled chambers with which the circuit-wires are connected and having spring-actuated pistons located therein and provided with contact-pins normally protruding from the chambers and projecting beyond the face of the ring, and an intermediate insulating circumferential plate having separate metal plates 48 on one face and separate contact-rings on the opposite face, the plates 48 being respectively connected with the rings and the latter with the pins 60 when the coupling is made, substantially as described.

4. An electrically-arranged hose-coupling consisting of two insulating-rings 41 and 42, ring 41 being provided with separate metallic contact-rings on its outer face, to which the circuit-wires lead, ring 42 being provided with metal-walled chambers connected with the circuit-wires, spring-actuated pistons located therein and provided with contact-pins normally extending beyond the face of the ring and adapted to engage the opposite metal ring when the coupling is established, substantially as described.

5. A hose-signaling apparatus consisting of a source of electricity, a circuit consisting of wires attached to the hose, and suitable connections at the hose-couplings, whereby the circuit is preserved without interfering with the coupling or uncoupling the hose-sections, said connections consisting of two insulating-rings 41 and 42, ring 41 being provided with separate metallic contact-rings on its outer face, to which the circuit-wires lead, ring 42 being provided with metal-walled chambers connected with the circuit-wires, spring-actuated pistons located therein and provided with contact-pins normally extending beyond the face of the ring and adapted to engage the opposite metal ring when the coupling is established, substantially as described.

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

WILLIAM FOWLER.

Witnesses:

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GEORGE KECK.