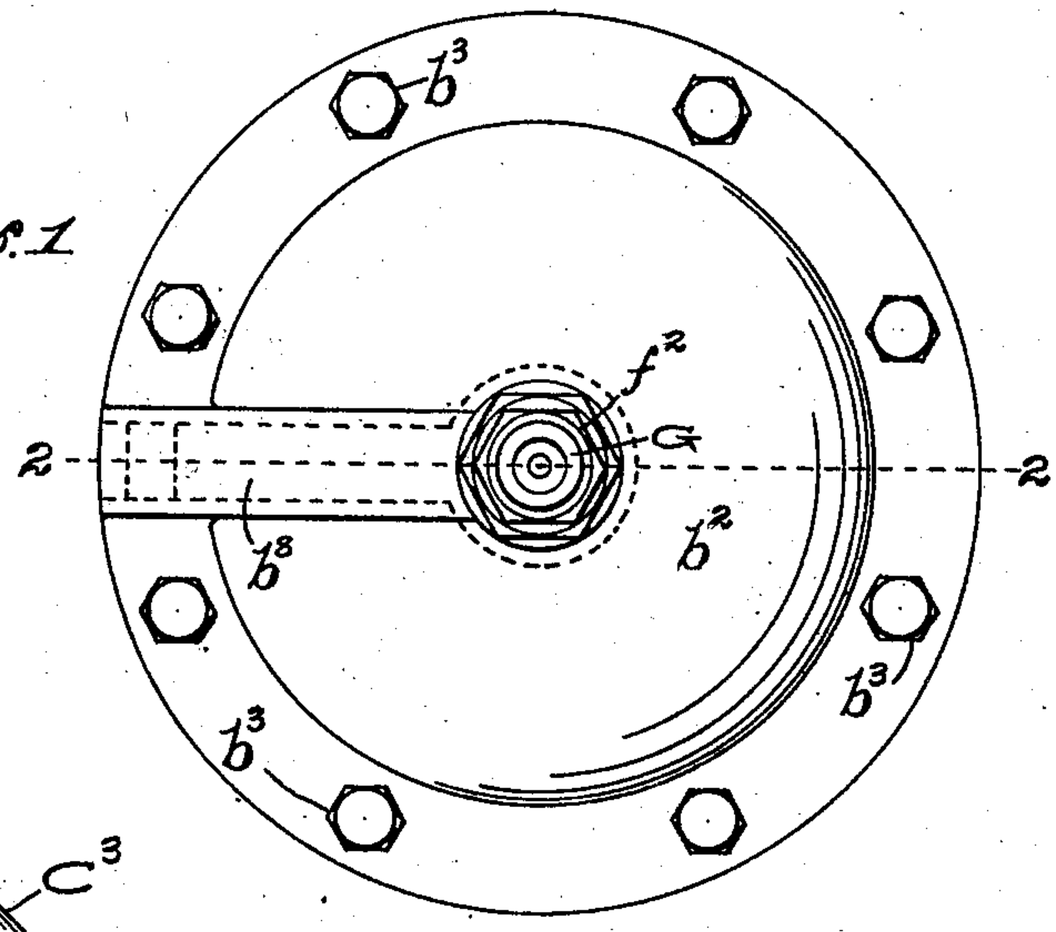
No. 833,777. PATENTED OCT. 23, 1906.

T. J. COOKSON.

STEAM TRAP.

APPLICATION FILED NOV. 4, 1904.

