W. H. Bechtel,

Steam Trap.

No. 109103. Patented Nov. 8. 1870.

Fig. 1

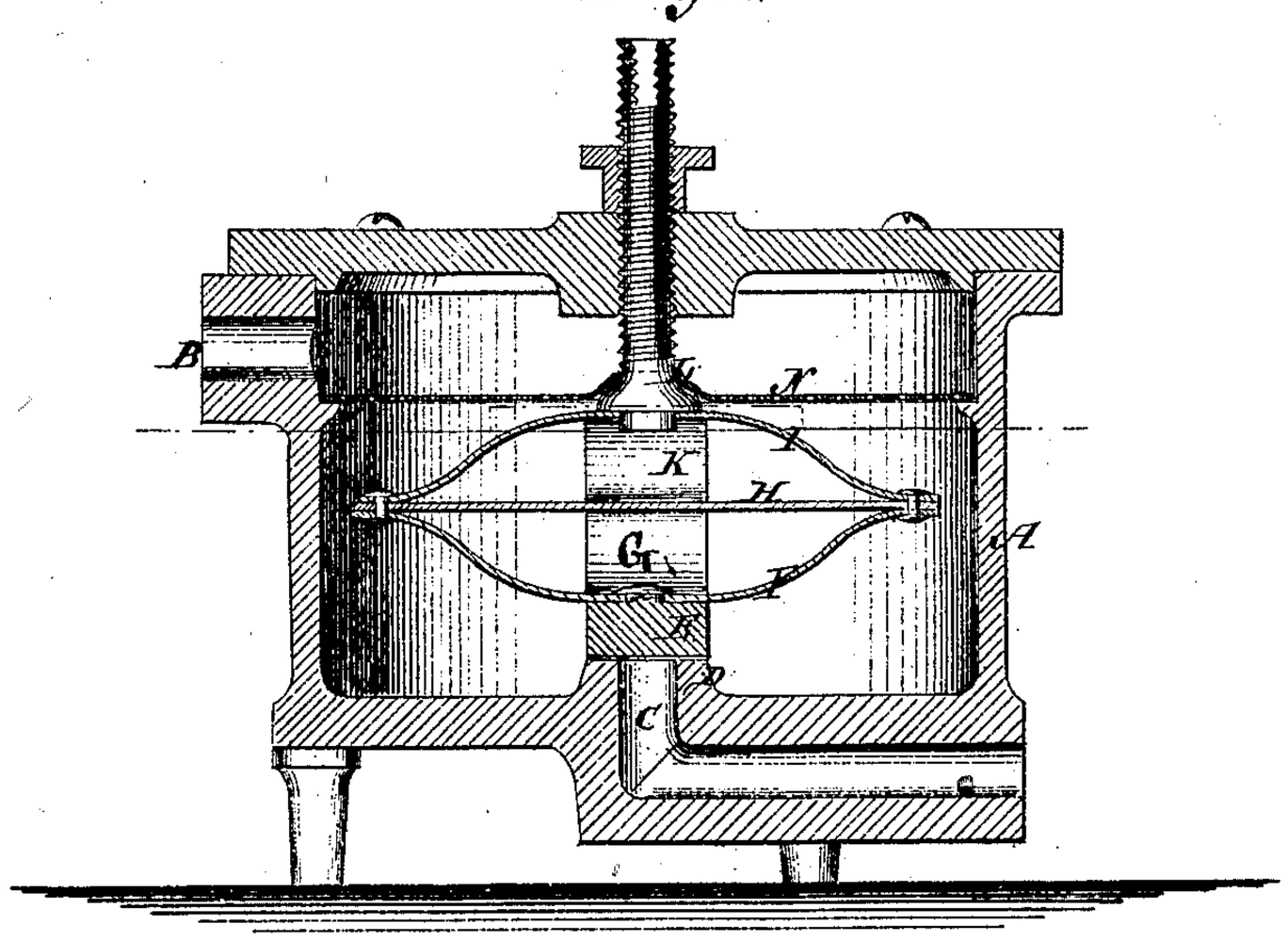
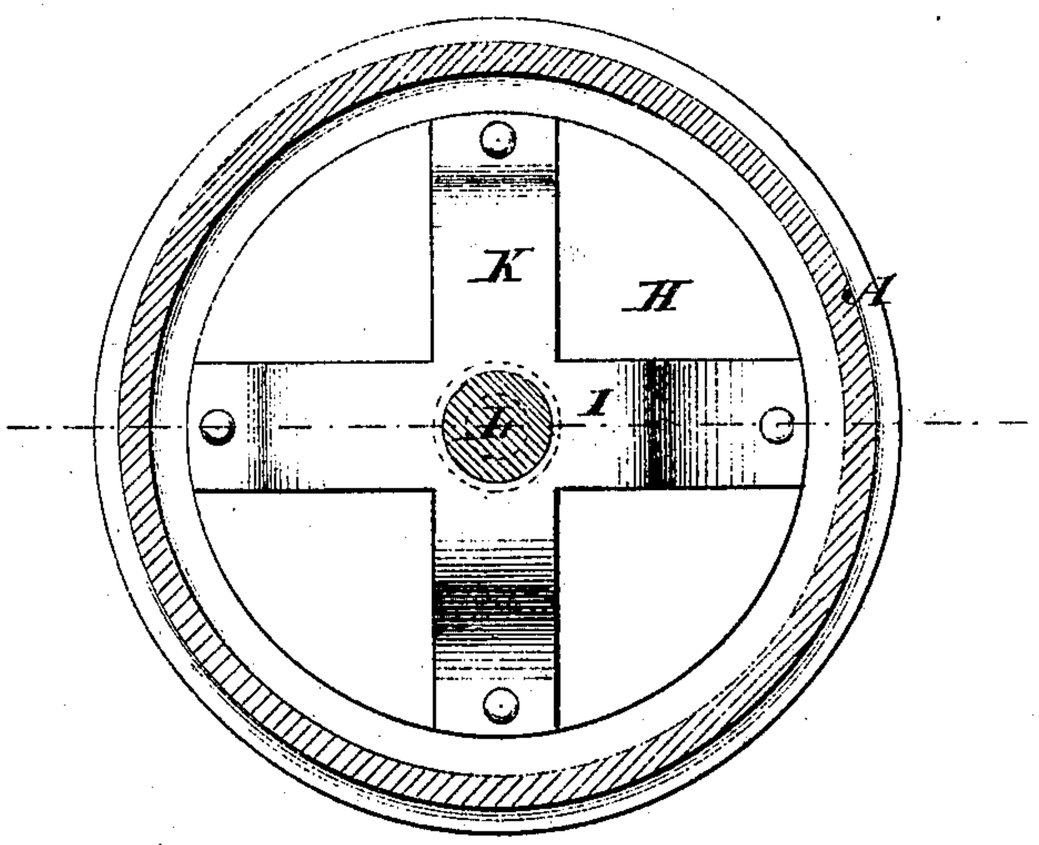


