

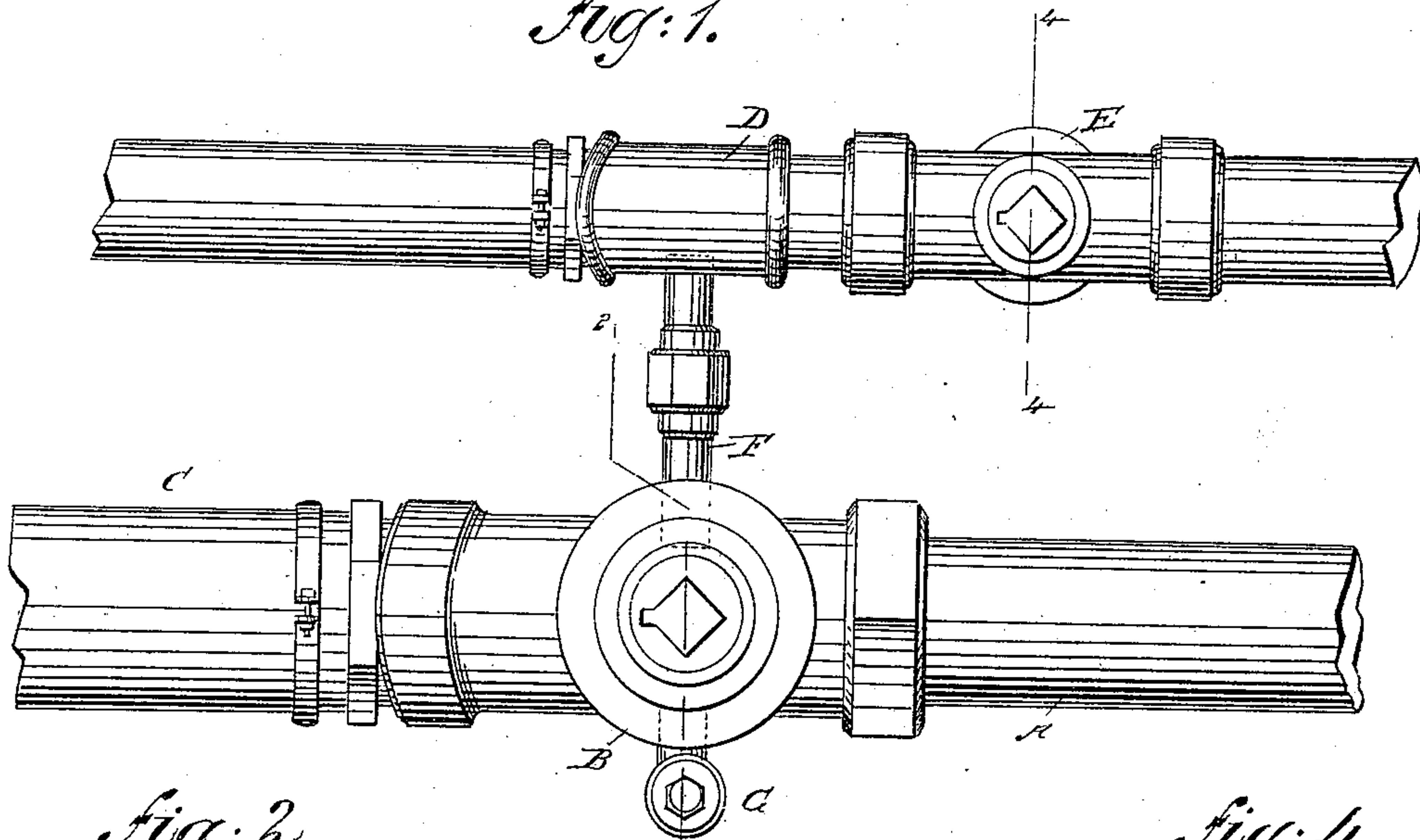
(No Model.)

