R. T. PASCALL.
Steam-Trap.

No. 206,748. Patented Aug. 6, 1878.

*Fig. 1.*

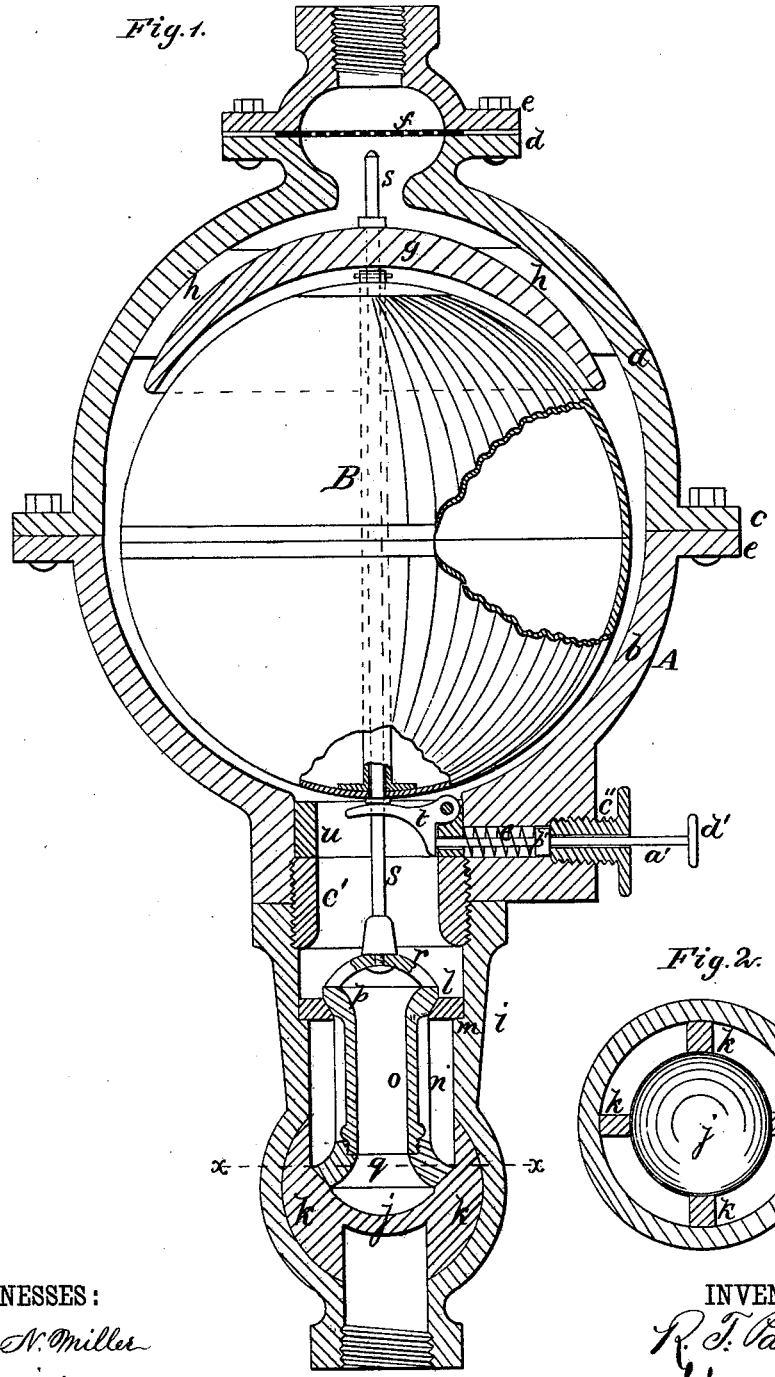


*Fig. 2.*




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## IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. **206,748**, dated August 6, 1878; application filed June 21, 1878.

*To all whom it may concern:*

Be it known that I, RICHARD T. PASCALL, of New York city, in the county and State of New York, have invented a new and Improved Steam-Trap, of which the following is a specification:

Figure 1 is a vertical section of my improved steam-trap. Fig. 2 is a transverse section taken on line *x x* in Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention relates to a steam-trap of novel construction; and it consists in a casing containing a spherical corrugated sheet-metal float, and having a strainer for preventing the entrance of dirt, and provided with a balanced discharge-valve.

