(No Model.)

E. H. GOLD.

STEAM TRAP.

No. 492,495. Patented Feb. 28, 1893.

Fig. 1.

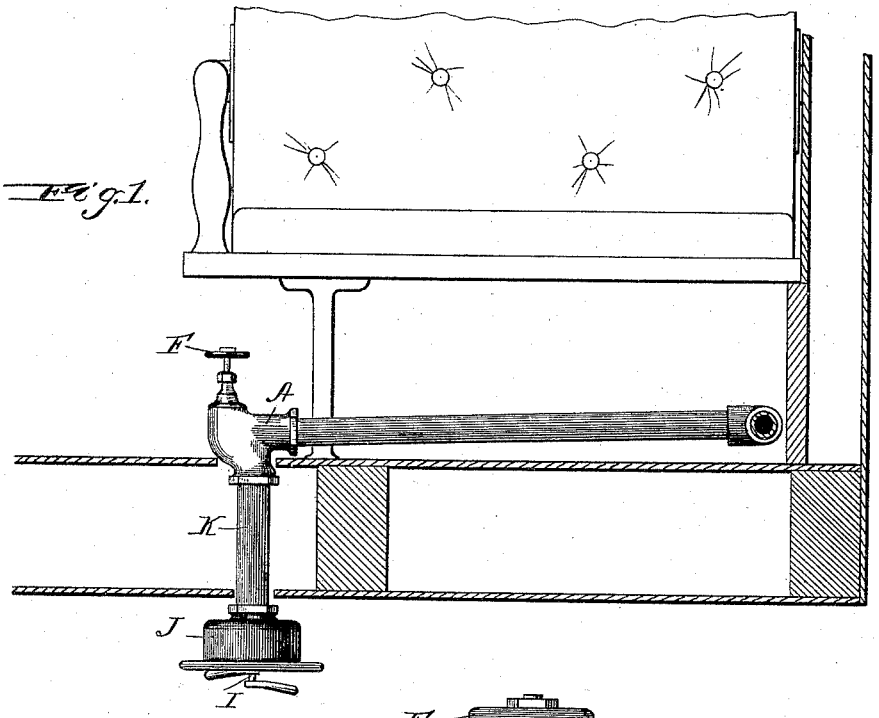


Fig. 2.

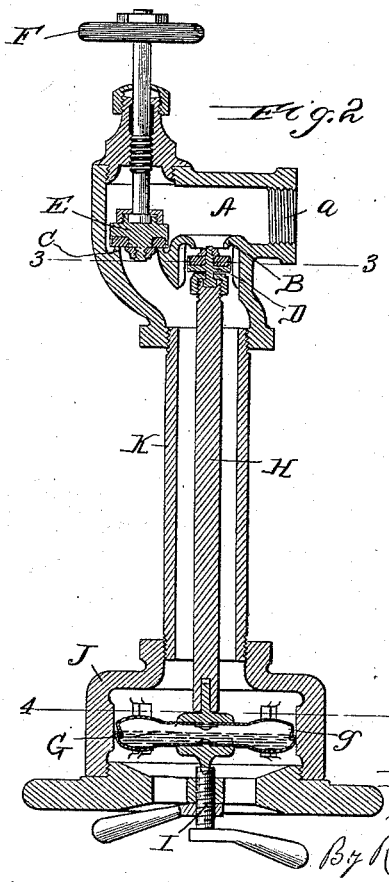


Fig. 3.

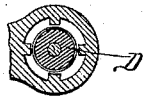
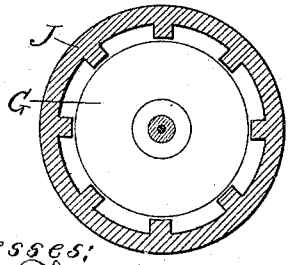


Fig. 4.



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UNITED STATES PATENT OFFICE.

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STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 492,495, dated February 28, 1893.

Application filed October 15, 1892. Serial No. 448,962. (No model.)

