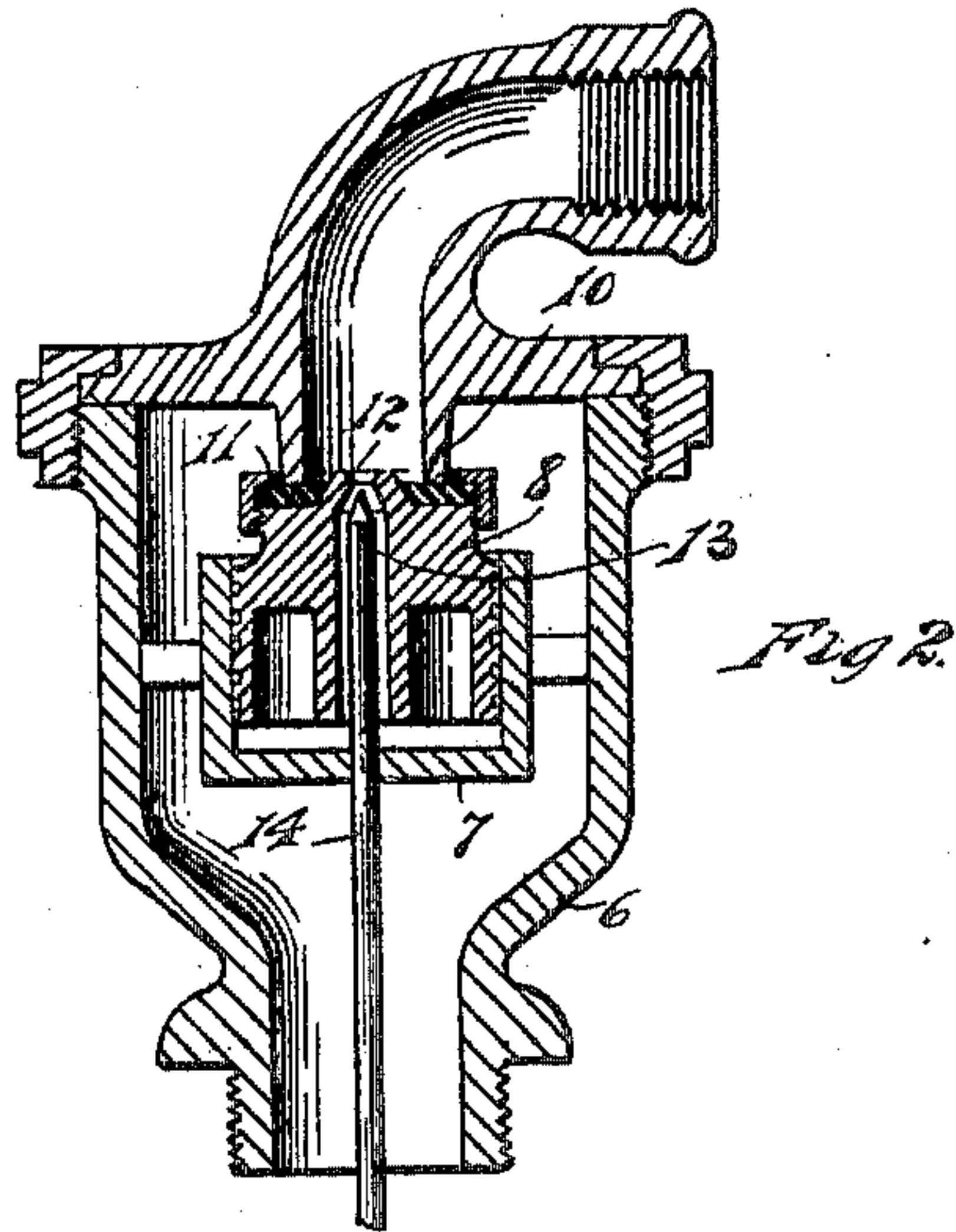
