N. Upham,

Steam Trap,

No. 29,833, Patented Aug. 28, 1860.

Fig. 1

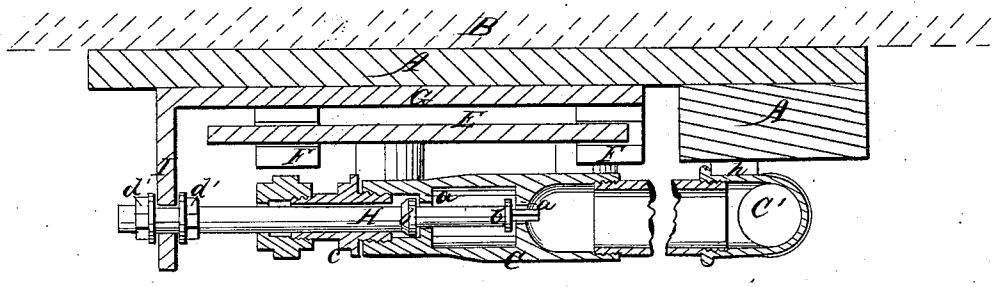
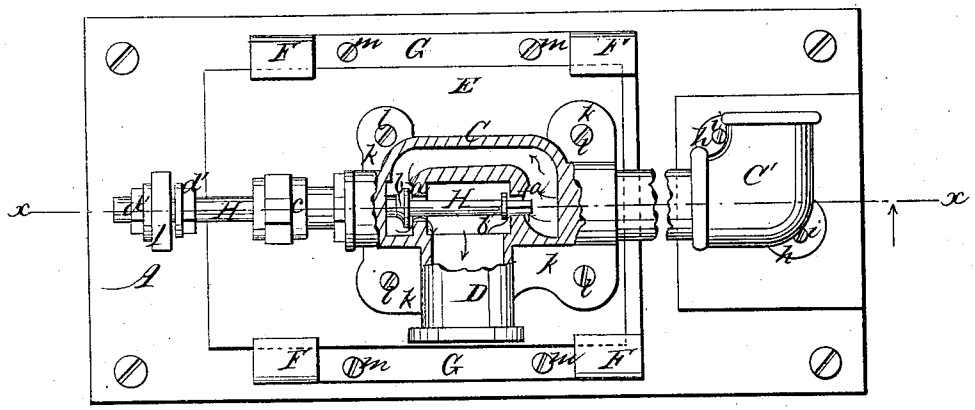


Fig. 2.



Witnesses
W. Tusch
R. S. Spencer

Inventor
N. Upham
By Munn & Co
Attys

UNITED STATES PATENT OFFICE.

NEHEMIAH UPHAM, OF NORWICH, CONNECTICUT.

STEAM-TRAP.

Specification of Letters Patent No. 29,833, dated August 28, 1860.

To all whom it may concern:

Be it known that I, NEHEMIAH UPHAM, of Norwich, in the county of New London and State of Connecticut, have invented a new and Improved Steam-Trap; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a side sectional elevation of my invention showing the apparatus suspended from the wall or ceiling of the apartment in which it is to be used. Fig. 2 is a plan view in part sectional.

Similar letters of reference indicate corresponding parts in the several figures.

The invention is designed to facilitate the escape of the water which accumulates by condensation and remains in steam pipes that are used to warm buildings or for other purposes.

A, is a board or plate to which the apparatus is secured said board being fastened by bolts or other suitable means to the ceiling B, or wall or other portion of the apartment in which it is to be used.