To all whom it may concern:

Be it known that I, EGBERT H. GOLD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steam-Traps, of which the following is a specification, reference being had to the accompanying drawings.

My invention is intended to provide a steam trap which shall be certain and quick in action and which will not be liable to be clogged, by freezing or otherwise, and which can be easily thawed if there should ever be occasion for it.

In the accompanying drawings: Figure 1 shows the trap as applied to the heating apparatus of a car. Fig. 2 is a central section through the trap. Figs. 3 and 4 are cross sections on lines 3—3 and 4—4 respectively of Fig. 2.

Referring to Fig. 2, A designates a valve body provided with an opening *a* by which it may be connected to the pipes of the heating apparatus. It contains two valve orifices or seats B, C to which are adapted valves D, E. The valve E is operated by the hand wheel F. The valve D is automatically operated by an expansion device G which so far as the present invention is concerned, may be of any suitable kind. As shown, it consists, however, of a hollow receptacle *g* filled with a volatile liquid such as alcohol. The top and bottom walls of the receptacle are expansible under the influence of pressure and the movement of said walls is utilized to move the valve D, the connection between the expansion device and the valve D being through a spindle H. The receptacle *g* is supported upon a screw I, by means of which its position may be varied in order to secure proper closure of the valve D. The expansion device is contained within the chamber formed by the casing J, which is connected to the valve body A by means of a discharge tube K. Through the tube K both valve openings B and C communicate with the chamber in which the expansion device G is situated. This is the most convenient arrangement but the purposes of the invention would be served if the communication of the respective valve-openings, with the chamber in which the expansion device is situated were through separate tubes. The valve D, operated by the expansion device G, is so far separated from the latter that it may be located within the space to be heated (in the case shown, the inside of the car) while the expansion device is situated outside where it is exposed to the cooler air. This arrangement serves several purposes. In the first place the device is made quick acting as the expansion device is cooled as soon as the flow of hot water and steam from the trap is checked and the accumulation of any material quantity of water above the valve D of the trap is prevented. Such water as may accumulate cannot be exposed to the freezing temperature as long as the apparatus is in use, for the accumulation is all inside of the space to be heated. The expansion device being the first thing to be cooled will, upon the discontinuance of the use of the heating apparatus, open the valve so as to drain all water in the heating apparatus away before any of it can be frozen. Even if clogging of the outer part of the trap should take place, it could be remedied in a few moments when the apparatus was again put in use by the opening of the hand valve E which would permit the steam to be blown into the chamber containing the expansion device and would thus thaw out, and clear from the trap, all obstructions.

I claim—

1. The combination, in a steam trap, for heating apparatus of an automatically operated valve located within the space to be heated, an expansion device situated outside the space to be heated, and a rod connecting said expansion device with the valve, substantially as described.

2. The combination in a steam trap for heating apparatus of an automatically operated valve located within the space to be heated; an expansion device situated wholly outside the space to be heated; and connections between said valve and expansion device, substantially as described.

3. The combination in a steam trap, of a valve body containing two valve seats; a hand operated valve fitted to one seat; an automatically operated valve fitted to the other seat; and an expansion device contained in a chamber communicating with both valve orifices, substantially as described.

4. The combination in a steam trap for

heating apparatus of a valve body adapted to be attached to the heating pipes and containing a valve opening, to which is fitted a valve; a discharge tube connected to said valve-body and adapted to extend from within the space to be heated to the outside air; a casing attached to the outer end of said tube; an expansion device contained in the chamber within said casing; but wholly without the space to be heated and connections between said expansion device and said valve, substantially as described.

5. The combination in a steam trap for heating apparatus of a valve body adapted to be attached to the heating pipes and containing a pair of valve openings to which respectively are fitted an automatic and a hand-operated valve, a discharge tube connected to said valve body and adapted to extend from within the space to be heated to the outside air, a casing attached to the outer end of said tube, an expansion device contained in the said casing but wholly without the space to be heated, and a rod connecting said expansion device with the automatic valve, substantially as described.

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