

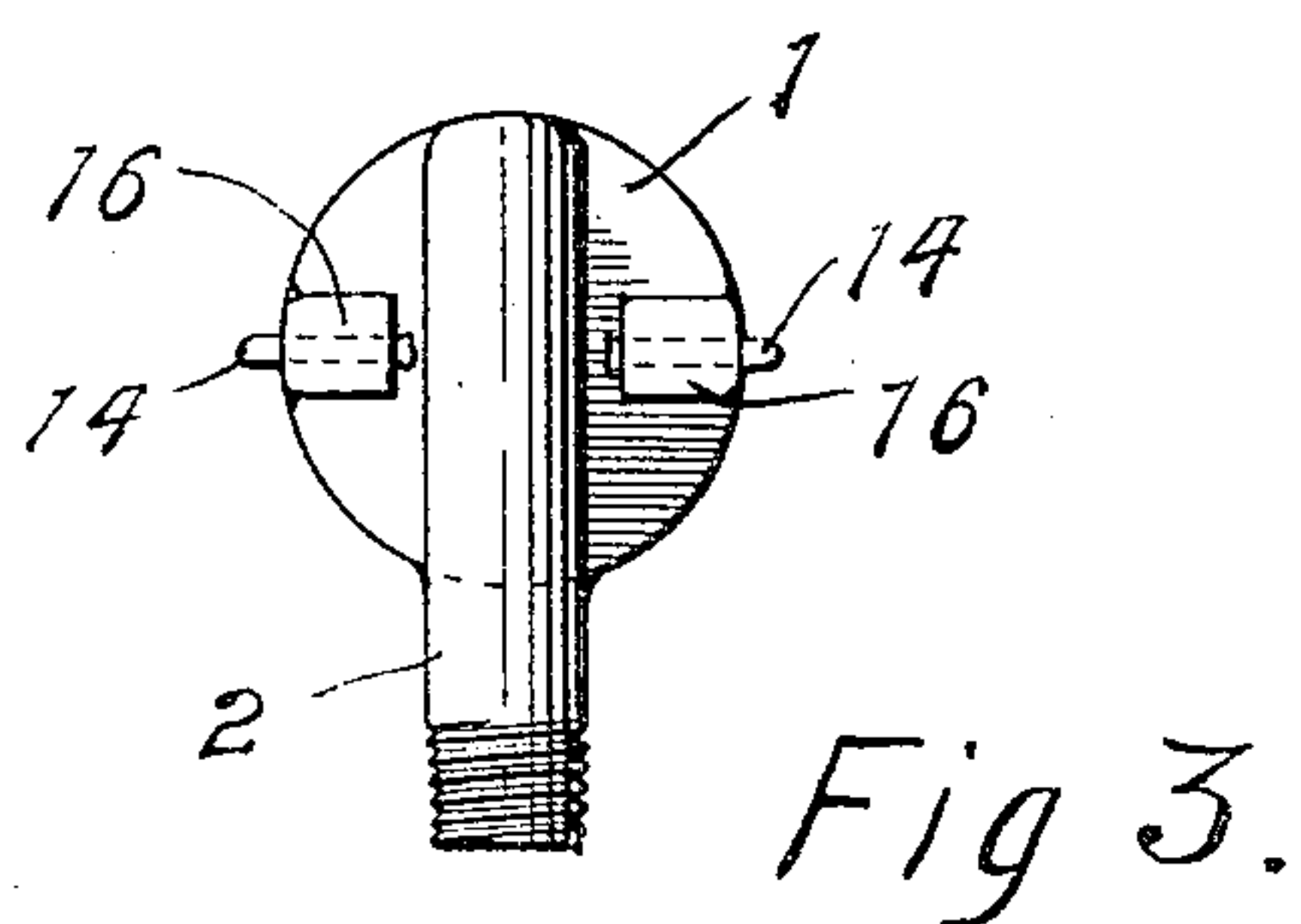
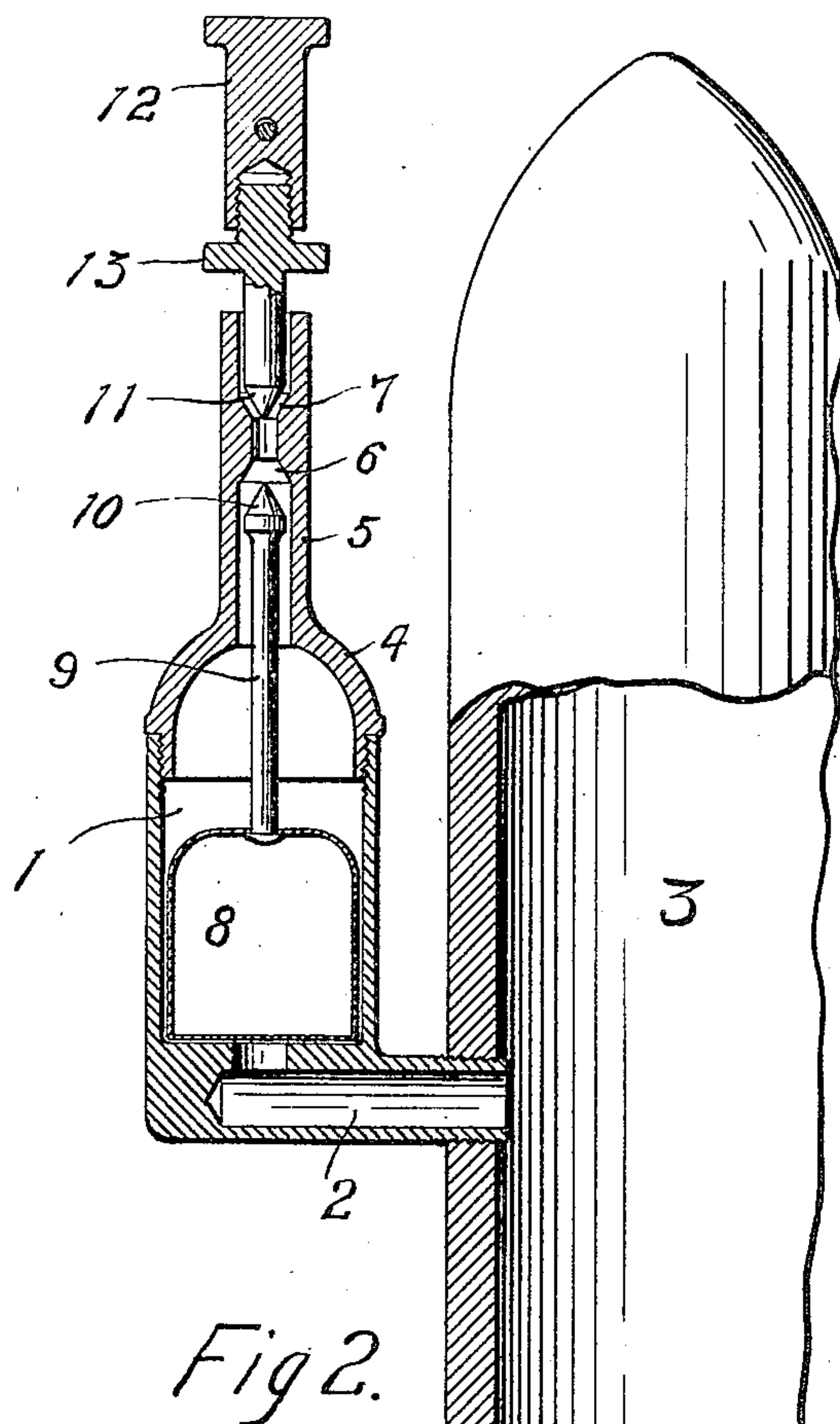