It also consists in a device for lifting the float independently of the action of the water, and also in a guard placed above the float, to carry the water that enters the trap to the side of the casing.

Referring to the drawing, A is a casing, which is nearly spherical in form, and is composed of two sections, *a b*, which have flanges *c*, for receiving the bolts by which the two sections are fastened together. The upper section is provided with a flange, *d*, to which is bolted the flange *e*, which receives the drip-pipe. Resting between the edges of flanges *d e* there is a wire-cloth or perforated sheet-metal strainer, *f*, which prevents the entrance of large solid particles to the trap-casing.

A concave guard, *g*, is supported in the upper portion of the section *a* by wings *h*, so as to leave a passage between it and the inner surface of the upper half of the casing.

A valve-casing, *i*, is connected with the lower half, *b*, of the casing A by means of a nipple, $c^1$, which is screwed into the discharge-aperture of the casing, and into the top of the valve-casing. The lower end of the valve-casing is threaded internally to receive the discharge-pipe.

The valve-casing contains a cup-valve seat, *j*, which is suspended by wings *k*, and also an annular valve-seat, *l*, which rests upon a shoulder, *m*, formed in the upper portion of the valve-casing.

The valve *n* consists of a tube, *o*, having on its upper end an annular valve, *p*, which is fitted to the annular valve-seat *l*. An annular valve, *q*, is screwed on the lower end of the tube *o*, and is fitted to the cup-valve seat *j*. The tube *o*, being smaller in diameter than the opening of the annular valve-seat *l*, admits of the passage of water between the valve-seat and tube.

It will be seen that the upper and lower valves are connected together by the tube *o*, and that when the valves are upon their seats the escape of water from the casing A is prevented. The under surface of the lower valve is flaring or bell-shaped, so that the internal diameter of the valve-face is equal to the external diameter of the upper valve-face, thereby insuring an equilibrium of pressure on the upper and lower ends of the valve, so that little or no power is required to operate it.

A curved yoke, *r*, connects opposite sides of the valve, and is drilled on the axial line of the valve to receive a spindle, *s*, which extends upward through the guard *g*. Upon this spindle is secured a spherical float, B, which is formed in halves of sheet metal, and is corrugated to stiffen it, so that it will resist external pressure. It is also stayed by a tube, which extends axially through it and projections above it, and receives the valve-spindle, which is fastened thereon by a pin that passes through both spindle and tube above the float. Below the float there is a lever, *t*, which is pivoted to a ring, *u*, that rests upon the nipple $c^1$. The longer arm of this lever is forked to straddle the spindle *s*, and its shorter arm projects downward and rests against the inner surface of the ring *u*.

A spindle, *a'*, having a collar, *b'*, extends through a stuffing-box, $c^2$, in the lower part of the section *b*, and is provided with a button or knob, *d'*, at its outer end, while its inner end projects through a hole in the ring, and engages the short arm of the lever *t*. Between the collar *b* and the ring *u* a spiral spring, *e'*, is placed on the spindle *a'*, to force it outward.

By pushing the spindle *a'* the float may at any time be raised so as to open the valve *n*, and permit steam and water to flow through the trap. The steam and water, entering the trap, are spread by the guard *g*, which carries them to the sides of the casing, and thus pre-

vents an accumulation of sediment on the top of the float, and also prevents the cutting of the float by the steam or water.

When the water in the casing A becomes high enough to raise the float the valve is opened and the water escapes.

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

1. The combination, with case A and float having valve *n*, of the spring-spindle *a'*, having collar *b'*, stuffing-box $c^2$, two-armed lever *t*, and ring *u*, as and for the purpose specified.

2. In combination with a steam-trap, the corrugated spherical sheet-metal float, as herein shown and described.

3. The double-seated tubular valve *n*, in combination with the valve-casing *i*, having the cup-seat *j* and seat *l*, substantially as herein shown and described.

RICHARD T. PASCALL.

Witnesses:
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