C. OLESON & J. D. MORRISON.  
SIGNALING APPARATUS.

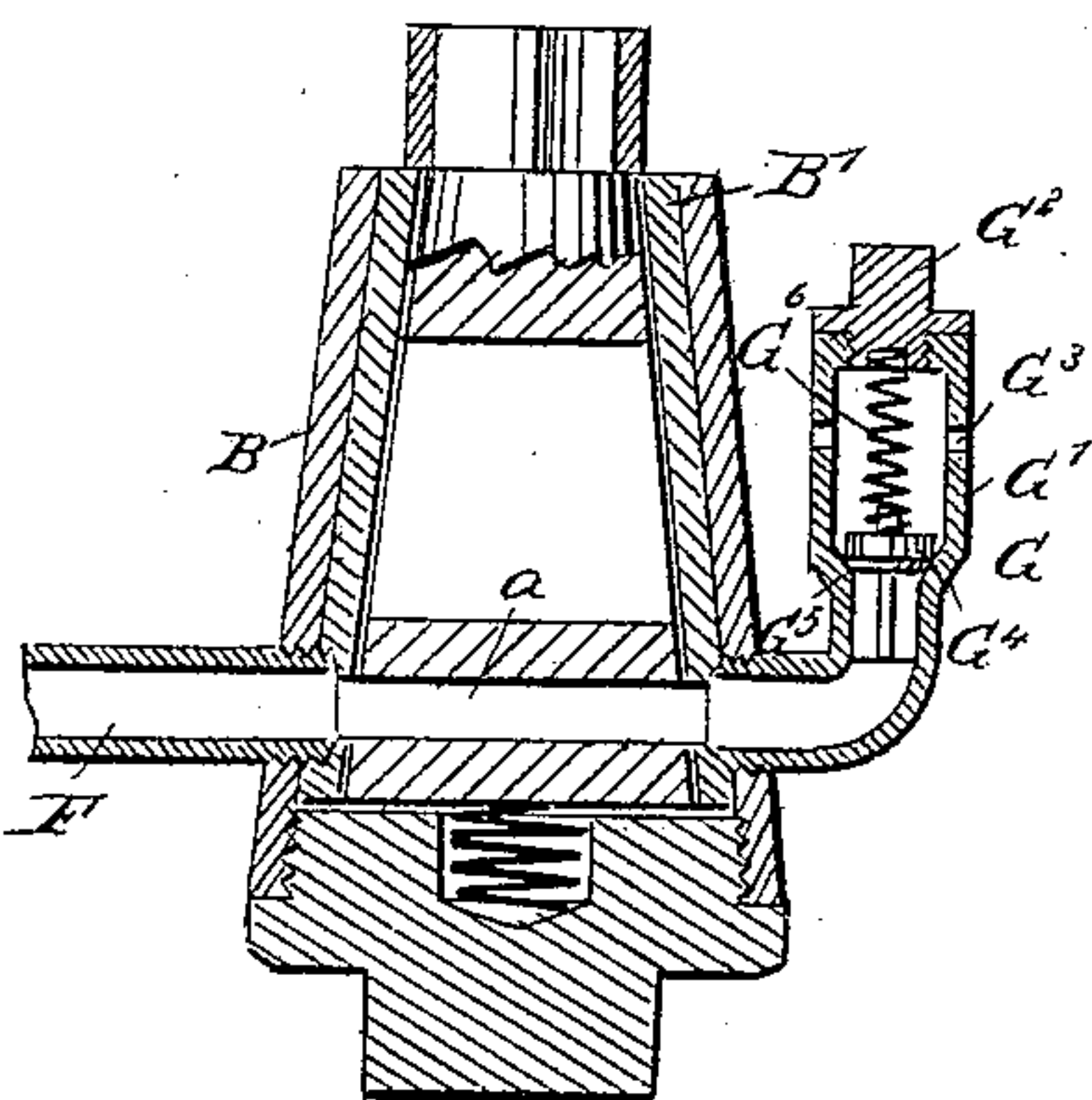
No. 557,421.

