

No. 815,268.

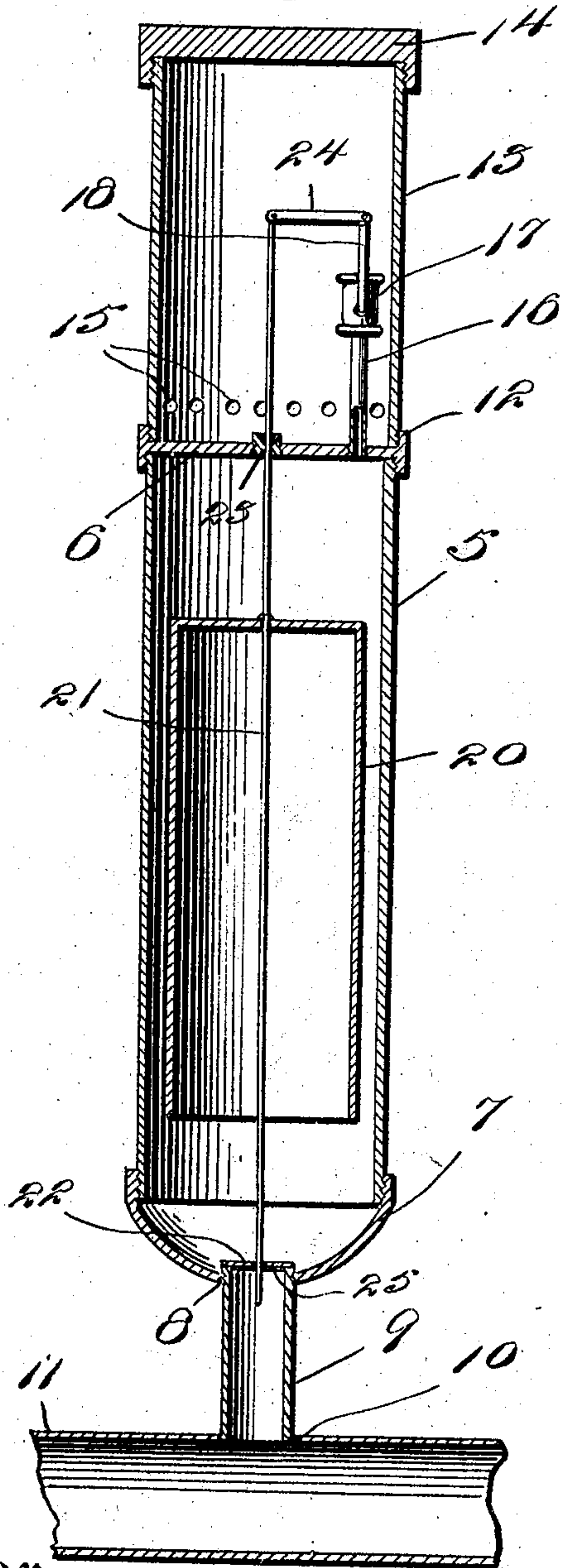
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C. COVELL.

# AUTOMATIC AIR RELIEF FOR PIPE LINES.

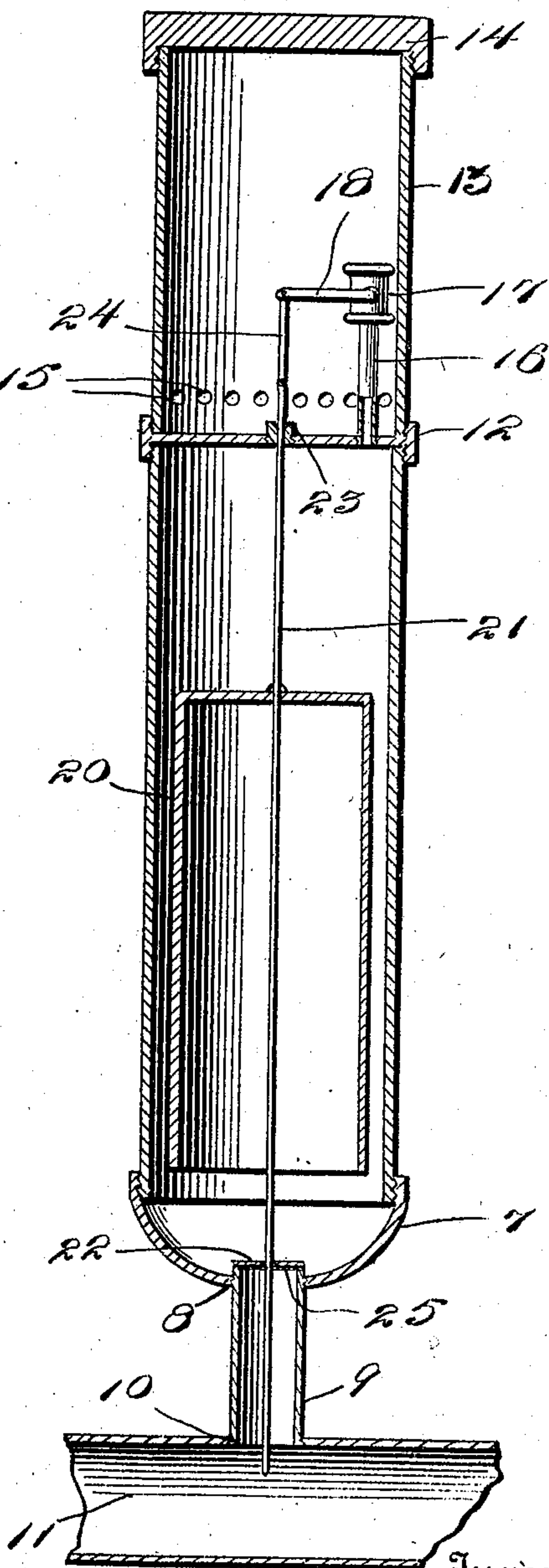
APPLICATION FILED APR 15, 1904.

