

No. 633,180.

Patented Sept. 19, 1899.

E. AMODEO-SALVATOR.
STEAM TRAP.

(Application filed Feb. 16, 1899.)

(No Model.)

3 Sheets—Sheet 1.

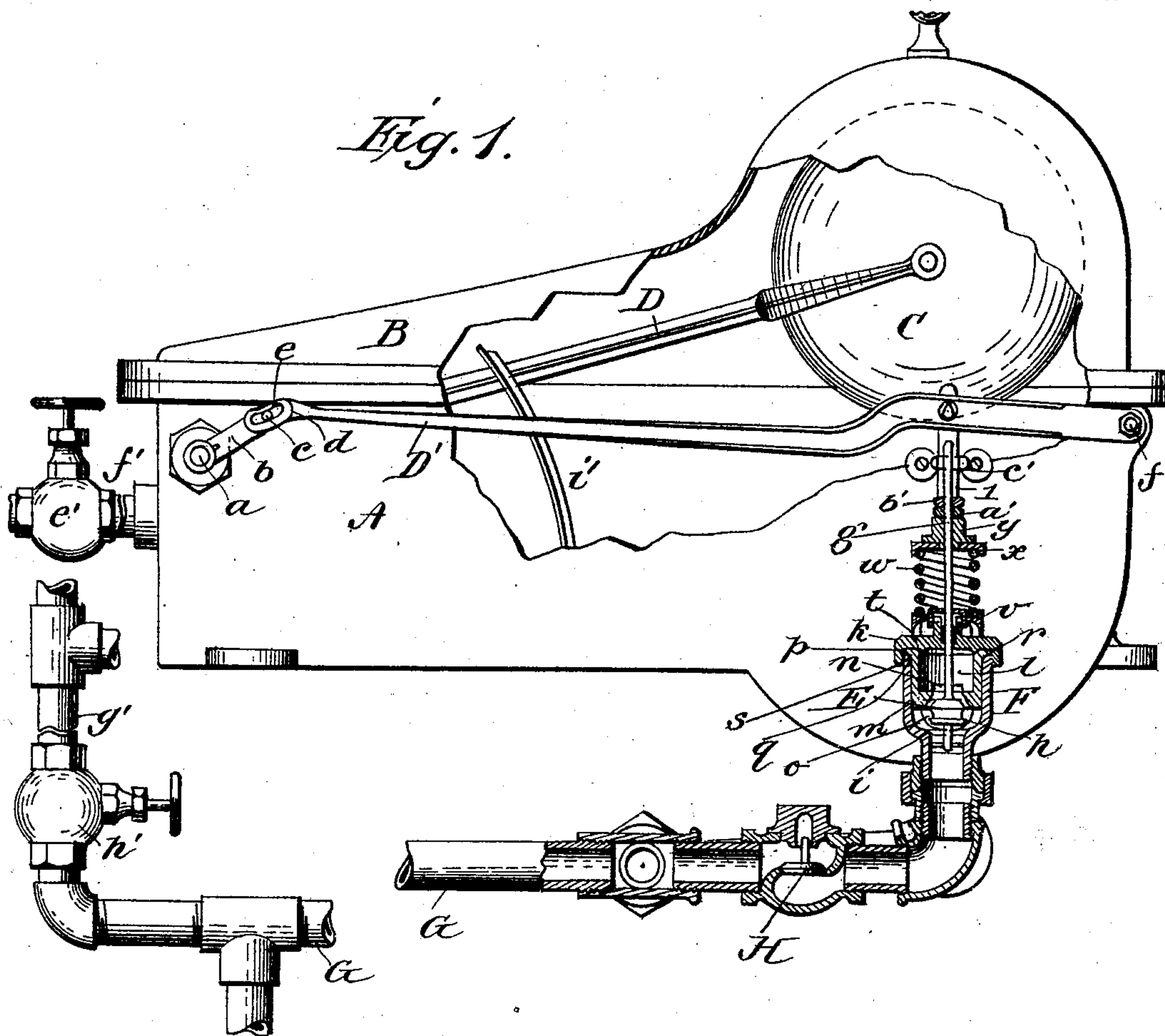
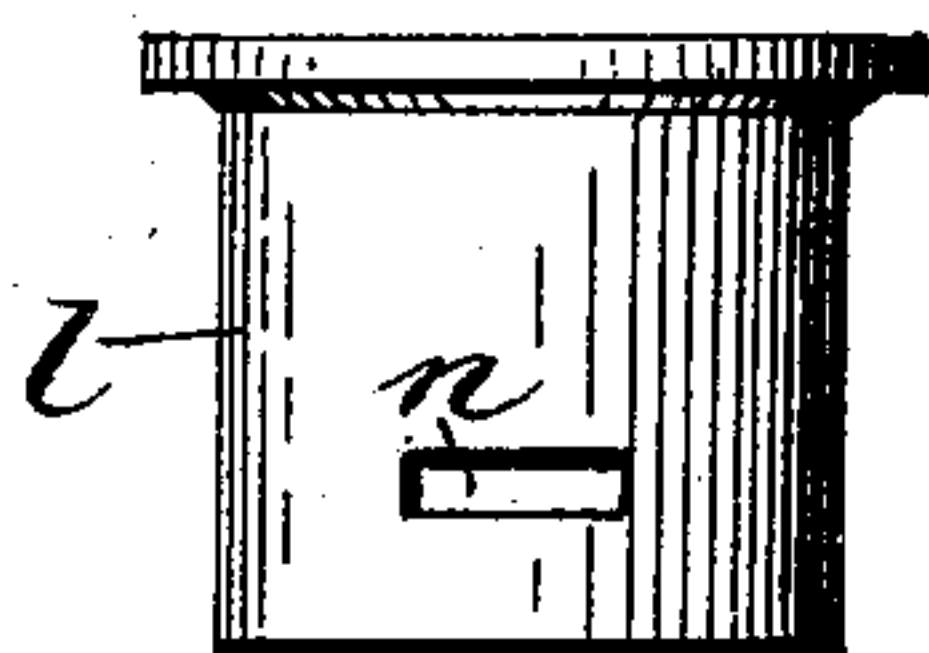


