G. ERNST.

TEST VALVE.

APPLICATION FILED MAY 31, 1919.

1,343,043.

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Fig. 1.

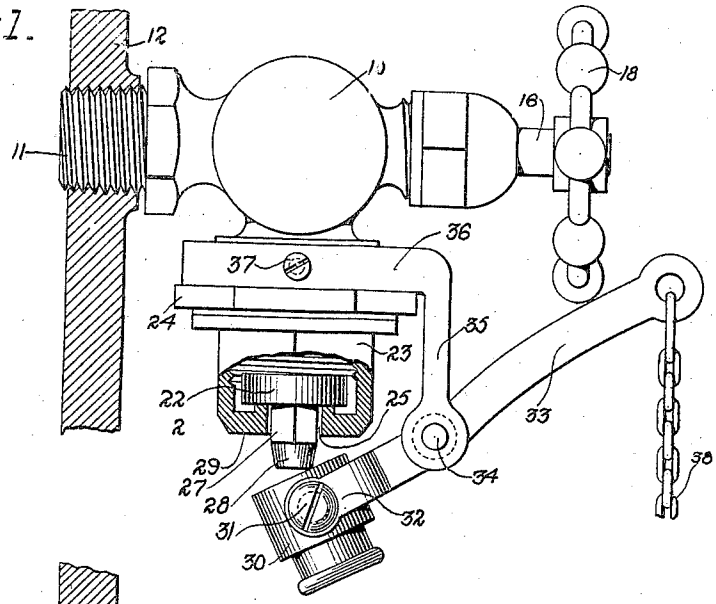


Fig. 2.

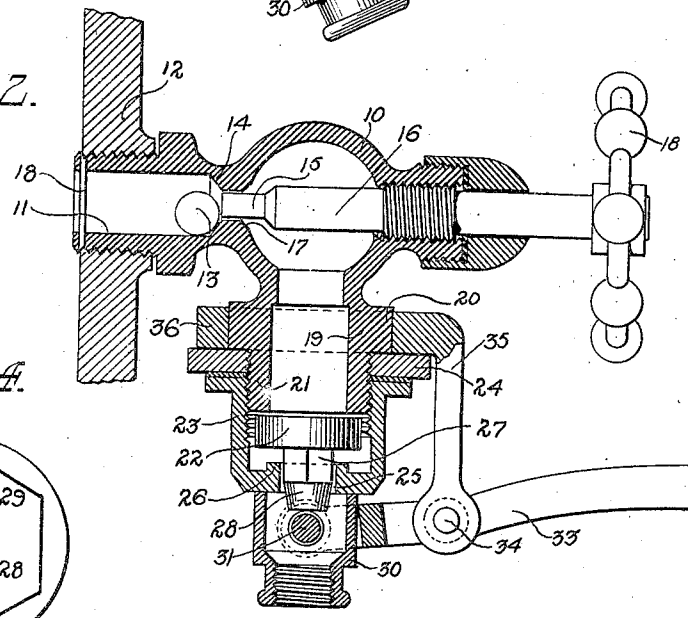


Fig. 4.

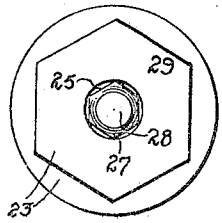
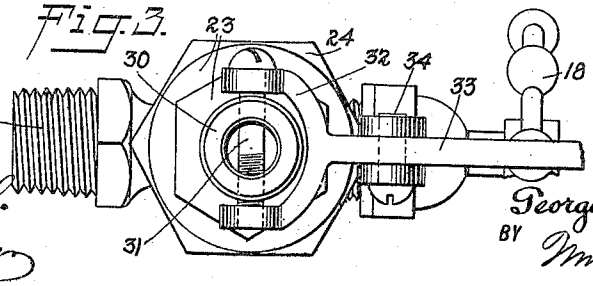


Fig. 3.



WITNESSES

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TEST-VALVE.

1,343,043. Specification of Letters Patent. Patented June 8, 1920.

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To all whom it may concern:

Be it known that I, GEORGE ERNST, a citizen of the United States, and a resident of the city of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Test-Valve, of which the following is a full, clear, and exact description.

This invention relates to steam boiler appliances and has particular reference to test valves for such apparatus.

In the practice of steam boilers, especially those for high pressure, it is customary to provide a plurality of test valves located at different elevations for the purpose of proving the accuracy of the water level shown visibly by the gage glass. As ordinarily made and commonly used the test valves soon become out of order and leak, and in consequence of this fact the boiler attendants rather than take a chance with the leakage of steam or hot water have a tendency to rely entirely upon the visible gage glass instead of proving the water level by using the test valves.

Among the objects of this invention therefore is to provide a test valve for use on or in connection with high pressure steam boilers that will be absolutely dependable and which will not get out of order for a long period of time.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a side elevation of the improved test valve shown applied to a fragment of a boiler, the parts being in normal position, and with a portion of the valve broken away to indicate the normal position of the movable valve.

