

No. 711,718.

Patented Oct. 21, 1902.

J. H. DETERS.

SIGNAL INSTALLATION FOR FIRE ENGINES.

(Application filed Apr. 28, 1902.)

(No Model.)

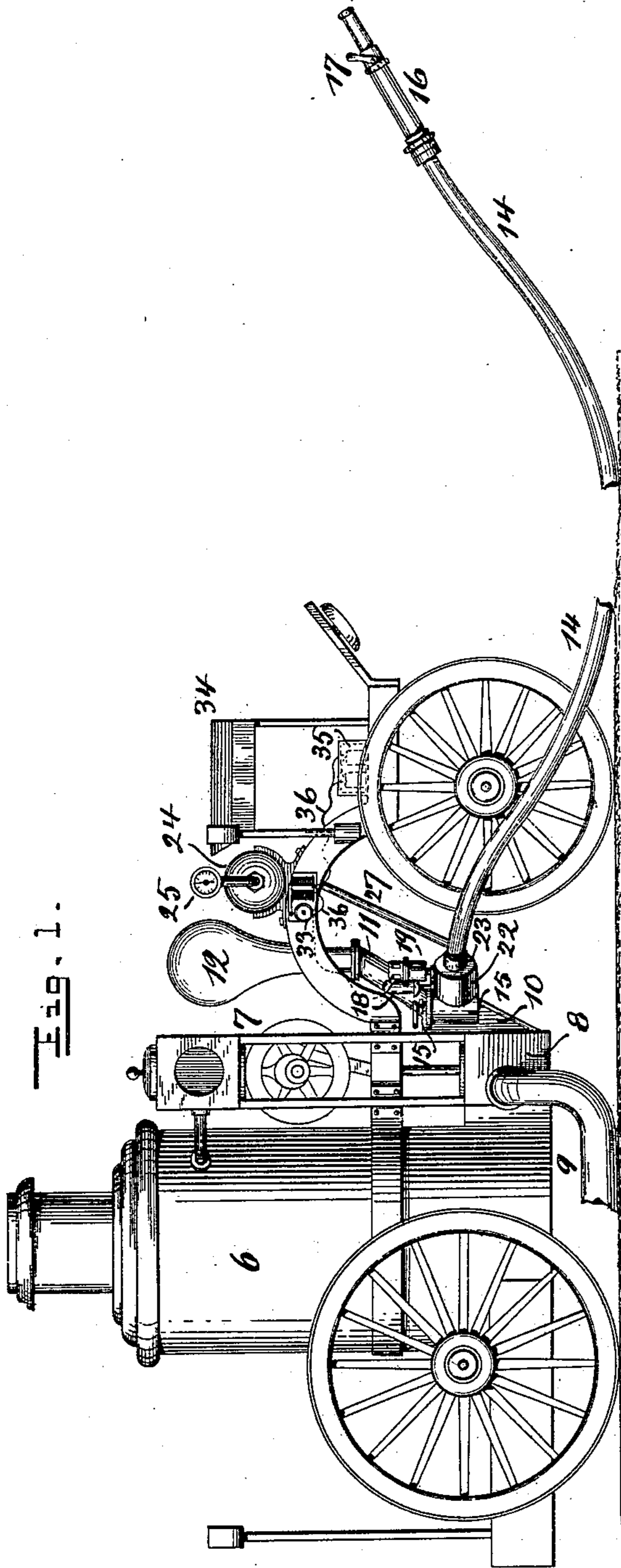


Fig. 1.

