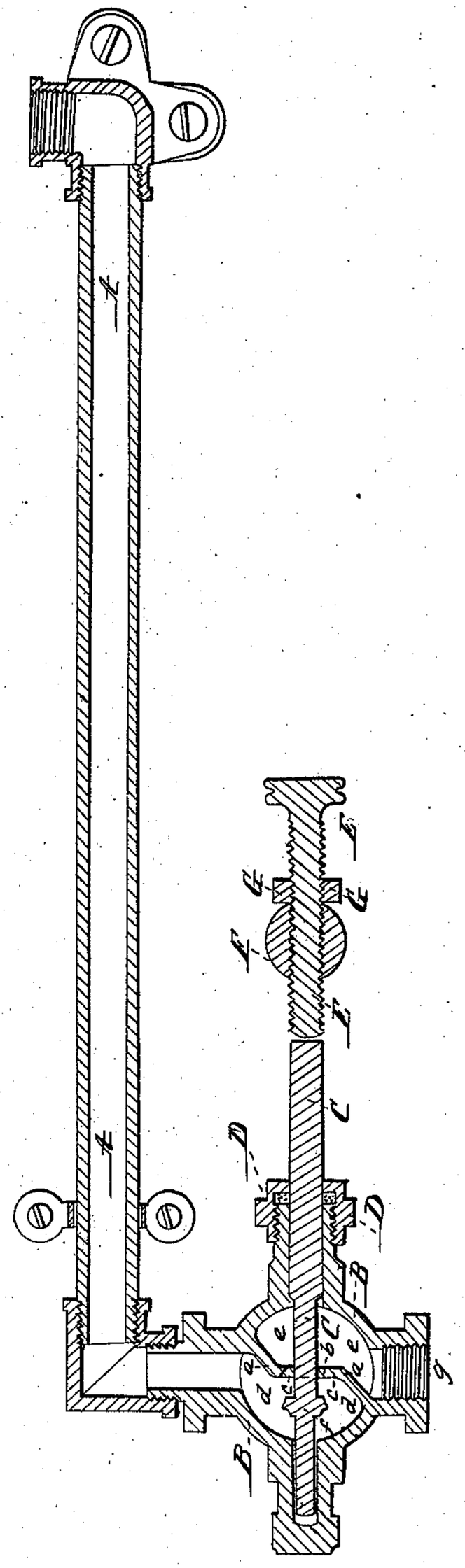
C. A. Wheelock,

Steam Trap,

No. 35,555. Patented June 10, 1862.



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CHARLES A. WHEELOCK, OF UXBRIDGE, MASSACHUSETTS.

IMPROVED STEAM-TRAP.

Specification forming part of Letters Patent No. **35,555**, dated June 10, 1862.

To all whom it may concern:

Be it known that I, CHARLES A. WHEELOCK, a citizen of the United States, and a resident of Uxbridge, in the county of Worcester and State of Massachusetts, have invented an Improved Steam-Trap; and I do hereby declare the same to be fully described in the following specification and exhibited in the accompanying drawing, which exhibits my invention in longitudinal section.

The purpose of a steam-trap is to discharge condensed water from a heat-radiator when such is heated by steam circulating within it.

In some respects my improved trap resembles various others in use, and particularly that described in the United States patent dated August 28, 1860, and numbered 29,833. Still, however, it differs materially from this. In this latter trap the valve-stem is stationary relatively to the expansion-pipe, and the valve is closed by the expansion of the pipe, whereas in my improved trap the valve-stem is movable with the pipe while the latter may be in the act of being expanded. Furthermore, in my improved trap the pressure of the steam operates to close the valve upon its seat and to keep it closed after the pipe may have expanded to a determined extent. In the other trap (viz., that shown in Patent No. 29,833) any expansion of the pipe after the valve may have closed will tend to strain the apparatus and to crook or bend the pipe laterally. My improved pipe, however, is free from these difficulties or defects.

In the above-mentioned drawing, A denotes the expansion-pipe, one end of which, when the apparatus is in use, is to be fastened to a wall or any stationary body and to connect with and open into the lower part of the heat-radiator, in order that the steam and water of the latter may freely flow into such pipe. The pipe in other respects is free, except that it is upheld, so as to be capable of being expanded lengthwise by the heat of the steam when in the pipe. The free end of the pipe is connected with and opens into a valve-case, B, whose interior is divided into two chambers, *d e*, by a partition, *a*, in which a valve-opening, *b*, and seat *c* are made.

The pipe A communicates with the space *d*, which is on one side of the valve-opening, and contains the valve *f*. The space *e* on the opposite side of the partition *a* has an exhaust or discharge passage, *g*, leading from it.

The stem C of the valve *f* passes into the case B and through a stuffing-box, D, arranged on such case and with respect to the valve and its seat and stem, as shown in the drawing. The outer end of the said stem abuts against the end of a screw, E, which is arranged with its axis in a straight line with the axis of the rod, and is screwed through a stationary stud or arm, F. A setting-nut, G, screws on the screw E and against the arm F.

From the above it will be seen that the valve-stem C has no direct communication or connection with the screw E, which may be adjusted longitudinally with reference to the stem.

While the pipe A contains steam and is free of water, it will be expanded lengthwise by the heat of the steam. The valve will also be closed by the direct pressure of the steam. When, however, water may form in or enter the pipe, contraction of the pipe will follow, in which case the valve-stem will be estopped from moving with the pipe. The consequence will be that the valve-seat will be moved away from the valve, and the water will be discharged through the valve-opening. After the water may have been thus expelled from the pipe, the steam will again heat and expand the pipe, so as to close the valve.

As the valve-stem C is not joined to the abutment-screw E, any expansion of the pipe after the valve may have been closed will bear the valve away from the screw, and consequently there will be no tendency of the expansion to crook the pipe or injuriously strain on the valve and its stem.

The valve-stem may have a stationary abutment, instead of the screw or adjustable abutment F. The latter, however, is preferable to the former. In consequence of the valve-seat, or the same and its exhaust-passage, being arranged between the valve and the stuffing-box of the valve-stem, there can be no leakage of steam through the stuffing-box, as would be likely to take place when the steam of the expansion-pipe can press against the stuffing-box, as it will in the apparatus described in the aforesaid patent.

I do not claim the mechanism set forth in the said patent; but

What I do claim as my invention or improvement is as follows:

My improved steam-trap as made substantially as hereinbefore described—that is to say, not only with an abutment, E, and with the valve and stem separate from such abutment and movable with the pipe, as explained, but with the valve so arranged as to be closed by pressure of the steam and opened by contraction of the pipe under circumstances substantially as above set forth; and, furthermore, in connection therewith my improved arrangement of the valve-seat, or the same and its exhaust-passage, relatively to the valve-stem and its stuffing-box, whereby the latter is separated or insulated from the pressure of the steam of the expansion-pipe, as specified.

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