(No Model.)

J. PARK.

STEAM TRAP.

No. 264,895. Patented Sept. 26, 1882.

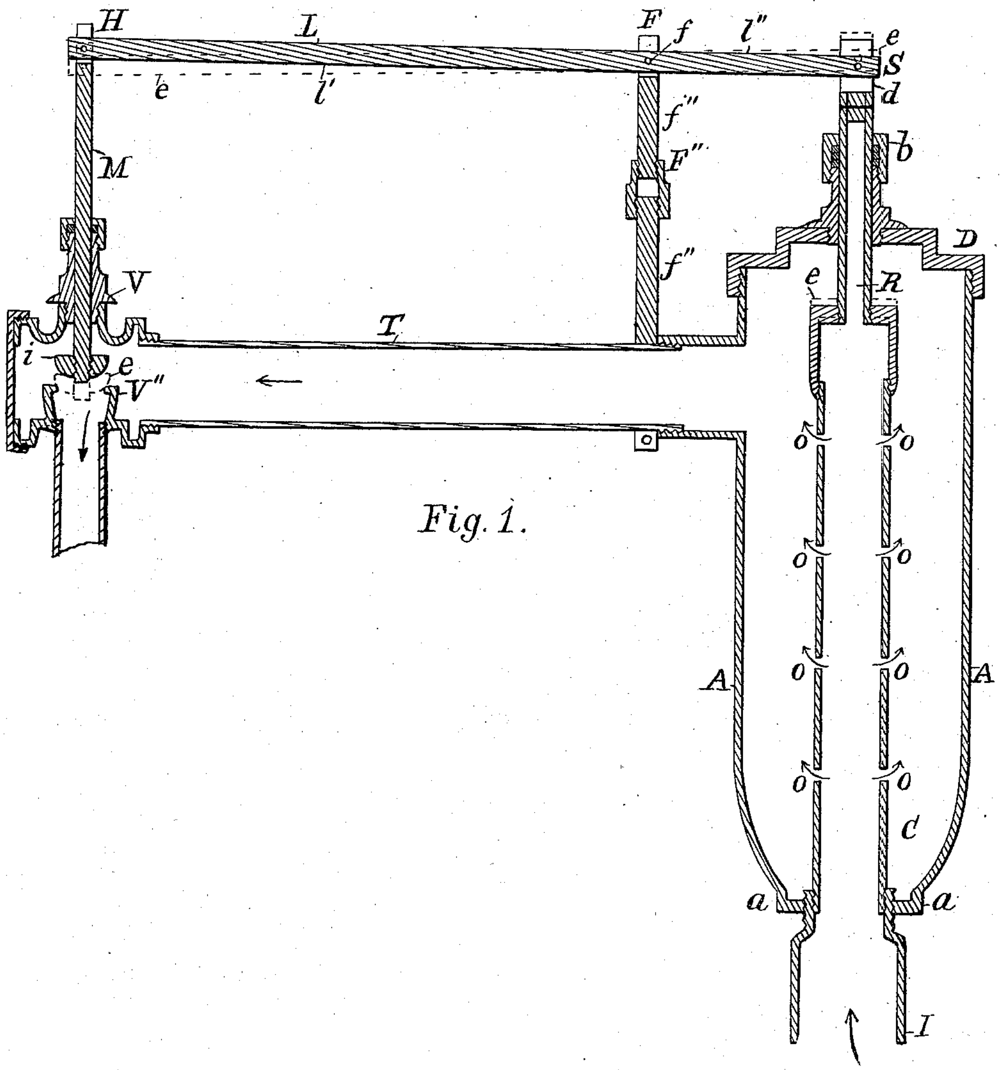

Fig. 1.

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UNITED STATES PATENT OFFICE.

JAMES PARK, OF TROY, NEW YORK, ASSIGNOR TO JOHN L. RUSSELL AND CHARLES CORLIES, BOTH OF SAME PLACE.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 264,895, dated September 26, 1882.

Application filed March 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES PARK, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Steam-Traps, of which the following is a specification.

My invention relates to that class of devices which are employed under pressure to pass off the water collecting from the condensation of steam in steam heating apparatus.