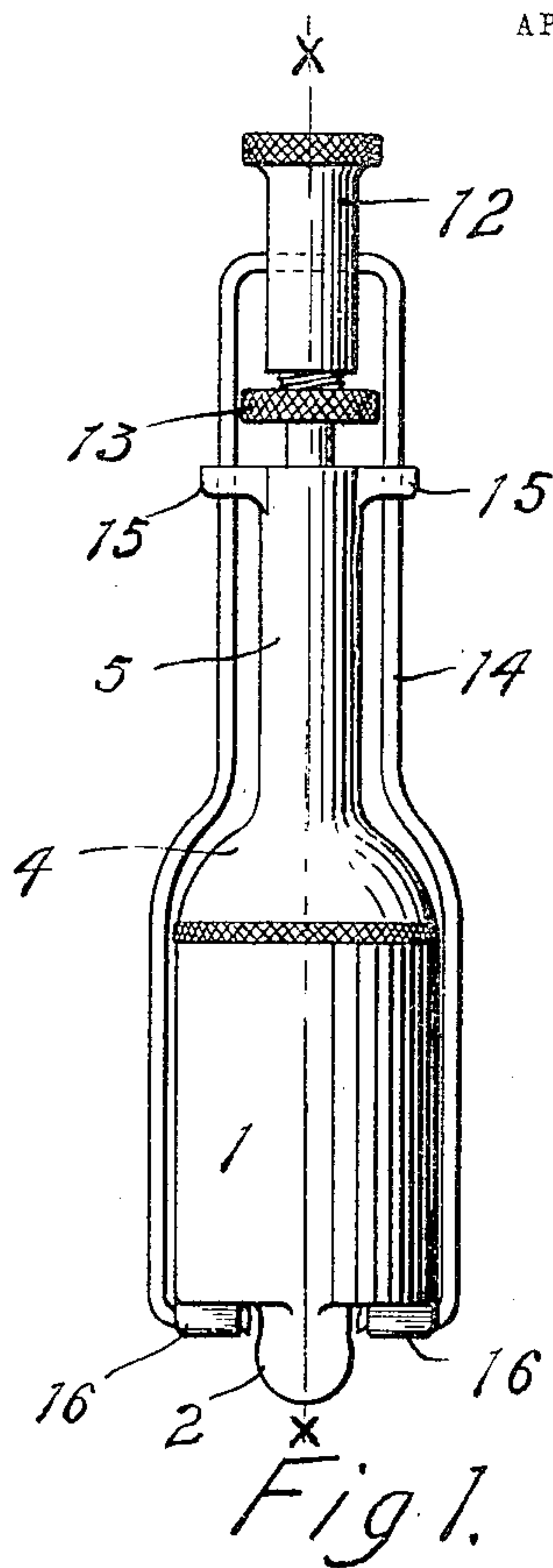
No. 816,475.