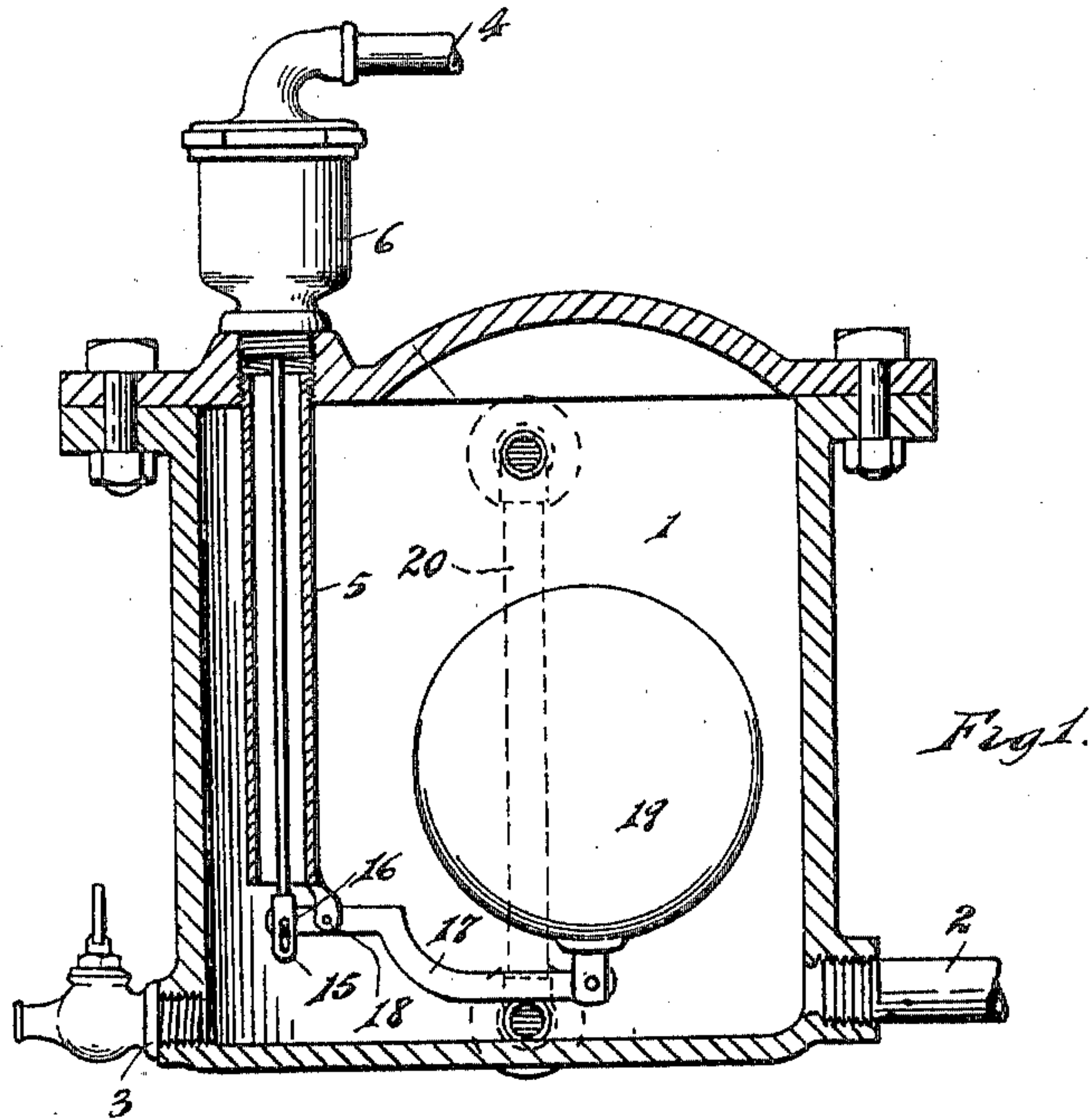


