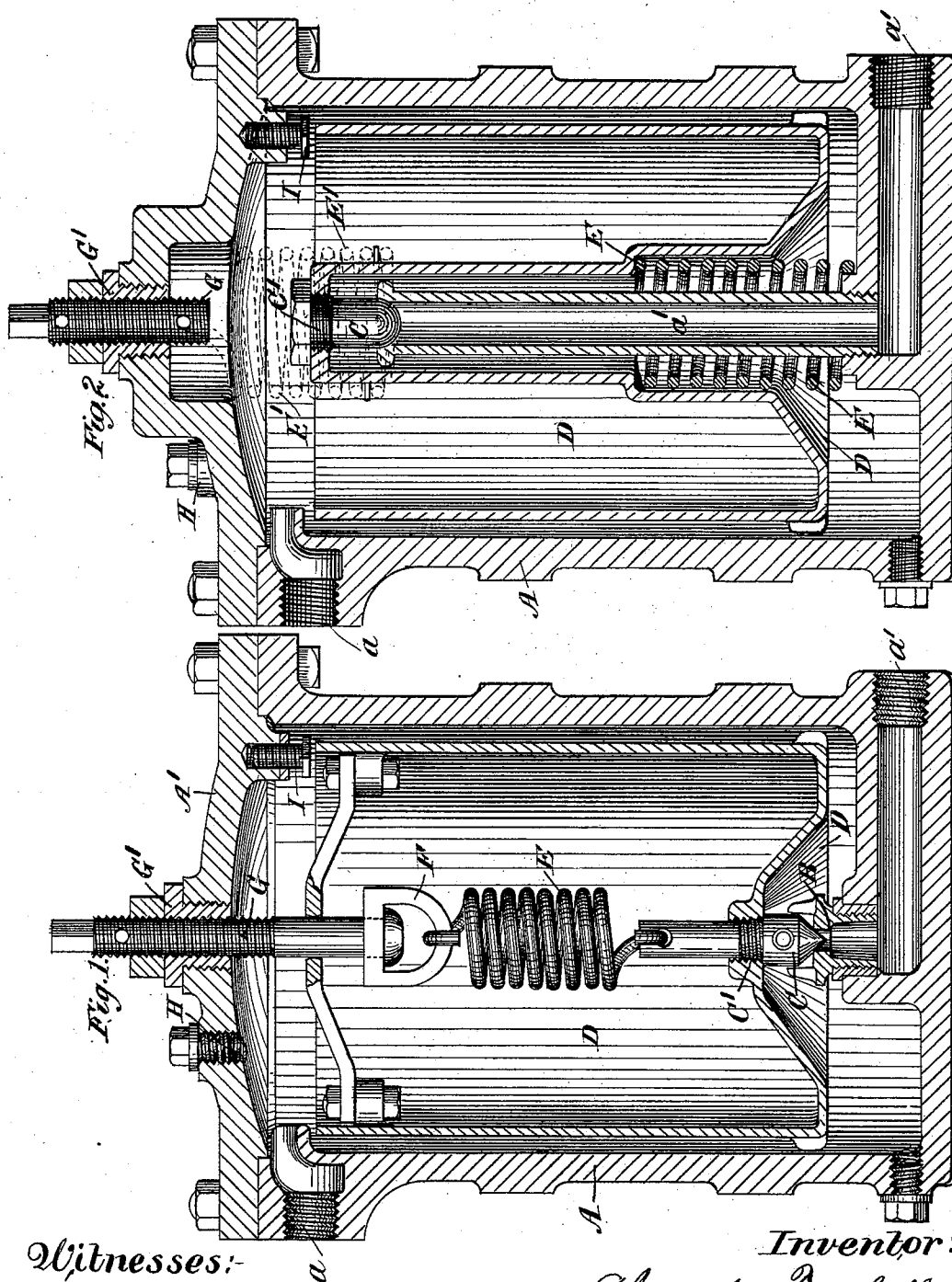


(No Model.)

A. TURNBULL.
STEAM TRAP.

No. 540,470.

Patented June 4, 1895.



Witnesses:-
W. E. Bowen
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Inventor:-
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Att'y.

