

(No Model.)

2 Sheets—Sheet 1.

J. M. HENRY & R. B. WILSON.
TRAIN SIGNALING APPARATUS.

No. 482,126.

Patented Sept. 6, 1892.

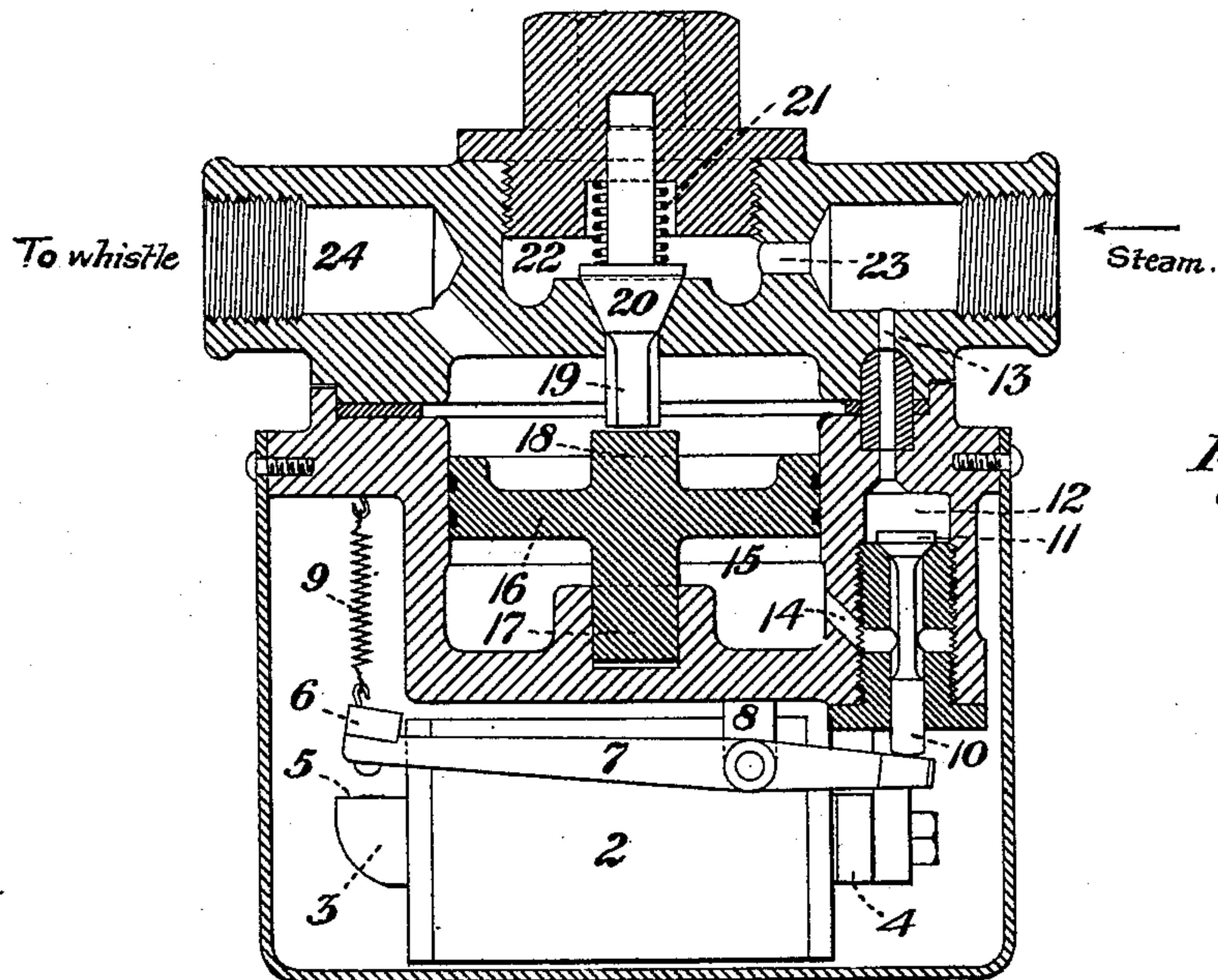


Fig. 1.

