

No. 799,098.

PATENTED SEPT. 12, 1905.

J. SMITH.
STEAM TRAP.
APPLICATION FILED JUNE 8, 1905.

Fig. 1.

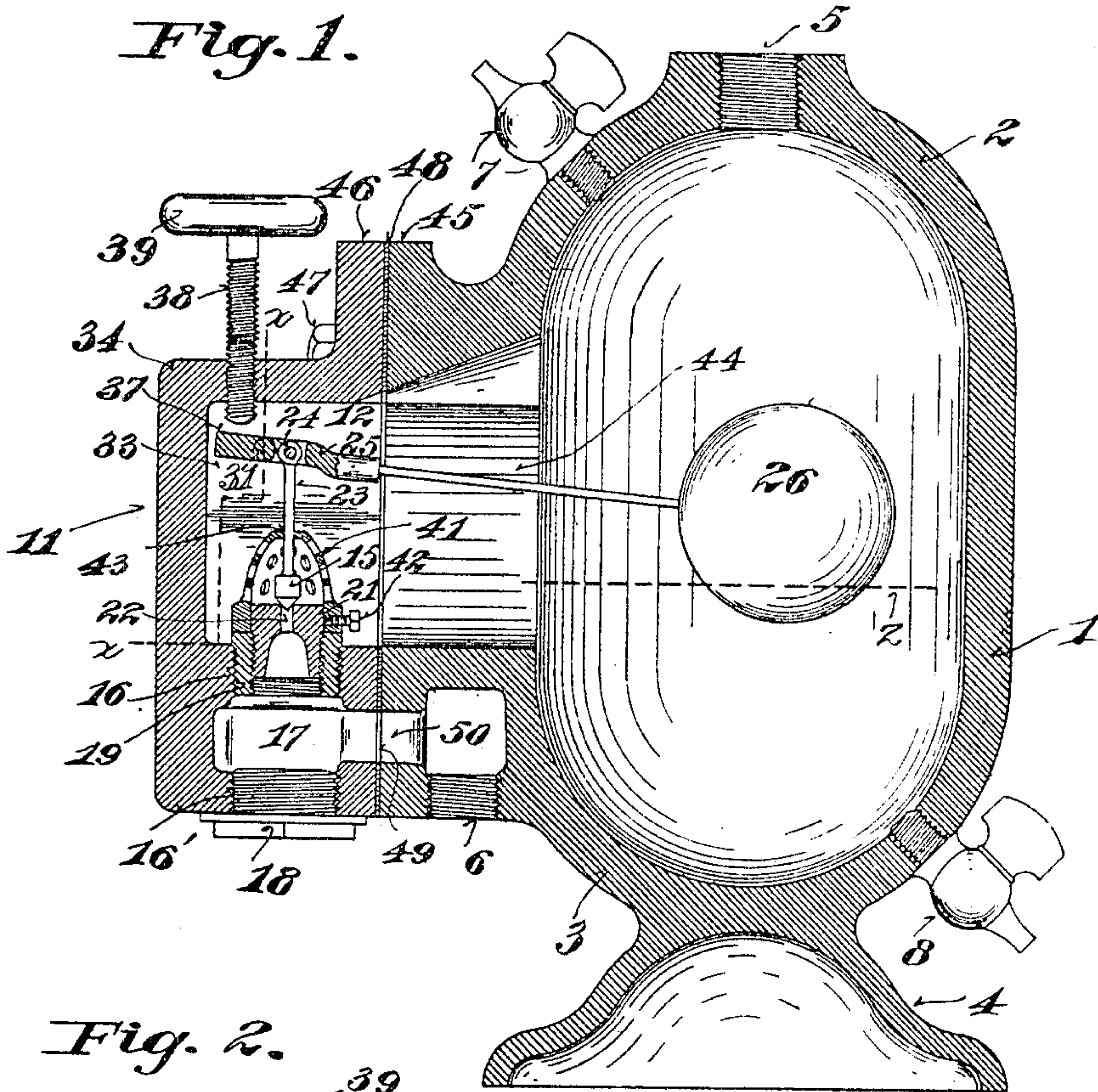


Fig. 2.