Fig. 1



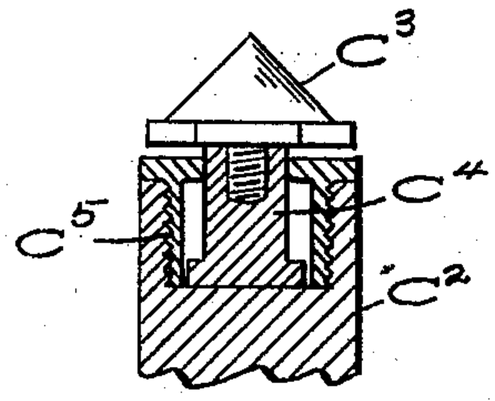


Fig. 4

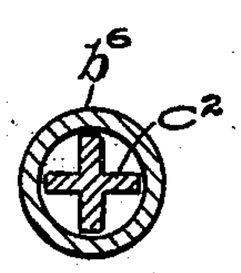


Fig. 3

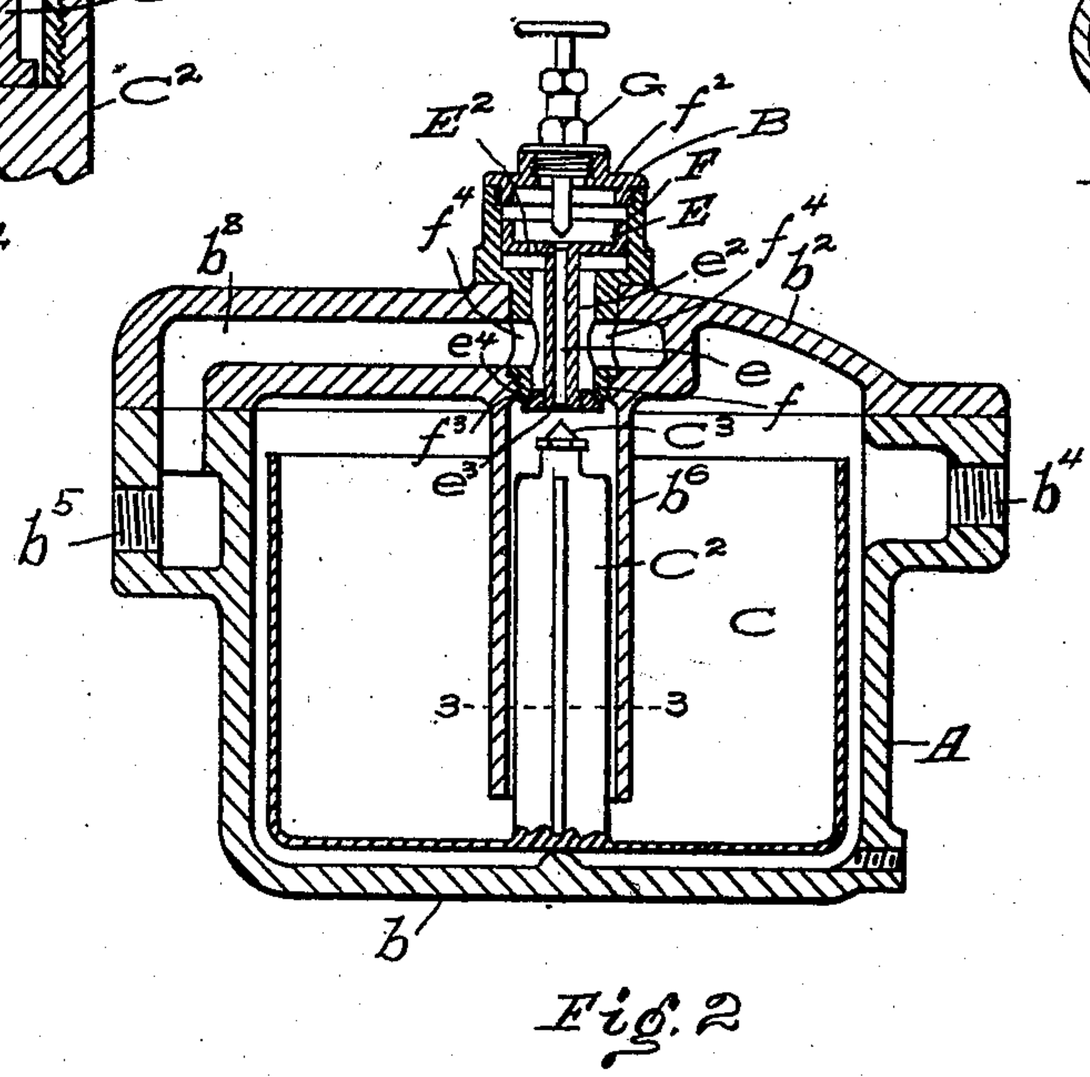


Fig. 2

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UNITED STATES PATENT OFFICE.

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STEAM-TRAP.

No. 833,777. Specification of Letters Patent. Patented Oct. 23, 1906.

Application filed November 4, 1904. Serial No. 231,453.