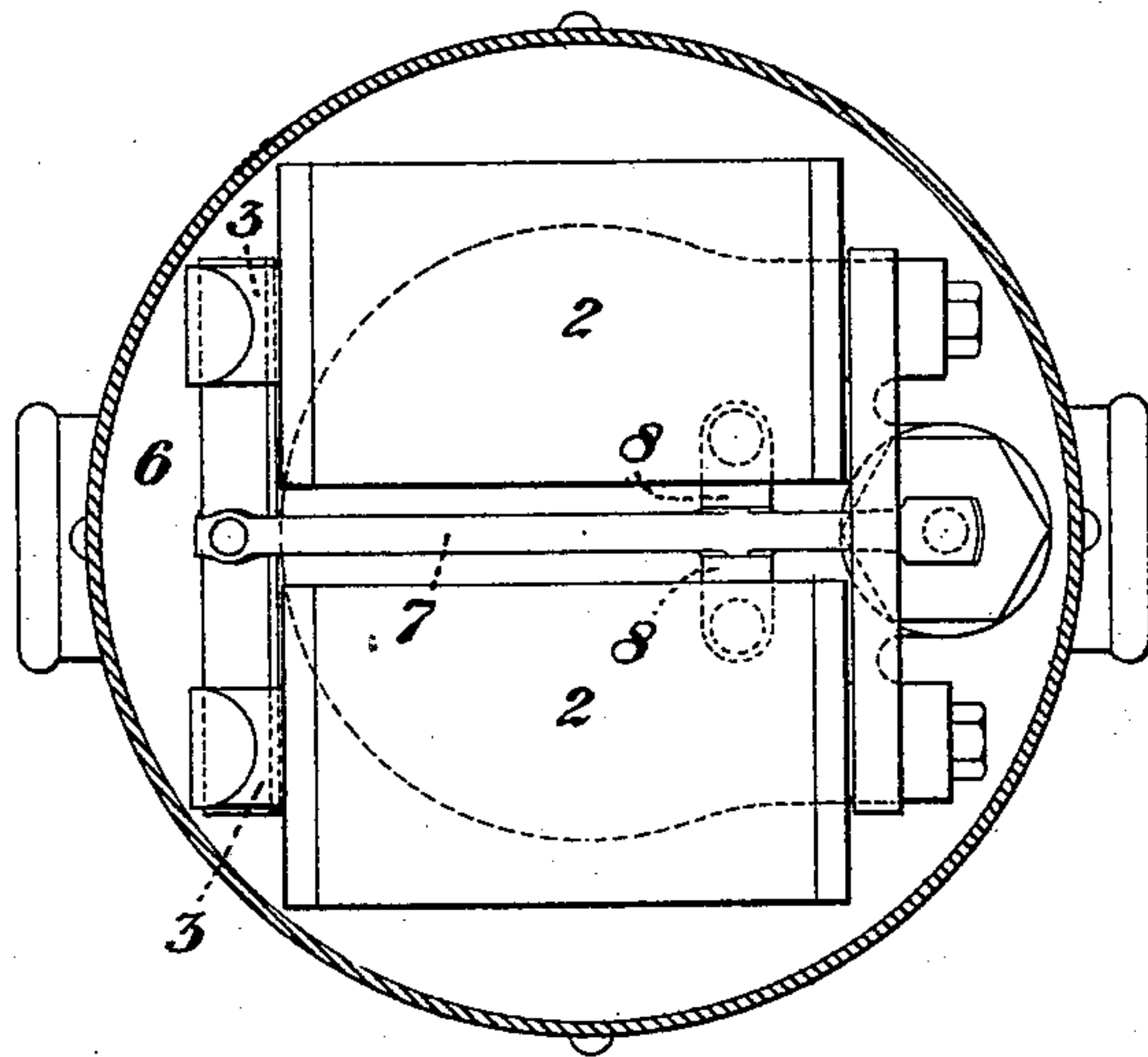


Fig. 2.

