

W. BERNERD.
ANGLE COCK FOR AIR BRAKE SYSTEMS.
APPLICATION FILED MAR. 2, 1908.

904,502.

Patented Nov. 24, 1908.

2 SHEETS—SHEET 1.

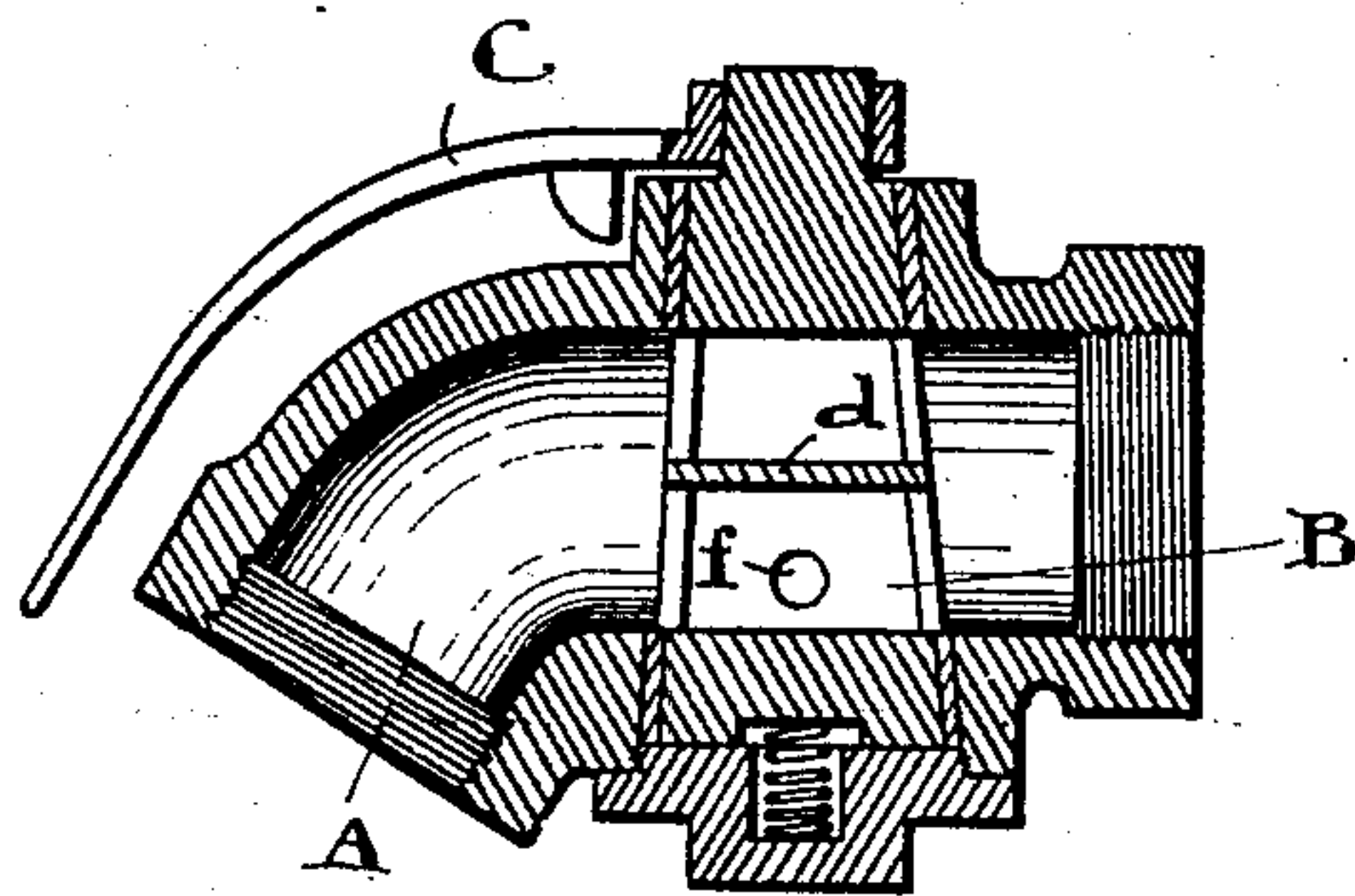


FIG. 1.