Witnesses
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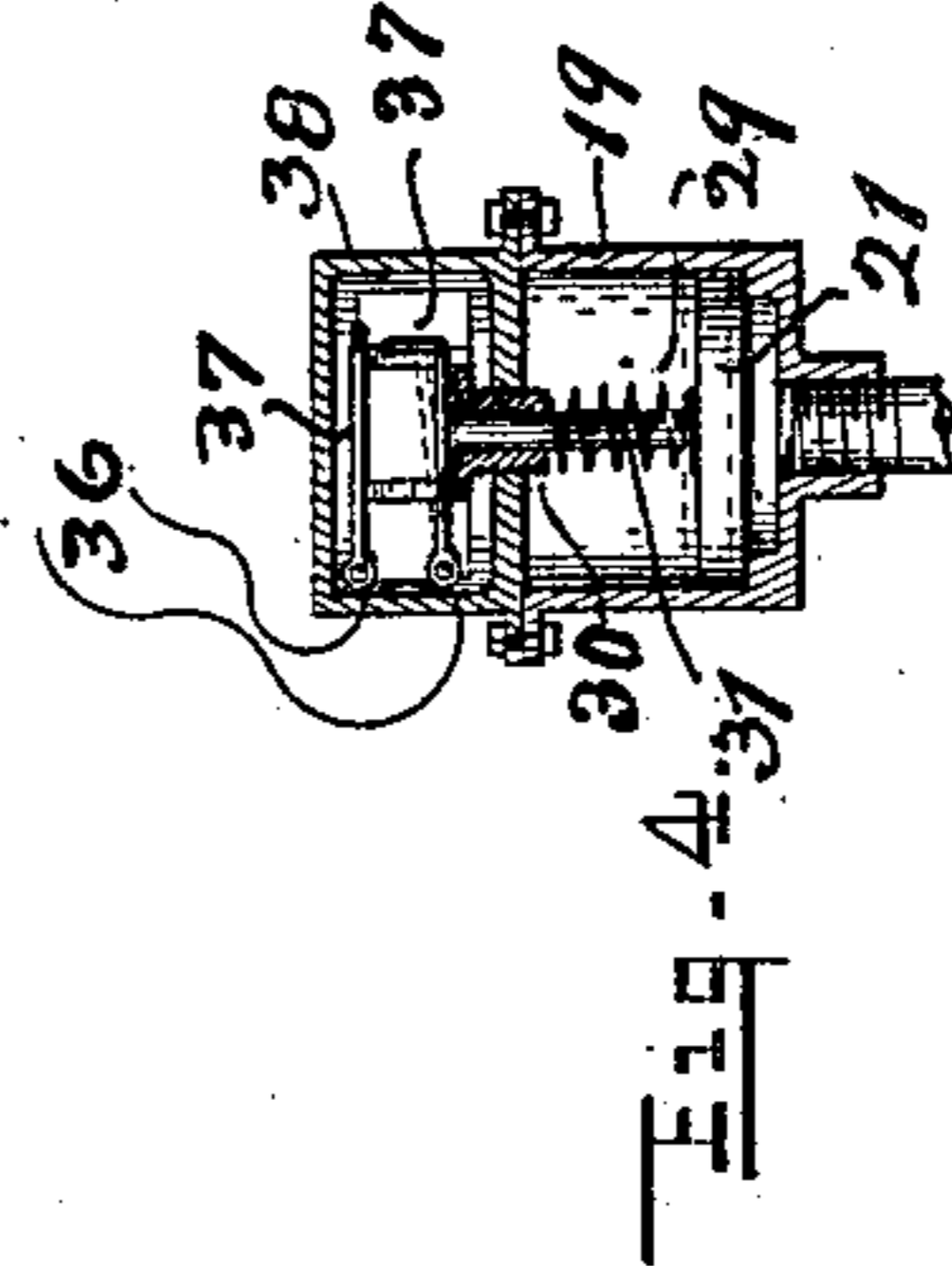


Fig. 4.

