

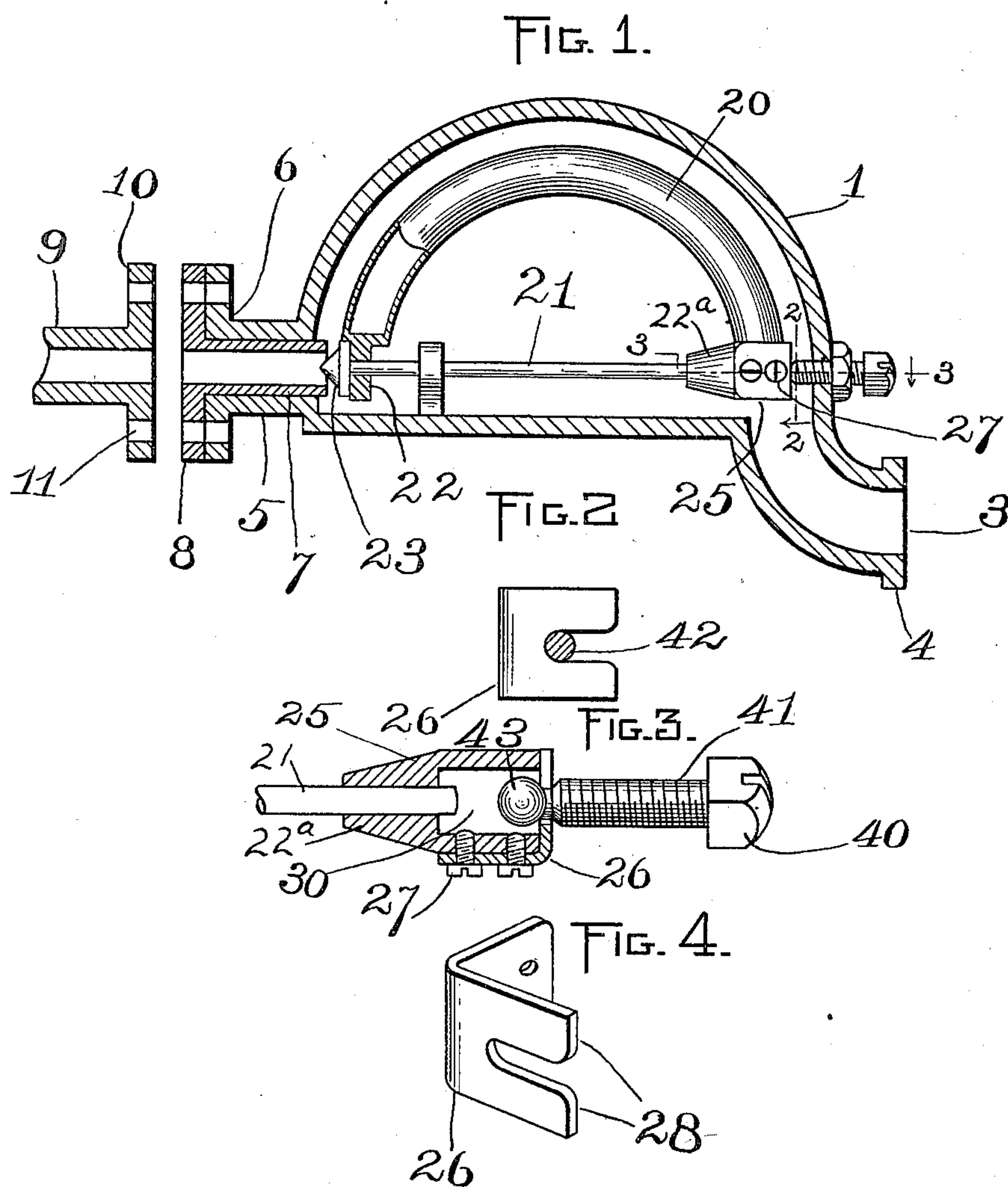
No. 669,053.

Patented Feb. 26, 1901.

C. H. WHITAKER.
STEAM TRAP.

(Application filed Aug. 11, 1900.)

(No Model.)



WITNESSES:
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UNITED STATES PATENT OFFICE.

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STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 669,053, dated February 26, 1901.

Application filed August 11, 1900. Serial No. 26,592. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. WHITAKER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Steam-Traps, of which the following is a specification.

This invention has for its object the production of an improved steam-trap; and it consists in the novel features of construction and relative arrangement of parts, which I will hereinafter describe and claim.

Reference is to be had to the accompanying sheet of drawings, forming a part of this application, and to the figures of reference marked thereon, the same reference characters indicating the same parts or features wherever they occur.