No. 811,420.

PATENTED JAN. 30, 1906.

E. A. MARSH.
STEAM TRAP.

APPLICATION FILED MAR. 20, 1905.



WITNESSES

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ELON A. MARSH, OF DETROIT, MICHIGAN, ASSIGNOR TO THE GREENAWAY COMPANY, OF DETROIT, MICHIGAN, A CORPORATION.

STEAM-TRAP.

No. 811,420.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed March 20, 1905. Serial No. 250,901.

To all whom it may concern:

Be it known that I, ELON A. MARSH, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Steam-Traps; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to steam-traps.

It has for its object an improved trap containing an automatically opening and closing main valve primarily started by a pilot-valve that is actuated by a float, and the float is contained in the body of the trap and connected to the pilot-valve by suitable levers and links. The main valve and the pilot-valve together, when both are closed, form a steam-tight closure across the mouth of the outlet-pipe, through which the accumulated water is to be finally driven out from the trap. The pilot-valve has but small surface to resist the opening action of the float and is easily opened at the proper time, after which the main valve is opened by the motive force of the water and the steam-pressure which tends to move the water.

In the drawings, Figure 1 is a vertical section through the trap. The valve-casing above the trap is shown in elevation. Fig. 2 is a vertical section through the valve-casing of the valve.

1 indicates the receptacle part of the trap, in which the waters that are to be separated from the steam accumulate.

2 is the inlet-pipe into the trap. 3 is a clean-out opening and valve therefor.

4 is the exit-pipe, through which the waters are all driven from the trap.

5 is an end of pipe dropping from the outflow-pipe 4 toward the bottom of the receptacle part of the trap and dipping into the accumulating waters. At the top of this pipe end 5, between it and the main outflow-pipe 4, is a valve-casing 6, inclosing a chamber, in which is held a cylinder-like receptacle 7 for the piston part 8 of a valve that seats against the pipe surrounding the orifice that leads into the outflow-pipe 4. The piston part 8 of the valve engages easily or loosely in the cylinder 7 and is provided on the upper side,

which engages against the valve-seat 10, with a suitable packing-gasket 11. The entire piston part of the valve is bored and at the upper part of the bore the bore contracts to make a seat 12 for a needle-valve 13, that terminates the upper end of a valve-stem 14. The lower end of the valve-stem is provided by a slot connection 15 with the end 16 of a lever 17. The lever 17 is pivotally suspended by pin 18 from the bottom end of the pipe 5 and supports the float that normally rests on the water in the trap.

In action the water accumulates in the trap, lifting the float 19 until the buoyancy of the float draws down the stem of the needle-valve and opens a passage through the orifice in the seat of the needle-valve, and thereby allows any water, air, or steam that may have accumulated in the cylinder 7 underneath the valve to escape freely into the passage 4 and reduces the resistance to an opening movement of the main valve by relieving the pressure from the under side of said valve. The pressure which is in the valve-chamber external to the cylinder 7 is now sufficient to drive the piston 8 into the cylinder and fully open the passage from the valve-chamber into the pipe 4, and water is driven out from the trap until its surface has fallen below the bottom of the pipe 5. When in this condition, the pressures on the opposite sides of the main valve are again equalized, or nearly equalized, and the weight of the float is sufficient to lift the needle-valve and the main valve which now hangs on the end of the needle-valve until the main valve closes against its seat and the needle-valve closes against its seat and the exit of the trap is closed.

A sight-feed or gage-glass 20, properly connected to the trap, shows the condition of the water therein at all times.

What I claim is—

1. In a steam-trap, a trap-chamber, a valve-chamber external to the trap-chamber and above the water-accumulating space therein, a main valve having a central passage, a piston-actuator for said valve, a cylinder surrounding said piston open at the top and having space for fluid therein under said piston and having discharge from said space through the said central passage in the main valve, a fluid-discharge pipe depending from the valve-chamber into the water-accumu-

lating space of said trap, a pilot-valve for controlling the passage through the main valve and a float for actuating said pilot-valve, substantially as described.

- 5 2. In a steam-trap, a trap-chamber, a valve-chamber external to the trap-chamber and above the water-accumulating space therein, a main valve having a central pas-
sage, a piston-actuator for said valve, a cyl-
10 inder surrounding said piston open at the top and having space for fluid therein under said piston and having discharge from said space through the said central passage in the main valve, a fluid-discharge pipe depending from

the valve-chamber into the water-accumu- 15
lating space of said trap, a pilot-valve for controlling the passage through the main valve and a float for actuating said pilot-valve, a pivot-and-slot connection between said float and pilot-valve, substantially as de- 20
scribed.

In testimony whereof I sign this specifica-
tion in the presence of two witnesses.

ELON A. MARSH.

Witnesses:

CHARLES F. BURTON,
MAY E. KOTT.