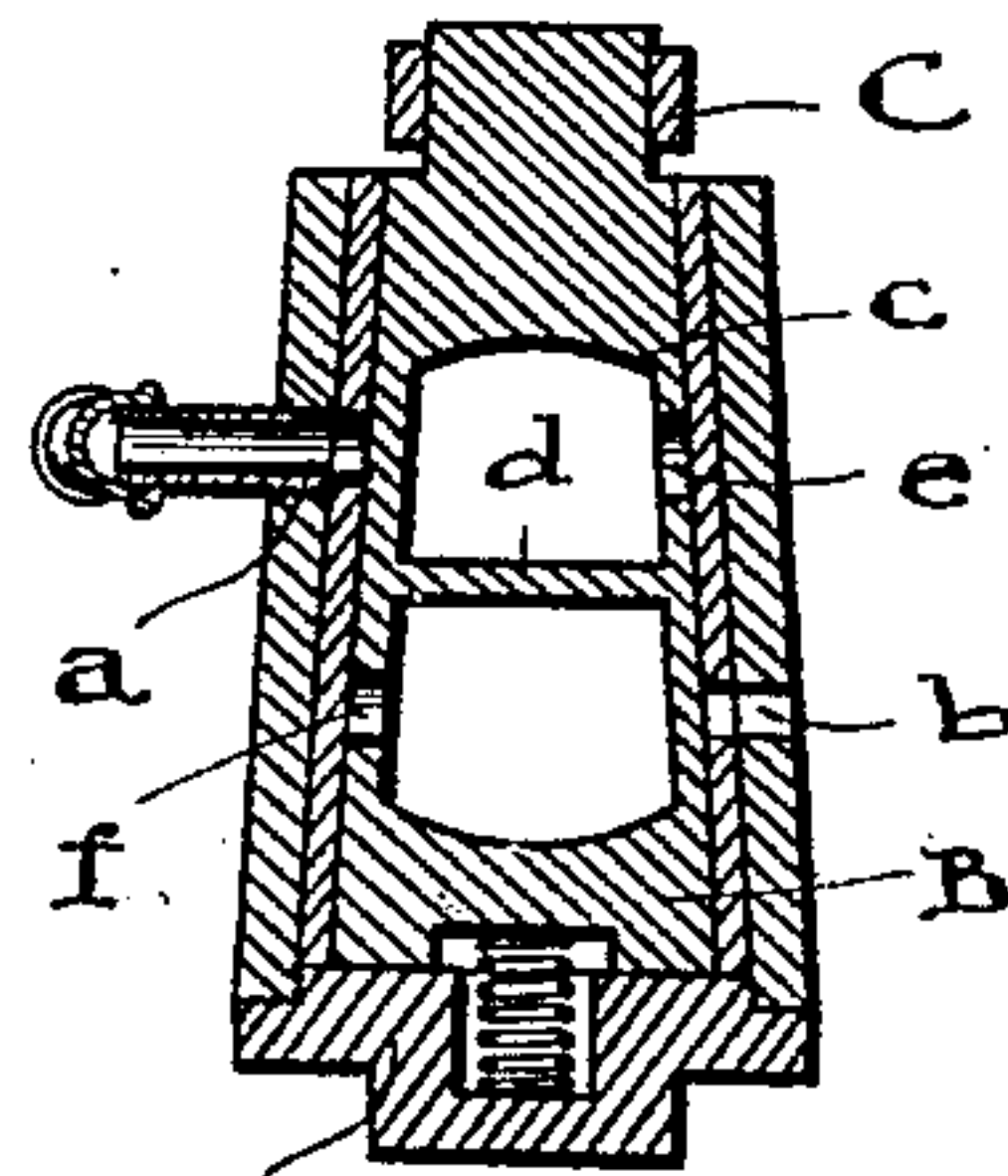


FIG. 2.

