

(No Model.)

W. L. JANCEY.
EXPANSION STEAM VALVE.

No. 537,685.

Patented Apr. 16, 1895.

Fig. 1

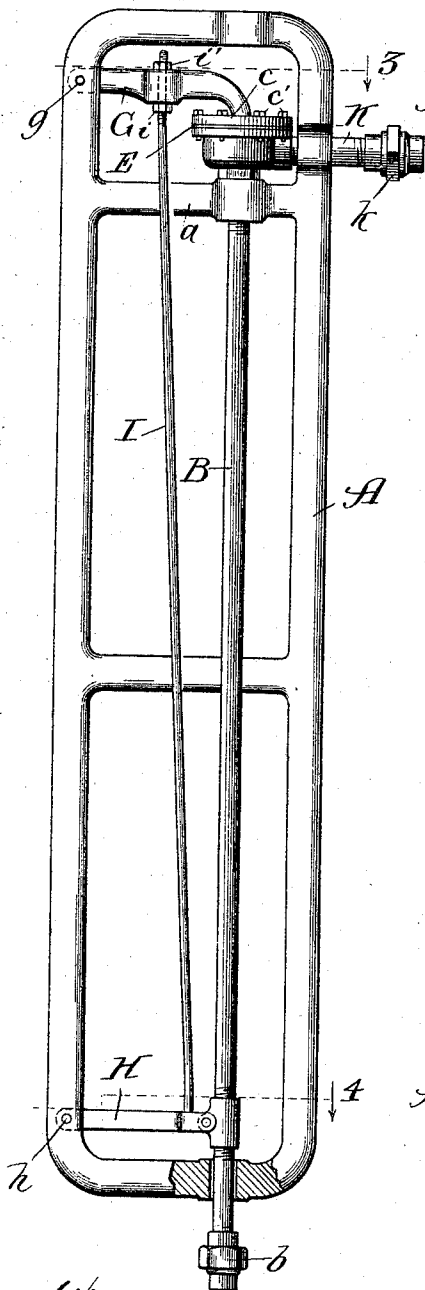


Fig. 2

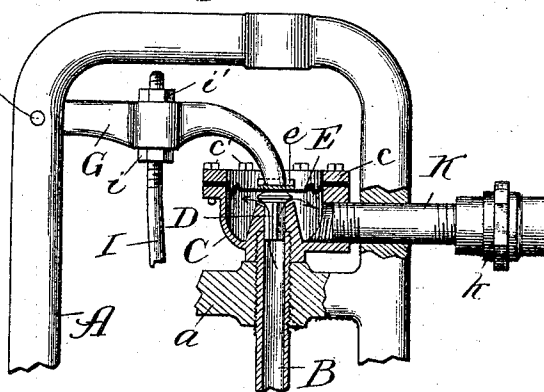


Fig. 3

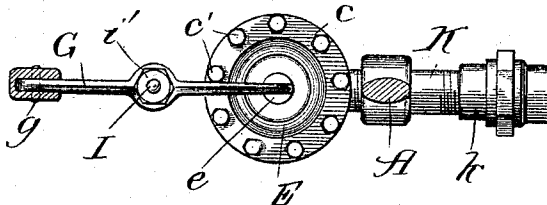


Fig. 4

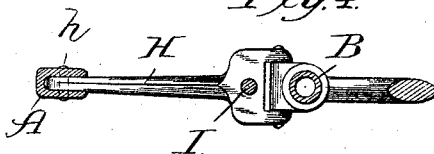
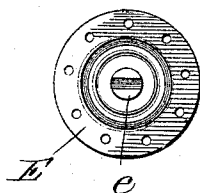


Fig. 5



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

WILLIAM LEE JANCEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THOMAS KANE,
OF SAME PLACE.

EXPANSION STEAM-VALVE.

SPECIFICATION forming part of Letters Patent No. 537,685, dated April 16, 1895.

Application filed April 2, 1894. Serial No. 506,015. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LEE JANCEY, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Expansion Steam-Valves, of which the following is a specification.

The object of my invention is to provide a simple, economical and efficient expansion steam trap; and the invention consists in the features and combinations hereinafter described and claimed.

In the drawings, Figure 1 is a front elevation showing the entire steam trap; Fig. 2, an enlarged view of a portion of the mechanism, partly in section; Fig. 3, a sectional plan view, taken on line 3 of Fig. 1, looking in the direction of the arrow; Fig. 4, a sectional view, taken on line 4 of Fig. 1; and Fig. 5, a plan view of the diaphragm.