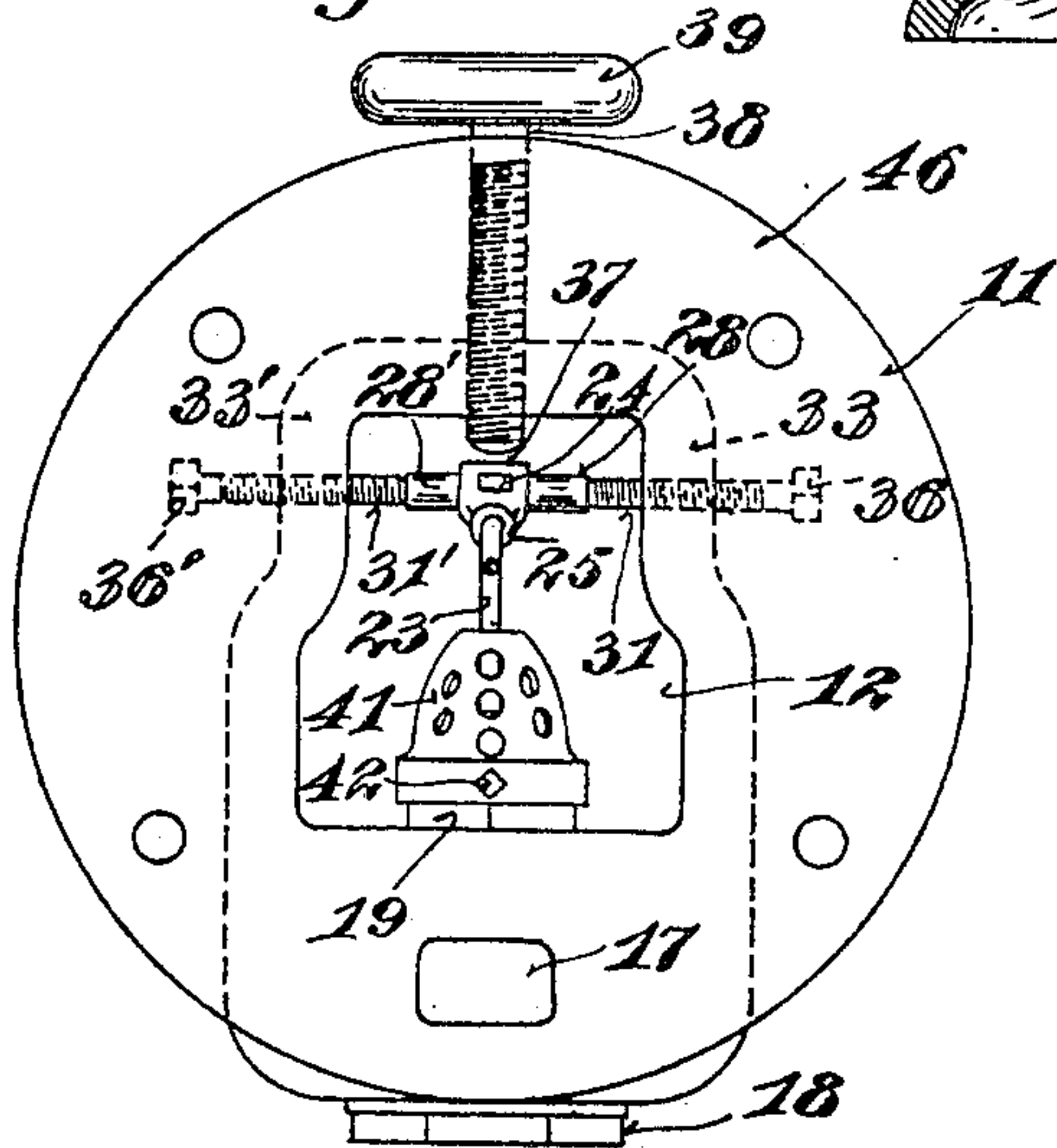
