July 14, 1931. A. FENNEMA 1,814,677

STOPPER FOR PIPE LINES

Filed May 3, 1930

Fig. 1.

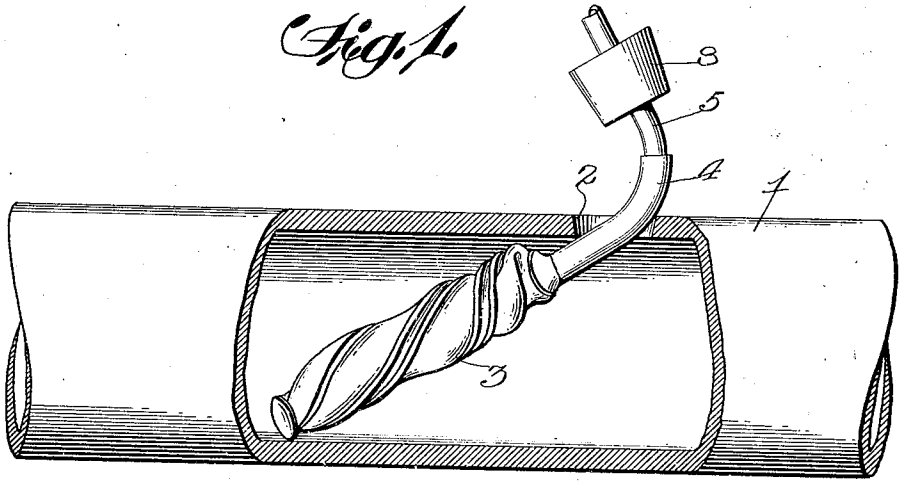
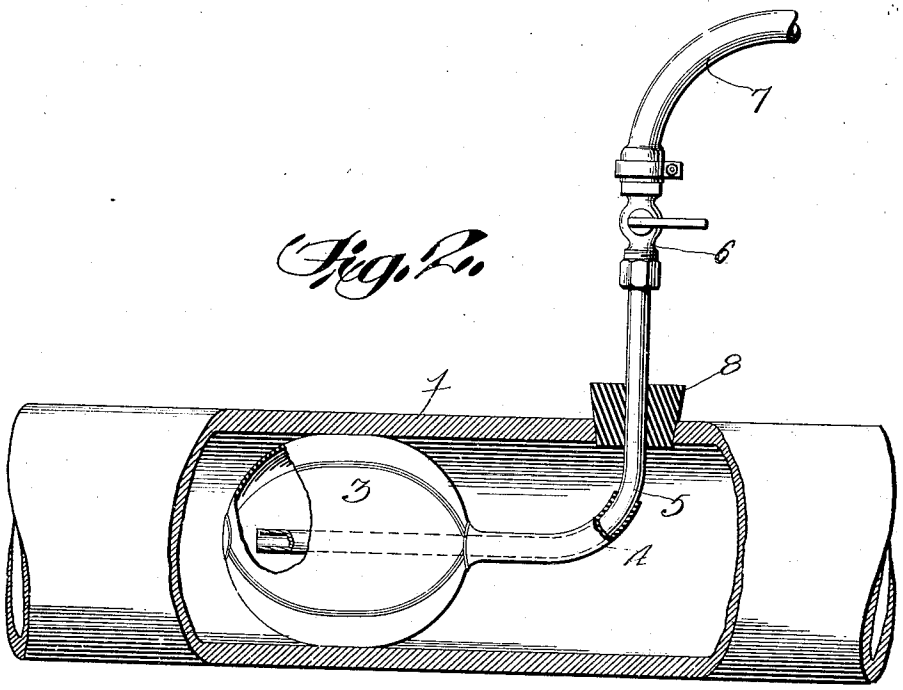


Fig. 2.



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UNITED STATES PATENT OFFICE

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STOPPER FOR PIPE LINES

Application filed May 3, 1930. Serial No. 449,542.

This invention relates to improvements in stoppers for pipe lines and more particularly to an inflatable stopper for gas pipes.

One of the objects of the invention is the provision of a pipe stopper which can be quickly and easily inserted through a tap opening in a gas main and inflated in order to provide a stopper for the main and includes means for properly retaining the inflated member securely in the main so as to provide an efficient stopper.

