

(No Model.)

I. CUMBERBATCH.

STEAM TRAP.

No. 327,433.

Patented Sept. 29, 1885.

Fig: 1.

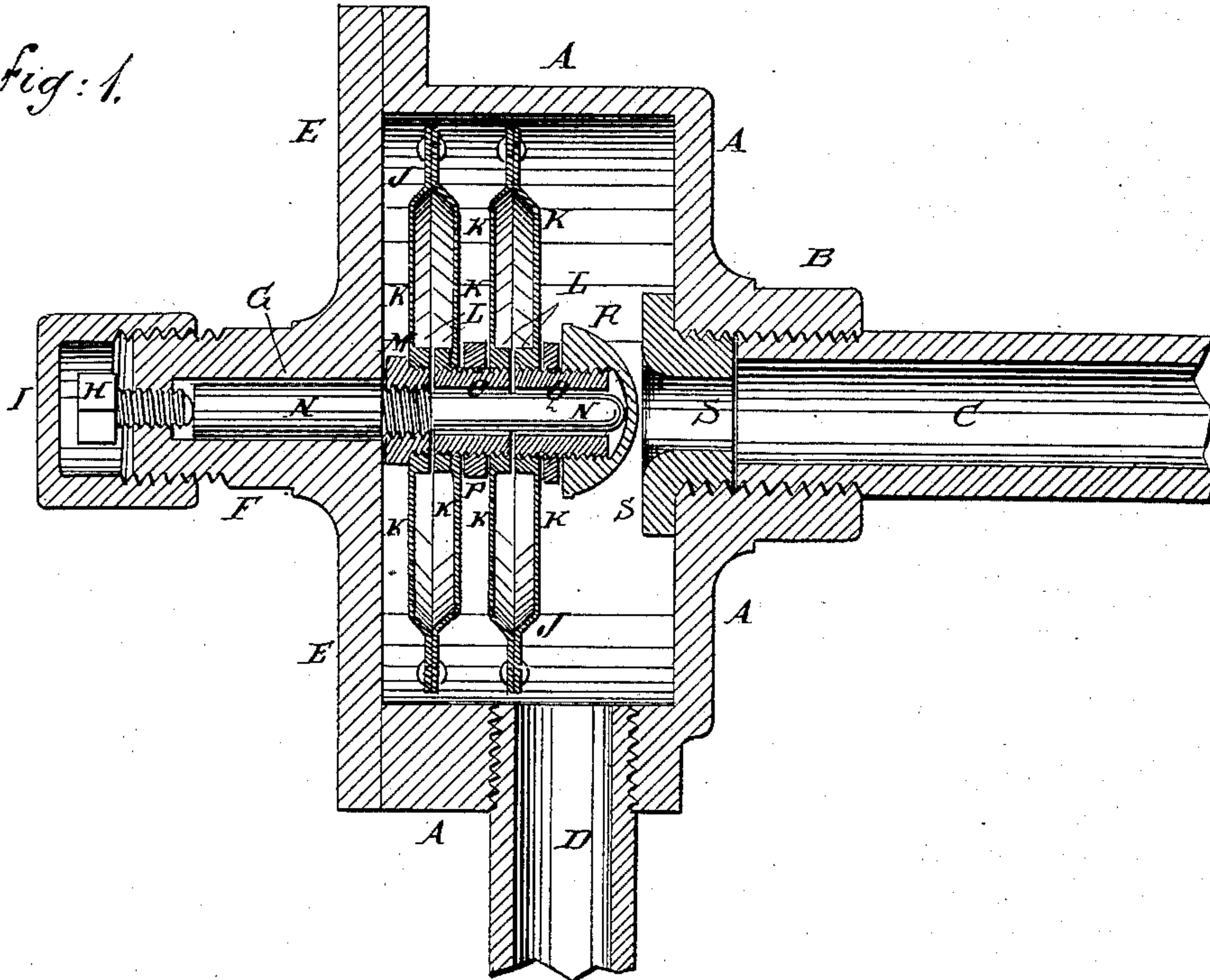
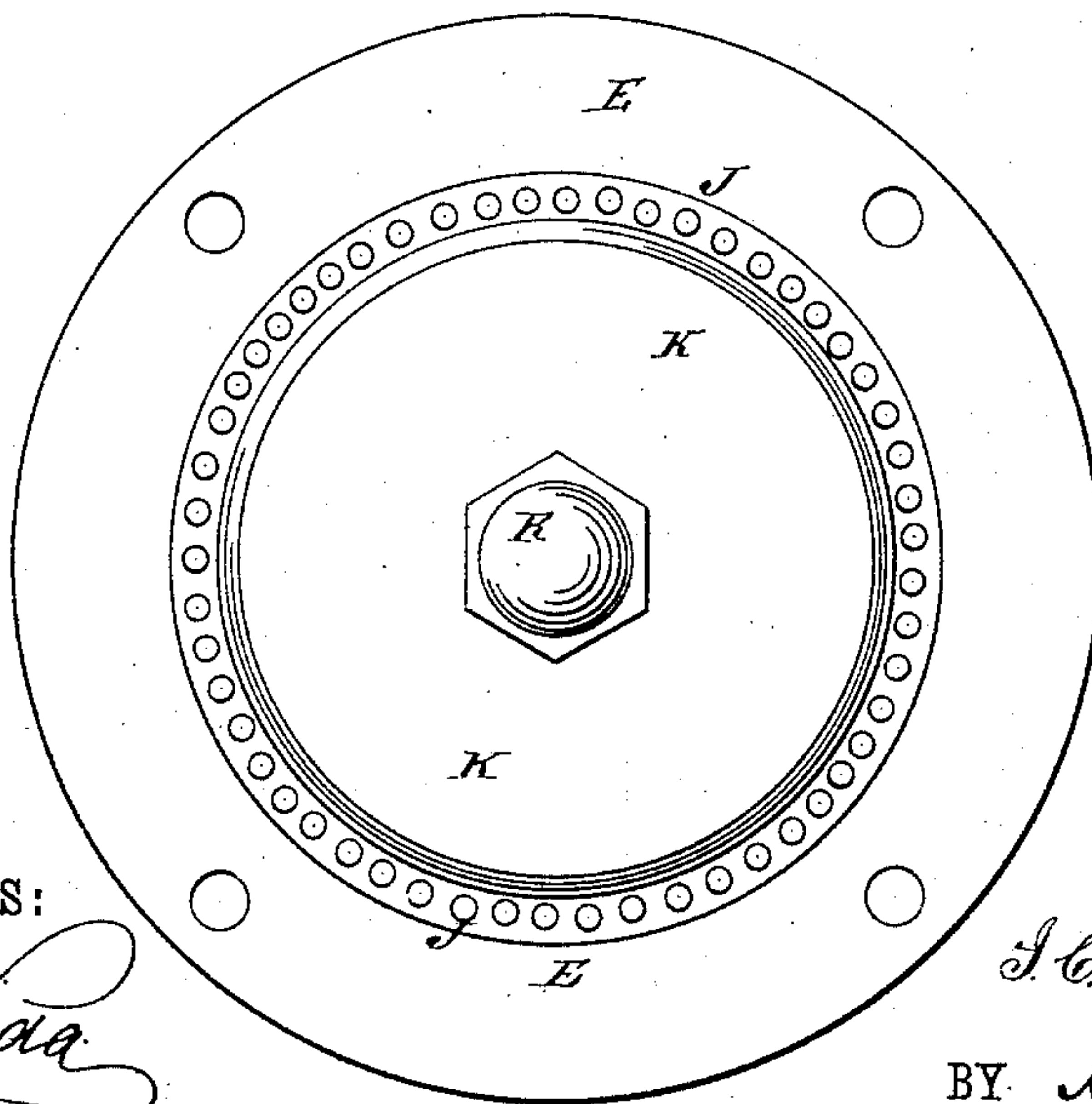


