G. M. HOPKINS.

Steam-Trap.

No. 162,168. Patented April 20, 1875.

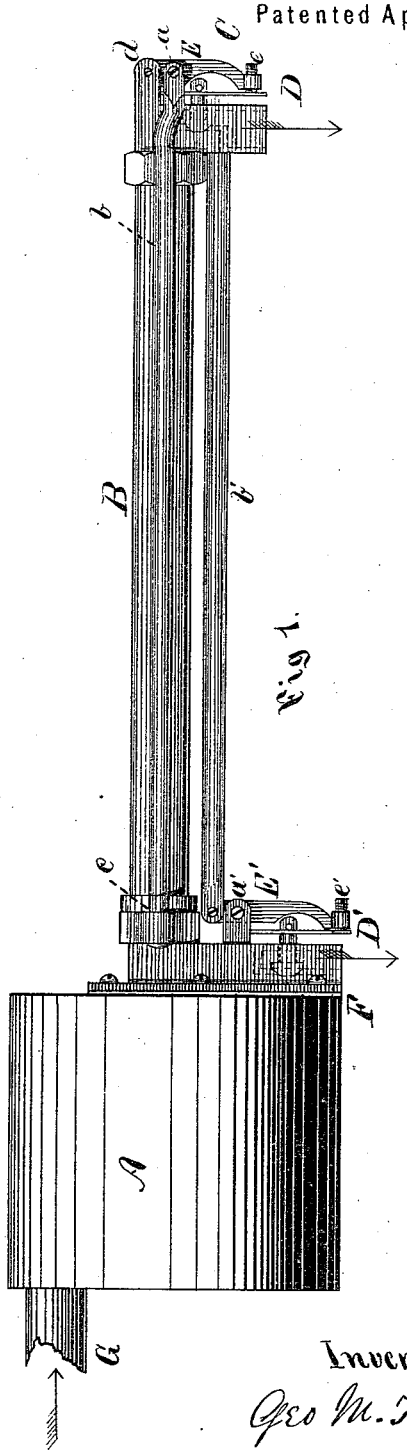

Fig. 1.

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UNITED STATES PATENT OFFICE.

GEORGE M. HOPKINS, OF ALBION, NEW YORK.

IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. **162,168**, dated April 20, 1875; application filed February 21, 1874.

To all whom it may concern:

Be it known that I, GEORGE M. HOPKINS, of Albion, in the county of Orleans and State of New York, have invented certain Improvements in Steam-Traps, of which the following is a specification:

The object of my invention is to furnish a steam-trap which cannot freeze so as to prevent its operating or injure any of its parts.

It consists in a heavy iron cylinder having an expansion-tube of brass projecting horizontally from its head, and provided with iron rods and levers to operate valves, one at the outer end of the tube and the other at the head of the iron cylinder, which is placed below the expansion-tube and near the bottom of the cylinder. These valves are not acted upon directly by the levers, as springs are interposed, which receive the motion from the levers, and which in turn operate the valves. By this arrangement, if the valves are clogged from any cause, none of the parts can be strained.

Figure 1 in the accompanying drawing illustrates the main features of the invention.

A is an iron cylinder. B is an expansion-tube fixed to and projecting horizontally from the head of the cylinder. C is a valve attached to the outer end of the tube B, opening outward. D is a spring, having one end free and the other fixed, and arranged to hold the valve open. E is a lever, having a fulcrum on the pin *a*, which passes through iron rods *b*. These rods are rigidly fixed at *c*. At *d* a pin passes through ears on the casting at the end of the tube, and also through the lever E. A valve is placed at F, which is arranged similar to the one just described, having the spring D′, which holds the valve open, and the lever E′, having a fixed fulcrum at *a′* and jointed to the rod *b′*. This rod is fixed to the outer end of the tube. *e e′* are adjusting-screws in the ends of the levers E E′. G is the tube which conducts the drip to the trap.

As the valves are set open when the expansion-tube is cold, it is evident that, while the water from the pipes is moderately cool, it will continue to pass out at the valves, and when the tube is warmed by very hot water or steam, and consequently expanded, it will move the levers E E′, which will depress the springs D D′ and close the valves more or less. When the steam is shut off from the pipes which the trap drains the cylinder A will retain heat sufficiently long to allow all the water to pass out without freezing.

Should a small quantity of water freeze in the lower valve, the upper one is not prevented from working by virtue of the yielding of the spring D.

I claim as my invention—

1. In combination with the pipe G and the expansion-tube B, the independent intermediate cylinder A, whereby the trap is adapted to retain heat, substantially as and for the purpose set forth.

2. The combination of the valves C and F, tube B, and cylinder A, substantially as specified.

3. The combination of the levers E E′, screws *e e′*, springs D D′, valves C and F, rods *b b′*, and expansion-tube B, substantially as shown and described.

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Witnesses:

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