UNITED STATES PATENT OFFICE.

ALEXANDER TURNBULL, OF BISHOPBRIDGE, SCOTLAND.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 540,470, dated June 4, 1895.

Application filed December 19, 1894. Serial No. 532,349. (No model.) Patented in England March 25, 1893, No. 6,366.

To all whom it may concern:

Be it known that I, ALEXANDER TURNBULL, engineer, a subject of the Queen of the United Kingdom of Great Britain and Ireland, residing at St. Mungo Works, Bishopbridge, in the county of Lanark, Scotland, have invented new and useful Improvements in Steam-Traps, (which have not been patented in any country except Great Britain by Letters Patent dated 10 March 25, 1893, No. 6,366;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art or manufacture to which it relates to make and use the 15 same.

My invention has for its object to provide a steam trap wherein the closing pressure on the discharge valve is regulated or controlled by a spring the degree of tension or compression of which may be varied to support 20 more or less of the weight of a water vessel or float partially floated or buoyed up by the water of condensation within the casing.

In the accompanying drawings, Figure 1 is 25 a vertical section of my improved steam-trap in which the regulating spring is under tension; and Fig. 2 is a similar view of another form of trap, showing in full lines the regulating-spring under compression and in dotted lines a modification as far as the position 30 of the regulating-spring is concerned, the spring in the latter case being held in tension.

As shown at Fig. 1 the improved trap is composed of the usual casing A having an inlet 35 α for steam and water and an outlet α' for the water of condensation, the outlet orifice being fitted with a valve seat B over which is fitted a valve C attached by a screw-threaded stem C' to a float or vessel D filled with water 40 and serving by its weight to maintain the valve normally closed upon its seat.

To the valve stem C' is attached one end of a helical spring E whose other end is connected to a bridge or saddle piece F suspended 45 on a screw-threaded spindle G passing through a nut or nuts G' fitted in the closed cover A' of the trap casing the spring being adapted to wholly or partially counterbalance the weight of the water vessel D. By turning

the spindle G and thereby raising or lowering 50 the bridge piece F the tension on the spring E may be varied so as to increase or diminish the closing pressure on the valve due to the weight of the can D and its contents. A plugged orifice H is provided in the cover 55 A' through which the can D is filled with water.

In the operation of the apparatus the water formed by condensation of steam entering the casing A by the inlet α falls into the can 60 D and overflows the casing becoming partially filled. When the water accumulates in sufficient quantity to buoy up the can D, which will be dependent on the weight supported by the spring E, the valve C is lifted from its 65 seat and the steam pressure forces out so much of the water from the casing through the outlet α' as will permit of the weight of the can D overcoming the buoyancy of the water whereupon the can D descends and 70 closes the valve.

In the form of my invention shown in full lines at Fig. 2 the can or vessel D is supported by a spring interposed between it and the bottom part of the casing and is under com- 75 pression. The can D is of annular form and the water passes out of the casing by an annular passage between the can and the outlet pipe α' which is carried up vertically and terminates in a valve seat formed under the valve 80 C which has a screw-threaded stem C' passed through an orifice tapped in the central part of the can. Adjustment of the closing pressure upon the valve C may in this example be effected by screwing or unscrewing the valve 85 stem C' to raise or lower the valve so that the spring E carries more or less of the weight of the can. With this formation of can and outlet a spring E' in tension from which the can is suspended may be used as indicated by 90 dotted lines, in lieu of the spring E under compression, or in conjunction with it. An adjustable stop I is provided in each case to limit the extent of upward movement of the can and consequent opening of the valve. 95

Having now described the invention, what I desire to claim and secure by Letters Patent is—

In a steam trap, the combination with its casing, of a vessel or float partially floated or buoyed up by the collecting water of condensation, a discharge valve attached to the float, 5 a spring from which the float is suspended, and an adjustable hanger supporting the spring, substantially as set forth.

In witness whereof I have hereunto set my hand and seal this 3d day of December, 1894.

ALEXANDER TURNBULL. [L. S.]

In presence of—

WALLACE FAIRWEATHER,
JNO. ARMSTRONG, Jr.