Of the drawings, Figure 1 shows in vertical sectional view a steam-trap constructed in accordance with my invention. Fig. 2 is a vertical sectional view taken on the line 2 2 of Fig. 1 looking in the direction of the arrow. Fig. 3 is a horizontal sectional view through the adjusting device, taken on the line 3 3 of Fig. 1, looking in the direction of the arrow. Fig. 4 is a detail perspective view of the fork on the end of the Bourdon spring.

Referring to the drawings, 1 represents the casing of a steam-trap, which may be of any preferred shape and size, having an outlet-port 3, provided with a flange, as 4, for uniting said port with the pipe. The casing 1 is further provided with an inlet-port 5, which in the form shown is provided with a flange 6 in order to connect the inlet-port with the pipe; but instead of the flange-and-bolt connection I may employ a screw-thread connection or any preferred form of coupling.

7 represents a valve-seat formed as a cylinder and arranged within the port 5. The valve-seat 7 is further formed with a flange 8, arranged to engage the flange 6 and seat against the same. 9 represents a portion of a feed-pipe formed with a coupling-flange 10, that is adapted to be arranged in contact with the flange 8, and the flanges 6 and 10, with the flange 8 between them, forced together by bolts passing through apertures 11 or by any suitable coupling connection. By this construction a removable valve-seat is provided and one that can easily be removed and replaced.

20 represents a Bourdon spring mounted in the casing 1 and adapted to be changed from an initial or normal curvature by changes in temperature in the trap.

21 represents a valve-stem connected at one end to a lug 22 at one end of the Bourdon spring 20 and having a sliding engagement at its opposite end with an apertured lug 22^a upon the opposite end of the Bourdon spring 20. The outer end of the valve-stem 21 has a valve 23, adapted to be seated against the valve-seat 7 and to be withdrawn from contact with the valve-seat, depending upon the curvature of the Bourdon spring due to changes in temperature. The operation of the Bourdon spring in this connection is well known and need not be described in detail.

The end 25 of the Bourdon spring to which the valve-stem 21 is connected is provided with a fork member 26, that is secured by screws 27 to the end 25. Instead of being secured by screws the fork member may be formed integrally with the end of the Bourdon spring or connected thereto in any desired way, and instead of a fork member any equivalent or preferred construction for accomplishing the purpose hereinafter described may be employed.

40 represents an adjusting-screw, whose screw-threads 41 engage complementary screw-threads in the wall of the casing 1. The screw 40 at its free end is formed with a contracted neck 42, that is arranged between the forks 28. Beyond this neck the screw is enlarged to form a retaining member 43, that may be spherical, cone-shaped, or of any desired form, the purpose being to confine a portion of this retaining member in a cavity 30, formed at the end of the Bourdon spring, so that the end of the Bourdon spring may be adjusted in either direction by the screw 40, while at the same time the adjusting-screw and the end of the Bourdon spring have a loose connection. In the form shown the forks 28 extend crosswise of the Bourdon spring 20; but they may be arranged to extend lengthwise thereof, and in either case the enlargement 43 is in the cavity of the spring, so that on connection with the forks 28 the enlargement 43 is held against displacement. Instead of the ball-and-socket connection shown I may employ any preferred

form of loose connection that permits of the described adjustability, together with a freedom of movement of the spring with relation to the adjusting member, to allow for
5 the proper seating of the conical valve 23 and the various conditions to which the parts of the trap are subjected.

It will be observed that the fork member 26 and the neck 42 and enlargement 43 on
10 the adjusting device or screw 41 constitute a connection between the Bourdon tube and the adjusting device which is positive and at the same time permits a sufficient independent oscillatory movement of the spring to en-
15 able the valve 23 to be accurately seated under all conditions. The positive connection insures exact correspondence between the endwise movements of the spring and screw when the latter is adjusted and is also dura-
20 ble and free from liability to derangement, so that the operativeness of the connection is not liable to be impaired.

A non-positive spring connection between the adjusting device and the Bourdon spring
25 such as has been employed heretofore is objectionable, because the spring gradually loses its force and is liable to be jarred or knocked out of place.

Having thus explained the nature of my

invention and described a way of construct- 30
ing and using the same, although without having attempted to set forth all the forms in which it may be embodied or all the modes of its use, I declare that what I claim is—

1. A steam-trap comprising a chamber, a 35
Bourdon spring mounted therein, a valve carried by said spring and arranged to be operated thereby, an adjusting-screw, and a loose connection between said screw and one end
of said spring, including means whereby said 40
spring may be positively adjusted in either direction by the screw and at the same time have capacity of oscillatory movement in relation to the screw and independent thereof.

2. In a steam-trap, a valve-operating Bour- 45
don spring, an adjusting device, and a positive connection between the adjusting device and spring, said connection including means for positively adjusting the spring in either di-
rection and having provisions for permitting 50
an independent oscillatory movement of the spring.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES H. WHITAKER.

Witnesses:

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