Fig. 2



Witnesses:
S. S. Mabee
W. H. Bechtel

Inventor:
Wm. H. Bechtel
Per Munn & Co
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM H. BECHTEL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN STEAM-TRAPS.

Specification forming part of Letters Patent No. **109,103,** dated November 8, 1870.

To all whom it may concern:

Be it known that I, WILLIAM H. BECHTEL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Steam-Trap; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

This invention relates to improvements in steam-traps; and consists in a novel combination, with a valve and escape-pipe, of metal plates having different degrees of expansion and contraction under the effects of heat and cold, so arranged that, when the valve and the said plates are surrounded by the water of condensation, the contraction thereby ensuing will open the valve and permit the water to escape until steam takes the place of the water, and being warmer than the water causes the plates to open and close the valve.

The invention comprises the combination, with the said plates and valve, of an adjusting apparatus, whereby the valve may be varied in position for action under different degrees of heat, as may sometimes be required; and the invention also comprises a combination, with the valve and the actuating-plates, of a screening or filtering plate or sieve to prevent any solid matter from working under the valve to obstruct it in closing.

Figure 1 is a vertical section of my improved trap, and Fig. 2 is a horizontal section of the same.

Similar letters of reference indicate corresponding parts.

A is a valve-chest, which may be of any suitable or preferred form. It is provided with a pipe-connection, B, for the admission of the steam and water, and an exhaust-pipe, C.

D is a valve-seat surrounding the mouth of the escape, and raised a little above the surrounding surface, so that any matter in the water or steam which may settle on the bottom will be prevented from flowing onto the seat. E is the valve. It is connected to the semi-elliptical bars or plates F G, (one or both,) of soft metal, as shown, which will expand and contract considerably under the effects of heat and cold. These plates cross each other at the center when the valve is connected to them, and they are connected at the ends to a hard-metal disk or plate, H, near the edge, and this plate, which is composed of metal which will expand and contract less than the others, is connected by other soft-metal plates, I K, attached on the other side in the same way that the plates F G are to a support above, which will be unyielding. In this case it is the end of an adjusting-screw, L, coming down through the top of the steam-chest, and provided with adjusting-nuts or other apparatus, as may be preferred, for raising or lowering it through a stuffing-box.

N represents the screen or other device placed above the plates and the valve for preventing any particles of matter from passing with the water or steam down to the valve-seat.

The contraction and expansion of the plates F G and I K in the direction of their length being resisted by the plate or disk H will have the effect to cause a movement of the valve toward or from the support L, or perpendicular to the plate H, so that, when the water of condensation surrounds the plates, and they are cooled thereby, the tendency of the soft-metal plates to contract will cause them to become straighter, thereby shortening the distance between the support L and the valve, so that the latter will be opened and the water will escape, and when the steam enters and the contrary effect is produced the valve will be closed.

If high steam is used, so that a greater difference of temperature between the steam and the water will exist than when low steam is used, then the support I will be raised, so that the plates may have room for the greater movement due to the greater variation in the temperature.

The like movement of the valve may be produced, but in a lesser degree, by using the soft-metal plates on only one side of the disk H, either connecting the valve to the disk H and making the same connection with support I, as here shown, or connecting the latter to the support L and connecting the valve as it now is; and, again, it is not necessary to use two soft-metal plates on one side of the disk

H, as one will work very well alone; but I prefer to employ two, as it makes a more durable construction.

The escape-pipe C may be arranged to convey the escaping water back to the feed-water supply.

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

1. The combination, with expansible plates H I and valve F, of the adjustable support L, for the purpose described.

2. The combination, with the valve-chamber, of the screen N, for the purpose set forth.

The above specification of my invention signed by me this 19th day of May, 1870.

WILLIAM H. BECHTEL.

Witnesses:

GEO. W. MABEE,

GEORGE BIRKBECK, Jr.