WITNESSES

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their attorneys

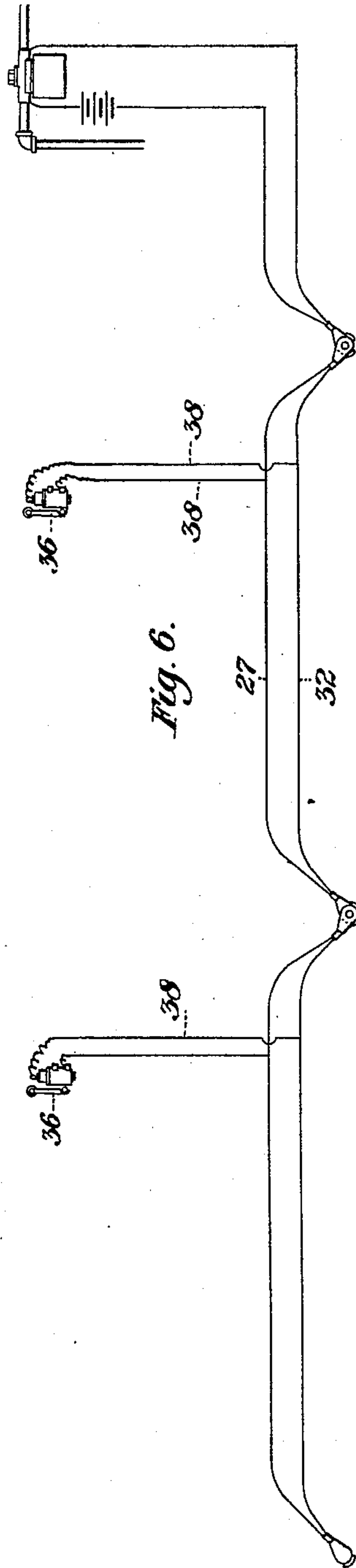
