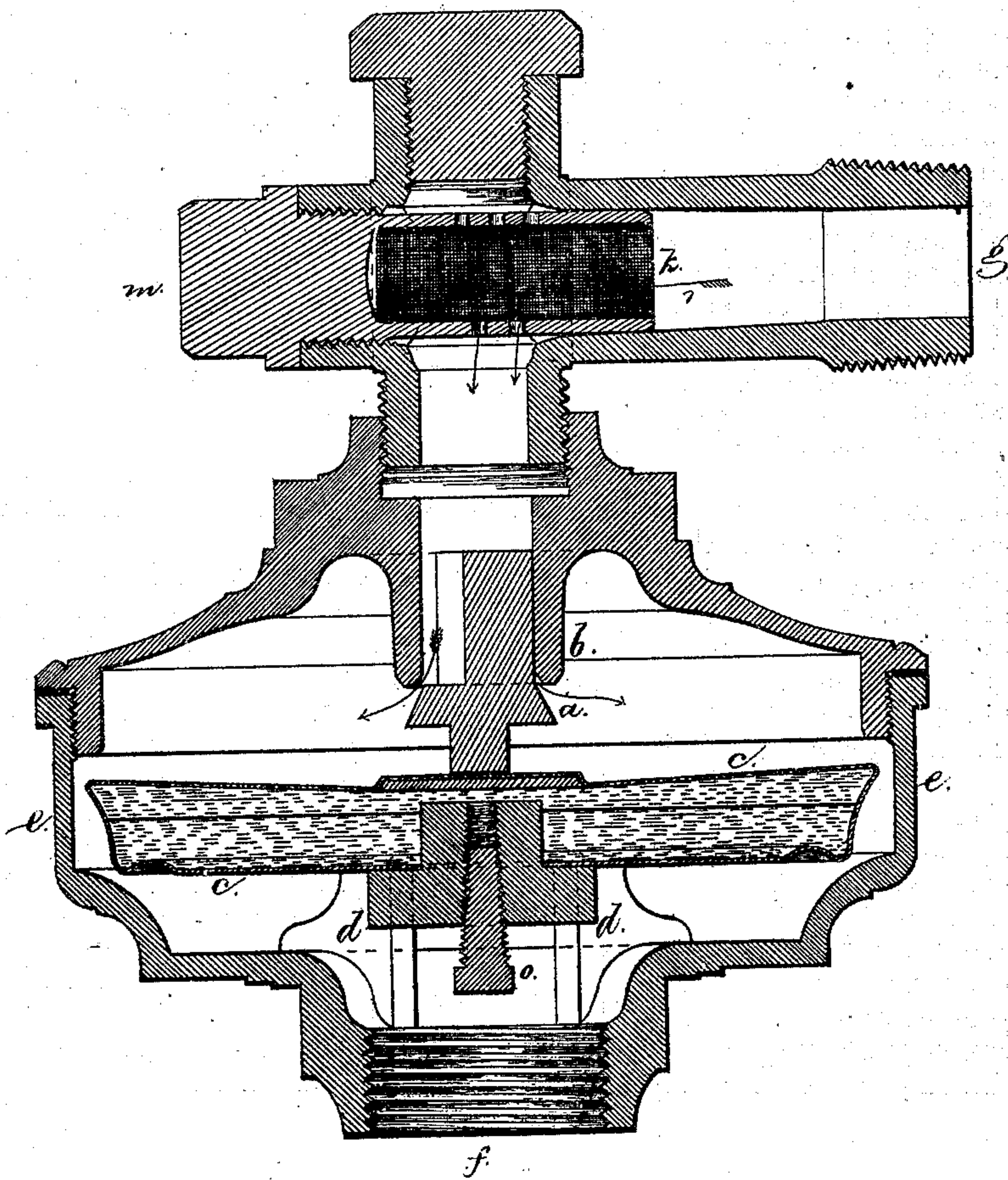


HIRAM S. MAXIM.

Improvement in Steam Traps.

No. 122,272.

Patented Dec. 26, 1871.



Witnesses,

Chas. H. Smith  
Geo. T. Pickney

Hiram S. Maxim  
per L. M. Sewell  
Atty.



# UNITED STATES PATENT OFFICE.

HIRAM S. MAXIM, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. 122,272, dated December 26, 1871.

*To all whom it may concern:*

Be it known that I, HIRAM S. MAXIM, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Steam-Traps; and the following is declared to be a correct description thereof.

The object of this invention is to allow the water of condensation to escape from a steam-heating coil or similar apparatus and to shut the valve when the water has blown out. This I effect by means of an expansion vessel containing alcohol or other easily-evaporated liquid, that is expanded by the contact of the steam-heat and closes the valve and stops the escape until the apparatus cools sufficiently for the expansive vessel to contract and open the valve.

In the drawing a vertical section of the said steam-trap is shown.

*a* is the check-valve closing against the seat *b*. *c* is the expansive vessel, made of thin sheet metal in a flattened form, supported upon bearers *d* within the case *e*, and this vessel *c* contains alcohol or other easily-vaporized liquid, so that when steam strikes said vessel *c* the expansion of the liquid or the formation of vapor shall produce a pressure to spring the sides of the case and press the valve *a* to its seat *b* and close the steam-passage. When the accumulation of water of condensation allows the parts to cool sufficiently for the vessel *c* to collapse or lessen in thickness by the diminished pressure within it, the valve *a* is allowed to open for the water to run out until the heat again expands the alcohol and its containing-vessel and closes the valve *a*, as before. The screw-plug *o* may be employed to close the orifice through which the alcohol is

introduced, and this should be sealed up by solder or otherwise. The case *e* may be made in two parts, screwed together, as shown, and the necessary sockets *f* and *g* are provided for the couplings or pipes. In order to prevent any foreign substance passing into the apparatus that might obstruct the valve *a*, the strainer or wire-gauze *k* is introduced within the cylindrical perforated plug *m* that is screwed in from outside and acts to retain any foreign substance. This plug can be easily removed for cleaning.

This steam-trap is compact, strong, durable, and reliable. It may be employed to allow water of condensation to escape from the cylinder of a steam-engine, or under other circumstances, whenever available.

I do not claim a vessel in which the expansion of liquid by heat acts on levers and rods to close a valve; nor an air-valve connected with an expansion vessel.

I claim as my invention—

1. The expansible vessel *c*, resting upon the supports *d* within the case *e*, and acting upon the independent valve *a* that has its seat *b* at the end of the pipe, through which water of condensation is delivered into the case *e* to pass away below the vessel *c*, as and for the purposes set forth.

2. The cylindrical removable plug *m* and strainer *k*, in combination with the valve *a* and expansion vessel *c*, as and for the purposes set forth.

In witness whereof I have hereunto set my signature this 22d day of September, A. D. 1871.

HIRAM S. MAXIM.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.

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