PATENTED MAR. 27, 1906.

J. L. JUDGE.

AIR VALVE FOR STEAM RADIATORS.

APPLICATION FILED JUNE 6, 1905.



WITNESSES
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JAMES L. JUDGE, OF MINNEAPOLIS, MINNESOTA.

AIR-VALVE FOR STEAM-RADIATORS.

No. 816,475.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed June 6, 1905. Serial No. 264,026.

To all whom it may concern:

Be it known that I, JAMES L. JUDGE, a citizen of the United States, residing at No. 3205 Chicago avenue, in the city of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Improvement in Air-Valves for Steam-Radiators, of which the following is a specification.

My invention relates to air-valves for steam-radiators in which a valve is made to close automatically through the expansive force of heat applied to the apparatus by the steam, thereby preventing the escape of the steam, and to an improvement upon the air-valve for radiators covered and described in and by Letters Patent of the United States No. 394,860, issued to me December 18, 1888.

The objects of my improvement are to provide an improved steam-valve support and an adjustable steam-valve that is not liable to be removed from the support. I attain these objects by the mechanism shown in the accompanying drawings, in which—

Figure 1 is an elevation of my air-valve; Fig. 2, a sectional view through the line *x x*, Fig. 1, showing also a section of a steam-radiator to which the air-valve is attached; and Fig. 3, a view of the under or bottom end of the air-valve.

Similar numerals refer to similar parts throughout the several views.