Patented Mar. 31, 1896.

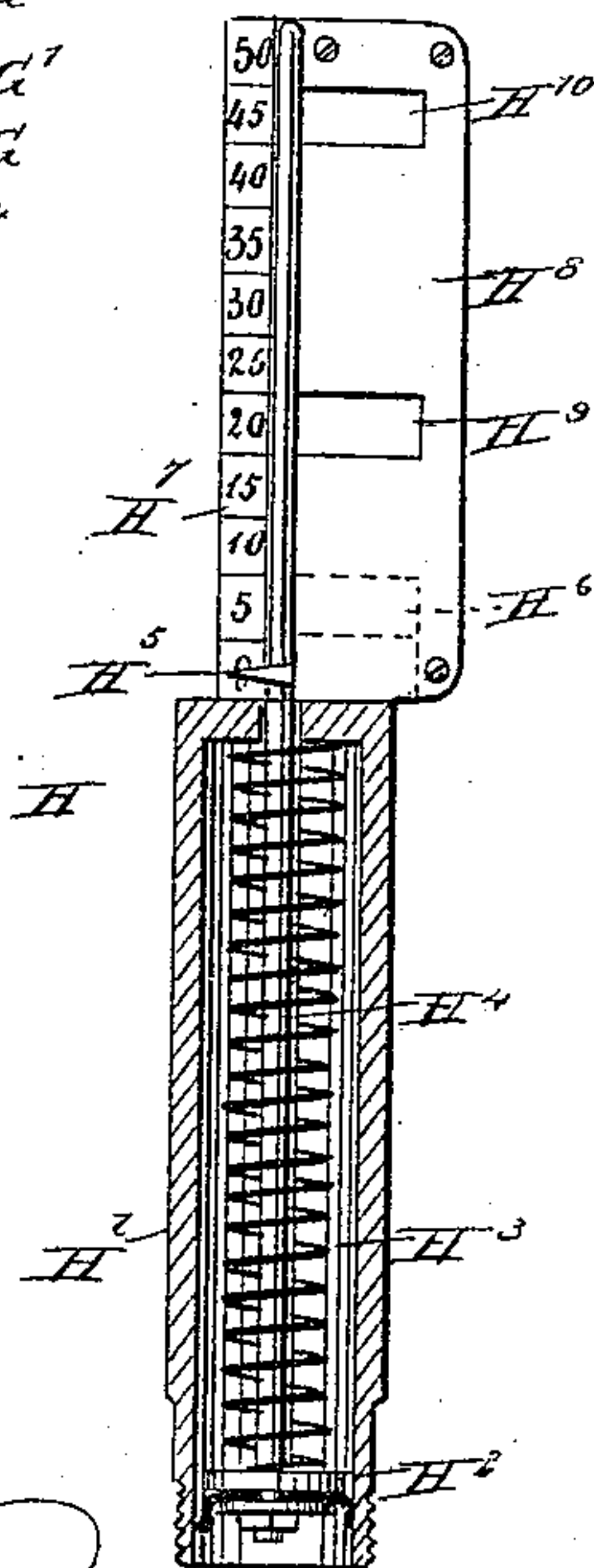
*Fig: 1.*



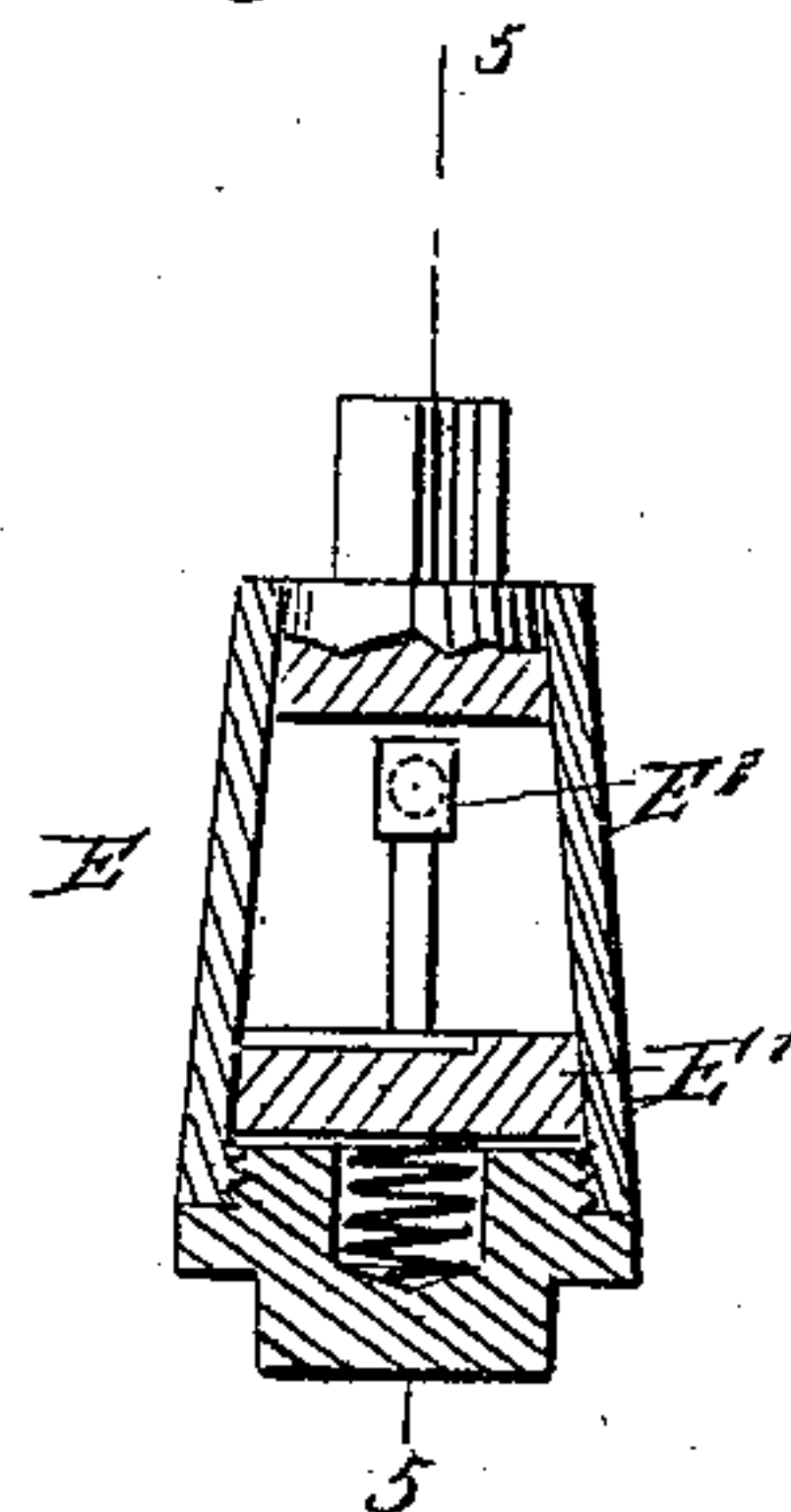
*Fig: 2.*



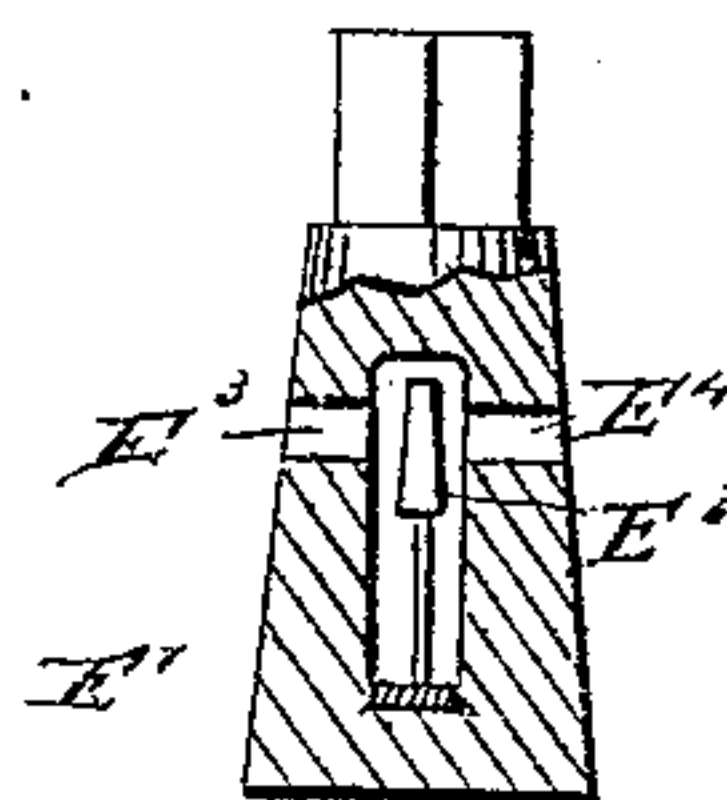
*Fig: 6.*



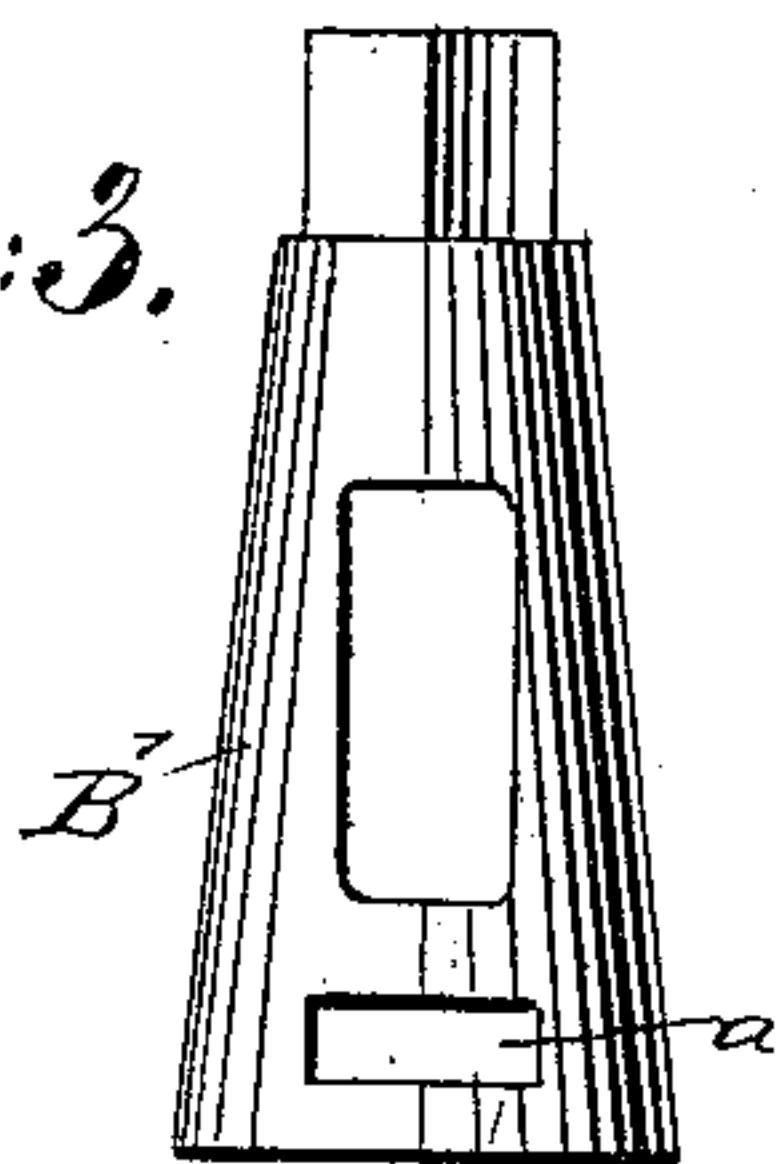