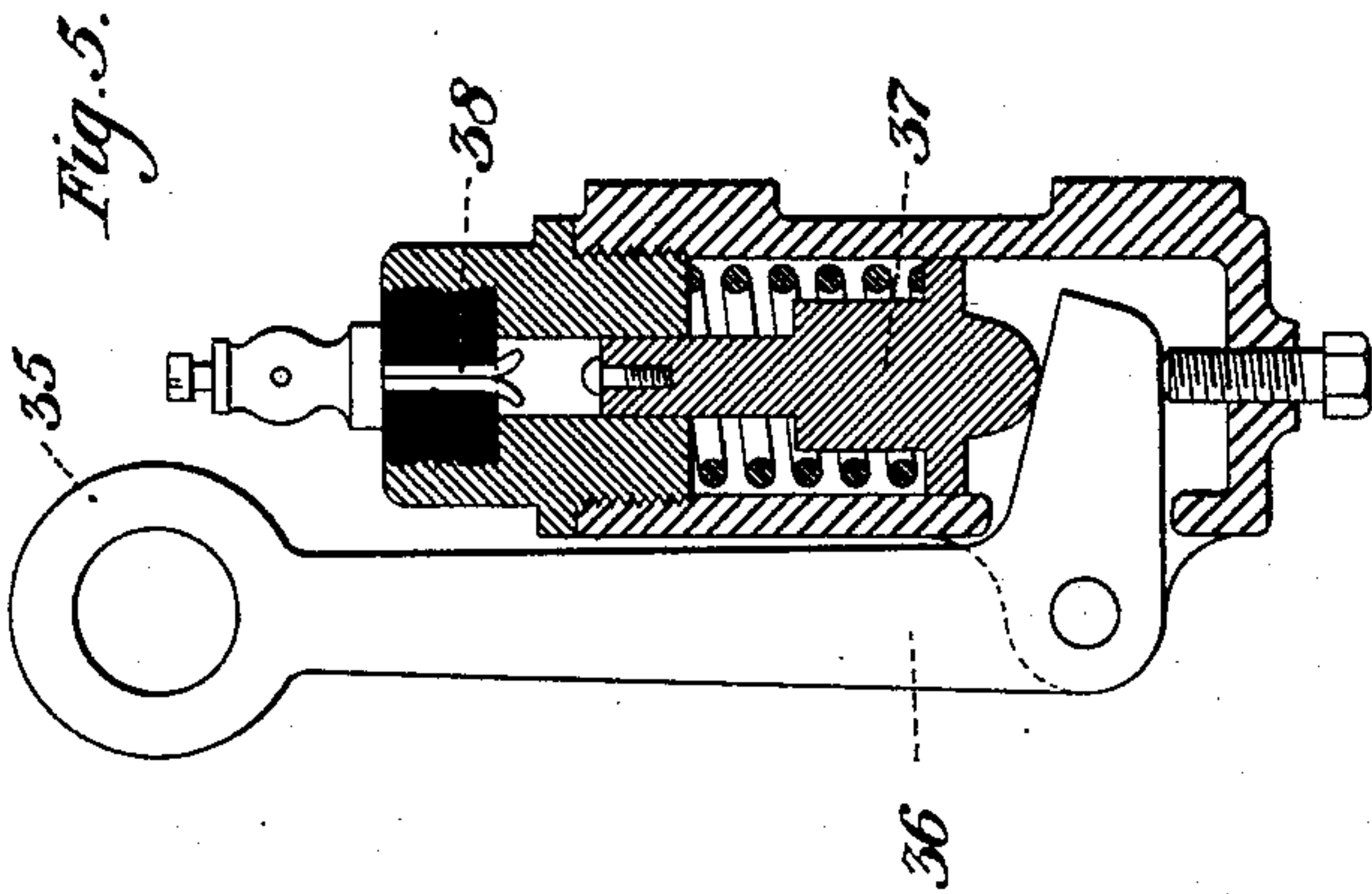
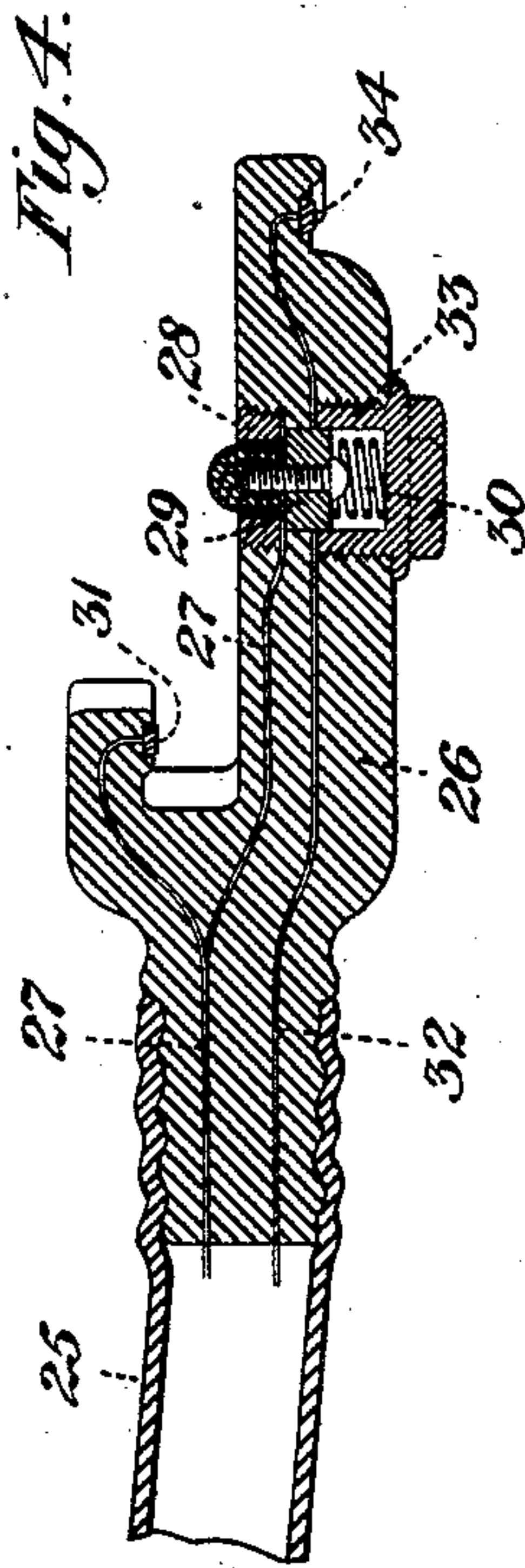