The float-chamber 1 is provided with an inlet 2, adapted to enter and to be screwed into the radiator 3 and to allow air and steam to freely enter the body of the air-valve from the radiator. The top of the float-chamber is covered by a screw-cap 4, which is provided with a neck or valve-stock 5. The walls of the float-chamber 1, including the cap 4, and of the neck or valve-stock 5 form the body of my air-valve. Within the valve-stock 5 are two valve-seats, the lower or inner 6 and the upper or outer 7, the latter being near the outer exit. Within the float-chamber 1 is the float 8, to the upper end of which is secured the valve-rod 9, which extends into the valve-stock 5 and ends in the water-valve 10 below the valve-seat 6. The steam-valve 11 enters the valve-stock 5 and is supported outside the valve-stock by being secured within the inner end of the head 12 and is rendered adjustable therein by means of the thumb-screw 13 and the screw-threads, as shown. The head 12 is held in position by means of the wire bail 14, which is secured to

the head, passes through the ears 15 upon the respective sides of the upper portion of said body, and is secured at the lower portion of said body, as shown in Figs. 1 and 3. I prefer to have said ears formed upon the valve-stock 5 and the bail to be in one piece, passing through the head 12, the ears 15, and secured at the lower end of said body by the respective ends thereof, being received within the extensions 16, formed upon the bottom wall of the valve-chamber 1, as shown in Figs. 1 and 3.

The operation of my air-valve is as follows: The steam-radiator 3 not being in operation, the steam-valve 11 is adjusted so as to be lifted slightly above the valve-seat 7. When steam is turned onto the radiator, the air therein will escape through the inlet 2, the float-chamber 1, and the valve-stock 5. When the air has been driven out of the radiator and the steam enters the main body of my air-valve, the heat thereof causes the walls of said body to expand and to lengthen upward, while the bail 14 not being so heated holds the steam-valve 11 stationary, so that it automatically closes the valve-seat 7 and prevents the escape of steam and will automatically open when the valve-body has again cooled from the absence of steam therein. Should water be forced into the float-chamber 1, the float 8 will automatically rise and lift the water-valve 10, which it supports, into contact with the valve-seat 6, so that the water is automatically prevented from escaping through the air-valve and is allowed to return to the radiator and to flow to the steam-boiler in the normal way.

The objection to steam-valve supports heretofore used is that the walls of the body of the air-valve are always liable to overexpansion or lengthening from the heat of the steam—that is, they are liable to so lengthen as to extend farther than the adjustment of the steam-valve would permit, which means that something must give way, and either the valve-support is broken or the valve-seat is destroyed. My method of such support entirely obviates this. The bail 14 through the head 12 holds the valve 11 rigidly in the adjusted position under all ordinary conditions; but when such overexpansion occurs by reason of the fact that the middle portion thereof is bent outward and then downward the bail 14 is possessed of sufficient spring or “give” so as to allow the valve 11 to be lifted slightly

by the overexpansion and to return it to its normal or adjusted position when the overexpansion has disappeared.

Another defect disclosed in the use of air-
5 valves has been the liability of loss of the steam-valve by its being entirely removed from the other parts. My valve is secured within the inner end of the head, and by means of the bail the head is so adjusted and
10 held so near to the valve-stock that said steam-valve cannot be withdrawn from the head. Hence the valve will always be present for use.

What I claim as new, and desire to secure
15 by Letters Patent, is—

1. In an air-valve for radiators, the combination of the body of the air-valve adapted to be attached to a radiator and to allow air from the radiator to pass into and through
20 the said body, a valve-seat near the outer exit of said body, an adjustable steam-valve adapted to be closed upon said valve-seat, a head in which said valve is adjustably secured, and a bail secured to said head, said
25 bail passing through ears upon the upper portion of said body, said bail being bent outward and then downward at the middle por-

tion thereof, and said bail being secured at the lower portion of said body, substantially as shown and described.

2. In an air-valve for radiators, the combination of the body of the air-valve, comprising a float-chamber and a valve-stock, adapted to be attached to a radiator and to allow air from the radiator to pass into and through
35 the said body, a valve-seat within and near the outer exit of said valve-stock, an adjustable steam-valve adapted to be closed upon said valve-seat, a head in the inner end of which said valve is adjustably secured, and a
40 bail secured to said head, said bail passing through ears upon the upper portion of said body and being secured to the lower portion of said body, said head and bail being also so
45 adjusted to said body and valve as to prevent the removal of said valve from said head, substantially as set forth and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES L. JUDGE.

Witnesses:

H. M. PETERSON,
RUTH BERG.