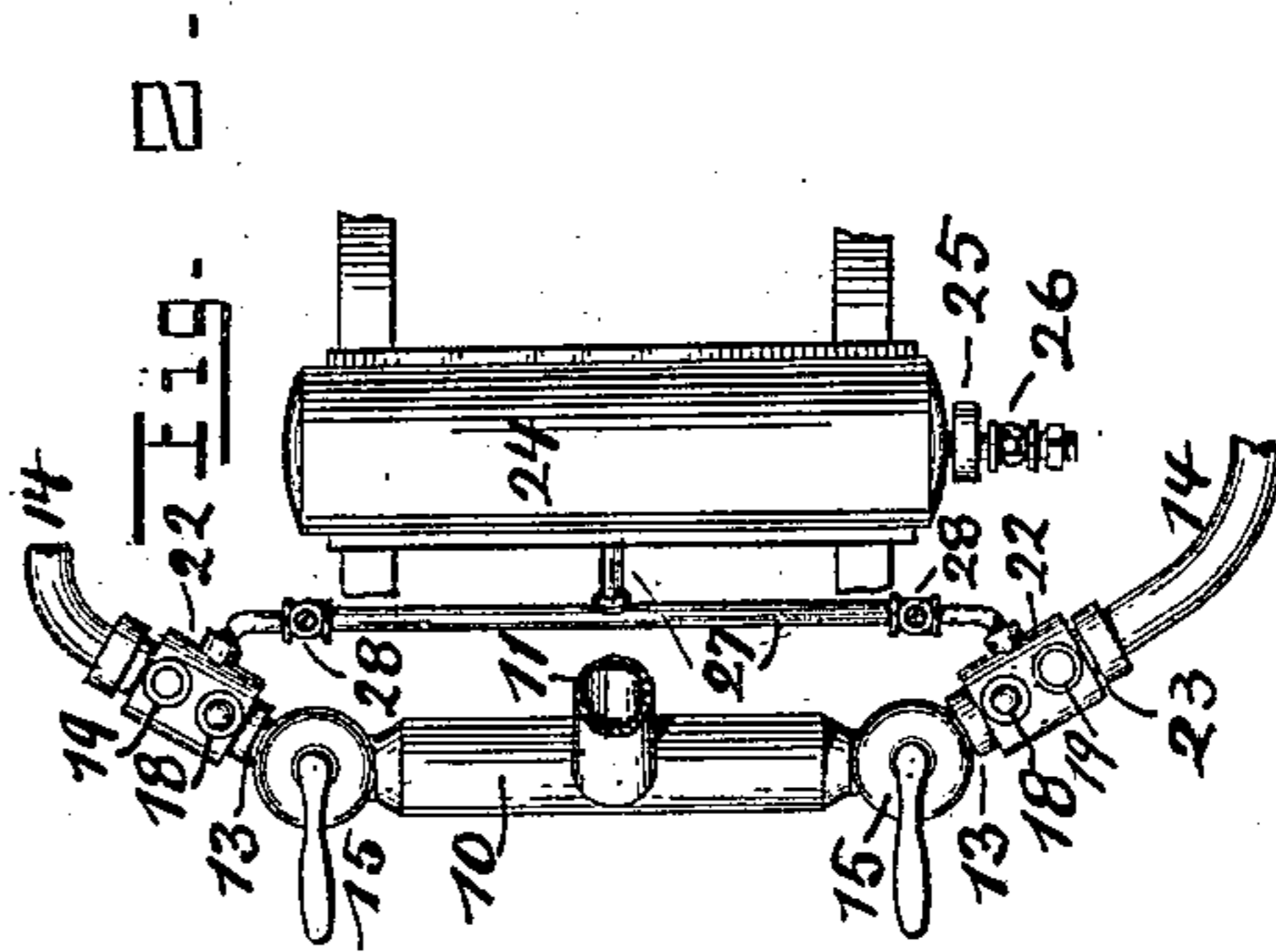
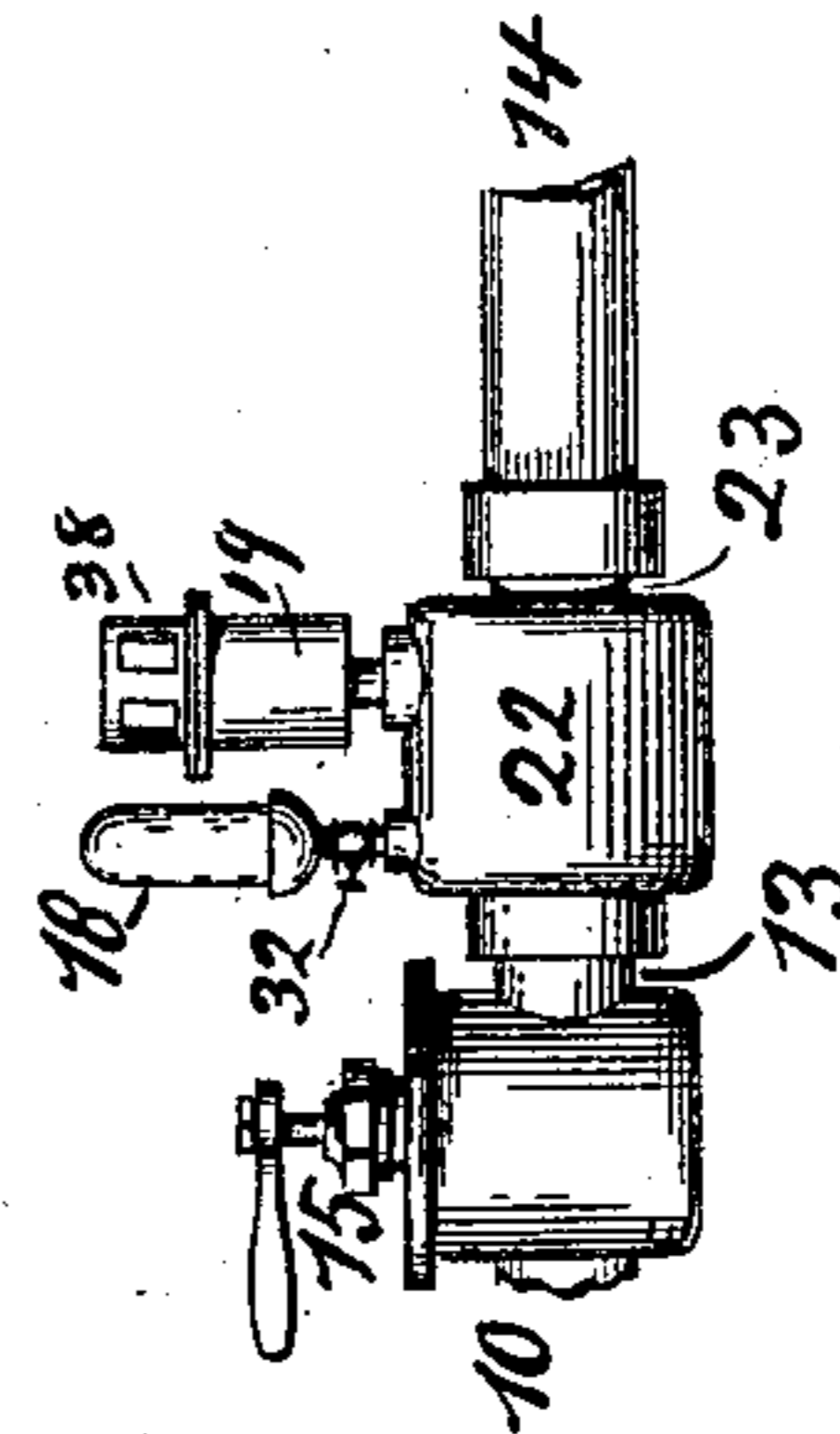