*Fig: 4.*



*Fig: 5.*



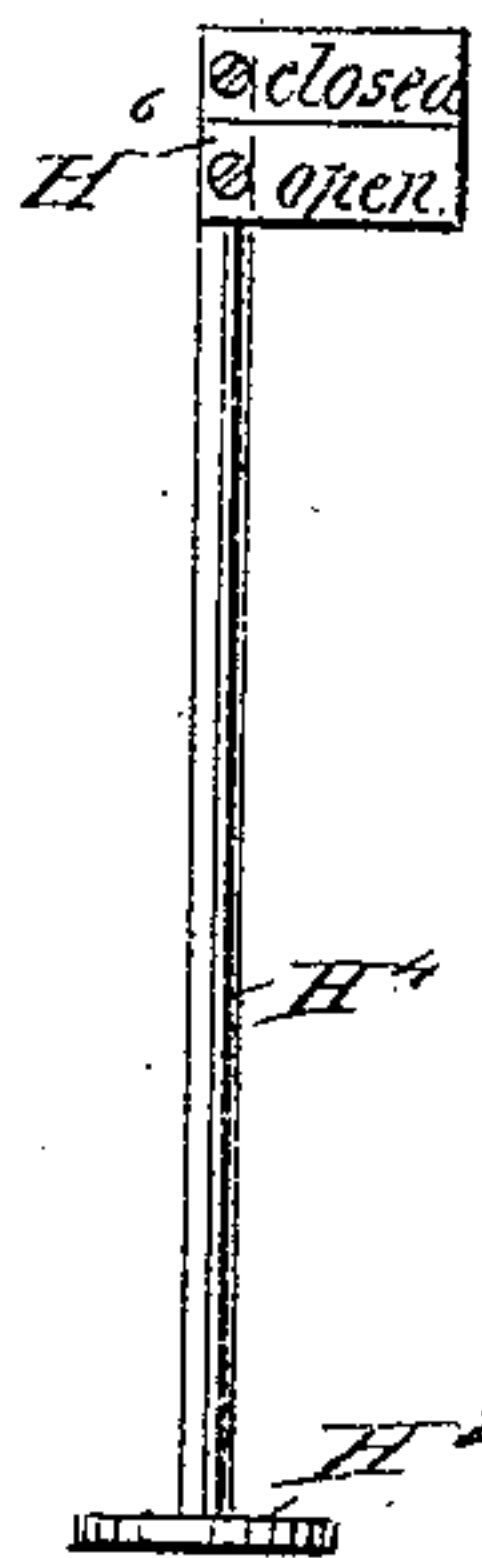
*Fig: 3.*



WITNESSES:

*Chas. Nida*  
*Thos. G. Foster*

*Fig: 7.*



INVENTORS:

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# UNITED STATES PATENT OFFICE.

CHARLES OLESON AND JOHN D. MORRISON, OF ROSEBURG, OREGON.

## SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 557,421, dated March 31, 1896.

Application filed May 1, 1895. Serial No. 547,804. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES OLESON and JOHN D. MORRISON, both of Roseburg, in the county of Douglas and State of Oregon, have invented a new and Improved Signaling Apparatus, of which the following is a full, clear, and exact description.