My invention consists, as will hereinafter be more fully described, in the manner of utilizing the longitudinal expansion and contraction of the metal composing a perforated tube, which is placed within the trap-inclosure under the thermal influence of the condensed water, with the open end of the tube firmly secured to the base of the exterior cylinder and connected with the trap-inlet, and the other end of the tube, which is closed, passing through the trap-cap by means of a steam-tight packing, and free to move therein as it expands and contracts longitudinally to move the short arm of a lever to which the projecting end of the tube is pivoted, and thus actuate the long arm of the lever to open and close a valve placed on the trap-outlet.

Accompanying this specification, and forming a part of it, is a drawing containing one figure, which is a vertical section of the device containing my invention.

The several factors composing my invention are designated by letter-reference, and their operation described as follows:

The letter A indicates the exterior wall of the trap, and T an offset-pipe connecting with the exit.

The letter C designates a tube or cylinder that is placed within the inclosure, firmly secured to the base of the trap at its open end, and the latter in free communication with the trap-inlet, (designated at I.) To the top of the perforated tube or cylinder C there is shown as attached a smaller pipe, R, which internally connects with the former, and upon the top of this smaller pipe is constructed the closing-cap *d*. This smaller tube passes through the cap of the trap D by means of the stuffing-box *b*. If desired, the smaller pipe R may be dispensed with and a rod used in its place; but in either instance the top of the rod, when used, or the smaller tube and cap *d*, when employed, they are pivoted at their ends, as designated at S, to attach to the short arm of a lever, which is fulcrumed so as to cause its long arm to open or close the discharge-valve of the trap as the tube or cylinder C expands or contracts.

The letter L designates a lever which is pivoted to the top of the rod or pipe R at S. This lever is also pivoted to the fulcrum-standard F at *f'*, and this standard is made in two pieces, *f' f''*, and these are connected with the coupling F'', constructed to have opposite threads, so that the length of the fulcrum-standard may be varied. The short arm of the lever L is designated at *l''* and the long arm at *l'*, and the end of the latter, at H, is shown as pivoted to the valve-rod M, which moves up and down the valve-plug *i* to contact with or from the valve-seat V''.

The letter *a''* indicates the trap-discharge exit-opening.

With the several parts thus constructed and arranged with reference to each other, they operate as follows: When heated water produced by condensed steam enters the inlet I and passes up through the tube C and out of its perforations into the trap-inclosure the tube longitudinally expands promptly under the influence of heat, and raises, to a small extent, the short arm of the lever L, while the long arm is forced down oppositely farther than the short arm rises, from the fact that the former is farther from the fulcrum, and which increased motion is sufficient to force down the valve-stem M and close the valve, the parts being in the position shown by the dotted line *e*. When the water thus in the trap has parted with its heat the perforated tube contracts and raises, by means of its connection with the lever L, the valve-stem M and the plug *i* to open the valve V, when the cooled water under pressure passes out through the discharge-opening *a''*.

To secure a prompt expansion of the metal of which the tube C is composed, it is essential that it should be made as thin as possible and have it retain the requisite stiffness, so that the longitudinal motion of the molecules of which it is composed, in their thermal expansion, shall not be retarded for a time by their

being compelled to part with their received heat to other molecules in horizontal contact, as would be the case were a solid bar used in place of a perforated tube.

As a perforated tube secured to the trap at its base, with its end in direct communication with the intake, and so perforated as to have the expanding and contracting influence of temperature act upon both of its surfaces at the same time, will at its motor end respond sensitively and promptly outside of the trap to operate a lever to open and close the discharge, from its improved elements of construction, I consider these elements as a separate feature of my invention for the purpose applied.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, in a steam-trap, of an inner perforated tube firmly secured to the trap-base in direct communication with the trap-inlet at its lower end, and its upper closed end projected through a stuffing-box in the trap-cap, and a lever having a pivoted fulcrum with its short arm pivoted to the projected closed end of the perforated tube, and its long arm pivoted to the stem of a discharge-valve arranged upon the trap egress-opening, whereby the valve-opening is closed by the expansion of the inner tube.

2. In combination, a steam-trap consisting of the exterior cylinder, A, offset-pipe T, inner perforated tube, C, secured to the base of the trap at one end and in direct communication with the trap-inlet, the stuffing-box *b*, cap D, lever L, fulcrum F, valve-rod M, and valve V, constructed and arranged to close the valve by the expansion of the tube, as herein shown and described.

Signed at Troy this 22d day of February, 1882.

JAMES PARK.

Witnesses:
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EDWARD J. HICKS.