Fig. 2.

Fig. 3.



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SIGNAL INSTALLATION FOR FIRE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 711,718, dated October 21, 1902.

Application filed April 28, 1902. Serial No. 104,974. (No model.)

To all whom it may concern:

Be it known that I, JEROME H. DETERS, a citizen of the United States, residing in the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and useful Signal Installation for Fire-Engines; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawings, with the reference-numerals marked thereon, which form also a part of this specification.

This invention relates to a signaling attachment for use in connection with fire-engines which comprise in general a pumping outfit operated by a suitable motor, usually a steam-engine, a hose for conveying the water, and a nozzle to direct its discharge. The motor and pump are usually managed by an engineer, who also controls the supply to the hose and nozzle, which latter is manipulated by the so-called "pipeman." These two are frequently out of sight of each other, owing to smoke, darkness, or intervening distance, and necessary communication between them becomes for these reasons more or less difficult and at best, as now managed, is slow and insufficient for the purpose. The failure of prompt transmission of orders between the two, particularly of the wants of the pipeman, who for his water-supply is dependent on the engineer, leads often to unnecessary and otherwise avoidable damage. This latter may be caused, for instance, by failure of the engineer to promptly reduce a stream too heavy or to instantly cut it off altogether when no longer required or by delay to furnish the water immediately and at the proper moment when needed.

The object of my invention is therefore to enable the man at the nozzle, who is the best judge for requirements by reason of being at the point of action, to convey to the engineer at the distant pump his need for water according to the varying conditions of the fire or other circumstances controlling.

The invention consists of the means provided for this purpose and as shown and hereinafter described and whereby the desired object is carried out.

