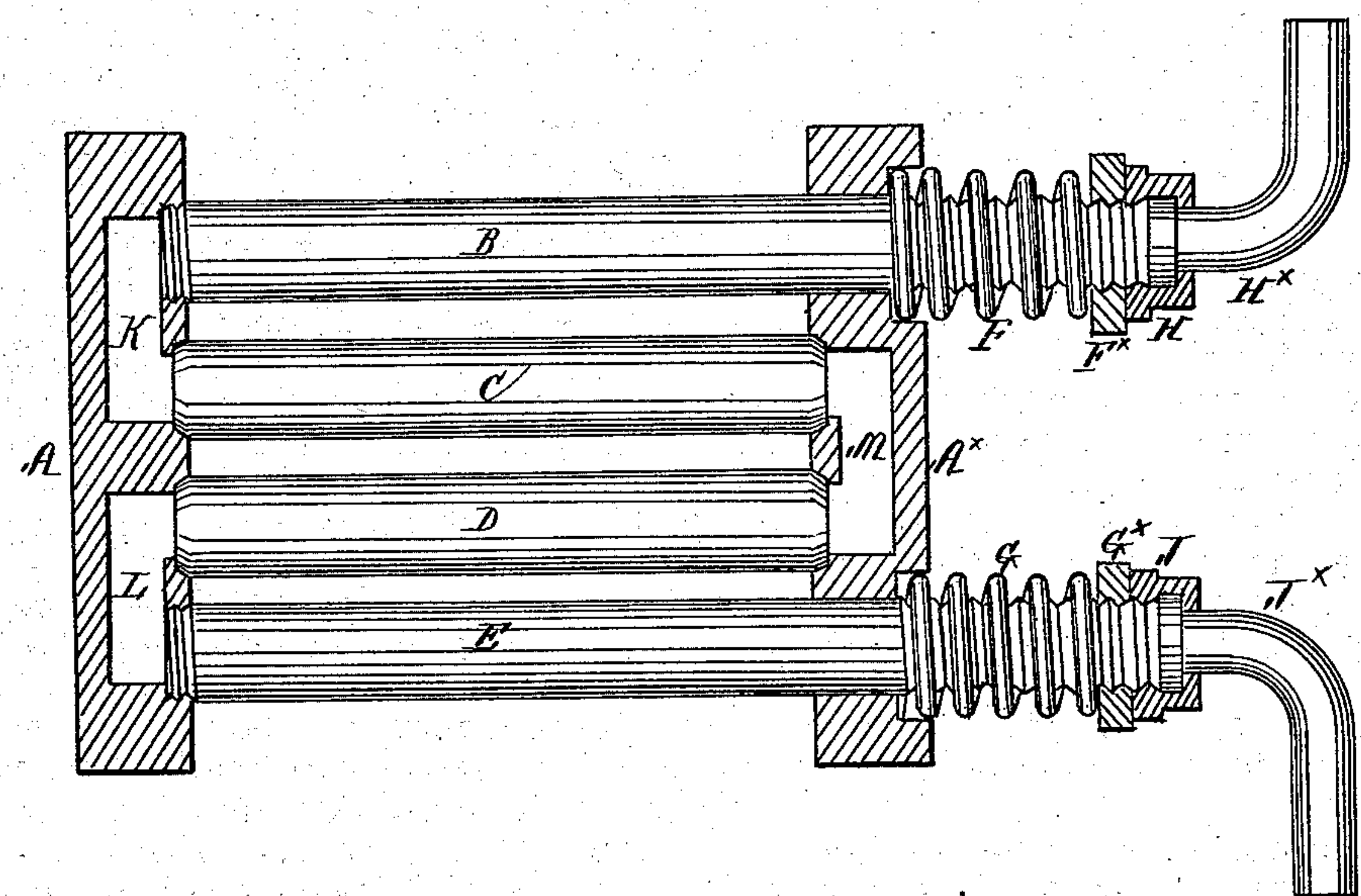


J. E. ROBINSON.
Safety Water-Backs for Stoves.

No. 154,959.

Patented Sept. 15, 1874.



Witnesses,
 Lemuel P. Deury
 Jerome Davis

Inventor,
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UNITED STATES PATENT OFFICE.

JOHN E. ROBINSON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SAFETY WATER-BACKS FOR STOVES.

Specification forming part of Letters Patent No. **154,959**, dated September 15, 1874; application filed February 12, 1874.

