Perkins, Moulton & Sawyer,

Steam Trap.

No. 106201. Patented Aug. 9. 1870.

Fig. 1.

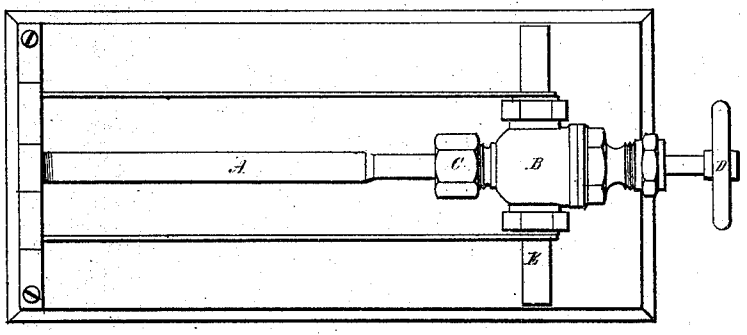

Fig. 2.

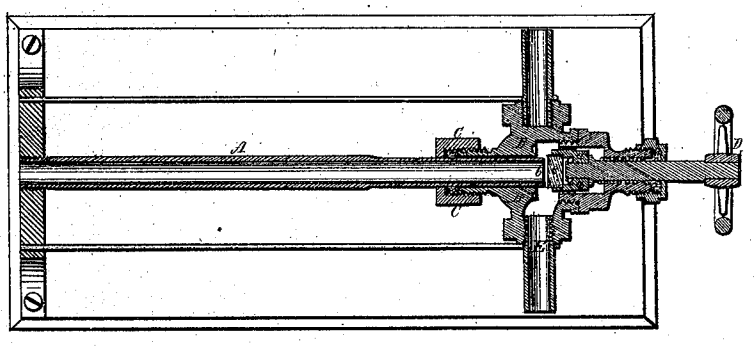

Fig. 3.

Fig. 4.

Witnesses
N. W. Stearns
W. J. Cambridge

Inventor
E. Lawson Perkins
J. H. Moulton
Chas. E. Sawyer

United States Patent Office.

E. LAMSON PERKINS, JOSEPH H. MOULTON, AND CHARLES E. SAWYER, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 106,201, *dated August* 9, 1870.

IMPROVEMENT IN STEAM-TRAPS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, E. LAMSON PERKINS, JOSEPH H. MOULTON, and CHARLES E. SAWYER, all of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Steam-Traps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a plan of a portion of a waste or escape-pipe with our improved steam-trap applied thereto.

Figure 2 is a longitudinal section through the same.

Figure 3 is a perspective view of the end of the plug of the valve or stop-cock, illustrating the application of our improvement thereto.

Figure 4 is a perspective view of the elastic packing, which is applied to the end of the plug of the valve.

Steam-traps as heretofore constructed have been objectionable for the reason that the plugs or seats of the valves have been located on a line below the mouth of the escape-pipe, and hence have been in position to be kept constantly under the influence of hot water, in which they are necessarily immersed, and are thus subject to more or less injury therefrom.

Plug and seats of valves made of metal are objectionable, as they are soon cut or destroyed by being forced against each other by contraction and expansion, and also by the action of the steam and water, and when out of order the flow of water cannot be properly regulated to prevent the escape of steam.

Our invention has for its object to overcome these objections, and produce a steam-trap which will not get out of order, and in which the flow of water can be automatically regulated with great nicety; and

Our invention consists in the application to the plug of a valve of steam-trap of a yielding or elastic packing having a flat surface, which will withstand the action of steam, and which is so placed with regard to the escape-pipe as not to be constantly submerged in the hot water, by which means the rapid wearing away of the parts is avoided, and the desired end attained.

To enable others skilled in the art to understand and use our invention we will proceed to describe the manner in which we have carried it out.

In the said drawing—

A is the lower one of a series of pipes (not shown) connected with a boiler for the passage of steam for heating and drying purposes, the said pipes being secured by brackets, or otherwise, to the wall of an apartment.

B is a valve or stop-cock, the plug *a* of which is provided with a screw-thread, by which it is turned in and out against the outer end *b* of the pipe A, which forms the outlet for the water of condensation contained within the steam-pipes.

The outer portion of the pipe A passes through a stuffing-box, C, and is free to slide within the shell of the valve as it is lengthened or shortened by expansion or contraction.

The end of the plug *a* of the stop-cock is provided with a recess, in which snugly fits an elastic or yielding packing, *c*, fig. 4, which forms the seat or bearing for the end *b* of the pipe A, and this packing is formed of a composition that will withstand the action of the steam to which it is exposed.

Soon after steam is admitted to the drying-pipes it begins to condense, the water filling the outer portion of the lower pipe A, and it then becomes necessary to draw off the water without permitting any waste of steam.

To accomplish this the plug *a* is unscrewed by turning the hand-wheel D so as to withdraw the elastic packing *c* a short distance from the end *b* of the pipe A, the size of the outlet thus formed being adjusted so as not to permit the water to entirely run out of the end of the pipe A, but so that it will extend back therein as far as required, to prevent the escape of the steam.

If from any cause the water should entirely run out of the end of the pipe A, the heat of the steam will instantly expand and lengthen it, so that its end *b* will come into contact with the elastic packing *c* on the end of the plug *a*, when the escape of the steam will be immediately stopped.

The water of condensation will then commence to fill the end of the pipe A, contracting and shortening it so that its end *b* will be withdrawn from the plug *c*, and the water will then be free to escape through the pipe E, which is placed on a line not above the surface of the plug *c*.

When the elastic packing *c* becomes worn out from constant use it may be readily replaced at a trifling expense.

By the application to the plug of the valve of a steam-trap of an elastic or yielding packing, *c*, that will withstand the action of steam, as above described, the plug and the end of the pipe A are prevented from being cut or destroyed by frequent contact with each other as the pipe expands and contracts, in consequence of which the apparatus is not liable to get out of order, and will last for a great length of time, while

the flow of water can be automatically regulated with a great degree of nicety, so that when the apparatus is once adjusted it will not require the constant attention heretofore needed.

We are aware that elastic balls have been used in steam-traps, and the elastic surface of these balls brought into direct contact with the mouth of the steam-pipes, but the practical effect of the globular form of this packing is objectionable, as it requires great exactness in the manufacture of these balls, for should they not be perfect globes, with a perfect evenness in the elasticity of their sides, the mouth of the pipe would not be closed.

My invention of a flat-surfaced socket will overcome this difficulty, and secure the object sought to be obtained with ease and certainty.

What we claim as our invention, and desire to secure by Letters Patent, is—

The elastic plug C, in the valve of a steam-trap, having a flat elastic surface, which is brought in direct contact with the mouth *b* of the pipe A, the point of contact being on a line with or above the mouth of the pipe E, all constructed as and for the purpose described.

Witness our hands this 10th day of May, A. D. 1870.

E. LAMSON PERKINS.
J. H. MOULTON.
CHAS. E. SAWYER.

Witnesses:
N. W. STEARNS,
W. J. CAMBRIDGE.