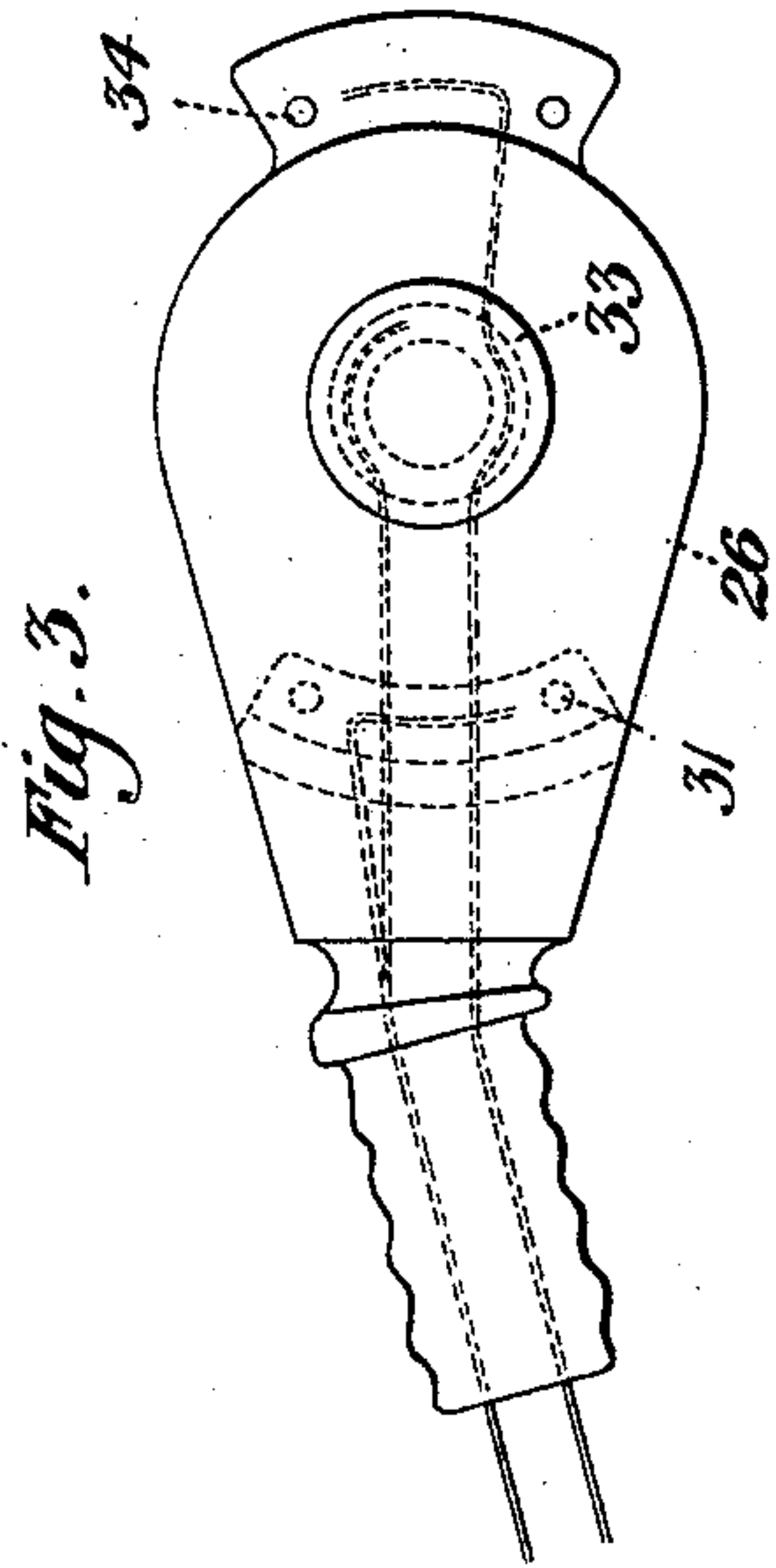
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2 Sheets—Sheet 2.