The invention relates to fluid-pressure brakes; and its object is to provide a new and improved signaling apparatus which is comparatively simple and durable in construction and arranged in connection with an angle-cock, so that in case the latter is closed for any reason whatever an indicator displays the fact in each car, and the whistle in the cab of the locomotive is sounded.

The invention consists, principally, of a signal-pipe charged with a constant pressure below that of the train-pipe, the said signal-pipe being connected with the angle-cock, so that when the plug in the latter is closed connection is made with the signal-pipe and a pop-valve to sound the whistle in the cab of the locomotive and actuate an indicator in each car of the train.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement. Fig. 2 is a cross-section of part of the same on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of the angle-cock. Fig. 4 is a cross-section of the signal-pipe valve on the line 4 4 of Fig. 1. Fig. 5 is a sectional side elevation of the valve-plug of the signal-line valve. Fig. 6 is a sectional side elevation of the indicator, and Fig. 7 is a side elevation of the indicator-sign.

The train-pipe A of each car is provided with an angle-cock B, connected by the usual hose C with the train-pipe of the next adjacent car. The usual signal-pipe D is arranged on each car, alongside the train-pipe A, and is provided with a valve E and connected by a transverse pipe F with the angle-cock B, as shown in Figs. 1 and 2. The valve E is provided in the main way or passage of its plug

E' with a spring-valve E<sup>2</sup>, adapted to close either of the ports E<sup>3</sup> and E<sup>4</sup>. (See Figs. 4 and 5.) The pipe F is adapted to connect with a port a, formed below the usual passage in the plug B' of the angle-cock B, the said port leading to a pop-valve G, supported on the angle-cock B. The pop-valve G is provided with a body G', a cap G<sup>2</sup>, port-holes G<sup>3</sup>, and a valve G<sup>4</sup>, pressed to its seat G<sup>5</sup> by a spring G<sup>6</sup>.

The signal-pipe D leads to the cab of the locomotive and is provided therein with a whistle or other alarm device, and an indicator H, located in each car, is connected with the said pipe D. The indicator H is provided with a casing H' connected at its lower end with the signal-pipe D, and in this casing is fitted to slide a piston H<sup>2</sup> pressed on by a spring H<sup>3</sup>, coiled around the piston rod or stem H<sup>4</sup>. The outer end of the latter is provided with a pointer H<sup>5</sup> and an indicator-sign H<sup>6</sup>, of which the former indicates on the scale H<sup>7</sup>, formed on the board H<sup>8</sup>. The latter is also provided with openings H<sup>9</sup> and H<sup>10</sup> for the display of the legends "Closed" and "Open" marked in the sign H<sup>6</sup>. The pipe D is charged with a fluid under pressure, less than half the pressure usually maintained in the train-pipe A. For instance, the latter is usually charged with seventy pounds, while that of the pipe D is only twenty-five pounds.

The operation is as follows: After the signal-pipe D is once charged to twenty-five pounds' pressure, the closing of the cock E will not prevent a signal being given, as the ports E<sup>3</sup> E<sup>4</sup> (shown in plug in Fig. 5) will then be in communication with the pipe D, and the air-pressure valve E<sup>2</sup> having a resistance of ten pounds will not allow of its closing in making reductions to give signal. While there is ten pounds' pressure in the signal-pipe, the valve E<sup>2</sup> will remain closed on the rear end of the train, as the pressure at this point will be only on one side of the valve, the rear hose being open to the atmosphere. In uncoupling the cars, the cock being closed and the hose parted, the valve E<sup>2</sup> will close instantly and retain the pressure in the signal-pipe D. In order to close the valve E<sup>2</sup> on the rear end of the train when the piping is first being charged with pressure, we place a pipe connection and also a cock in any con-