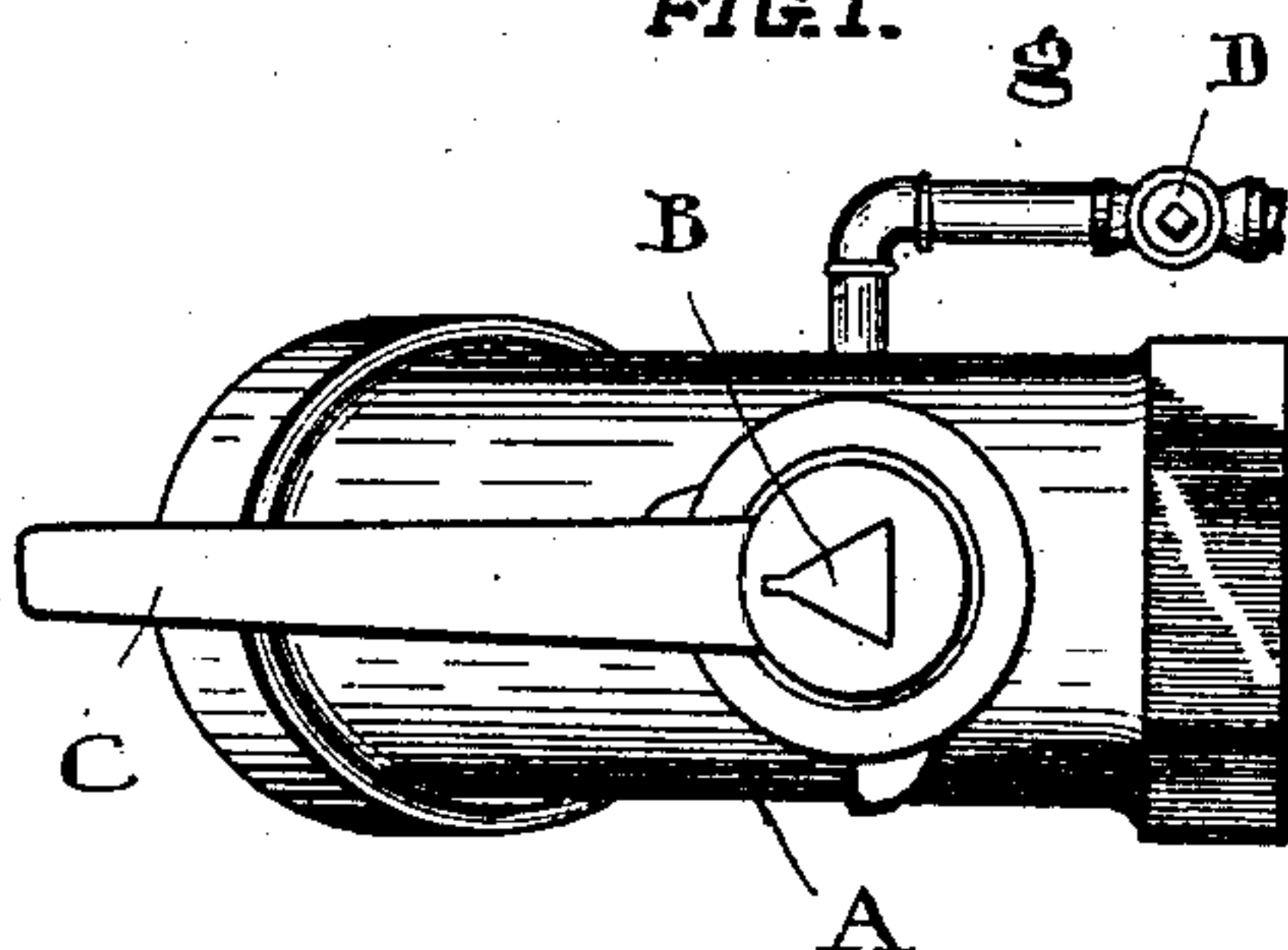


FIG. 3.

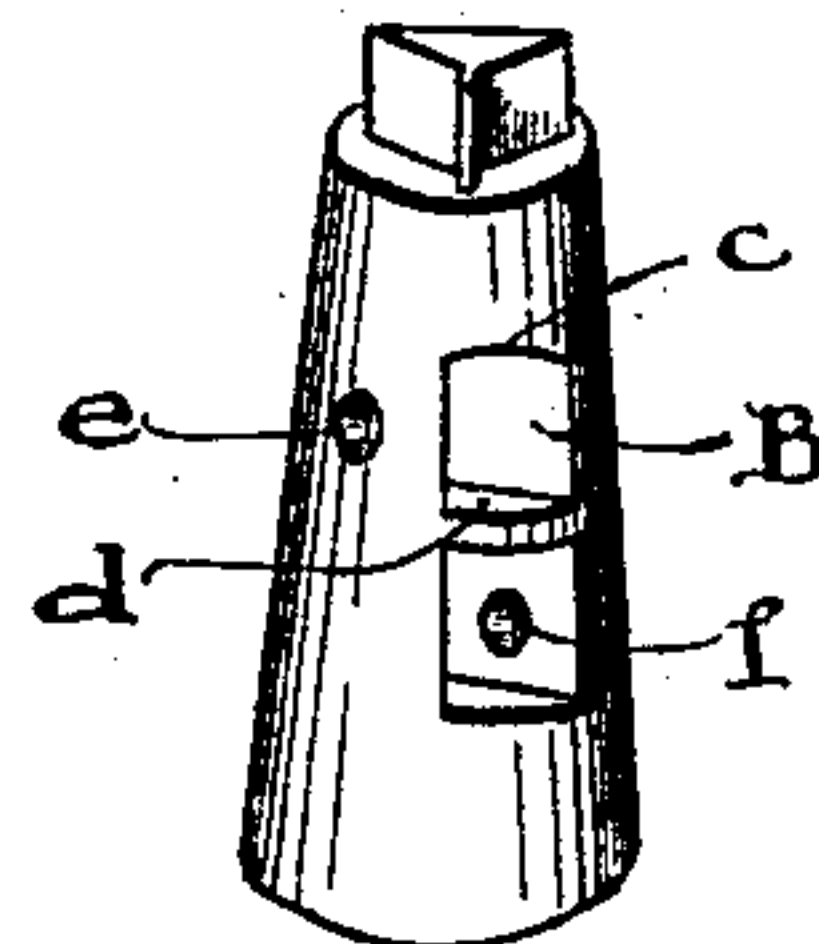


FIG. 4.

