No. 766,003. PATENTED JULY 26, 1904.

J. C. STEWART & J. CLELAND.

DRAIN TRAP.

APPLICATION FILED MAR. 22, 1904.

NO MODEL.

Fig 1.

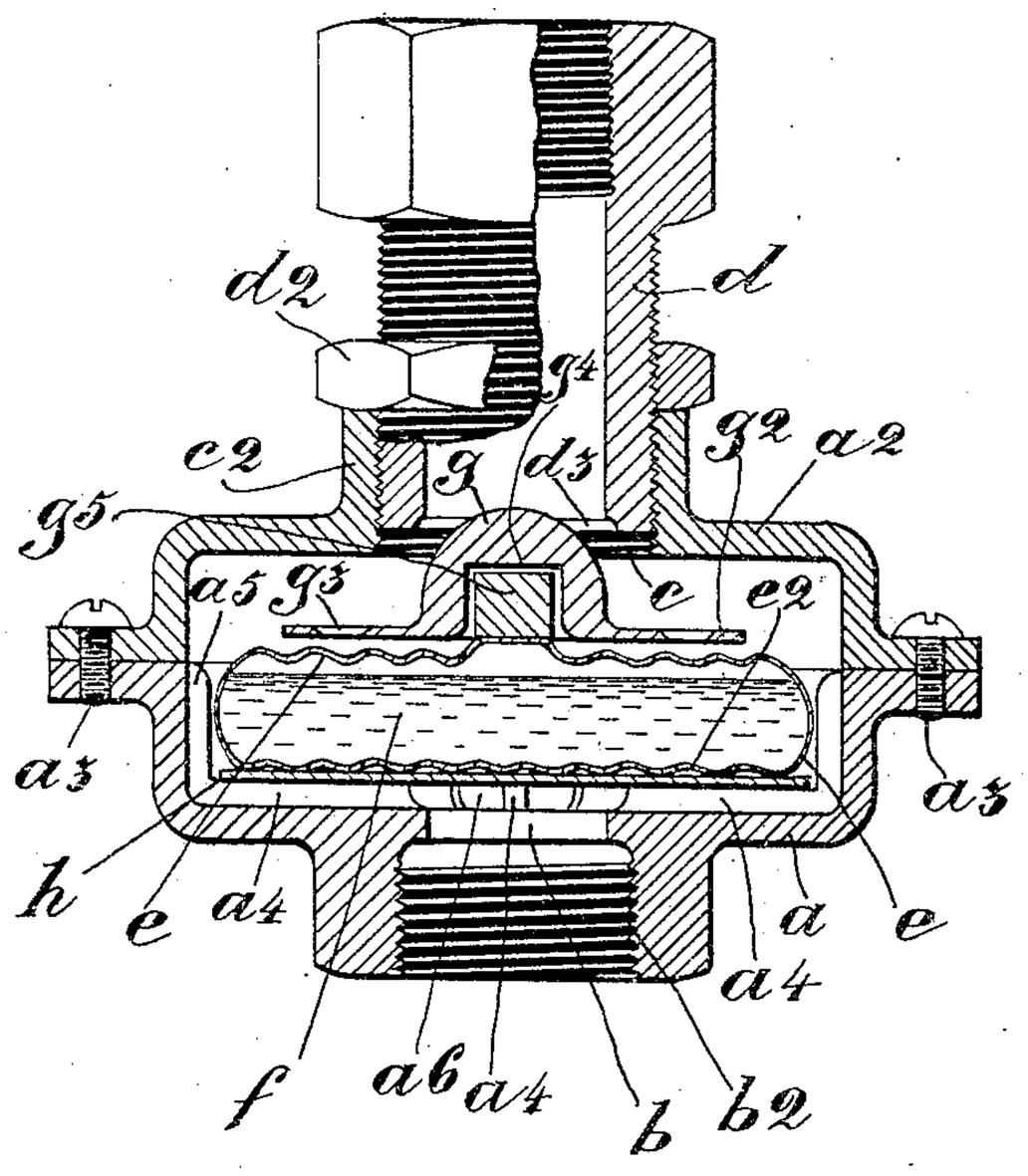
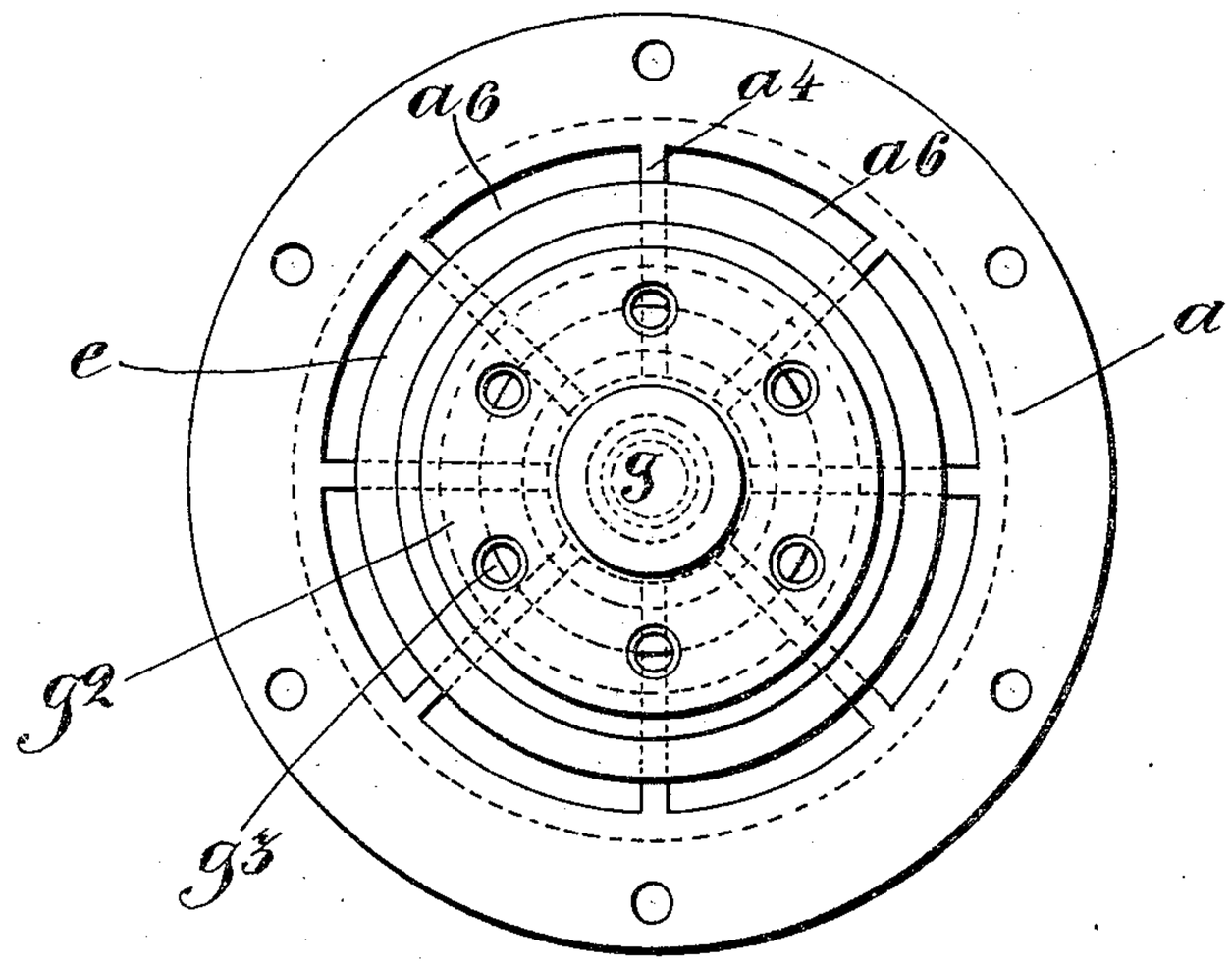