Fig. 2 is a vertical longitudinal section of the entire structure indicating the movable valve open.

Fig. 3 is a bottom plan view corresponding to Fig. 2; and

Fig. 4 is a bottom plan view of the combined valve seat and nut.

Referring now more specifically to the drawings I show a valve structure including a body 10 having a nipple 11 tapped into the side of a boiler 12, said nipple being tubular and fitted with a ball 13 adapted to seat automatically against a valve seat 14 when permitted so to do by means of a stem 15 at the inner end of a positive cut-off valve 16 adapted to seat inward against the seat 17 when turned by means of a hand-wheel 18 at the outer end of the stem 16. The ball 13 is held from dropping out of the nipple by means of a pin 18 spanning the mouth of the nipple. During the use of this improved valve the valve stem 15 is projected inward far enough to hold the ball unseated from the seat 14 as shown in Fig. 2. For the purpose however of inspection, repair, or interchange of the valve devices constituting this invention the valve stem is seated inward against the seat 17 so as to positively close the outlet through the nipple.

The body has connected thereto a tubular extension 19 the axis of which is shown as being substantially perpendicular to the axis of the nipple 11 and valve 16, though in this as well as in other details of design I do not wish to be unnecessarily limited.

Said extension comprises an annular collar 20 and below or beyond which is an externally threaded nipple 21, said nipple being reduced in diameter whereby the collar constitutes a shoulder.

The nipple 21 constitutes a discharge for the steam or water at the time of testing, but this discharge is controlled by a valve 22 located just beyond the nipple 21 and held loosely in place with respect thereto by means of a nut 23 in the form of a cap screwed upon the nipple 21 and bearing against a washer 24 which in turn bears against the shoulder portion of the collar 20. The end portion of the nut 23 includes a port 25 surrounded by an inwardly projecting valve seat 26 against which the valve 22 is normally seated. This valve 22 is in the form of a disk and may be made of any suitable composition or other material. It is provided with a polygonal central stem 27 projecting through the port 25 and terminating in a frusto conical end 28 having a flat terminal surface. The outer surface of the cap nut 23 constitutes a seat 29 which is flat where it surrounds the port 25 and stem 27.

30 indicates a nozzle of any suitable construction or design and adapted to seat

against the seat 29 when the valve 22 is to be opened. This nozzle is pivoted on a transverse pivot 31 mounted in a yoke 32 of a lever 33 pivoted at 34 upon a depending arm 35 of a ring 36 surrounding the collar 20 and supported upon the washer 24. The collar 20 being round, the ring and parts supported thereby may be adjusted around the axis of the extension 19 to any desired position and it may be locked if desired in such adjusted position by means of a set-screw 37 bearing against the collar. To the outer end of the arm 33 is connected a chain 38 or equivalent flexible connection.

The parts naturally and automatically assume the position indicated in Fig. 1, with the nozzle 30 swung downward well below the cap nut 23 leaving the valve 22 free to seat against the valve seat 26 under the force of the internal steam or water pressure. When however the level of the water is to be tested or proved the operator will draw downward upon the chain 38 and so cause the nozzle 30 to be swung upward against or toward the seat 29, by this time however the pivot 31 will have struck against the flat end of the conical portion 28 of the valve stem and caused the lifting of the valve 22 from its seat. The polygonal portion of the stem 27 will insure free exit for steam or water through the port 25 which will be discharged in any desired direction, according to the adjustment of an extension not shown for the nozzle 30. When the chain 38 is released again the valve will automatically close and seat against the seat 26. It has been found in practice that during this testing of the water lever a suction is produced by the stream discharged through the nozzle which eliminates any leakage that might theoretically take place where the nozzle bears against the nut. Consequently the character of the joint between the nozzle and the nut is quite sufficient for all practical purposes. When the valve 22 is to be inspected or renewed the valve 16 is closed positively against the seat 17 rendering it easy for the inspection to be effected without danger of scalding the operator. When the nut 23 is removed direct access is had to the valve and all of the parts may be removed from the collar and extension.

I claim:

1. The herein described test valve for steam boilers or the like comprising a body having a tubular extension with a circular collar and a threaded nipple projecting beyond the collar, a supporting device comprising an arm and a ring journaled for rotation upon said collar, means to hold the ring on the collar including a nut engaging said threaded extension and having a flat outer end constituting a seat on the outside, said nut having an inwardly directed valve seat on the inside, a disk shaped valve within the nut and adapted to bear outward against said valve seat, and means supported on said supporting arm and movable against said outside seat to unseat the valve from the valve seat.

2. A device of the character set forth in claim 1 in which the means supported by the arm includes a nipple having a smooth upper end adapted to abut directly against said outside seat, and having a transverse pin serving to unseat the valve within the nut.

GEORGE ERNST.