

(No Model.)

A. W. FAHR.
ANTIFREEZING VALVE.

No. 594,070.

Patented Nov. 23, 1897.

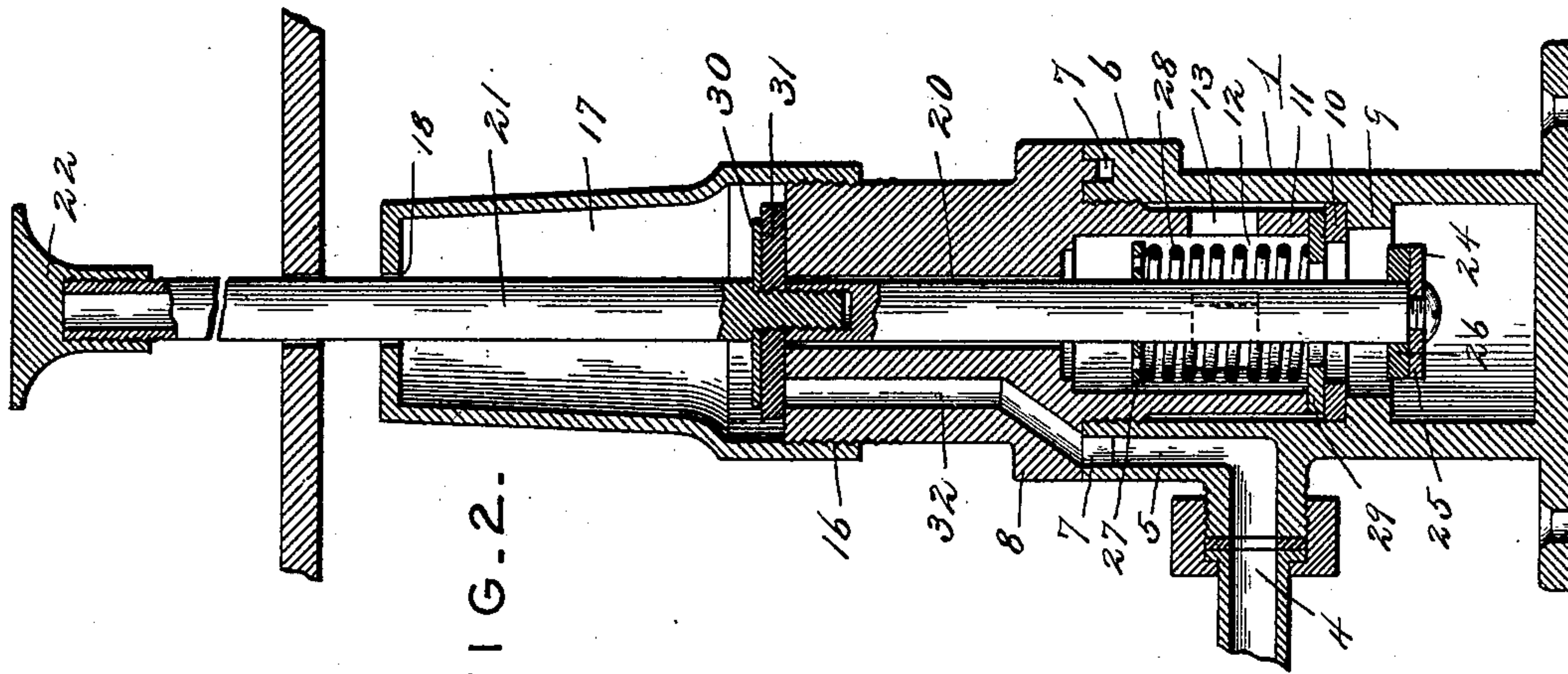


FIG. 2.

