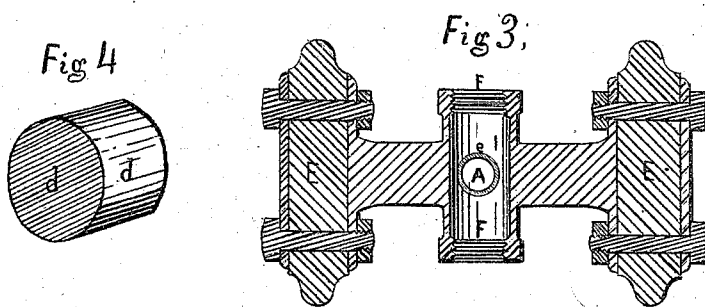
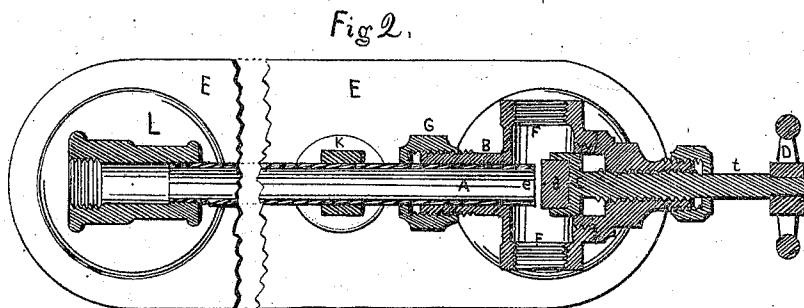
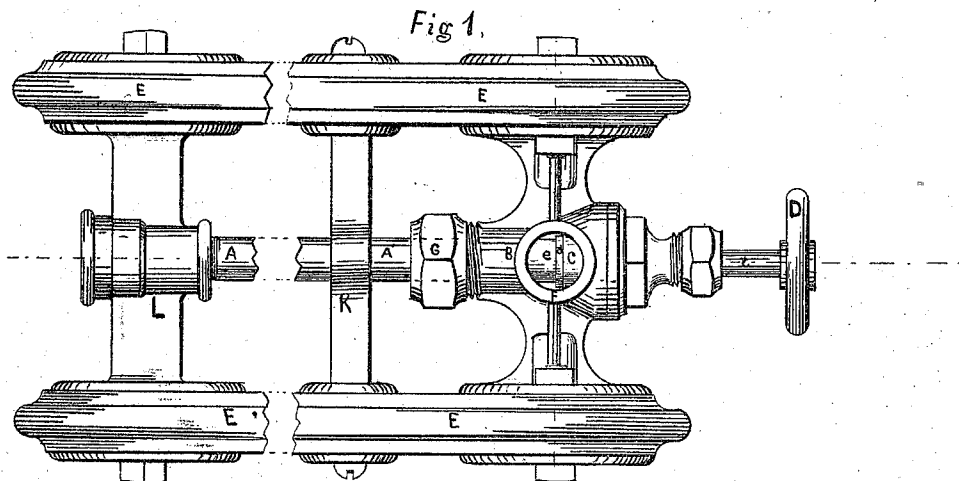


E. L. PERKINS, J. H. MOULTON & C. E. SAWYER.
Steam-Traps.

No. 141,946.

Patented August 19, 1873.



INVENTORS.

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IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. 141,946, dated August 19, 1873; application filed
March 22, 1871.

To all whom it may concern:

Be it known that we, E. LAMSON PERKINS, J. H. MOULTON, and CHAS. E. SAWYER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Steam-Traps, of which the following is a specification:

Our invention relates to improvements in steam-traps; and consists in providing the valve-seats with faces of wood, which we have found much better adapted for making durable seats for expanding tubes than any compressible substance known to us, as they are not injuriously affected by the action of steam.

Figure 1 is a plan of a portion of the expanding tube of a steam-trap with our invention. Fig. 2 is a longitudinal section through the same. Fig. 3 is a cross-section of the same. Fig. 4 represents the wood packing.

To enable others to construct our invention and use the same, we will proceed to describe the same in reference to the accompanying drawings, showing the manner in which we have carried it out.

A is a portion of the brass expanding tube, to which is connected the lower one of a series of pipes connecting with the boiler, for the passage of steam for heating and drying purposes. B is a valve or stop-cock, the plug *c* of which is provided with a screw-thread, by which it may be turned in or out, so as to come in contact with the end *e* of the pipe A, or removed therefrom, so as to allow the escape of the condensed steam (water) contained within the steam-pipes. The end of the pipe A passes through the stuffing-box 6 into the valve B, and is free to slide within the same as it is lengthened or shortened by expansion or contraction. The end of the spindle *t* is provided with a recess, in which snugly fits a packing of wood, *d*, which forms the seat or bearing of the end *e* of the expanding pipe A. This packing of wood is formed endwise of the grain of the wood, it being circular, with a flat face. Thus the end of the grain comes in contact with the end *e* of the pipe A. In practice, we prefer box-wood, being fine-grained or compact fiber, and is sufficiently yielding to allow the end *e* of the space A to form a tight joint when it is expanded suffi-

ciently to come into contact with the said packing.

It is found by actual experiment that rubber or composition packing, as heretofore employed for this purpose, after being subject to the action of steam and expansion of the tube, after constant use for six weeks, was so worn and deteriorated as to render it useless, and requiring a renewal; while a wood packing constructed as above described, after being subject to the same conditions and influences for nearly a year, was found, upon examination, to be imperceptibly worn or injured in any manner.

Soon after steam is admitted to the heating-pipes it begins to condense, the water filling the lower portion of the pipe A, and then it becomes necessary to draw off the water without any waste of steam. To accomplish this, spindle *t* is unscrewed by turning the hand-wheel D, so as to withdraw the plug *c*, containing the wood packing *d*, a short distance from the end *e* of the pipe A, the size of the outlet thus formed being adjusted so as to prevent the water from entirely running out of the end of the pipe A, but so that it will extend as far back therein as required to prevent the escape of the steam.

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

When the temperature is reduced the water of condensation will commence to fill the end of the pipe A, contracting and shortening it, so that its end *b* will be withdrawn from the wood packing *d* in the plug *c*, and the water will then be free to escape through the opening F to the waste-pipe.

By the application to the plug of the valve of a steam-trap of a wood packing that will withstand the action of the steam, as above described, the packing *d* and the end of the pipe A are both prevented from being injured by frequent contact with each other as the pipe expands and contracts.

K represents the supports for the pipe A,

which are about a foot apart, more or less, throughout its entire length. The expanding pipe A may be constructed of any length desired; in practice, we find about eight feet sufficient for all purposes. E E represent the frame, composed of two pieces of hard wood, to which are firmly secured the supports K, through which the pipe A freely passes, the other end of which is firmly secured in the post L.

When once put up and adjusted they will act automatically, and control the flow of water with a great degree of nicety.

We claim as our invention—

A steam-trap composed of a wooden frame or side pieces E E, the braces or guides K, expanding tube A, and adjustable wood valve-seat, as described.

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