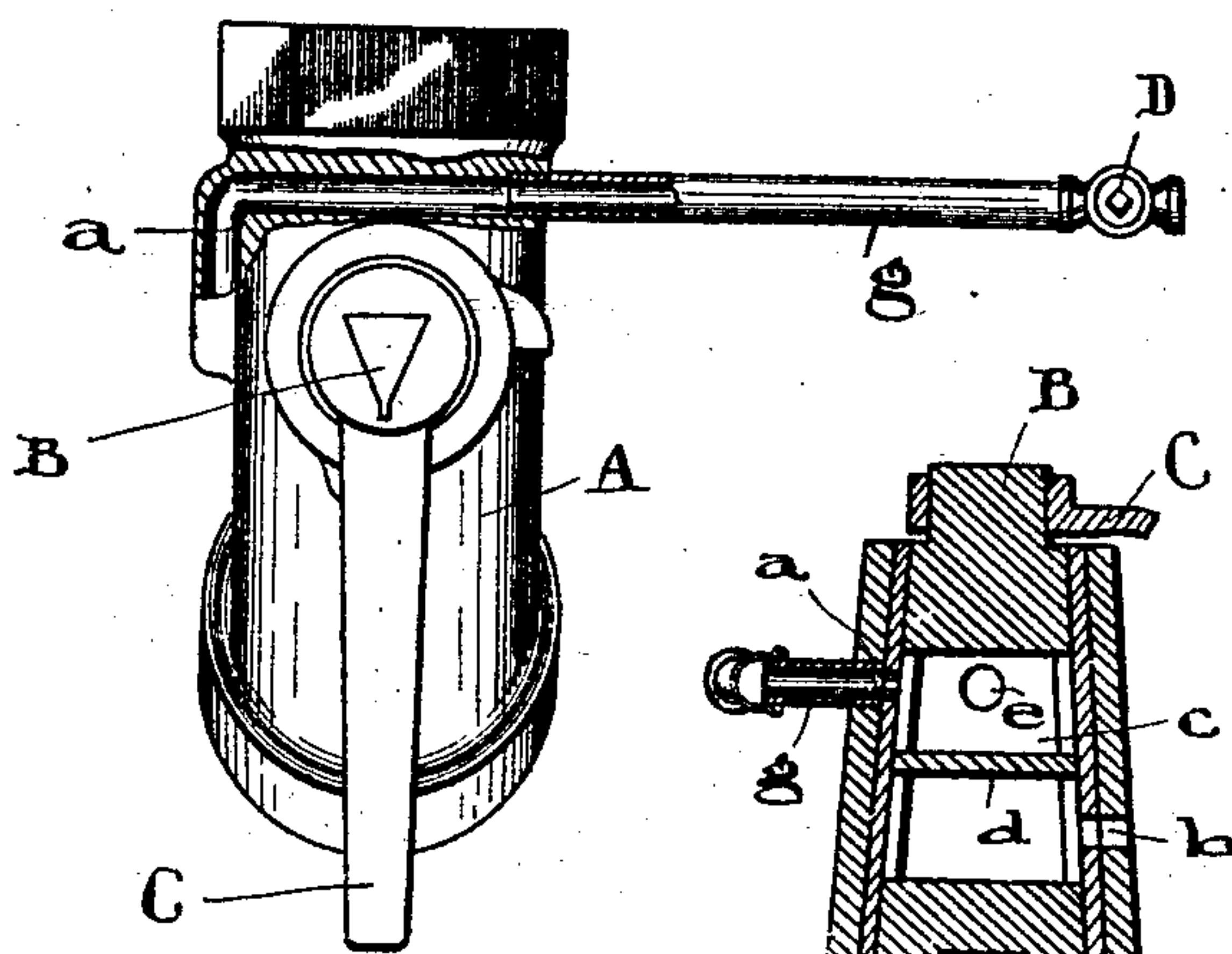


FIG. 5.

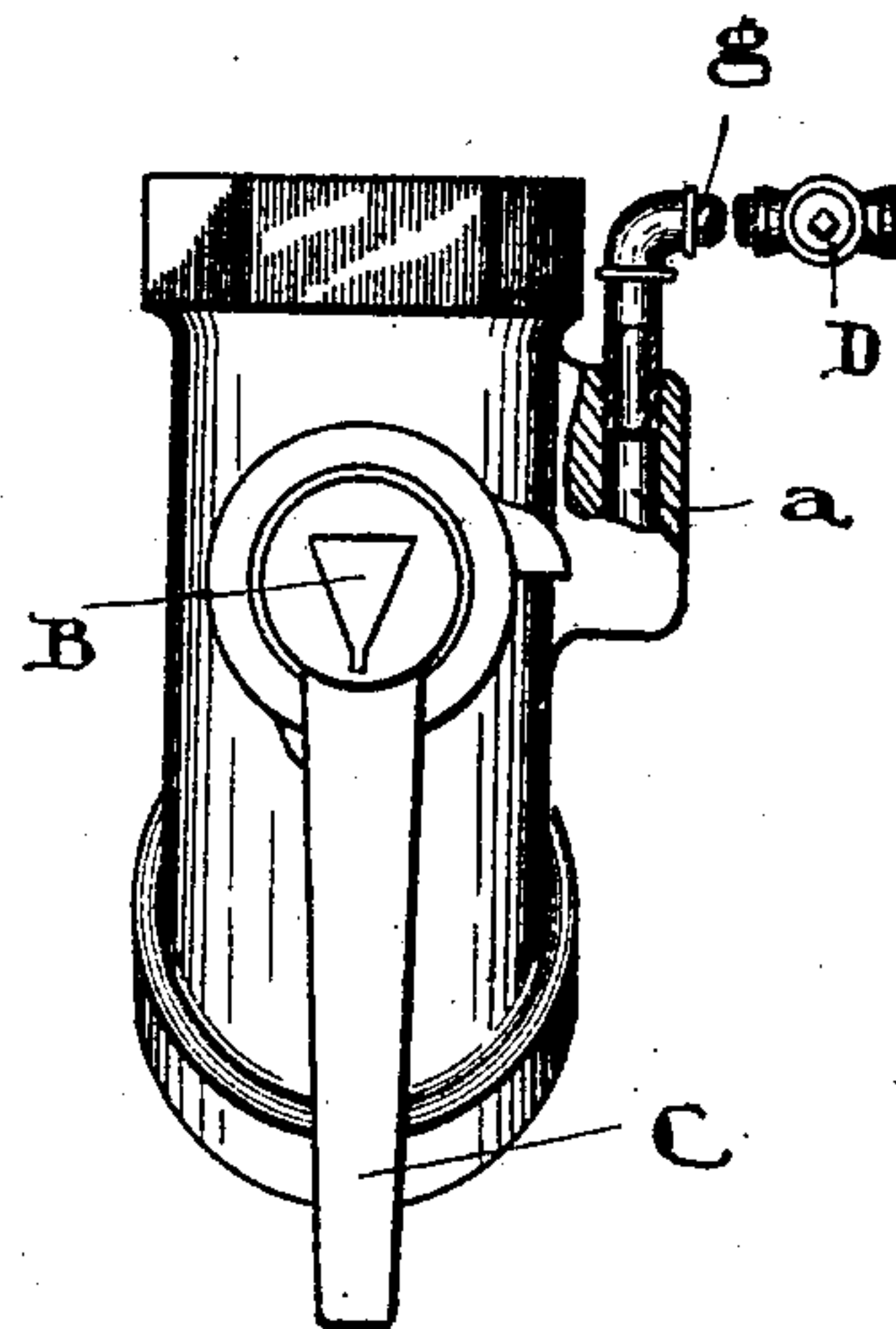


FIG. 6.