C, is a valve chamber of tubular form as shown, one end C′, being secured to receive the lower end of the heating pipes and conduct the water of condensation from the heating pipes to the interior of the valve chamber C. An escape pipe D, projects from the center of chamber C, as shown said pipe D, serving to carry off and discharge the condensed water which is received within the interior of the chamber C. The curved end C′, is rigidly attached by flanges *h*, and screws *i*, to the board A. The other end of valve chamber C, is fastened by flanges *k*, and screws *l*, to a flat plate or carriage E, which is arranged to slide between ways or guides F, that project from a bed plate G. Said bed plate is firmly attached by screws *m*, to the board A. It will thus be seen that the carriage E, serves as a support for one end or portion of the valve chamber C, and that inasmuch as the opposite end C′, is fixed, the remainder of the chamber C, will have liberty to move longitudinally when its length is increased or diminished by the expansion or contraction of the metal of which it is composed. When the steam heats the chamber C, to a sufficient degree it will expand and together with carriage E, move away from the fixed end C′. When the temperature of the steam is reduced the metal composing chamber C, will become cooled and thereby contract, and with the carriage E, return to its original position.

The interior of the valve chamber C, is provided with two valve seats *a*, and at the mouth or at that end of the chamber which is opposite to the fixed end C′, there enters a valve stem H, which has two valves *b*, attached which valves fit the seats *a*.

The mouth of chamber C, which receives stem H, is closed by a stuffing box (*c*) of the usual construction through which stem H, passes as shown in the drawings.

The rear end of stem H, is attached by means of jam nuts *d*′, *d*′, to a standard or hanger I, which projects from the bed plate G, as shown. The valves *b*, may be adjusted or set nearer to or farther from the seats *a*, by adjusting the stem H, by means of the jam nuts *d*′, *d*′. The stem H, with its valves *b*, *b*, it will thus be seen is stationary, while the valve chamber C, and seats *a*, *a*, are susceptible of longitudinal movement by expansion as before described.

The operation is as follows: When the chamber C, is filled with steam the metal of the chamber becomes so heated that it expands longitudinally and carries the seats *a*, against the valves *b*, thus closing the said valves and preventing any escape of steam through pipe D. But when the steam is shut off or the temperature of the metal comprising the chamber C, is reduced and condensed water is present therein, the metal of the chamber contracts or becomes shortened so that the seats *a*, are carried away from the valves and the condensed water is thus allowed to escape freely through the discharge pipe D from chamber C.

Some of the advantages of this trap are as follows. It is simple and cheap in construction. It will work equally as well under a high as under a low pressure and will discharge the water at any temperature that may be preferred and do it equally as well from a large or small quantity of pipes without change of the valves. It is very durable, the valves being of the same material as the seats and being ground together they will shut tight and remain so for any length of time. Every part that will need any attention is on the outside and can be adjusted by any person, and when once set right will not need any attention unless it is

desired to change the temperature of the water discharged. It will not freeze if placed outside of the building in the coldest climate. It enables every fitter of steam pipes to so arrange his pipes that he can get nearly all the heat in the steam when it leaves the boiler. In short for simplicity of construction, perfectness of operation, durability and cheapness it is a highly desirable apparatus.

A great objection to most traps is the constant liability to become leaky or inoperative by breaking or giving out of the packing everything being so placed inside that it requires that they should be disconnected, in order to repair or pack them. The water in most of them is discharged at a boiling heat whereby a large amount of the heat is lost. Traps that are made to depend upon rubber for their action either in the form of a diaphragm or valve, will become defective by being constantly in use under a high pressure and the rubber will constantly have to be renewed as the heat will soon destroy the elasticity and strength of the rubber.

I do not claim the employment of elastic valves, nor do I claim broadly the invention of self acting steam traps; but

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

1. The combination of a valve chamber C, having valve seats *a*, and that has one of its extremities C′, fixed while the remainder of the chamber is allowed to expand and contract longitudinally, with an adjustable valve stem H, and valves *b*, substantially as herein shown and described.

2. The arrangement as herein shown and described of the movable carriage or plate E, chamber C, valve stem H, and bed plate G, for the purpose set forth.

NEHEMIAH UPHAM.

Witnesses:

WILLIAM T. FARRINGTON,

WILLIAM S. FLETCHER.