Another object of the invention is the provision of a stopper of this character, which includes an inflatable bulb applied to a comparatively rigid stem, the bulb being inserted into a gas main through an opening tapped for the purpose and the rigid tube retained in operative position by means of a stopper adapted to be fitted in the tapped opening around the tube, so as to properly center the bulb with respect to the main and then inflate the bulb until the exterior thereof is brought into intimate contact with the inner wall of the main, thus forming a complete stopper for the gas main.

With the above and other objects in view, the invention consists in the novel features of construction, the combination and arrangement of parts hereinafter more fully set forth, pointed out in the claim and shown in the accompanying drawings wherein:

Figure 1 is a side elevation of my improved device, illustrating a portion of the gas main in cross section; and showing how the device is placed in position, and

Figure 2 is a similar view with the improved stopper in operative position.

Referring more particularly to the drawings, 1 indicates a gas main and at any desired point within the main there is a tap opening 2. The stoppers in use at the present time, which include an inflatable bulb, usually have attached thereto a flexible tube which is inserted through the opening 2 in the gas main and, consequently, it is rather difficult to properly center the bulb so that when it is inflated, it will provide an efficient stopper.

It is, therefore, one of the main objects of this invention to provide improved means for properly centering the bulb in the gas main so that when it is inflated, it will have its exterior moved into intimate contact with the interior of the pipe or main, and the inflation will equalize this contact throughout the circumference of the bulb due to the proper centering of the bulb by means of the stem attached thereto.

In the present instance, the bulb 3 is preferably of rubber and adapted to be inflated to the position shown in Figure 2. The bulb has a flexible tubular stem 4 and passed through this stem is one end of an angular tube 5 which extends into the bulb 3 and projects nearly the full length of the bulb, as illustrated in Figure 2, while the other end of the tube 5 passes out through the opening 2 and is connected to a valve 6 which controls the pressure of air through the conduit 7 that leads to the usual type of pump.

It will be noted that after the opening 2 has been formed in the main 1, the bulb 3 in its deflated position can be rolled around one end of the tube 5 and inserted through the opening 2, as shown in Figure 1. In order to support the tube 5 in proper position for centering the bulb 3, a plug 8 is mounted upon one end of the tube 5 and is adapted to fit within the opening 2. This plug 8 is slidably mounted upon the tube 5 so that as soon as the tube is properly positioned with regard to the center of the gas main, the plug 8 is fitted within the opening 2 for retaining the tube in proper position. After the inner end of the tube and the bulb 3 have been properly centered with respect to the gas main, air is admitted into the tube 5 by means of the valve 6, and as soon as the tube has been inflated, the valve can be turned to cut off the supply of air and, if found desirable, the conduit 7 can be removed from the valve portion and the bulb 3 allowed to remain in the pipe or main.

Upon deflation, the bulb can be easily removed by tilting the tube 5 to the position shown in Figure 1. It has been found that by using a comparatively stiff tube for supporting the bulb in position that the bulb can be quickly centered and retained in a central position by means of the plug 8, and when the bulb is inflated it will provide a very efficient stopper for the gas main. The device is ex-

tremely simple and can be manufactured and placed on the market at a very low cost, and as the tube 5 is a comparatively rigid tube, it will securely hold the bulb 3 in a central position and prevent the same from moving about while being inflated, so that when it is inflated, the exterior thereof will contact equally throughout the inner circumference of the gas main.

One of the principal advantages of this invention is the fact that the bulb can be inserted into the gas main and the plug 8 can then be positioned in the tap opening 2 to cut off any gas escaping through this opening, and it will not be necessary to inflate the bulb until desired. With the use of various types of pipe line stoppers now in the market, it is necessary to immediately inflate the bulb after the same has been placed in the gas main, due to the fact that no provision is made for closing the tap opening through which the device is inserted.

While I have shown and described the preferred embodiment of my invention, it will be apparent that slight changes may be made in the construction when putting the invention into practice without departing from the spirit of the same or the scope of the appended claim.

I claim:

A gas main stopper including an inflatable bulb having a flexible stem, a rigid tube having one end passed through the stem and into the ball, the ends of said tube being diposed at right angles to each other with a curved portion between said ends, and a yieldable plug slidably mounted upon the other end of the tube.

In testimony that I claim the foregoing I have hereunto set my hand at Kenosha, in the county of Kenosha and State of Wisconsin.

ALBERT FENNEMA.