Fig 2.



WITNESSES

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No. 766,003. Patented July 26, 1904.

UNITED STATES PATENT OFFICE.

JOHN COULTER STEWART AND JAMES CLELAND, OF BELFAST, IRELAND.

DRAIN-TRAP.

SPECIFICATION forming part of Letters Patent No. 766,003, dated July 26, 1904.

Application filed March 22, 1904. Serial No. 199,451. (No model.)

To all whom it may concern:

Be it known that we, JOHN COULTER STEWART and JAMES CLELAND, subjects of the King of Great Britain, residing at Donegal Quay, Belfast, Ireland, have invented certain new and useful Improvements in Drain-Traps for Steam-Pipes, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an improved drain-trap for steam-pipes which will be automatic in operation and which is of what is known as the "capsule" type of drain-traps and which is adapted to be used wherever traps of this class are required; and with this and other objects in view the invention consists in a device of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of our improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is a central side elevation of our improved drain-trap for steam-pipes, and Fig. 2 a plan view with the top part of the trap removed.

In the practice of our invention we provide a casing comprising in the form of construction shown a bottom member a and a top member a^2, which in the form of construction shown are screwed or bolted together, as shown at a^3, but which may be connected in any desired manner.

The bottom portion a of the casing is provided centrally with an opening b, around which is a screw-threaded collar or coupling b^2, and the top portion a^2 of the casing is provided with an opening c, around which is a collar or tubular coupling c^2, and the collars or couplings b^2 and c^2 are screw-threaded internally, as shown.