Fig: 2.



WITNESSES:

Chas. Nida
C. Sedgwick

INVENTOR:

I. Cumberbatch

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ISAAC CUMBERBATCH, OF NEWARK, NEW JERSEY.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 327,433, dated September 29, 1885.

Application filed December 2, 1884. (No model.)

To all whom it may concern:

Be it known that I, ISAAC CUMBERBATCH, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Steam-Traps, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a sectional side elevation of one of my improved steam-traps. Fig. 2 is a front elevation of the expansion-chamber and the outer head of the case.

The object of this invention is to provide simple and reliable steam-traps for automatically withdrawing the water of condensation from the pipes of steam-heaters and other steam-pipes.

The invention consists in the peculiar construction and arrangement of parts, as hereinafter fully described, and pointed out in the claims.

The invention also consists in the combination, with the expansion-chamber and the head of its inclosing-case, of a rounded nut and its concaved seat, whereby the perforation in the said head will be opened and closed by the contraction and expansion of the said chamber.

The invention further consists in the combination, with the longitudinally-perforated projection on the outer head of the case inclosing the expansion-chamber, and the rod carrying the said expansion-chamber, of a set-screw whereby the rod can be readily set forward to take up the wear of the valve, as will be hereinafter fully described, and then claimed.

A represents the case of the trap, which is cast with a solid head having a boss, B, in its center perforated with a screw-hole to receive the end of a steam-pipe, C. One side of the case A is thickened, and is perforated to receive the end of a discharge-pipe, D. Around the open end of the case A is formed a flange, to which is bolted the removable head E.

Upon the center of the head E is formed a long boss or projection, F, in which is formed a perforation, G, extending from the inner

surface of the said head nearly to the outer end of the projection F. In the outer end of the projection F is formed a screw-hole of a less diameter than the perforation G, to receive the screw H, which is made of such a length that its rounded forward end will project into the said perforation G.

Upon the outer end of the projection F is screwed a cap, I, to cover and protect the screw H.

Within the case A is placed an expansion-chamber, J, which is formed of one or more pairs of elastic disks or plates, K. The outer edges of the disks of each pair are bent or inclined inward or toward each other and then outward, and are riveted, soldered, or otherwise secured together. Each disk K is perforated centrally and is thickened around the perforation, or is attached to a nut, L. The disk K of the expansion-chamber J next to the removable head E is screwed upon a collar, M, which is screwed upon a rod, N, the outer end of which is placed in the perforation G, and rests against the forward end of the screw H. The rod N is made of such a length that its forward end will extend nearly to the solid head of the case A.

The adjacent disks K of the pairs, when more than one pair is used, are screwed upon the ends of collars O, and are kept at the proper distance apart by screw-washers P, interposed between them and screwed upon the said collars O. The disk K next the solid head of the case A is screwed upon the inner end of a collar, Q, the outer end of which projects and has a cap-nut, R, screwed upon it, covering the end of the rod N. The bores of the collars O Q are larger than the part of the rod N upon which they are placed, and the adjacent ends of the collars M O Q and the adjacent sides of the nuts L are placed at a little distance apart, so that the pairs of disks will form a continuous chamber, which is designed to be filled with resin and alcohol, or some other substance capable of being warmed and cooled quickly and of readily expanding and contracting with changes of temperature.

The outer surface of the cap-nut R is convexed or rounded to adapt it to serve as a valve; and in the inner end of the screw-hole in the solid head of the case A is screwed a

valve-seat, S, which abuts against the end of the pipe C, and is provided at its inner end with a flange to rest against the inner surface of the solid head of the case A. With this construction the valve R will be forced to its seat S or closed by the expansion of the chamber J, and will be withdrawn from its seat or opened by the contraction of the said chamber. The wear of the valve is taken up by adjusting the screw H.

In using the trap, as the water of condensation collects in the lower end of the pipe C, the chamber J cools and contracts, opening the valve R S and allowing the collected water to flow out. As the outflowing water becomes warm or the steam begins to escape, the chamber J is warmed, expands, and closes the valve R S until the water of condensation again collects and cools.

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

1. In a steam-trap, the combination, with a casing having a valve-seat and a rod projecting into the same, of an expansion-chamber composed of two disks, one of which is secured to the said rod and the other to a collar loose on the said rod, and a cap-nut valve on the end of the loose collar, substantially as herein shown and described.

2. In a steam-trap, the combination, with the casing A, provided with the valve-seat S and the rod N, of the expansion-chamber J, composed of the disks K, the fixed collar M, the loose collars O Q, and the cap-nut valve R, secured on the end of the collar Q, substantially as herein shown and described.

ISAAC CUMBERBATCH.

Witnesses:

JAMES T. GRAHAM,
C. SEDGWICK.