To all whom it may concern:

Be it known that I, JOHN EDWARD ROBINSON, of Boston, Suffolk county, State of Massachusetts, have invented a new and Improved Safety Water-Back for Stoves and Ranges, of which the following is a specification:

The nature of my invention is that of so arranging a series of pipes, in combination with two chambers and two springs, (which pipes and chambers conduct cold water to the back, side, or front of a stove or range, to where it comes in contact with heat, and thence to the locality where the heated water is drawn off,) as that any undue pressure of steam shall open a way for its own escape; and the object is safety and economy in the use of water-backs for stoves and ranges.

In the drawing, the figure shows the device in the position in which it is placed when in use, some of the parts being in elevation and some of the parts in section, as hereinafter explained.

The whole device is constructed of metal.

In the drawings, A A^x are two blocks, whose thickness is about double the width seen in the drawing. These are called the chamber-bars, and they bear four pipes, B, C, D, and E. The pipes B and E are secured, at their left-hand ends, into apertures in the chamber-bar A, from which they proceed, as seen in the drawing, toward, into, and beyond circular apertures, respectively, in the chamber-bar A^x. On the portions of these pipes B and E which project beyond the chamber-bar A^x they are seen in the drawing to be surrounded, respectively, by a spiral spring, F and G. These springs pass, respectively, at their left-hand ends, into circular cavities cut into the chamber-bar A^x, (impinging upon the bottoms of these cavities,) and they are retained in place upon the pipes which bear them by means, respectively, of the nuts F^x and G^x, which are shown in sections in the drawing. H and J are couplings with bent tail-pieces, respectively, H^x and J^x, which couplings are screwed on, respectively, to the projecting ends of the pipes B and E. The pipes C and D reach from the chamber-bar A to the one marked A^x, their ends impinging upon the respective chamber-bars, and passing a short distance into apertures in them. The apertures communicate

with chambers of the shape of a bent tube, (as seen from above,) and circular in vertical section, hollowed (cast) in the chamber-bars, there being two, marked K and L, in the chamber-bar A, each of which has two circular openings communicating with the bores of the pipes. There is one chamber in the chamber-bar A^x, communicating in the same manner with two pipes. The chamber communicates with the bores of the pipes B and C at their left-hand ends, and the chamber M (in the chamber-bar A^x opposite) communicates, at their right-hand ends, with the bores of the pipes C and D, and the chamber L (in the chamber-bar A) communicates with the bores (at their right-hand ends) of the pipes D and E.

It will thus be seen that there is an uninterrupted passage for the water from the entrance of the device at the mouth of the tail-piece J^x, through all four of the pipes and the chambers of the two chamber-bars, to the mouth of the tail-piece H^x, and that the chamber-bar A thus forms a movable wall to one side of the water-containing chamber, (formed mainly by the pipes.)

The operation of the invention is as follows: The device being built in at the back, side, or front of a stove or a range, the tail-piece J^x is connected with the hydrant-pipe or other water-supplying medium, and the tail-piece H^x is connected with a pipe which carries the heated water to the place where it is to be used. The water is then turned on, and the fire is lighted in the range.

The normal operation of devices in some respects similar to mine consists in the simple heating of the water, the rise of the hot water to the top of its containing-vessel, and its being drawn off for use. But it is often the case that, by neglect to let the cold water in a water-back before the fire is lighted, the water-back becomes heated, and the water, when let on, impinging upon the hot metal, being converted into steam, an explosion ensues, to the damage of the water-back, and possibly other property, and may be the loss of life. These effects would also result in case of the freezing of the efflux portion of the pipe above the tail-piece H^x, when the hot water, finding no vent, would be converted into steam, which, finding no mode of escape, would explode the de-

vice. But with my improved safety water-back these disadvantages are obviated. The generation of steam causing an equal pressure on all parts of the device, the chamber-bar A^x is forced to the right, compressing the two springs F and G, thus quitting the ends of the pipes C and D, and leaving two or more orifices for the escape of the steam, all danger being thus obviated. The steam having escaped, the expansion of the springs F and G presses the chamber-bar A^x to its original place, the pipes C and D are readjustable in their respective places, when the whole device is in order for a second use.

I do not claim the application of the principle of the steam safety-valve to water-backs for stoves; but

What I claim is—

The combination of the tubes B and E, the springs F and G, and the chamber-bars A and A^x with one or more detachable tubes, constructed and arranged substantially as described.

JOHN EDWARD ROBINSON.

Witnesses:

LEMUEL P. JENKS,
JEROME DAVIS.