Fig. 4.



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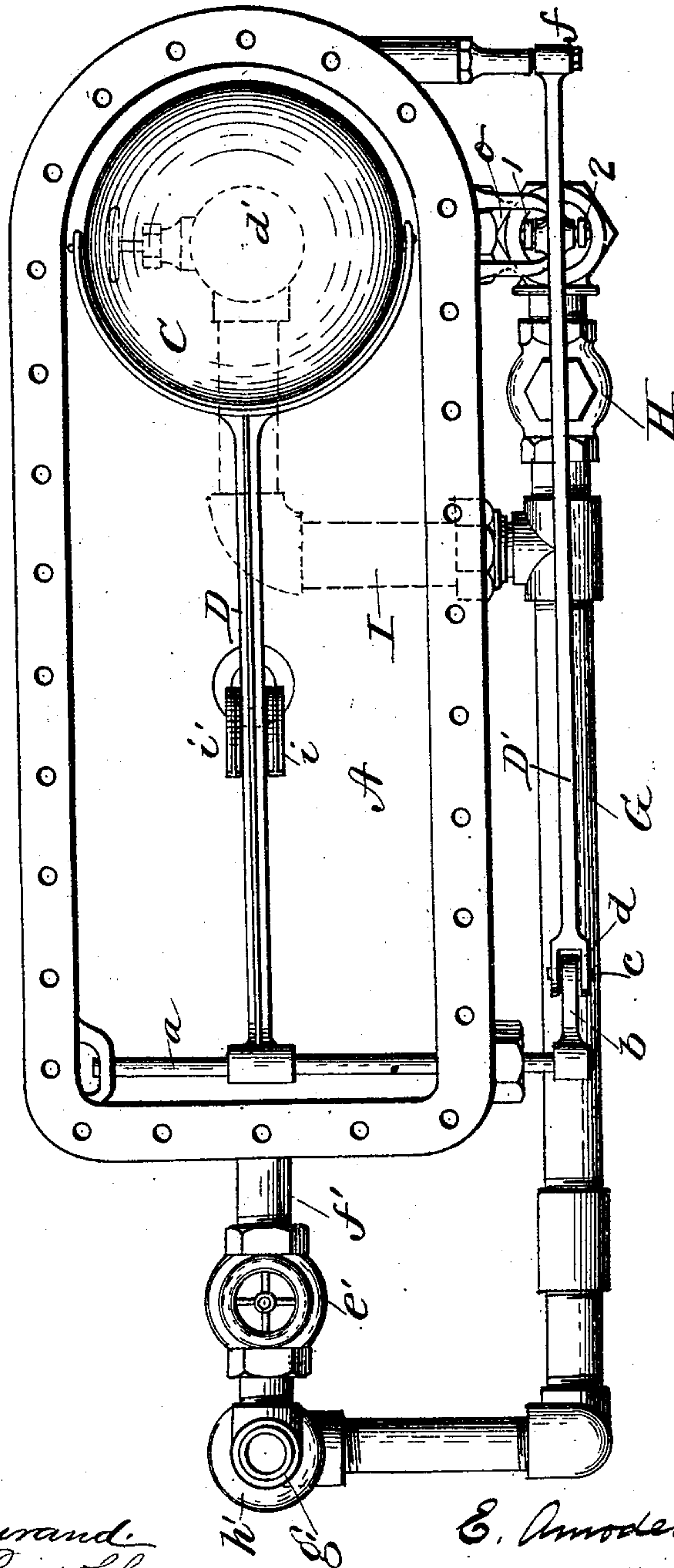
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Fig. 2.



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3 Sheets—Sheet 3.