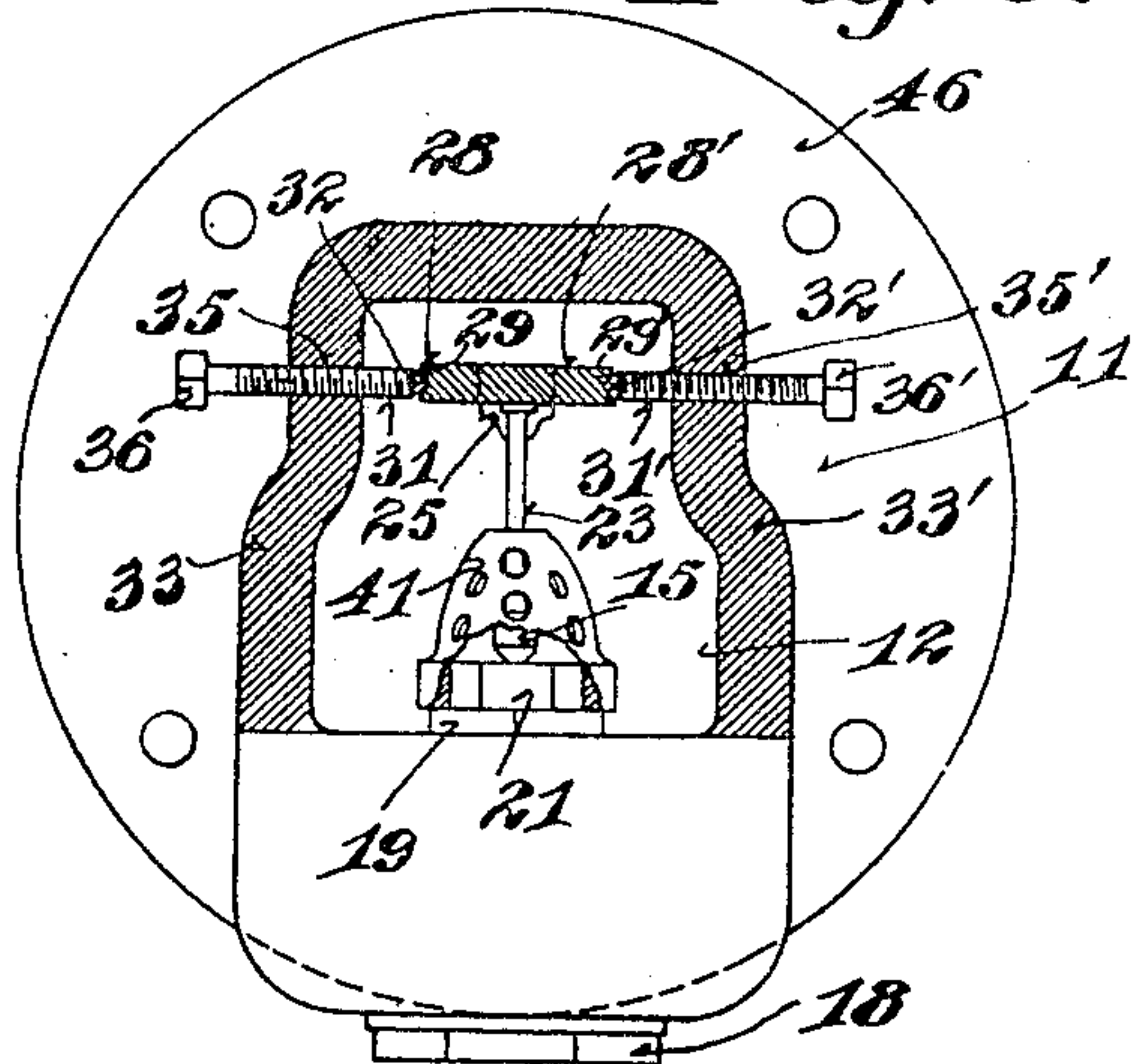