Screwed into the collar or coupling c^2 is a tubular sleeve or coupling attachment d, which is provided with a set-nut d^2, and the inner end of which is adapted at d^3 to serve as a valve-seat. The inner surface of the bottom portion a of the casing is provided with radial ribs a^4, which extend upwardly at the sides thereof, as shown at a^5, and these ribs form radial spaces a^6, which communicate with the opening b in the bottom portion a of the casing, and which extend to the top of said bottom portion of the casing.

Within the casing, and preferably filling the bottom portion thereof, is placed a capsule e, composed of the usual or any preferred material and the top and bottom of which are corrugated, as shown at e^2. The capsule e is filled, or partially filled, with a liquid f, which is adapted to expand and contract according to the temperature thereof, and placed on the top of the capsule e is a valve g, having a flange g^2, preferably perforated, as shown at g^3, and the valve g is provided in its under side with a recess g^4, adapted to receive a filling neck or nozzle g^5 on the top of the capsule e, and which serves to hold the valve in proper position, and in practice we also preferably place between the bottom of the capsule and the ribs a^4 a disk h.

The opening at c constitutes the inlet-opening and the opening at b the outlet-opening to and from the casing, and although we have used the words "top" and "bottom" in the foregoing description it will be understood that the device may be placed in any desired position, and the valve side of the capsule e is commonly known as the "free" end of the capsule, and is also called the "diaphragm," and by means thereof the valve g when the liquid in the capsule becomes heated is forced to its seat d^3, so as to close the opening c, and when the liquid in the capsule cools this operation is reversed. It will also be understood that the part d in addition to forming a seat for the valve g also forms a means for regulating the movement of said valve and for attaching the trap to a steam-pipe to be drained; but the trap might be otherwise attached.

The radial ribs a^4 and radial spaces a^6 afford means for freely draining the trap, as will be readily understood, and the drain-water and water of condensation is free to pass entirely around the capsule e and escape through the

opening b in the bottom part a of the casing, and the collar or coupling b^2 serves as means for attaching a drain-pipe to the trap.

The operation is as follows: The water of condensation flows into the trap through the opening c and escapes through the opening or outlet b^2, and in this operation it flows around the capsule e, and the said capsule is heated according to the temperature of the water of condensation, and the liquid therein expands and operates the valve g, as hereinbefore described, and by means of our improved construction we provide a trap which is extremely sensitive to the required variations occasioned by the amount of water to be discharged, and as soon as steam enters the trap the capsule is heated, so that the valve g operates to close the opening c.

By means of the construction herein described it will be seen that when the trap is properly connected with the inlet-pipe the position of the valve-seat d^3 may be adjusted by simply turning the casing of the trap, and this construction facilitates the operation of our improved drain-trap.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A drain-trap for steam-pipes of the capsule type, comprising a casing having an inlet and outlet opening at the opposite sides thereof, said casing being composed of two parts secured together at the perimeter thereof, the inlet-opening being provided with a valve-seat, and that part of the casing in which the outlet-opening is formed being provided with radial ribs forming passages which communicate with said opening when the capsule is in position, a capsule placed in said casing and provided on the side thereof opposite the outlet-opening with a central neck, and a valve mounted on said neck and adapted to operate in connection with said valve-seat, substantially as shown and described.

2. A drain-trap for steam-pipes of the capsule type, comprising a casing having an inlet and outlet opening at the opposite sides thereof, said casing being composed of two parts secured together at the perimeter thereof, the inlet-opening being provided with a valve-seat, and that part of the casing in which the outlet-opening is formed being provided with radial ribs forming passages which communicate with said opening when the capsule is in position, a capsule placed in said casing and provided on the side thereof opposite the outlet-opening with a central neck, and a valve mounted on said neck and adapted to operate in connection with said valve-seat, said valve being provided with an annular perforated plate, substantially as shown and described.

3. A drain-trap for steam-pipes of the capsule type, comprising a casing having an inlet and outlet opening at the opposite sides thereof, said casing being composed of two parts secured together at the perimeter thereof, the inlet-opening being provided with a valve-seat, and that part of the casing in which the outlet-opening is formed being provided with radial ribs forming passages which communicate with said opening when the capsule is in position, a capsule placed in said casing and provided on the side thereof opposite the outlet-opening with a central neck, and a valve mounted on said neck and adapted to operate in connection with said valve-seat, said valve being provided with an annular perforated plate, and said valve-seat being adjustable, substantially as shown and described.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of the subscribing witnesses, this 7th day of March, 1904.

JNO. COULTER STEWART.
JAMES CLELAND.

Witnesses:
JOHN MCQUADE,
WM. KILMARTIN, Junr.