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TRAIN SIGNALING APPARATUS.

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WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES M. HENRY, OF WILMERDING, AND ROBERT B. WILSON, OF ALTOONA,
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TRAIN SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 482,126, dated September 6, 1892.

Application filed December 23, 1891. Serial No. 415,949. (No model.)

To all whom it may concern:

Be it known that we, JAMES M. HENRY, of Wilmerding, Allegheny county, and ROBERT B. WILSON, of Altoona, in the county of Blair, State of Pennsylvania, have invented a new and useful Improvement in Train Signaling Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming
10 part of this specification, in which—

Figure 1 is a longitudinal sectional view of the operative parts of the signal. Fig. 2 is an end view of the same. Figs. 3 and 4 are top plan and longitudinal sectional views, respectively, of the electrical coupling. Fig. 5 is a sectional view of the circuit-closer, and Fig. 6 is a diagram view showing the train connections.

Like symbols of reference indicate like parts
20 in each of the figures.

Our invention relates to that class of signals which are employed upon moving trains for enabling the conductor to signal to the engineer from any part of the train; and it
25 consists in an improved combination whereby the agencies of electricity and compressed air or steam are utilized to produce a cheap, simple, and highly-efficient signal.

In the accompanying drawings, Figs. 1 and
30 2, 2 2 are two electro-magnets having the usual core-pieces 3 3, which at their lower ends are supported upon the cross-piece 4 and at their upper ends are provided with flat faces 5 5, adapted to be contacted with by the armature 6, which is fastened to the pivoted
35 lever 7. This lever is pivoted between the two electro-magnets to the arms 8 and is normally held by a spring 9 in such position that the armature is out of contact with the core-pieces 3. In contact with the lower end of
40 the lever is the protruding stem 10 of a valve 11, which moves in the recess 12. Into this recess leads the part 13, and from around the valve-stem 10, which is grooved to allow the
45 passage of the compressed air or steam, leads the exit-port 14 into the cylinder 15. The piston 16, which moves in this cylinder, is provided with a guiding-stem 17 and on the opposite side with a boss 18, arranged to lift the
50 stem 19 of a valve 20, which is pressed into closed position by a spring 21. The valve 20

moves in a valve-chamber 22, into which leads the port 23, and from one side of the cylinder 15 leads the port 24 to the whistle or other signal to be operated.