Fig. 3.



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STEAM-TRAP.

No. 799,098.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN SMITH, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Steam-Traps, of which the following is a specification.

My invention relates to steam-traps, and has for its object the providing of a new and improved steam-trap of simple construction and few parts in which the valve and moving parts are readily accessible and capable of being assembled upon a small part only of the frame of the trap, which latter is arranged for attachment to the body proper of the trap after such assembling.

My improved device is intended for use under high pressures, and is so constructed and arranged as to be especially applicable for such use, although it is obvious that it may also be used where so-called "high pressure" is not maintained.

My improved device is further preferably constructed in such manner that the steam and discharge pipes may be connected with the body proper of the trap, so as not to be disturbed by removing the cap and the parts supported thereby.

The invention will be readily understood from the following description and claims and from the drawings, in which—

Figure 1 is a central vertical section of my improved device. Fig. 2 is an interior view of the cap, showing the parts attached thereto in assembled relation with the float-lever broken away; and Fig. 3 is a detail of the same, partly broken away and partly in section, on the line *x x* of Fig. 1.

1 represents the body proper or shell of my improved device, which, as shown, is preferably in the form of a shell having rounded ends 2 and 3 at top and bottom thereof, respectively, and approximating in cross-section the form of an ellipse, thereby affording great resisting power against internal pressure. The lower part of the shell may merge into a flange 4, forming a foot for the trap.

5 is the inlet-opening, and 6 is the outlet-opening, in the shell 1, to which suitable pipe connections may be made.

7 is an air-cock located in the upper rounding of the shell, and 8 is a blow-off cock secured in the lower rounding of the shell, the said lower rounding forming a water-pocket in which the sediment in the water of condensation may collect, the sediment being dis-

charged from the trap when the blow-off cock is opened. The blow-off cock may also be connected by a suitable piping with a waste-pipe.

11 is a cap and has a cavity 12, in which the valve 15 is located. This cap has a threaded opening 16 16', the respective parts 16 16' thereof being separated by a passage 17. The opening 16' is closed by a plug 18. The opening 16 has a nipple 19 firmly secured therein, as by being threaded thereon. A valve-seat 21 is threaded into the nipple in the cavity 12 and is so arranged that it is readily removable for regrinding, attention, or renewal, being preferably in the form of a threaded bolt having an interior longitudinal passage 22, communicating with the passage 17.

The valve 15 has a stem 23, said stem being articulated, as at 24, with a lever 25, this lever being preferably a float-lever and carrying a float 26 at its free end. The lever preferably has side wings 28 28', in which seats 29 29' are formed. These seats receive the ends of bolts 31 31', said ends being preferably pointed, as shown at 32 32', and taking into said seats 29 29', the side walls of said seats preferably flaring more than the inclined faces of the pointed ends 32 32' of said bolts for providing a pointed pivot on which the float-lever may swing, providing sensitive movement for said lever. These bolts are threaded into the side walls 33 33' of the protrusion 34, formed on the cap 11 for forming the cavity 12. The bolts are threaded in threaded apertures 35 35' in said side walls 33 33' and project into the said cavity, their headed ends 36 36' being outside of said protrusion and trap for ready adjustment at any time of the pivotal points of the float-lever without removal of any part of the trap. The articulation 24 between the float-lever and valve-stem is preferably closely adjacent to the bolts 31 31'. The float-lever has a tailpiece 37 in rear of its pivotal point, and the cap is provided with a threaded rod 38, having a hand-wheel 39 adapted to take against the tailpiece for raising the valve.

