No. 763,843. PATENTED JUNE 28, 1904.

S. BELT.

STEAM TRAP.

APPLICATION FILED SEPT. 14, 1903.

NO MODEL.

Fig. 1.

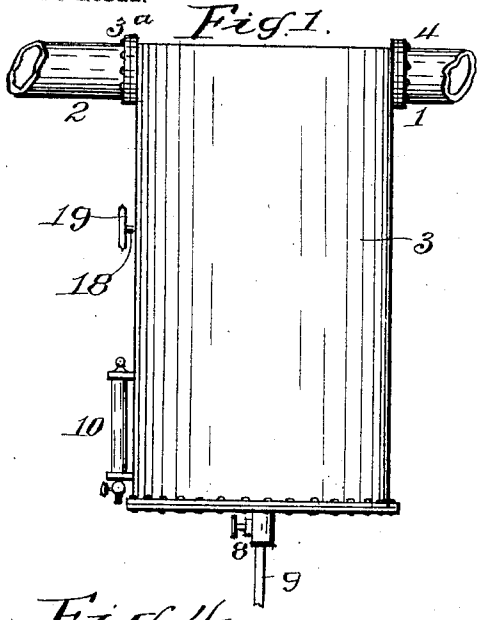


Fig. 2.

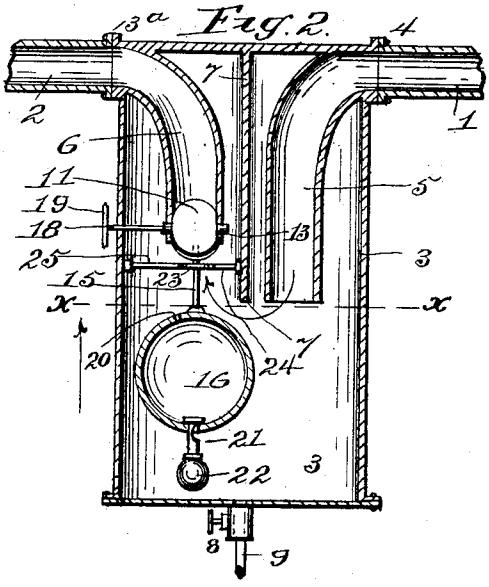


Fig. 4.

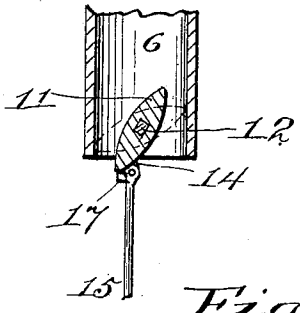


Fig. 3.

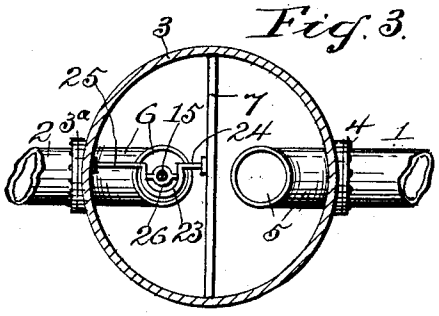


Fig. 5.

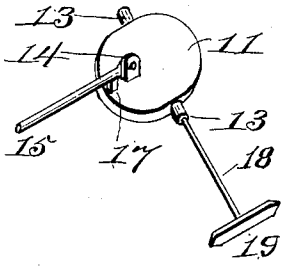
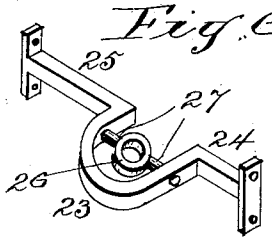


Fig. 6.



Witnesses

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No. 763,843. Patented June 28, 1904.

UNITED STATES PATENT OFFICE.

SAMUEL BELT, OF LEESBURG, VIRGINIA.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 763,843, dated June 28, 1904.

Application filed September 14, 1903. Serial No. 173,157. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL BELT, a citizen of the United States, residing at Leesburg, in the county of Loudoun and State of Virginia, have invented certain new and useful Improvements in Steam-Traps, of which the following is a specification.

This invention relates to steam-traps, and pertains especially to the class of traps having butterfly or similar valves operated by a float.

The object of the invention is to provide a tank, receptacle, casing, or inclosure having steam ingress and egress pipes extending downwardly thereinto, one of said pipes being connected to the steam-pipe leading from a boiler and the other of said pipes being attached to the steam-pipe leading from the receptacle to an engine and having a valve operated by a vertically-moving float worked by overflow-water from the boiler in the said receptacle in the event of foaming or excess of water in the boiler to close the valve and shut off steam to the engine.