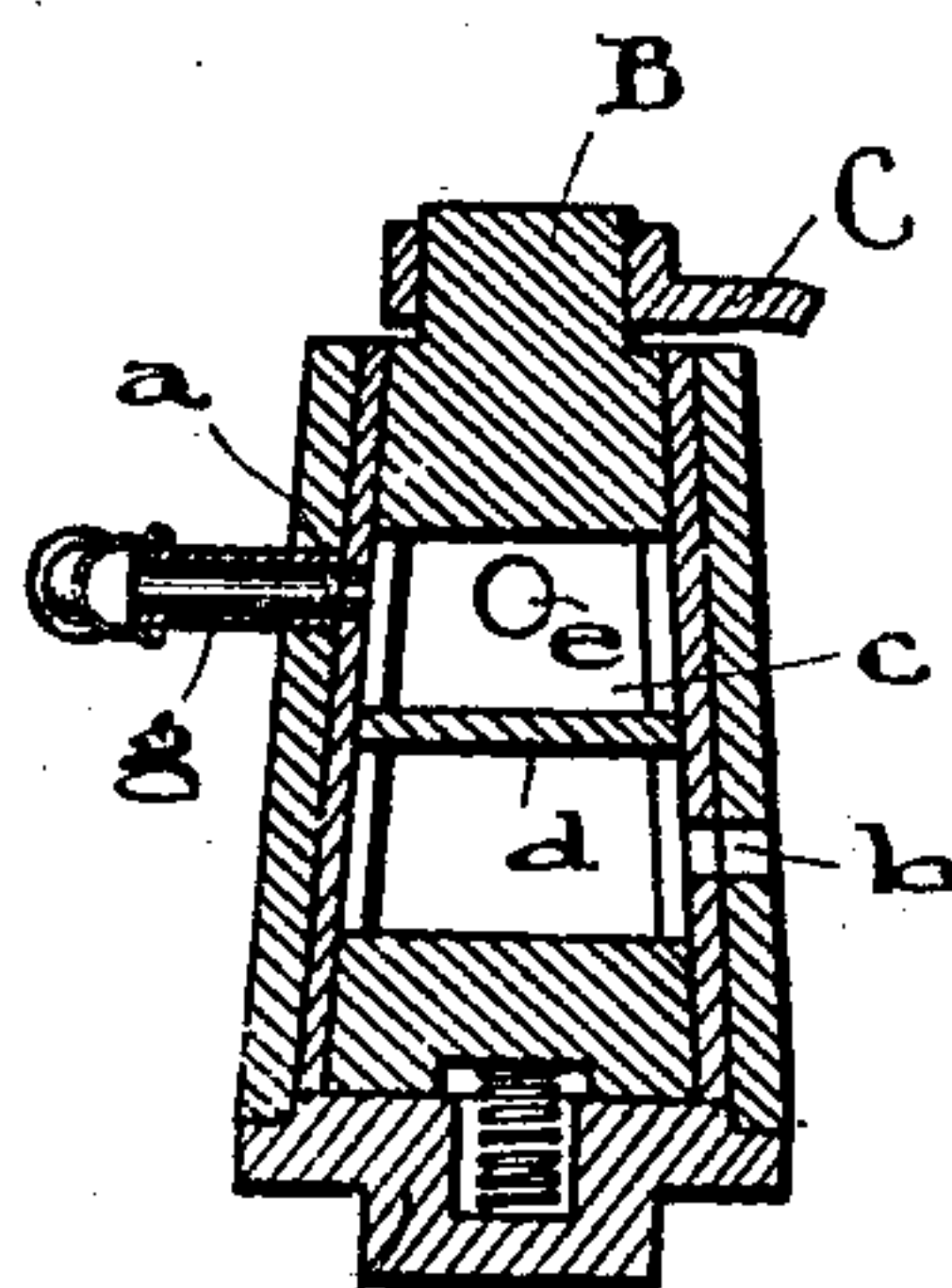


FIG. 7.

WITNESSES.