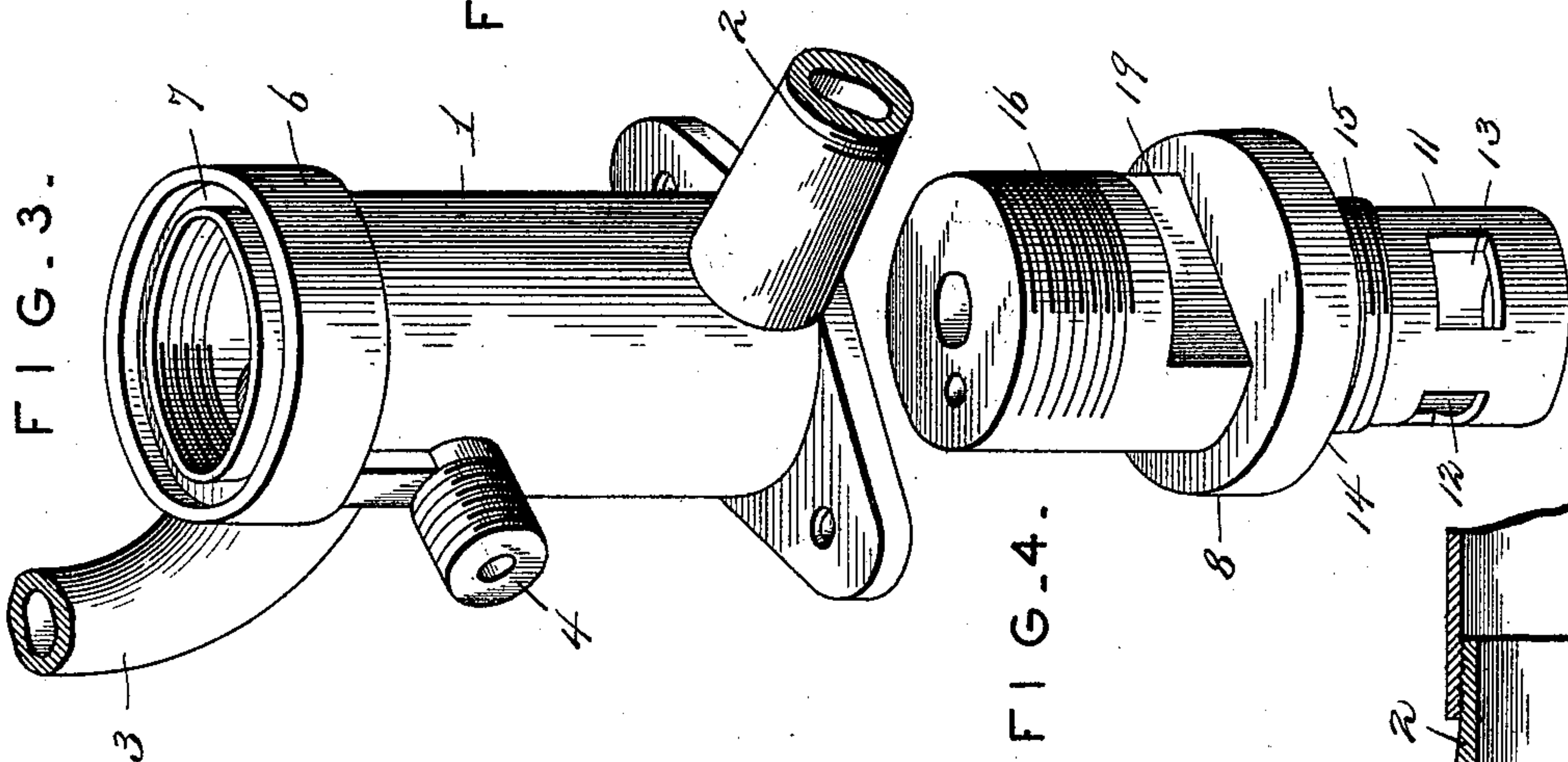


FIG. 3.

FIG. 4.