A further object of the invention is to provide a steam-trap for engines adapted to be hung from or suspended by the pipe-line from the boiler to the engine, so as to intersect the line of pipe and continue it into a receptacle of the trap by means of downwardly-bent open-end pipe-sections, one of which has a valve balanced by a float pendent therefrom to keep the valve open during the proper working of the boiler and engine and to close the valve by vertical movement of the float-stem under pressure of the float when the latter is floated by overflow-water from the boiler.

A still further object of the invention is to provide in a steam-trap a valve pivoted to swing in the egress-pipe of the trap and having a vertically-operated float-stem pivoted thereto eccentric to the pivot of the valve, a peculiar bracket to guide said stem and to control the lateral movement of the float, and a relief-valve for said float and operated by a supplemental float.

In the accompanying drawings, forming part of this application, Figure 1 is an elevation of the trap applied to a line of steam-pipe from a boiler to an engine. Fig. 2 is a vertical sectional view. Fig. 3 is a cross-section on the line $x\,x$, Fig. 2. Fig. 4 is a detail cross-section of the valve. Fig. 5 is a perspective view of the valve and part of the float-stem. Fig. 6 is a perspective view of the guide-bracket.

The same numeral references denote the same parts throughout the several views of the drawings.

The steam-pipe 1, leading from a steam-boiler, and the steam-pipe 2, leading to an engine, constitute the pipe-line hereinbefore and hereinafter referred to.

The tank, inclosure, or receptacle 3 is positioned to intersect the pipe-line by interposing the top portion between the ends of the pipes 1 and 2 and connecting the latter thereto at 3^a and 4, so that the receptacle hangs vertically from or is suspended by the pipes. The top portion of the receptacle has ingress and egress pipe-sections 5 and 6, respectively, the latter being coupled to the engine-pipe 2 and the former to the boiler-pipe 1, and they curve downwardly within the receptacle and terminate in open ends, the pipe 5 being preferably longer than the pipe 6 and separated from the latter by a partition 7, reaching from the top of the receptacle to the end of the pipe 5, so that the discharge from the pipe 5 will be below the pipe 6 and directed toward the bottom of the receptacle, the receptacle being provided with a suitable valve 8 and drain-pipe 9, leading to an ordinary water-trap, and with a water-gage 10.

The valve 11 is preferably of the butterfly type and has a square pin 12, terminating in trunnions 13, pivoted or journaled in the open end of the pipe-section 6. The valve has a lug 14 offset from the pivot-line of the valve or in eccentric position relative thereto, and the stem 15 of the float 16 is pivoted to the lug 14, so that the float may hang vertically in line with the pipe 6 and pendent from the valve. The stem 15 has a stop-lug 17 to limit the opening movement of the valve or prevent its becoming dead-centered. The pivot-pin 12 has a rod 18 projecting therefrom through the wall of the receptacle, and the rod is provided with a vane 19 to indicate the position of the valve. The float 16 is hollow and has an aperture 20 near the stem and is provided with a

relief-valve 21 at the bottom, which is operated by a small supplemental float 22.

The guide-bracket for the float-stem and for controlling the lateral movement of the float consists, preferably, of a U-shaped bar 23, having an arm 24, attached to the partition 7, an arm 25, attached to the wall of the receptacle, and a collar 26, through which the float-stem 15 works, and is provided with pivots 27, working in the U-shaped bar. This arrangement provides for the proper vertical swinging movement of the stem and float perpendicularly to the valve and limits or controls any other movement of the float except its vertical movement. The valve being oblong or somewhat larger than the pipe, the vertical movement of the stem is controlled thereby in closing and in opening by the stop-lug of the stem.

It is obvious that an excess of water in the boiler will overflow by way of the pipe 1 and ingress-pipe 5 into the receptacle, which will raise the float and close the valve, thereby shutting off steam to the engine, it only being necessary to drain off the water from the receptacle to permit the float to open the valve, The valve 11 may be pivoted in a coupling secured to the pipe 6.

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

1. The combination with the receptacle having ingress and egress pipes terminating downwardly within the receptacle and in communication with a steam-pipe line, of a valve pivoted in the end of the egress-pipe, a float having a stem attached to the valve eccentric to its axis, a relief-valve in said float, and a supplemental float to operate the relief-valve.

2. In a steam-trap, the combination, with a receptacle having ingress and egress pipes terminating therein and coupled with a steam-pipe line, of a valve pivoted in the egress-pipe, a float in the receptacle and having a stem connected with and working eccentric to the valve, and a guide-bracket having a pivoted collar through which the stem works.

3. In a steam-trap, the combination, with the receptacle, the ingress and egress pipes, a valve hinged or pivoted in the egress-pipe, a float having a stem working vertically and connected eccentric to the valve, of a guide-bracket comprising a U-shaped bar fixed within the receptacle, and a collar pivoted in the bar and through which the float-stem works.

In witness whereof I hereunto set my hand in the presence of two witnesses.

SAMUEL BELT.

Witnesses:

J. ROSS COLHOUN,

C. T. BELT.