In the following specification and particu-

larly pointed out in the claims is found a full description of the invention, together with its operation, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 shows in side view a steam fire-engine of customary type supposed to be in action and provided with the devices whereby my invention is carried out. Fig. 2 is a top view of these devices and of certain adjacent parts of the fire-engine. Fig. 3 is an enlarged side view of certain devices of my invention. Fig. 4 is a sectional detail view, still further enlarged, of one of these devices.

In Fig. 1, 6 indicates the usual upright boiler; 7, the steam-engine in general outline; 8, the suction-chamber with pump-barrels within; 9, the suction-hose leading to a cistern or fire-plug; 10, the discharge-chamber; 11, the neck connecting the same with air-chamber 12.

13 represents the outlet-nipples, to which ordinarily one end of hose 14 is attached.

15 represents engineer's valves, controlling supply of water to the hose.

16 is the discharge-nozzle, and 17 a cock or valve in this nozzle.

Connected anywhere so as to be in open communication with the hose and beyond control of valve 15 there is a whistle 18, suitably constructed so as to be capable of being sounded by air if such passes through it in sufficient volume and pressure. Connected in a similar manner there is also a closed housing 19, into which is fitted a diaphragm or piston 21. In practice these two members are preferably connected to housings 22, one attached to each outlet-nipple 13, each of which housings is provided at its outer end with a hose-attaching nipple 23.

24 is a tank capable of containing air under pressure, which latter is indicated by a gage 25 and which air is charged into the tank through a valve-controlled nipple 26. This tank communicates with housings 22 on each side by pipes 27, which communication is controlled by cocks 28, one for each housing.

Piston 21 within cylinder 19 is kept normally seated by a spring 29, bearing against it and a shoulder, and the pressure of which spring is adjustable by adjusting the dis-

tance between these two spring-abutments. For such purpose the shoulder mentioned forms, preferably, a part of a nut 30, seated in the top of cylinder 19. There is also a
 5 stem 31 connected to piston 21, so as to share in the movements thereof, and the upper end of which passes loosely through the top of the cylinder. This stem may also be used as a means to hold spring 29 in position, as shown,
 10 for which purpose it passes through nut 30.

With the parts as now described the device operates as follows: At the beginning after the engine is in position and with hose and suction connections made hose and pipe men
 15 advance with the empty hose to the seat of fire. Cock 17 in the nozzle is closed at this time. Meanwhile the engineer opens one or both of valves 28, (if two hose-lines are in use,) thus permitting the compressed air
 20 from tank 24 to fill the hose-lines, from which it escapes through whistles 18, causing them to sound. This escape is of course quite restricted by limitation of the size of the whistle-outlet and merely sufficient to
 25 sound the whistle loud enough to be heard by the engineer while close to the engine. Operation of the whistles for a length of time sufficient for all intended purposes—that is, until the pipeman is ready for action—is
 30 thereby fully assured. Meanwhile the engineer has made ready to give water to the pipeman as soon as the latter is ready for it and signifies his requirement to such effect. This he does by opening the nozzle-cock 17,
 35 permitting thereby all at once a more extensive escape of air, whereby the volume of air passing through the whistle is instantly reduced, so as to be insufficient to further sound the same. This sudden cessation of the sound
 40 is notice to the distant engineer that water is now wanted, and accordingly he turns on the supply by opening valve 15. At the same time or preceding this action he shuts cocks 28 again to prevent any water from backing
 45 into tank 24. He may at the same time close whistle 18 to prevent water from squirting therethrough, using for such purpose a cock 32. During the further progress of operations if the pipeman wants the water turned off or
 50 on or less or more of it he signals his requirements to the engineer by using the water-pressure in the hose for such purpose and which pressure he raises for one or more moments by rapidly closing and opening cock
 55 17, the closed position being in each case maintained a sufficient length of time, which may be a second, more or less, to cause the suddenly-created back pressure to lift piston 21. In this manner he sends back a number
 60 of impulses conveyed by the water in the hose, causing corresponding vibrations of piston 21. This action of the piston and stem 31, connected thereto, I utilize to operate a suitable signal to be perceived by preference
 65 audibly—like, for instance, a bell-signal would be. As a means to operate this bell-signal I prefer to use electricity, for which