venient place in the cab of the locomotive, connecting the signal-pipe with the reservoir-pipe. Now the engineer by opening this cock will charge the piping up, instantly closing  
 5 the valve  $E^2$  on the rear end, and the cock can then be closed and the pressure will feed up in the usual way. The pressure from the signal-pipe D will always be over to the train-line cock, as shown in Fig. 1, by the pipe F,  
 10 and while the train-line cock is open to the train-line the opening over the pop-valve G is closed; but on the cock being turned to cut-out position, or nearly so, the port or passage-way  $a$  makes direct connection from  
 15 piping F to pop-valve G, raising the valve  $G^5$  off its seat and allowing air to flow through the port  $G^3$  to the atmosphere, thus reducing the pressure throughout the signal-line of pipe to twenty pounds, causing the whistle  
 20 to sound in the cab of the engine, thus giving notice of the cock being closed. The spring  $G^6$  on the pop-valve  $G^4$  has a resistance of twenty pounds and will not reduce the pressure below that point, but said pop-  
 25 valve will keep reducing at intervals as the pressure feeds up in the piping, thus causing the whistle to sound at intervals until the train-line cock is opened. There is no pressure from the signal-line to the train-line cock  
 30 on the rear end of the train, as the pipe connection F is outside of the signal-line cock—that is, between the cock and the hose.

The indicator, as shown in Figs. 6 and 7, will be used on passenger cars or engines where  
 35 ever desired, and on freight-trains it will only be necessary to have one on the engine and caboose. It will be screwed into the signal-pipe, and pressure will come under the piston  $H^2$ , causing it to rise and compress the spring  
 40  $H^3$ . The indicator or pointer  $H^5$  will indicate the pressure on the graduation  $H^7$ , and the sign  $H^6$  will come to the opening  $H^9$  on the face of the indicator and will show "Closed" or "Open," indicating position of the train-  
 45 line cock. The top opening  $H^{10}$  on the face of the indicator-board  $H^8$  will only be used in case fifty pounds' pressure is carried instead of twenty-five pounds. The valve and ports in the signal-line cock can be put in cocks  
 50 now in use, as can also our improvement on the train-line cock, by tapping into the casing on each side and drilling a passage-way through the plug.

Having thus described our invention, we claim as new and desire to secure by Letters 55 Patent—

1. In combination with a train-pipe, a signal-pipe charged with a constant pressure, a four-way cock in said signal-pipe, a spring-valve in the main way of the cock-plug and  
 60 designed to be moved laterally by pressure to close the way opposite to that of the pressure, a connection between the signal-pipe and train-pipe, and a four-way cock in the train-pipe, one of the ports thereof being adapted  
 65 to register with said connection and with a pop-valve when the plug is turned to close the pipe, substantially as specified.

2. In combination with a train-pipe, a signal-pipe, a four-way cock in said signal-pipe,  
 70 a spring-valve in said cock for automatically closing one of said ways at the side opposite that receiving pressure, a connection between the train-pipe and signal-pipe, a four-way cock controlling said connection and train-  
 75 pipe, and a reduction or pop valve controlled by said four-way cock, substantially as specified.

3. A signal apparatus provided with a signal-pipe charged with a constant pressure  
 80 and connected with the angle-cock of a train-pipe, so that when the plug in the latter is closed, connection is made with the signal-pipe to sound an alarm in the locomotive, and an indicator having connection with said  
 85 pipe and comprising a spring-pressed piston, a scale-marked board having openings, a pointer carried by the piston for indicating on the scale the pressure in the signal-pipe and a sign carried by the piston for indicating when  
 90 disclosed at the openings in the scale-board the position of the cock in the train-pipe, substantially as specified.

4. A valve for a pipe for containing a fluid under pressure, comprising a plug having a  
 95 main port and lateral ports communicating with the main port, and a spring-yielding valve wholly within the main port of the plug for closing either of said lateral ports at the side opposite to that receiving pressure, sub-  
 100 stantially as specified.

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 JOHN D. MORRISON.

Witnesses:

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 C. A. SEHLBREDE.