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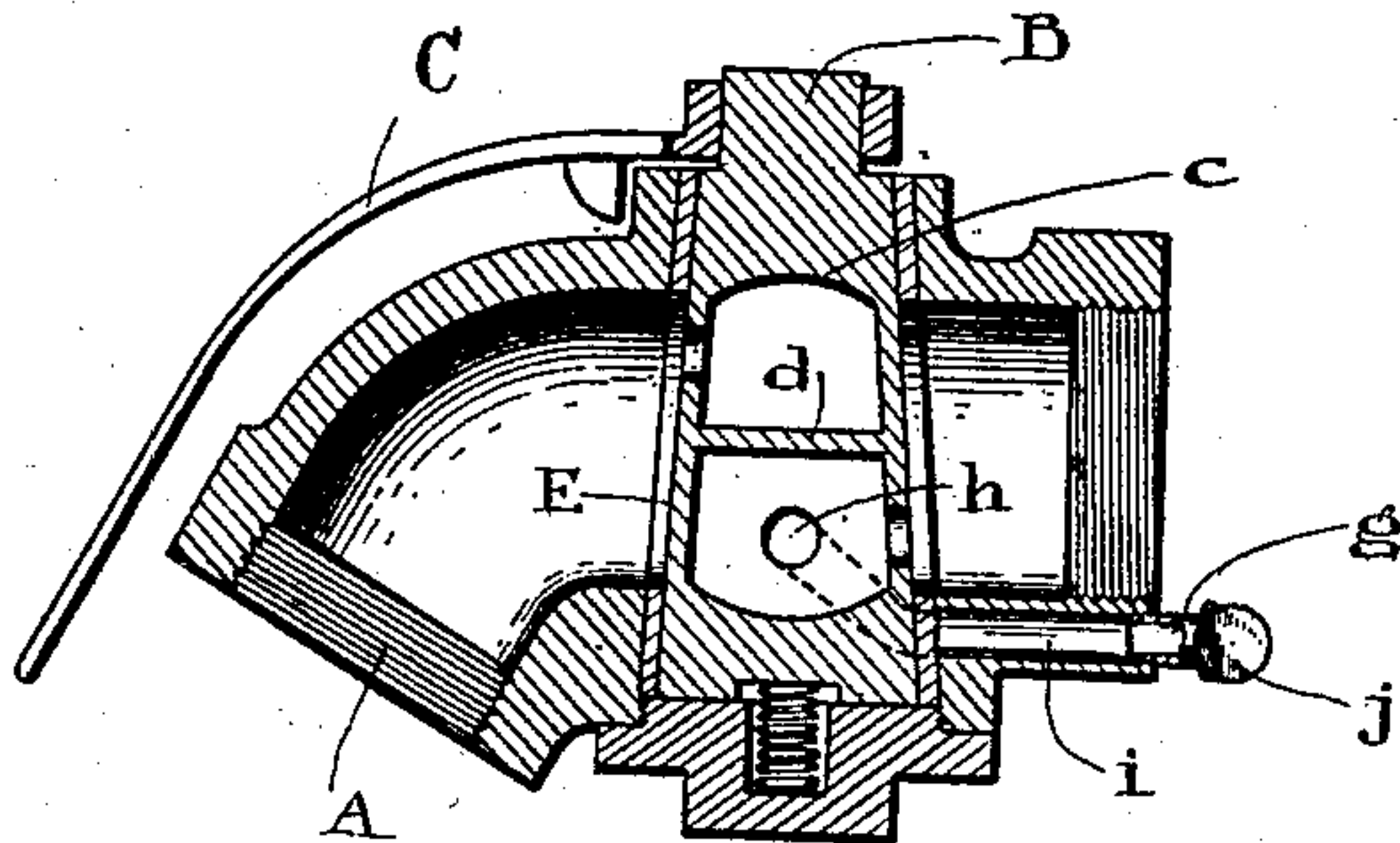


FIG. 8.