The action of this portion of the system is
55 as follows: A contact being made which completes the circuit through the electro-magnets, the armature is drawn to the faces 5 and the lower end of the lever 7 pushes open the valve
60 11, upon which action the motive fluid passes through the port 14 into the cylinder 15 and by the piston 16 opens the valve 20. The motive fluid then passes through the port 23 into contact with the opposite face of the piston
65 16 and through the port 24 to the whistle, and operates the same. The pressure on the side of the piston 16 which is toward the valve 20 being, however, slightly in excess of
70 that upon the opposite side on account of its larger area, this piston 16 is depressed. As soon as it is depressed the spring pushes the valve 20 to its seat and the fluid passing through the port 14 repeats the operation, causing a series of short interrupted sounds
75 upon the signal. It is evident that by making the area of the two faces of the piston 16 exactly equal it may be maintained in equilibrium as long as the current is closed, thus giving a continuous sound upon the signal. 80

Referring to Figs. 3 and 4, which show the electrical coupling employed between the cars, 25 represents the flexible hose through which the wires pass from each car to the coupling proper 26, which coupling, as shown, is made
85 in the form of the ordinary air-brake coupling and is composed of vulcanized fiber or some similar non-conductor. The wire 27 separates into two branches within this coupling, one branch of the wire passing to the
90 annular ring 28, through which passes the movable button 29, which is normally held in its uppermost position by a spring 30. The other branch leads to a contact-piece 31, with which a similar piece upon the other half of
95 the coupling contacts when the cars are coupled together. The other wire 32 passes in contact with a second annular ring 33, within which the button 29, having a non-conducting top portion 29', moves and passes
100 thence to the contact-piece 34. As the rings 28 and 33 and the button 29 are of conduct-

ing material, it is evident that the circuit is completed through this half-coupling by the rings and button. When, however, the next car is coupled thereto, the buttons upon the two halves push each other back out of contact with the rings 28 and the circuit is then completed through the contact-pieces 31 and 34.

In each car is located the transmitter of Fig. 5, to which the branch wires lead from the main circuit, and when the cord passing through the ring 35 is pulled it, through the bell-crank lever 36, moves the plunger 37 against the contact-piece 38 and completes the circuit.

The system of wiring is shown in Fig. 6, branch wires 38 running to the circuit-closer in each car, while the button to operate the signal is located in the locomotive. When the train is made up, a blank coupling may be inserted in the coupling at the end of the last car to break the circuit, and it is evident that if through any accident the train becomes parted the button 29 upon the last car being released moves upward and completes the circuit and operates the signal, thus giving warning of the separating of the train. Moreover, in coupling up a train the alarm sounds until each car is coupled, when it ceases, thus showing the engineer that the car is coupled. As the circuit is normally broken, there is not a constant drain upon the battery, as in systems wherein the circuit is normally closed.

It is obvious that many variations may be made in the form and arrangement of the parts without departure from our invention, which we regard as lying broadly in a signal system wherein the circuit is normally broken.

The advantages of our construction are evident. The entire system is simple and not liable to get out of order and does away with

the present costly and cumbersome pneumatic-signal system.

What we claim is—

1. A sounder having an admission-port leading thereto, a main valve controlling said port, a piston bearing against the main-valve stem, a branch passage leading to said piston, a valve controlling said passage, and an electrically-operated lever bearing upon the valve in the branch passage, substantially as and for the purposes described.

2. A sounder having an admission-port leading thereto, a main valve controlling said port, a piston working loosely in a cylinder and bearing against the main-valve stem, a branch port leading to one side of the piston, a secondary valve controlling the branch passage, a lever bearing upon the secondary valve, an electro-magnet, and an armature carried upon the lever, substantially as and for the purposes described.

3. An electric coupling comprising two similar halves having interlocking lugs, each half having two contact-buttons to which the wires of the circuit lead, a hollow bushing with which one of the wires contacts, a movable button within the bushing, and a ring to which a branch wire from the other wire leads and arranged to contact with the movable button, substantially as and for the purposes described.

In testimony whereof we have hereunto set our hands this 28th day of November, A. D. 1891.

JAMES M. HENRY.
ROBERT B. WILSON.

Witnesses:

W. B. CORWIN,
H. L. GILL.