41 is a perforated shield taking over and secured to the valve-seat as by means of a set-screw 42. This shield has an aperture 43 acting as a guide for the valve-stem.

The shell has an opening 44 coincident with the cavity 12 in the cap. The shell has a flange 45, and the cap has a flange 46, through which the cap is bolted to the shell by means of bolts 47, a packing 48 being interposed be-

tween flanges of the shell and cap, said packing having an opening 49 registering with the passage 17. This opening 49 also registers with a passage 50 in the shell communicating with the outlet 6. This construction permits the inlet and outlet pipes to be threaded to the stationary part or shell of the trap and the valve to be on the removable cap, the cap and shell each having a portion of the passage therein from the valve-seat, which portions register for forming a continuous passage to said outlet-opening.

My improved device is so constructed that it may withstand great pressure, and the parts are so arranged that the valve may remain comparatively free from sediment as it is elevated above the sediment-chamber of the shell, to which latter sediment naturally gravitates, while a water seal is maintained above the valve-seat during operation, the float being maintained sufficiently high to prevent discharge of the water of condensation to a level as low as the level of the valve, the preferably lowest level of the water of condensation being indicated by the dotted line *z*.

In my improved device the valve-seat and the valve, together with the operating mechanism of the latter, are mounted on the removable cap, which cap is devoid of steam-pipe connections, so that the cap may be readily and conveniently removed from the shell without disturbing any pipe connection and without disturbing any adjustments of the valve parts. The valve-seat and the valve and the mounting of the latter are also within the cavity of the cap, so that danger of injury to the parts is minimized. After the parts have been properly mounted on the cap, the cap, together with its mounting, is bodily bolted to the shell proper, the float being introduced through the opening 44 in the shell.

The valve may have threaded adjustments with its stem, and the articulation between the stem and the float-lever may be loose. A suitable glass gage to show elevation of the water of condensation may be provided.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a steam-trap, the combination, with a shell having an inlet-opening, an outlet-opening, and a passage in its wall connecting with said outlet-opening, of a cap having a cavity, a valve-seat having a passage therethrough,

said cap also having a passage communicating with said valve-passage and registering with said first-named passage in said shell, a valve, means for pivotally mounting said valve, said latter means, valve and valve-seat being in said cavity of said cap, substantially as described.

2. In a steam-trap, the combination, with a shell having an inlet-opening and an outlet-opening, of a removable cap, a valve-seat thereon provided with a fluid-passage, said removable cap having part of a fluid-passage therein with which said valve-passage communicates and said shell having part of a fluid-passage therein communicating with said outlet-opening, said part of the fluid-passage in said cap registering with said part of said fluid-passage in said shell for forming a continuous fluid-passage between said valve-seat and outlet-opening, substantially as described.

3. In a steam-trap, the combination of a casing, a valve-seat secured thereto, a valve, a float-lever to which said valve is articulated, bolts threaded from the outside of said casing through the walls of said casing, said float-lever being pivoted on the inner ends of said bolts, the outer ends of said bolts being outside said casing, and said valve, valve-seat, float-lever, and pivot ends of said bolts being inside said casing, substantially as described.

4. In a steam-trap, the combination, with a shell having an inlet-opening, an outlet-opening, and a passage communicating with said outlet-opening, of a cap having a cavity and a passage registering with said first-named passage, a valve-seat in said cavity having a passage therethrough connecting with said last-named passage in said cap, a valve in said cavity, a float-lever having connection with said valve, and bolts threaded in opposite walls of said cavity and taking into said cavity from the outside of said cap, said float-lever being pivoted on the inner ends of said bolts, the outer ends of said bolts being outside of said cap for adjustment of said pivot, substantially as described.

In witness whereof I have subscribed my name hereto in the presence of two subscribing witnesses.

JOHN SMITH.

Witnesses:

HARRY M. BAUGH,
LAWRENCE RAAB.