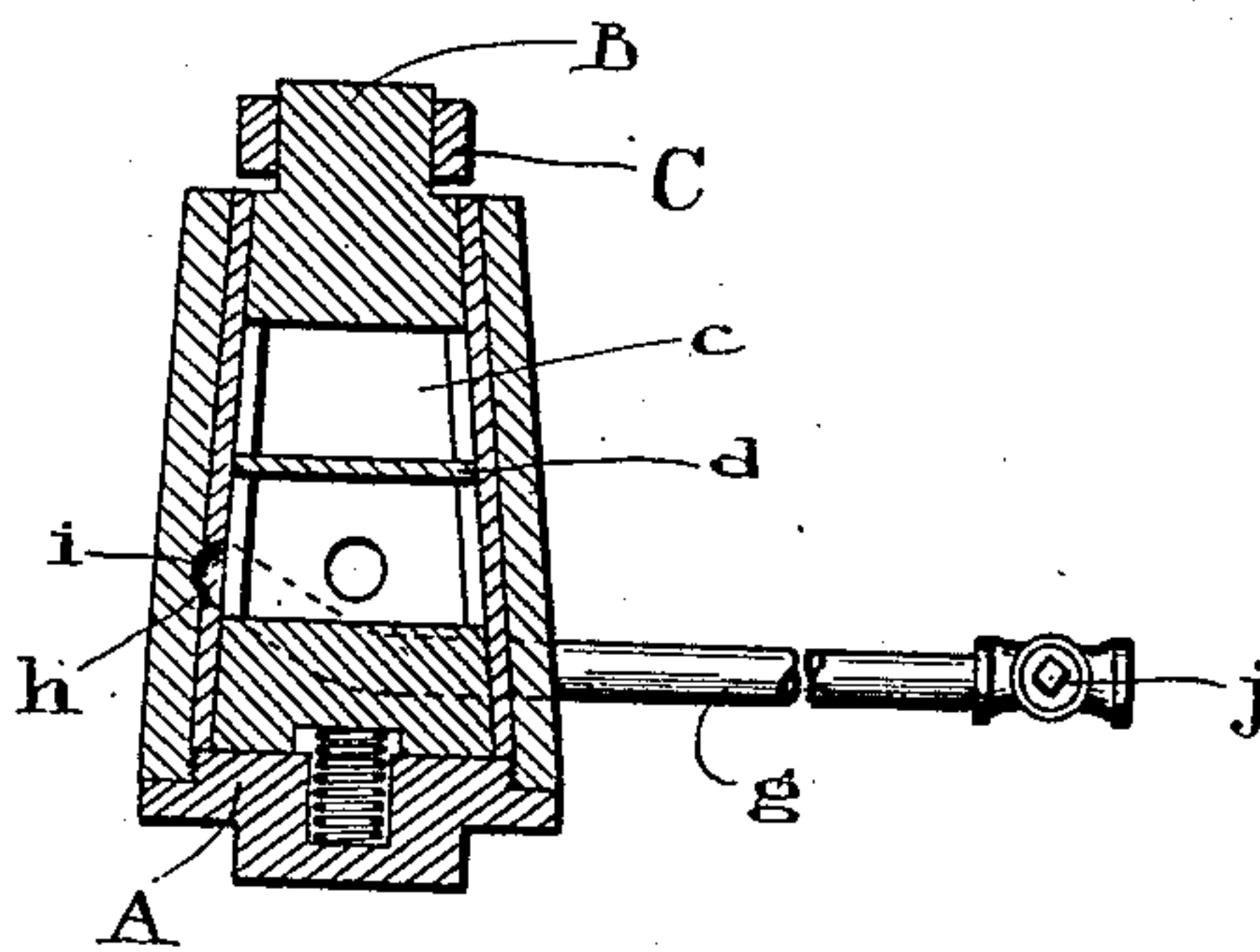


FIG. 9.



FIG. 10.



FIG. 11.

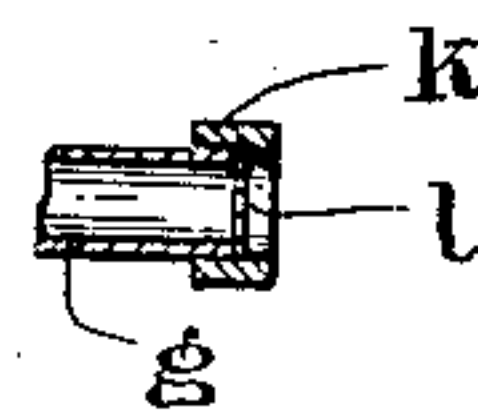


FIG. 12.

WITNESSES.

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UNITED STATES PATENT OFFICE.

WILLIAM BERNERD, OF SMITHS FALLS, ONTARIO, CANADA, ASSIGNOR OF SEVENTEEN-FORTIETHS TO THOMAS MARTIN AND SIX-FORTIETHS TO WILSON McCUE, OF SMITHS FALLS, CANADA.

ANGLE-COCK FOR AIR-BRAKE SYSTEMS.

No. 904,502.

Specification of Letters Patent.

Patented Nov. 24, 1908.

Application filed March 2, 1908. Serial No. 418,902.

To all whom it may concern:

Be it known that I, WILLIAM BERNERD, of Smiths Falls, in the county of Lanark, Province of Ontario, Canada, have invented certain new and useful Improvements in Angle-Cocks for Air-Brake Systems, of which the following is a specification.

My invention relates to improvements in angle cocks for air brake systems employed in railway trains, and the objects of the invention are to provide positive means for placing both sides of the train line pipe in communication with the open air should the handle and plug be turned to closed position, further objects being to provide independent means for retaining the air on the forward side of the train line pipe; and it consists essentially of two passage-ways leading directly to the open air, provided in opposite sides of the angle cock casing, in combination with ports or passage-ways provided in the plug adapted to place the passage-ways in the casing in communication with the opposite sides of the train line pipe when the plug is rotated to closed position, and a retaining valve connected to the passage-way corresponding to the forward end of the train line pipe, all as hereinafter more fully set forth and described in the accompanying specifications and drawings.

Referring to the drawings, Figure 1 is a longitudinal section through the angle cock. Fig. 2 is a transverse section through the same. Fig. 3 is a plan view. Fig. 4 is a perspective view of the plug. Fig. 5 is a transverse section with the plug rotated to closed position. Fig. 6 is a top view partially in section of a modified form of the invention. Fig. 7 is a plan view of another modified form. Fig. 8 is a longitudinal section through a further modified form of the invention. Fig. 9 is a transverse sectional view through the form shown in Fig. 8. Fig. 10 is a sectional detail of an alternative form of outlet port. Fig. 11 is a sectional detail of another alternative form of outlet port. Fig. 12 is a sectional detail of a trap which may be attached to the end of the outlet pipe in which the retaining valve is located.

In the drawings, like letters of reference indicate corresponding parts in each figure.

Referring to the drawings, A represents the outside casing of the angle cock of usual

construction, B the plug thereon and C the handle of the plug. In accordance with my invention, passage-ways *a* and *b* are provided through the casing on opposite sides thereof, one being towards the top and the other towards the bottom as shown. The plug B is provided with the usual passage-way *c*, which is however divided into two parts by means of a horizontally extending bridge plate *d*, and through opposite sides of the plug, one above and one below the bridge plate, ports *e* and *f* are provided adapted to place the train line pipe on opposite sides of the angle cock in communication with the passage-ways *a* and *b* in the manner hereinafter described.

To permit the retention of air in the forward cars when the angle cock is located on the end of the last car, or when it is desired to separate the cars for shunting purposes, a retaining valve D of any suitable construction is provided located within a conducting pipe *g* connected to the passage-way *a*, corresponding to the forward end of the train line pipe.