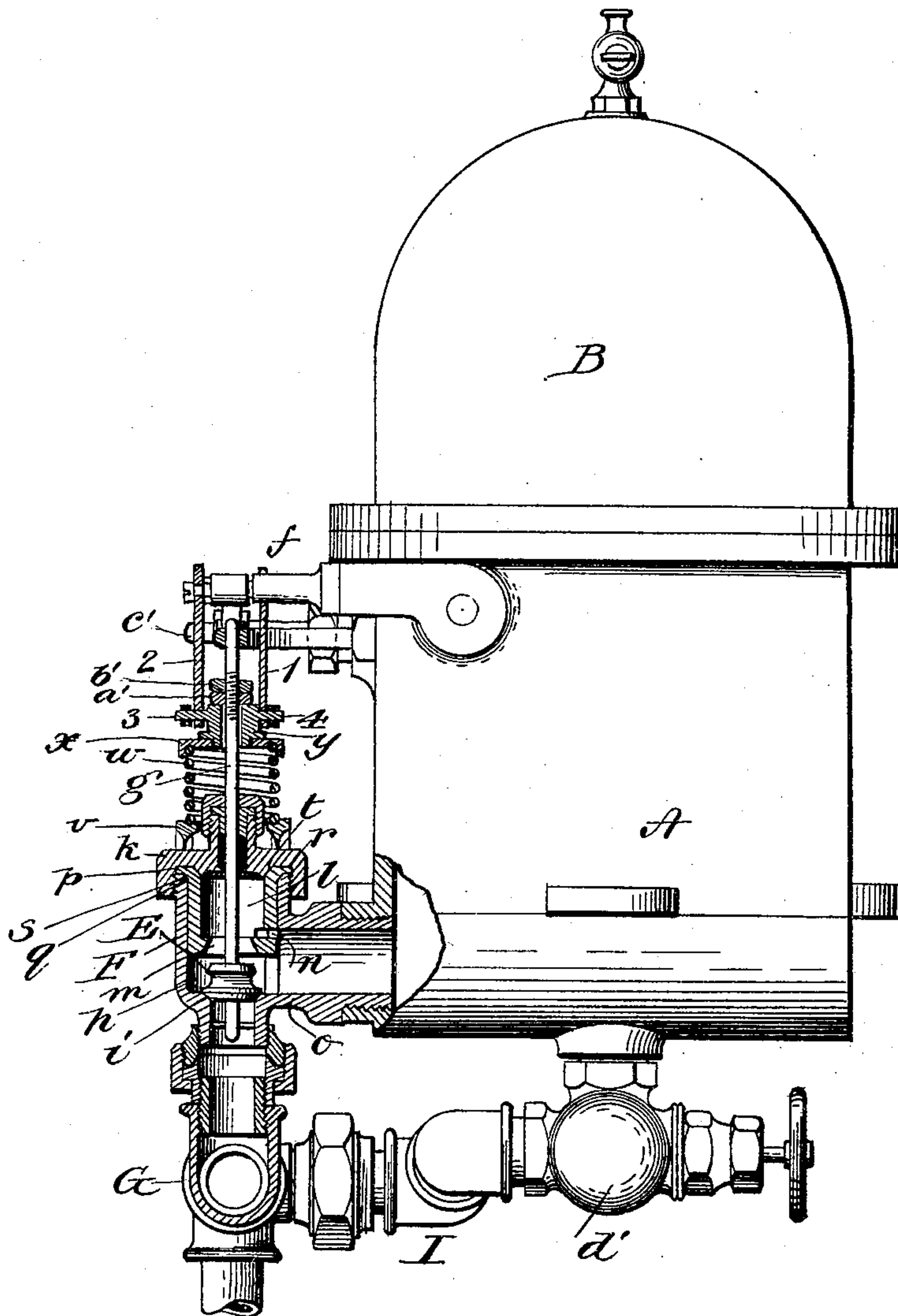


Fig. 3.

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UNITED STATES PATENT OFFICE.

EMMANUEL AMODEO-SALVATOR, OF THE UNITED STATES NAVY.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 633,180, dated September 19, 1899.

Application filed February 16, 1899. Serial No. 705,638. (No model.)

To all whom it may concern:

Be it known that I, EMMANUEL AMODEO-SALVATOR, of the United States Navy, stationed at New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Steam-Traps; and I do hereby 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 appertains to make and use the same.

My invention relates to steam-traps used in connection with steam-exhaust pipes, and has for its object certain improvements in construction which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a side elevation, partly in section, of my improved steam-trap; Fig. 2, a top plan view; Fig. 3, an end view; and Fig. 4 a side elevation of the cup in the valve-chamber, detached and on an enlarged scale.

Reference being had to the drawings and the letters and figures thereon, A indicates the vessel or body of the trap, which is provided with a detachable cover B, a float C, connected to a float-rod D, which is connected to a shaft *a*, supported in and extending beyond the body A at one end, to which is attached a crank *b*, having a pin *c* in the end thereof, and to the crank is connected a lever D', having a bifurcated end *d*, in each arm of which is a curved slot *e*, which is engaged by the pin *c*. The opposite end of the rod D' is pivotally connected to the vessel or body by a stud *f*, and to said rod is connected the rod *g*, supporting the compound valve E by links 1 2, which engage the laterally-extending arms 3 4 on the head *y*.

F indicates the valve-case, having a chamber *h*, a valve-seat *i*, and a cover *k*, and within the case is a cup *l*, having a valve-seat *m* at its lower end, a port *n* in its side above the valve-seat and adjacent to the pipe *o*, which connects the valve-case to the vessel A, and at the upper end of the cup is a flange *p*, on which are formed annular seats *q r*, which engage, respectively, the seat *s* on the valve-case and the seat *t* on the cover *k* and form a steam-tight joint. The cover of the

valve-case is provided with a stuffing-box *u*, through which the valve-rod *g* passes.