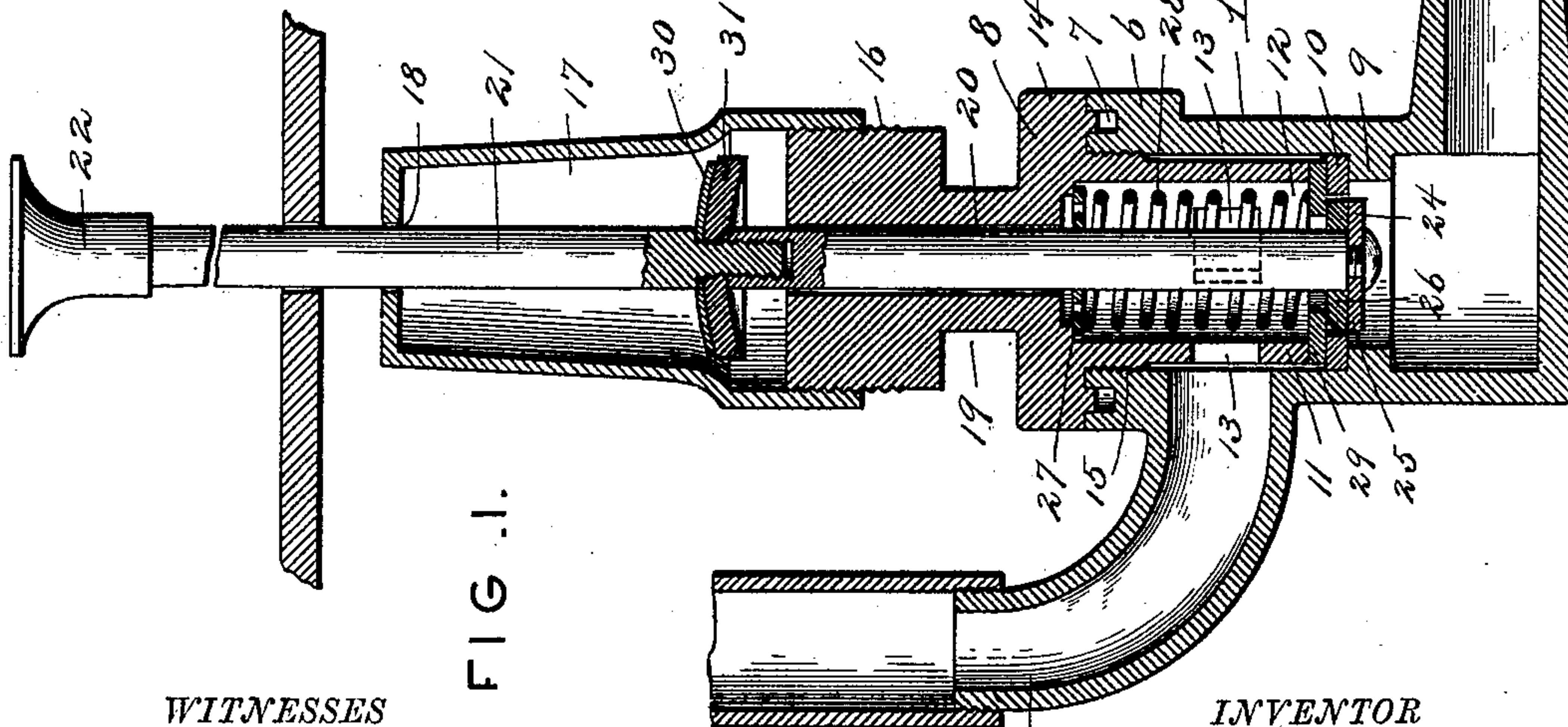


FIG. 1.

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ANTIFREEZING-VALVE.

SPECIFICATION forming part of Letters Patent No. 594,070, dated November 23, 1897.

Application filed December 17, 1896. Serial No. 616,091. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS W. FAHR, a citizen of the United States, residing at Manchester, in the county of Chesterfield and State of Virginia, have invented certain new and useful Improvements in Antifreezing-Valves; 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 antifreezing-valves, and the object in view is to provide a spring-actuated valve which will normally close the water-supply under the surface of the ground below the freezing-point or frost-line and which will also operate to drain off the water from the pipe or pipes leading to the point where the water is drawn therefrom for use.

The details of construction of the device and the objects of the invention will be clearly pointed out in the subjoined description.

The invention consists in certain novel features and details of construction and relative arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section through the valve and valve-casing constructed in accordance with the present invention. Fig. 2 is a similar view showing the valve open. Fig. 3 is a detail perspective view of the valve-casing. Fig. 4 is a similar view of the valve-cap.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the drawings, 1 designates the valve-casing, which in practice is placed underground and below freezing-point or frost-line. This casing is in the form of a vertically-disposed hollow cylinder and has near its bottom a water-inlet pipe 2 and near its upper portion an outlet or water-supply pipe 3, the said casing being further provided at an intermediate point with a waste-pipe adapted to discharge into the sewer, the said pipe communicating with a vertical opening 5, extending downward from the wall of the casing, the said wall being for that purpose thickened, as shown at 6. The opening 5

communicates at the top with an annular canal or groove 7, which is partially covered by the cap 8 of the valve-casing. The water drains into the groove 7 and thence out through the opening or passage 5. The valve-casing is provided below the water-supply pipe and above the inlet-pipe with an annular shoulder 9, upon which is placed a packing-ring 10 for affording a close joint between the valve-casing and cap.

The cap 8 is cylindrical in form, and its lower portion 11 is hollowed out, as indicated at 12, and provided with a series of apertures or waterways 13, through which the water passes into the supply-pipe. Several apertures 13 are provided, so as to insure communication between the cap 8 and pipe 3 regardless of the position of said cap. The cap is provided with an annular shoulder 14, and just beneath said shoulder the cap is screw-threaded, as indicated at 15, and screwed into the valve-casing, as shown in the sectional views. The upper portion of the cap 8 is threaded, as indicated at 16, to receive a conico-cylindrical box or casing 17, which is internally threaded to fit thereon and provided in its closed upper end with an opening 18 for the reciprocation of the valve-stem. The cap 8 is also provided upon opposite sides with notches or recesses 19, having overhanging shoulders adapted to receive the branches or arms of the forked end of an operating-rod, by means of which the operative portions of the valve and the cap 8 may be removed from the valve-casing whenever required for the purpose of repairing the same. Cap 8 is provided with a central longitudinal bore 20, through which reciprocates the valve-stem 21, said valve-stem being smaller in diameter than the bore 20 and extending upward above the surface of the ground, where it is provided with a cap 22, which may be depressed either by hand or foot power or by means of an operating-lever suitably mounted upon a hydrant or faucet or wherever the improved device may be utilized. Upon the lower end of the valve-stem is located the valve 24, which may consist of a metal washer 25, having superposed thereon a leather or packing disk or washer 26. This valve is adapted to move up and down within the annular shoulder in the valve-casing. Surrounding the valve-stem above the valve