In the alternative form shown in Fig. 6, the passage-way *a* is cored around the forward part of the angle cock, and the conducting pipe *g* is extended at one side, whereby it may be more readily accessible.

In the form shown in Fig. 7, the passage-way *a* is shown on the reverse side and is cored for a portion in the angle cock, the ports *e* and *f* in the plug being also reversed to render this possible.

The operation of the device is as follows: When the plug is rotated in closed position, as shown in Fig. 5, the port *e* affords communication between the forward part of the train line pipe and the passage-way *a*, while the port *f* affords communication between the train line pipe in the rear of the angle cock and the passage-way *b*. This opening of the angle cock to the atmosphere will at once apply the emergency brakes and stop the train. The bridge plate *d* maintains the separation of the train line pipe on opposite sides. When it is desired to retain the air at the forward end of the train line pipe the retaining valve D is turned to closed position, which will permit the use of the valve on the end of the last car. It will be observed that if it were not for the bridge plate *d*, it would not be possible to maintain

the air by the retaining valve, as it would pass out through the port *f*. It will also be noted that the passage-ways *a* and *b* communicate directly with the open air and no form of spring valve or other means are provided therein, which would interfere with the free out-going of the air. From this, it results that if the angle cock is tampered with, the air brakes are promptly and effectually applied.

In the form shown in Fig. 8, the bushing *E* has ports in opposite sides thereof, as in the other forms, but the port *h* corresponding to the forward end of the train line pipe communicates with a cored passage-way *i* in the casing, which leads beneath the same and opens at the front thereof, where it is connected with the pipe *g* through the medium of an elbow *j* which enables a slight tilting of the pipe *g* to take place without wrenching. The passage-way *i* in this form, may be very easily and simply cored in the casing and the elbow *j* in permitting the slight tilting movement of the pipe *g* enables any tilting movement between the said pipe and the angle cock to be taken up.

The forms of outlet ports shown in Figs. 10 and 11 are designed to prevent plugging of the ports and in this case, the port might be tapered, as shown in Fig. 10, or counter-bored as shown in Fig. 11, or grooved, to prevent freezing and plugging. With the same object in view, a trap *k* having a flapper *l* shown in Fig. 12 may be provided on the pipe *g* permitting the outlet of the air, but preventing the entrance of water, snow or ice.

It is of course evident that the form or shape of the port in the casing is immaterial, and might be formed oblong, rounded or any other shape. It will also be seen that the ordinary form of angle cock may be very readily changed to include the present invention, thus reducing the cost of installation.

It will be observed that the cored passage-ways in the forms shown in Figs. 6 and 7 bring the retaining valve *D* and the conducting pipe *g* near the forward end of the angle cock, thereby bringing the same close to the side of the car, and leaving the space between comparatively clear.

While my invention has been described herein with great particularity of detail, it will be readily understood that in carrying out the construction of the same, changes within the scope of the appended claims, may be made without departing from the spirit of the invention.

What I claim as my invention is:

1. An angle cock including a casing having passage-ways therein communicating directly with the open air, a plug having a

passage-way therethrough and a bridge plate medially dividing the same, and ports on opposite sides thereof above and below the bridge plate, adapted to afford communication between the opposite sides of the train line pipe and the passage-ways in the casing, when the plug is rotated to closed position.

2. An angle cock, including a casing having passage-ways on opposite sides thereof, a plug having a passage-way therethrough divided by a substantially horizontal bridge plate, and ports in opposite sides of the plug above and below the bridge plate adapted to afford communication between the opposite sides of the train line pipe and the passage-ways in the casing.

3. An angle cock including a casing having two passage-ways therethrough, a plug having ports therein adapted to place said passage-ways in communication with opposite sides of the train line pipe when the plug is turned to closed position, a conducting pipe leading from the passage-way in the casing corresponding to the forward end of the train line pipe and a retaining valve in said conducting pipe.

4. An angle cock including a casing having two passage-ways therein, one of said passage-ways being cored in the casing to extend close to the forward end thereof, a plug having ports therein adapted to afford communication between said passage-ways and opposite sides of the train line pipe, when the plug is rotated to closed position, a conducting pipe connected to the cored passage-way and a retaining valve therein.

5. In an angle cock, the combination with the bushing having a port through the side thereof, of a casing inclosing the same having a passage-way extending from the port in the bushing to the underside of the casing, an opening at the forward end thereof, a plug in the bushing having means thereon adapted to place the port in the bushing in communication with the train line pipe when the plug is rotated to closed position.

6. In an angle cock, the combination with the bushing having a port through the side thereof, of a casing inclosing the same having a passage-way extending from the port in the bushing to the underside of the casing, an opening at the forward end thereof, a plug in the bushing having means thereon adapted to place the port in the bushing in communication with the train line pipe when the plug is rotated to closed position, a tiltable outlet pipe connected with the passage-way in the casing and a retaining valve in the outlet pipe.

7. In an angle cock, the combination with the bushing having a port through the side thereof, of a casing inclosing the same hav-

ing a passage-way extending from the port in the bushing to the underside of the casing, an opening at the forward end thereof, a plug in the bushing having means thereon adapted to place the port in the bushing in communication with the train line pipe when the plug is rotated to closed position, an outlet pipe having a retaining valve

therein, and an elbow connecting the outlet pipe with the passage-way in the casing.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM BERNERD.

Witnesses:

B. E. SPARHAM,
NETTIE L. MILLER.