On the cover *k* rests a saddle *v*, in which rests a spiral spring *w*, which surrounds the valve-rod, and at the upper end of the spring is a cap or disk *x*, which rests upon the spring, and upon the disk rests a head *y*, which is engaged by a nut *a'* on the valve-rod to regulate the tension of the spring to balance the pressure of the steam in the vessel A and the weight of the valve *g* to render the action of the lever D very sensitive, and the nut *a'* is locked after adjustment of the spring by a jam-nut *b'*, the valve-rod being guided by a bracket *c'* near the upper and free end thereof.

Steam admitted to the cup *l* through port *n* balances the valve E in its ascent, prevents the valve rushing to its upper seat by resisting the tendency of the spring *w* to draw the valve to the upper seat suddenly, and maintains an exact equilibrium of pressure in the valve-chamber and renders the valve exceedingly sensitive, so that when the water has been drained from the vessel A the weight of the float starts the valve in its downward or closing direction; but as soon as the valve has passed the center of its travel, then, the escape being continually reduced, the pressure increases on top of the valve and forces it to its lower seat and closes the discharge-outlet without other help from the weight of the float.

The valve E being located outside of the vessel A is not subject to being clogged by grease and other impurities of the water of condensation and can be readily inspected or repaired by unscrewing the cover *k* and removing the cup *l* and the valve.

To the lower end of the valve-case F is connected the discharge-pipe G, in which is a check-valve H to prevent fluid entering the valve-chamber *h* when the vessel A is being relieved of its contents by hand or condensation discharged without entering the vessel while the trap is undergoing repairs.

I indicates a by-pass pipe connected to the vessel A at or near its bottom, is provided with a valve *d'* to control the flow, and connects with the discharge-pipe G, beyond the check-valve H, as shown in Figs. 2 and 3, to admit of the vessel A being discharged with-

out using the valve E, and to provide for the escape of water of condensation from an engine or other source without entering the vessel A a valve *e'* is inserted in the supply-pipe
5 *f'*, and a pipe *g'*, provided with a valve *h'*, connects with the discharge-pipe G, as shown in Figs. 1 and 2.

The float-rod D is guided in the vessel A by bars *i' i'*, and the float is preferably divided into separate compartments by transverse and right-angled partitions (not shown) to strengthen the float and render it less liable to be indented.

In the practical use of the trap the valve E
15 and the levers outside of the vessel A may be inclosed in a suitable casing. Any variation in pressure of steam is provided for by the excess of length of the lever D', so that no change need be made in the adjustment of
20 the spring *w*.

Having thus fully described my invention, what I claim is—

1. A trap comprising a vessel containing a float, a lever connected thereto, a valve-chamber, a compound valve therein and opposite
25 valve-seats, in combination with means for applying tension to the valve.

2. A trap comprising a vessel containing a float, a lever connected thereto, a valve-chamber provided with opposite valve-seats a compound valve, and means for admitting fluid
30 on both sides of the valve, in combination with a spring interposed between the valve and the lever.

35 3. A trap comprising a vessel containing a

float, in combination with a valve-chamber provided with opposite valve-seats, a compound valve, and means for admitting fluid on both sides of the valve, and a spring surrounding the valve-rod.

4. A trap comprising a vessel containing a float, a lever connected thereto, a valve-chamber provided with a valve-seat and a separable cup having a valve-seat thereon and provided with a port, in combination with a compound valve and a spring on the valve-rod.

5. A trap, in combination with a valve-chamber having a valve-seat, a separable cup provided with a valve-seat and a port above the seat, and a compound valve.

6. A trap, in combination with a valve-chamber having a valve-seat a separable cup provided with a valve-seat at its lower end, a compound valve, a port above the seat, and a steam-joint at the upper end.

7. A trap comprising a vessel containing a float, a shaft crossing the vessel and to which the float-rod is connected, a crank secured to said shaft and provided with a pin, a rod having a curved slot in one end connected to said crank and to the wall of the vessel, and a valve connected to said rod, and a spring interposed between the rod and the valve.

In testimony whereof I affix my signature in presence of two witnesses.

EMMANUEL AMODEO-SALVATOR.

Witnesses:

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