In constructing my improvement, I use a supporting frame, A, of the desired shape and size to support and guard the operating mechanisms. Secured to the cross bar, a, of the frame, in a threaded opening, is an expansible pipe, B, formed preferably of brass, though it may be made of any other metal having a high degree of expansion and contraction under the influences of heat and cold. The end of the pipe extends a short distance beyond the cross bar, and secured to it is a trap or body portion, C, which is provided with an ordinary fluted valve, D, which closes the opening in the trap that registers with the expansible pipe, so as to close or open the passage when desired.

Arranged immediately above the valve, and secured to the trap in any convenient manner, preferably by means of a ring washer, c, and cap screws, c', is a diaphragm, E, preferably made of sheet metal, so that it may be easily vibrated one way or the other and always retain its elasticity. To actuate this diaphragm, so that the valve may be closed or permitted to open, I arrange a pivotal lever, G, which is fulcrumed at g, in the frame, and having its outer free end resting in a notched piece of metal, e, which is secured to the diaphragm by means of solder, or in any other convenient manner. Pivoted to the lower end of the expansible tube is a lever, H, which is also pivoted at f, to the inclosing frame, in

such manner that the expansion or contraction of the tube—due to the heat or cold—is likewise communicated to the lever.

I connect the levers, G and H, together, by means of a connecting rod, I, which has adjustable nuts, i, i', at its upper end to give the desired adjustment and location to the lever, G. The steam trap is provided with an exit pipe, K, having a union, k, by which it may be connected to any suitable drip or return pipe. The lower end of the expansible pipe is also provided with a union, b, by which it may be connected to the desired heating coil or pipe.

My improved steam trap is intended to be used in connection with kettles for heating water or places where it is desired to sustain an approximate uniform temperature.

In use, the union, b, is attached to the heating coil, and the union, k, attached to a return or drip pipe, and the lever, G, adjusted to a position to allow sufficient steam to pass through from the expansible tube into the trap and sustain the desired normal temperature. In the beginning the expansible pipe is cold and at its shortest length, thus keeping the actuating lever up from the diaphragm and allowing the valve to be opened, as shown in Fig. 2. The main valve to the coil is opened and steam allowed to enter. As it passes through the substance it is desired to heat, and which probably is at its lowest temperature, very little steam heat passes through the expansible pipe; but as the water or substance is raised in temperature, the temperature of the steam passing through the expansible pipe is also raised. This heats the expansible pipe, which, expanding, pushes down the lever, H, and, by the connecting rod, pulls down the actuating lever, which action closes the valve a proportionate amount. If it be a very high heat the valve is entirely closed, and no steam allowed to pass through. As the temperature in the kettle or substance desired to be heated is lowered by the surrounding atmosphere, or from its use, the steam which enters or is contained in the expansible pipe also lowers in temperature, thus permitting the expansible pipe to cool, and in contracting—owing to its coolness—raises the lever, H, which, through the connecting rod, raises the actuating lever, G, and permits the

steam pressure to open the valve, again permitting steam to pass through until the temperature of the pipe again reaches a point which will expand it and again close the valve.

- 5 These operations are continued as long as the boiling kettle or substance desired to be heated is used, or until the steam is shut off by a main valve.

The advantages of my invention are, first,
10 it is a very sensitive valve, on account of doing away with the usual stuffing boxes and complex mechanism, and, second, that it is very simple and economical in construction.

It will of course be understood that I do not
15 intend to limit the use of my invention to any particular place or purpose, but on the contrary I contemplate using it in any position or for any purpose to which it may be found applicable; nor do I intend to limit myself
20 to minor features or details of construction, it being my intention to change form and construction and to omit parts or use equivalents as circumstances may suggest or render expedient.

25 I claim—

An expansion valve, in which there is combined a supporting and sustaining frame, an expansible tube having one end rigidly secured to the frame portion and its other end, free to move or operate, a valve body portion 30 provided with an exit chamber and secured at the rigid end of the expansion pipe, a valve located in the exit chamber for opening or closing the passage through the expansion pipe, a diaphragm in the valve body portion 35 located adjacent to the valve so that its vibrations regulate the opening or closing of the valve, an actuating lever pivoted in the frame portion, with its free end contacting the diaphragm, a second lever pivoted to the frame 40 portion and arranged to be operated by the free end of the expansible tube, and a connecting rod for such levers to transmit the motion of the expansion pipe to the diaphragm and thereby regulate the operations 45 of the valve, substantially as described.

WILLIAM LEE JANCEY.

Witnesses:

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