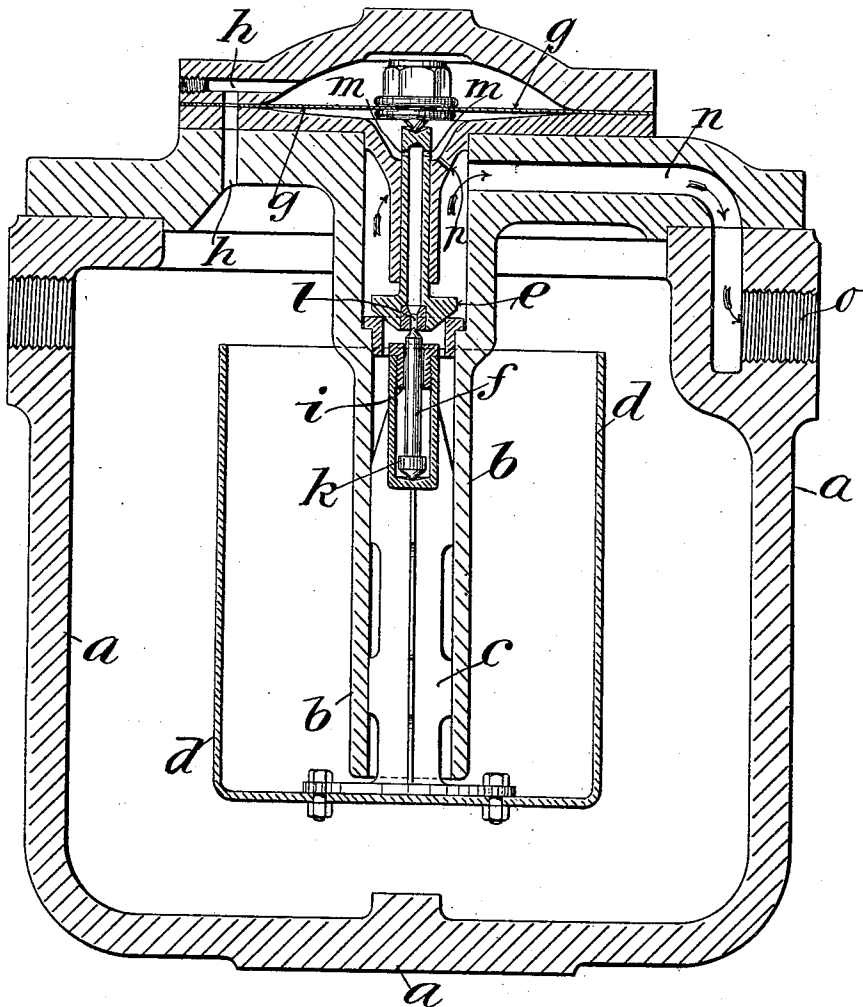


J. DAVIDSON & W. O. LARMUTH.
STEAM TRAP.

APPLICATION FILED MAY 9, 1911.

1,008,120.

Patented Nov. 7, 1911.



Witnesses
N. M. Meem.
E. M. Stauffman.

Inventors.
John Davidson.
William Oliver Larmuth.
Per Mason Fenwick & Lawrence,
Attorneys

UNITED STATES PATENT OFFICE.

JOHN DAVIDSON, OF PENDLETON, AND WILLIAM OLIVER LARMUTH, OF SALFORD,
ENGLAND.

STEAM-TRAP.

1,008,120.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed May 9, 1911. Serial No. 626,126.

To all whom it may concern:

Be it known that we, JOHN DAVIDSON and WILLIAM OLIVER LARMUTH, subjects of the King of Great Britain, residing at Pendleton and Salford, respectively, both in the county of Lancaster and Kingdom of Great Britain, have invented certain new and useful Improvements in Steam-Traps; and we 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.

The improvements which form the subject of this invention relate to steam traps of the float type which are or may be employed for automatically draining the water of condensation from steam pipes, and returning the same to the boiler.

The object of this invention is to provide rapid action with a minimum of force.

We attain this object by the means illustrated in the accompanying drawing, which shows a vertical section of a steam trap constructed in accordance with one embodiment of our invention, and marked with letters of reference.

In carrying out our invention and referring to the drawing, *a* is the casing of the trap, from the lid of which depends the tube *b*.

c is a standard secured in the center of a float *d* and inserted in the tube *b* to slide in the latter, a space being formed between the wings of the standard and the inside of the tube.

e is the main valve actuated by means of a relay-valve *f* and held down by pressure on the diaphragm *g*, the upper side of the diaphragm being always in communication with the inside of the trap by holes as *h*; the area of the diaphragm being larger than that of the main valve *e* the said valve is always retained on its seat by the pressure of the steam or water that passes through the holes *h* to the space above the diaphragm.

When the float *d* fills and sinks, as it nears the bottom of its travel, the collar *i* comes in contact with the collar *k* drawing down the valve *f* and opening the inlet *l* in the main valve *e*, allowing the steam and water which is under pressure to pass up the stem of the valve *e* and through the holes *m* to the underside of the diaphragm

g, by which the pressure above and under the diaphragm is equalized.

When the pressure on the diaphragm is equalized, the pressure in the casing *a* causes the valve *e* to open and the water in the float *d* to be discharged through the passage *n* to the outlet *o*, a small hole *p* in the casing *a* allows a small leak to take place, but as this hole is very small in area compared with the relay-valve, it does not prevent the pressure being equalized on both sides of the diaphragm when the relay-valve is open, but immediately the float is empty and rising thereby closing the relay-valve *f* the pressure is reduced on the underside of the diaphragm, destroying the equilibrium and causing the main valve *e* to be shut by the pressure on the top side of the diaphragm.

We claim:

1. A steam trap comprising a casing, a tube depending from its lid, a bucket float in the casing, a standard carried by the said float slidable in the said tube, a relay-valve in the said standard, a valve seating in the said tube, a main valve resting normally on the said seating and the upper end of the said relay-valve and a diaphragm in the said lid controlling the movement of the said main valve and held in equilibrium by the steam in the casing, all combined substantially as and for the purpose set forth.

2. A steam trap comprising a casing, a tube depending from its lid, a bucket float in the casing, a standard carried by the said float slidable in the said tube, a relay-valve in the said standard, a valve seating in the said tube, a main valve resting normally on the said seating and the upper end of the said relay-valve and a diaphragm in the said lid controlling the movement of the said main valve, the upper end of the said standard and lower end of the said relay-valve having each a collar the former being adapted to contact with the latter and thereby open the relay-valve, all combined substantially as and for the purpose set forth.

3. A steam trap comprising a casing, a tube depending from its lid, a bucket float in the casing, a standard carried by the said float slidable in the said tube, a relay-valve in the said standard, a valve seating in the said tube, a main valve resting normally on the said seating and the upper end of the said relay-valve and a diaphragm in the

said lid controlling the movement of the
said main valve, the chamber of the said
diaphragm having a boss extending into the
said tube, and the said main valve a tubular
5 shank both of which are furnished with
ports communicating with the underside of
the said diaphragm, all combined substan-
tially as and for the purpose set forth.

In testimony whereof we have affixed our
signatures in presence of two witnesses.

JOHN DAVIDSON.
WILLIAM OLIVER LARMUTH.

Witnesses:

FERDINAND B. BOSSHARDT,
STANLEY E. BRAMALL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
