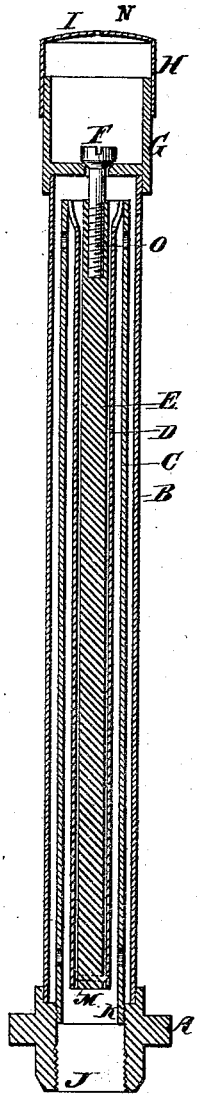
G. M. DAVIS.

STEAM-TRAP.

No. 184,004. Patented Nov. 7, 1876.



Witnesses.

Samuel Harris.

Samuel A. Ross

Inventor.

George M Davis

UNITED STATES PATENT OFFICE

GEORGE M. DAVIS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. **184,004**, dated November 7, 1876; application filed March 31, 1876.

To all whom it may concern:

Be it known that I, GEORGE M. DAVIS, of Chicago, Cook county, Illinois, have invented certain Improvements in Automatic Air-Valves, of which the following is a specification:

My improvement consists substantially of a base made of suitable metal, about one inch in diameter and one inch high. This base is drilled and tapped in the bottom for the purpose of being attached to the heating pipes or coil. The top of the base is tapped out to receive a thin brass tube, about three-quarters of an inch in diameter. This tube is about six inches long, and is screwed or otherwise firmly fastened to a cup-shaped top. Inside this outer brass tube is an iron pipe, which is screwed into the base and extends to within about one-quarter of an inch of the cup-shaped top, but is not attached to the top or outer tube. Just inside this iron pipe is a brass tube, which is fastened to the top of the iron pipe. This brass tube runs down to within about one-half inch of the base, and is left free at its lower end. Inside this brass tube is an iron rod about three-sixteenths of an inch in diameter. This rod is fastened to the lower end of the brass tube, and extends upward to within about one-half inch of the cup-shaped top. The upper end of the rod is drilled and tapped with a small hole. The top is made of suitable metal, about one inch in diameter and one inch high, and is cupped out on the top about one-half inch deep, for the purpose of holding any small quantity of water that may pass the valve. The bottom is bored out to fit the outer brass tube, to which it is firmly attached. In the center of the cupped bottom is a hole bored out conical for the valve-seat. The valve is made about one-quarter of an inch in diameter, with a stem about one inch long and about one-eighth of an inch in diameter. This stem is threaded, for the purpose of screwing into the upper end of the iron rod. The top of the valve projects upward above the seat, for the purpose of putting a screw-driver slot to screw the valve in or out at pleasure. Near the top and bottom of this iron pipe are small holes, for the purpose of allowing free passage of the steam, and also for the purpose of allowing any water to escape. There is a cover made to screw or otherwise fit tightly over the cupped top. A small hole, N, is drilled in the top of the cover, to allow the escape of air, or a small waste-pipe can be inserted in the side of the cup, which will allow the escape of air or steam, or will convey off any water that may pass the valve.

Instead of using iron pipe and the inner brass tube and the iron rod, there can be used alternate strips of brass and iron, and will produce the same results. In this case, base, outer brass pipe, and cup-shaped top, as above described, would be used. A strip of iron about one-half inch wide and about one-eighth thick would be firmly attached to the base. This iron would run nearly to the top of the outer brass tube. At its top would be firmly attached a strip of brass of about the same dimension, running down near to the base. At the bottom end of this brass strip is firmly attached an iron strip of about the same dimensions, and runs to within about one-half inch of the cup-shaped top, and to the top of this iron strip is attached the valve, by means of a screw-thread.

A is the base; G, the cup-shaped top; B, the outer tube, made of brass or other metal that will expand most by heat. C is an iron pipe fastened to the base at K. D is a tube, made of brass or other metal that will expand most by heat, and is fastened to the top of the pipe C. E is an iron rod fastened to the tube D at M. F is a valve, attached to the rod E by means of the screw O. H is the cover fitting on the top G. J is the screw, by means of which the valve is attached to a coil.

The valve operates as follows: When the coil and valve are cold the valve is open and will allow the escape of any air that may be in the coil. When the steam admitted to the coil comes in contact with the pipes of the valve it will cause the outer tube B to expand, and will carry the valve-seat upward, the tube D will expand downward more than the pipe C, and rod E will expand upward, thereby drawing the valve downward, and this, together with the upward movement of the valve-seat caused by the expansion of the tube B, will close the valve and prevent the escape of steam.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The pipe B, in combination with the pipes C and D, and the rod E, attached at their alternate ends, and made of different metals, which, by their unequal expansion and contraction, will operate the valve F, the whole being constructed substantially as and for the purpose above described.

2. The top G, made cup-shaped to receive and form a seat for the valve F, and also to catch any water that may pass the valve, together with the cover H, for the purpose of keeping out any dirt.

GEORGE M. DAVIS.

Witnesses:
SAMUEL HARRIS,
SAMUEL A. ROSS.