Fig. 1.



Witnesses  
Amending  
J. C. Jones

Fig. 2.



Inventor

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# UNITED STATES PATENT OFFICE.

CHARLES COVELL, OF GRAND VALLEY, PENNSYLVANIA.

## AUTOMATIC AIR-RELIEF FOR PIPE-LINES.

No. 815,268.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed April 15, 1904. Serial No. 203,681.

*To all whom it may concern:*

Be it known that I, CHARLES COVELL, a citizen of the United States, residing at Grand Valley, in the county of Warren, State of Pennsylvania, have invented certain new and useful Improvements in Automatic Air-Reliefs for Pipe-Lines; and I do hereby 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.

This invention relates to means for relieving pipe-lines of accumulated air or other gas which tends to form a seal and prevent operation of the pipe-line, the object of the invention being to provide a construction which may be attached to the pipe-line at any point and which will work automatically to open a valve when there is an accumulation of air and to close said valve when the accumulated air has passed away in sufficient quantity to no longer interfere with the operation of the pipe-line.

Other objects and advantages of the invention will be understood from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a vertical section through one form of apparatus embodying the present invention, the parts being in position to close the outlet-valve. Fig. 2 is a view similar to Fig. 1 with the parts in the positions they assume when the valve is open.

Referring now to the drawings, and more particularly to Figs. 1 and 2 thereof, there is shown an apparatus comprising a cylindrical body portion 5, having caps 6 and 7 at its upper and lower end portions, respectively, the cap or end piece 7 having a threaded central end piece 8, in which is engaged a pipe 9, the lower end of which is engaged in a threaded perforation 10 in the pipe-line 11 at the upper side of the latter, so that any air or other gas accumulating in the pipe-line at this point will pass through the nipple 9 and into said cylindrical body portion 5. The cap 6 has an upwardly-directed flange 12 at its edge, which is internally threaded for engagement by a cylindrical extension 13, having a cap 14 screwed upon its upper end, said extension 13 having perforations 15 through its wall directly above the flange 12. A vent-pipe 16 is engaged through the cap 6 and communicates with the interior of the body por-

tion 5, and engaged with the upper end of this pipe 16 is a turning-plug vent-valve or outlet valve or cock 17, having a lever 18 for oscillating the plug to open and close the valve, it being understood that when the valve is open the air or other gas that passes from the pipe-line into the body portion 5 is permitted to pass through the pipe 16 and the valve 17 into the extension 13 and thence through the perforations 15 into the outer air. In order that the lever 18 will be operated to open the valve when there is an accumulation of air and to close said valve when such air has passed away in sufficient quantity to permit of operation of the pipe-line, a float is provided consisting of a hollow cylindrical body portion 20, which is open at its lower end and closed at its upper end, said float being of lesser diameter than the interior of the body portion 5 to permit of free passage of air and liquid between the float and the wall of the body portion 5. Passed axially through the float is a rod 21, the lower end of which is slidably engaged with a guide-plate 22, arranged diametrically of the upper end of the nipple 9. The rod 21 above the float passes through a stuffing-box 23 in the center of the cap 6, and pivoted to its upper end is a link 24, which is pivoted also to the free end of the lever 18, so that when the float 20 rises the lever 18 is swung upwardly to close the valve or cock 17, and when the float moves downwardly, the lever is reversely operated to open the cock or valve.

It will be understood that when there is no accumulation of air the cylinder 5 will be full of liquid from the pipe-line and the float will be buoyed in elevated position with the outlet valve or cock closed. As the air from the pipe-line passes into the cylinder 5 the liquid in the cylinder passes therefrom, so that the float gradually moves downwardly in the cylinder and opens the valve 17. The air which is in the upper portion of the cylinder then passes outwardly to the valve, as hereinbefore described, permitting liquid to enter the cylinder from the pipe-line, which moves the float upwardly, so that the valve is closed. By this means an accumulation of air in the pipe-line sufficient to prevent operation of the pipe-line is prevented.

To prevent entrance of solid matter into the cylinder 5, which might interfere with the operation of the float, a screen 25 is disposed transversely of the upper end of the nipple 9.



What is claimed is—

An air-relief for pipe-lines comprising a cylinder adapted for attachment at its lower end to a pipe-line in communication therewith, a cylindrical extension removably connected with the upper end of the first-named cylinder and having perforations through its wall, a vent-pipe leading from the upper end of the first-named cylinder into the cylindrical extension, a relief-valve for the vent-pipe within the cylindrical extension, an operating-lever for the relief-valve, a float within the first-named cylinder, a rod passed axi-

ally through the float and secured thereto, said rod being passed through the top of the first-named cylinder, a link pivoted to the upper end of the rod and to the valve-lever and a guide for the lower end portion of the rod, said valve being movable into and out of closed position as the float rises and falls.

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

CHARLES COVELL.

Witnesses:

OTIS S. PORTER,  
CLARK BEERS.