To all whom it may concern:

Be it known that I, THOMAS J. COOKSON, a citizen of the United States of America, and a resident of No. 2137 Grand street, in the city of Cincinnati, in the county of Hamilton and State of Ohio, (whose post-office address is No. 323 West Fourth street, in the city of Cincinnati, in the county of Hamilton and State of Ohio,) have invented an Improvement in Steam-Traps; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My invention relates to steam-traps; and it has for its object the improvement in the construction of such devices whereby they are simplified and rendered more efficient in action.

The novelty of my invention consists in the combination and subcombination of the parts, as will be hereinafter set forth, and specifically pointed out in the claim.

Figure 1 is a top view of my steam-trap. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a section on line 3 3 of Fig. 2. Fig. 4 is a vertical section through a portion of the top of bucket-guide.

In the drawings, A represents the body of the trap, and B the piston-valve. The body of the trap consists of a cylindrical box having a solid bottom b and a removable top b^2. The top b^2 is secured by bolts b^3 to the body A. At the side of the body, near the top, is a screw-thread opening b^4 to receive a steam-pipe. Directly opposite to the opening b^4 is a threaded opening b^5 to receive the drain-pipe. Within the body A is a bucket C, which is free, so that it can be raised or lowered by the action of the water which will accumulate in the body A. The bucket C is provided with a guide C^2, which slides up and down in the pipe b^6, projecting downwardly from the center of the top b^2. The upper end of the guide C^2 is provided with a sliding valve-face C^3, which closes the hole e, that passes through the stem e^2, said stem being provided with a valve-seat e^4 at its lower end. The stem e^2 extends down from the piston E, that plays in the cylinder F. The piston E has a small opening E^2 to relieve the pressure of water on the piston E. The pressure can also be relieved by the piston E being made to play loosely in the cylinder F. The cylinder F is attached to the cap b^2 by the threaded portion f. The cylinder F is also provided with a cap f^2, which screws onto the top of the cylinder F, making it perfectly tight. Attached to the lower end of the stem e^2 is a valve-face e^4, which closes the lower part of the cylinder F by seating on the valve-seat f^3. The top b^2 has a passage-way b^8, which leads from the chamber where the bucket C is to the outlet-opening b^5 through the openings f^4, which are in the cylinder F. A threaded stem G, provided with a stuffing-box, passes through the top of the cap f^2. This stem G is for forcing down the piston E at any time, so that the trap can be blown out and emptied should occasion require it. The valve-face C^3 is screwed into the sliding piece C^4, which slides up and down in the sleeve C^5, it in turn being screwed into the guide C^2. The object in having C^4 slide up and down in C^2 is to prevent valve-face C^3 from sticking, which is attained as follows: When the bucket C drops, it falls until the upper part of C^2 strikes the lower part of C^4, the blow struck assuring the dropping of the valve-face C^3, thereby preventing any sticking of the valve-face C^3.

The advantage in my trap over other traps of this class is that an immense volume of water can be taken care of without loss of steam, the passage-way between the bucket-chamber and outlet being controlled by the pressure of water.

The operation of my steam-trap is as follows: The water from the condensed steam in the pipes entering the body of the trap through the inlet b^4 gradually raises the bucket C until the valve-face C^3 strikes the valve-seat e^3, closing the hole e in the stem e^2, also forcing the valve-face e^4 up against the valve-seat f^3, thereby closing off all communication between the chamber where the bucket C is and the passage-way b^8, which leads to the outlet b^5. As there is no outlet for the water, it will continue to rise in the chamber where the bucket C is and overflow into the bucket C. This will continue until the bucket C becomes heavy enough to sink, when it will open the valve which closes the bottom of the tube e^2. Water will then flow through the hole e (the pressure of steam forcing it up) to the top of the piston E, which being of a greater area than the valve-face e^4 will be forced down, permitting the water in the bucket C to flow up through the pipe b^6, entering at the bottom and passing out through the opening b^8 to the drain-pipe opening b^5. When the bucket has become

empty, it will rise, closing the valve between the chamber containing bucket C and the passage-way b^8.

Having thus explained my invention, what I claim is—

In a steam-trap, the combination of a steam-trap chamber provided with an inlet, a bucket-float within said chamber, a guide for the bucket, a valve-face attached to top of guide so it can move vertically independent of the movement of the guide, a valve-seat, a piston-valve having ends of different areas, means for passing pressure from small area to large area, means for automatically relieving pressure on large area, outlet for water through same pipe through which bucket-guide passes, means for opening valve from the outside of trap, all substantially as described.

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Witnesses:
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