is a washer 29, forming the lower seat of the valve-closing spring 28, said spring being interposed between said washer and a collar or shoulder 27 on the valve-stem, the said spring being arranged in the cavity in the cap 8 and exerting its tension to lift the valve and press the same snugly against the washer 29. The opening in the washer 29 is larger than the valve-stem, so as to admit the water from the inlet-pipe to the hollow lower portion of the cap 8, whence it escapes through the opening in the side and into the supply-pipe.

Above the cap 8 the valve-stem is provided with a flange or collar 30, between which and the upper end of the cap 8 is interposed a concaved washer 31, of leather or other soft material, the same being adapted when the valve-stem is depressed to close a drain-opening 32, extending longitudinally of the cap 8 and from the top surface of the cap beneath said washer downward, where it opens out under the circumferential flange of the cap, thus communicating directly with the annular groove or canal in the top edge of the valve-casing, as hereinabove described.

The operation of the device is as follows: When it is desired to obtain water from the hydrant or faucet, as the case may be, the valve-stem is depressed by the foot or hand or by means of any suitable mechanism, thereby lowering the valve 25 and allowing the water to enter the cap, the water passing thence through the openings in the side of the cap and thence through the water-supply pipe. Upon releasing the pressure on the valve-stem the spring referred to serves to close the valve and at the same time to open the drain-opening, thus allowing the water which flows downward through the supply-pipe and into the box or casing fitting over the cap 8 to pass through bore 20 and said drain-opening and enter the annular groove or canal in the valve-casing, the water passing thence through the vertical opening in the valve-casing and out through the waste-pipe into the sewer. It will thus be seen that the valve is self-draining, and by automatically emptying the pipe or series of pipes connected with the water-supply any possibility of the said pipes freezing is entirely overcome.

Having thus described the invention, what is claimed as new is—

1. In a self-draining valve, the combination with a valve-casing having inlet and discharge pipes and also a waste-pipe, and provided with an internal annular shoulder and a longitudinal passage communicating with the waste-pipe, of a cap removably fitted in said casing and having waterways formed in its sides and also provided with a drain-opening extending longitudinally through the cap, a movable valve-stem, a valve for closing the lower end of the cap, a spring for holding said valve normally closed, and a valve or washer

movable with the stem for closing the drain-opening when the valve proper is opened.

2. A valve-casing comprising inlet and outlet pipes communicating with the interior thereof and provided in one side with an inclosed opening, out of communication with the interior of the casing and in communication with a waste-pipe and in further communication with an annular canal or groove in the top of the casing, in combination with a cap removably fitted to said casing and provided with waterways for admitting water to the discharge or supply pipe and also having a drain-opening extending through said cap and communicating with the canal in the valve-casing, a valve normally actuated for shutting off the water-supply, and means for operating said valve, substantially as described.

3. In a self-draining valve, a valve-casing comprising a cylindrical body provided in its upper portion with an annular canal for receiving the drain-water and also having inlet and discharge orifices, and further provided with an inclosed passage affording communication between said canal and a waste-pipe, said passage being out of communication with the interior of the valve-casing, substantially as described.

4. In a self-draining valve, a valve-casing comprising a cylindrical body having an internally-arranged annular shoulder, in combination with a cap removably fitted to said casing, a valve-stem extending through said cap, a valve secured to the lower end of said stem, a washer interposed between said annular shoulder and cap, and a spring interposed between said washer and a collar or shoulder on the valve-stem and exerting its tension to hold the valve normally closed, substantially as described.

5. In a self-draining valve, the valve-casing substantially in the form of a hollow cylinder having inlet and outlet orifices and provided with an internal annular shoulder, in combination with a cap removably fitted in said casing and having a hollow lower portion provided with waterways opening through the side walls thereof, a valve-stem passing through said cap, a valve fast on the lower end of said stem, a washer or valve-seat interposed between said annular shoulder and the lower portion of the cap, and a spring arranged between said washer or seat and a collar or shoulder on the valve-stem, substantially as described.

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

AUGUSTUS W. FAHR.

Witnesses:

REXFORD M. SMITH,
ARTHUR BROWNING.