purpose I provide a signal on the style of the ordinary and well-known electric call-bell, as shown at 33, which may be attached in any
 70 suitable position, as under the driver's seat 34 or to the frame of the engine. The battery 35 may be placed under the seat. The necessary wires 36 are readily conveyed to the upper part of cylinder 19, where they are con-
 75 nected each to one of each of two contact-pieces 37. The impulses sent back by the pipeman through the momentarily-created back pressure of the water are conveyed electrically to the bell-signal every time stem 31 closes
 80 the electrical circuit by pushing the lower contact-piece against the upper one. A suitable signal-code may of course be readily arranged whereby the number of impulses, which may be one or two, three, or more, conveyed at a
 85 time in rapid succession, have each a certain meaning. The adjustment provided for the water-pressure-resisting spring by means of nut 30 makes it possible to also set the
 90 device to suit different water-pressures to be used, so that the signal does not operate until a certain predetermined pressure is created. Nut 30 is rendered accessible for such pur-
 95 pose by having it, as well as contact-pieces 37, inclosed in a cage 38, through the open sides of which nut 30 may be reached.

The various parts of this signal installation are of course in each case located, devised, and attached to suit the particular type of engine for which they are intended. By using
 100 a housing 22, which carries whistle 18 and cylinder 19, all these parts may be readily attached and fitted to existing engines. It may, however, be also omitted, and these parts might be directly attached to nipple 13, the
 105 length of which is accordingly increased.

Having described my invention, I claim as new—

1. In a signal installation for fire-engines, the combination with the attached hose-line
 110 and valve-controlled discharge-nozzle, of an air-whistle and tank for compressed air, all in open communication with each other so that the air from the tank mentioned may escape either through the air-whistle or through the
 115 discharge-nozzle.

2. In a signal installation for fire-engines, the combination with the attached hose-line and valve-controlled discharge-nozzle, of a
 120 cylinder in open communication therewith, a piston held therein to a normal position and against a certain water-pressure by a spring, a signal device carried by the engine and means for operating this signal when actuated by the piston while the same is caused to move
 125 by reason of increase in water-pressure due to manipulation of the valve in the discharge-nozzle.

3. In a signal installation for fire-engines, the combination with the attached hose-line
 130 and valve-controlled discharge-nozzle, of an air-whistle, a tank for compressed air and a pressure-cylinder, all in open communication with the hose-line, a piston held in this pres-

sure-cylinder to a normal position and against a certain water-pressure by a spring, a signal device carried by the engine and means for operating this signal when actuated by the piston while the same is caused to move by reason of increase in water-pressure due to manipulation of the valve in the discharge-nozzle.

4. In a signal installation for fire-engines, the combination with the attached hose-line and valve-controlled discharge-nozzle, of a cylinder in open communication therewith, a piston held therein to a normal position and against a certain water-pressure by a spring, an electrical bell-signal and electrical appurtenances carried by the engine, normally open contact-pieces in circuit with this electrical outfit and a projection on this piston adapted to close these contact-pieces to operate the bell-signal when the piston is caused to move by reason of increase in valve-pressure due to manipulation of the valve in the discharge-nozzle.

5. In a signal installation for fire-engines, the combination with the discharge-nipple of the pump, of a housing adapted to be attached thereto and having a hose-attaching nipple, an air-whistle carried on this housing and a tank for compressed air in communication therewith.

6. In a signal installation for fire-engines, the combination with the discharge-nipple of the pump, of a housing adapted to be attached thereto and having a hose-attaching nipple, a pressure-cylinder mounted on this housing, a piston held therein to a normal position by a spring, a signal device carried by the engine and means intermediate this device and the piston and adapted to operate the former when this latter moves out of its normal position.

7. In a signal installation for fire-engines, the combination with the discharge-nipple of the pump, of a housing adapted to be attached thereto and having a hose-attaching nipple, a tank for compressed air in open communication therewith, an air-whistle and a cylinder both mounted on this housing, a piston within the cylinder and held therein to a normal position by a spring, a signal device carried by the engine and means intermediate this device and the piston and adapted to operate the former when this latter moves out of its normal position.

In testimony whereof I hereunto set my signature in the presence of two witnesses.

JEROME H. DETERS.

Witnesses:

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ARTHUR KLINE.