W. E. JERAULD.

TESTING ATTACHMENT FOR SPRING LOADED VALVES.

APPLICATION FILED AUG. 20, 1908.

920,472.

Patented May 4, 1909.

Fig. 1.

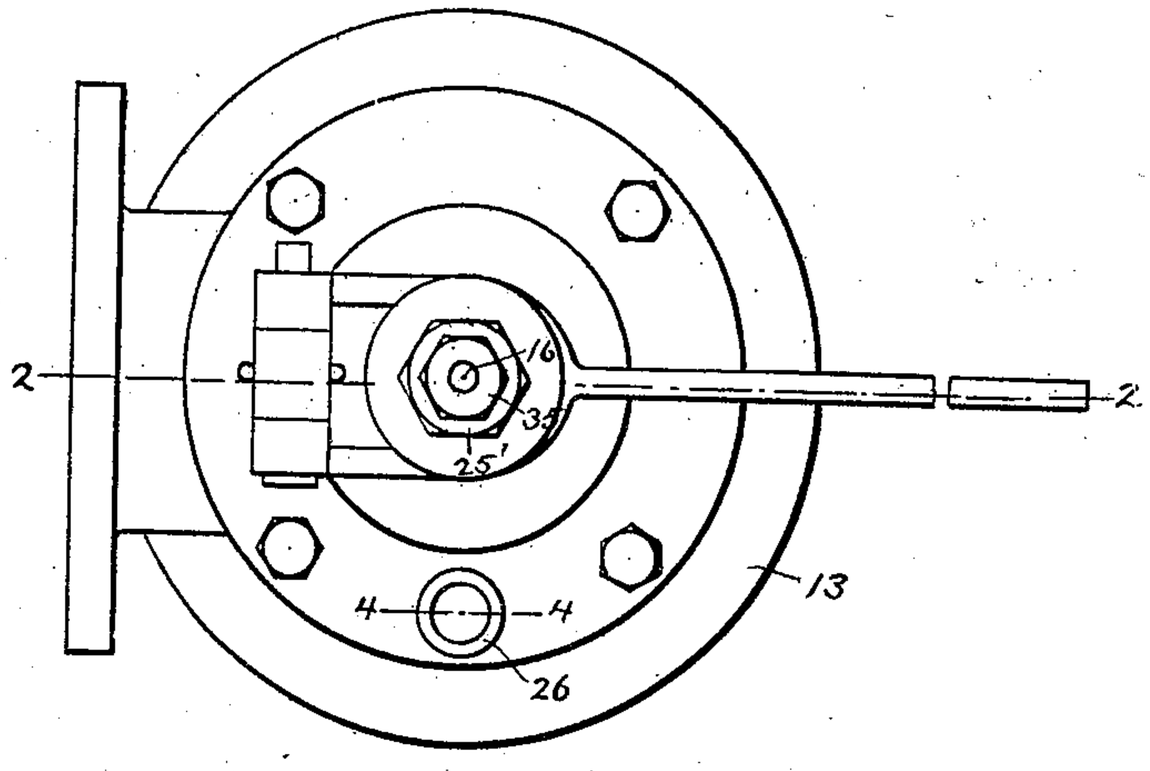


Fig. 2.

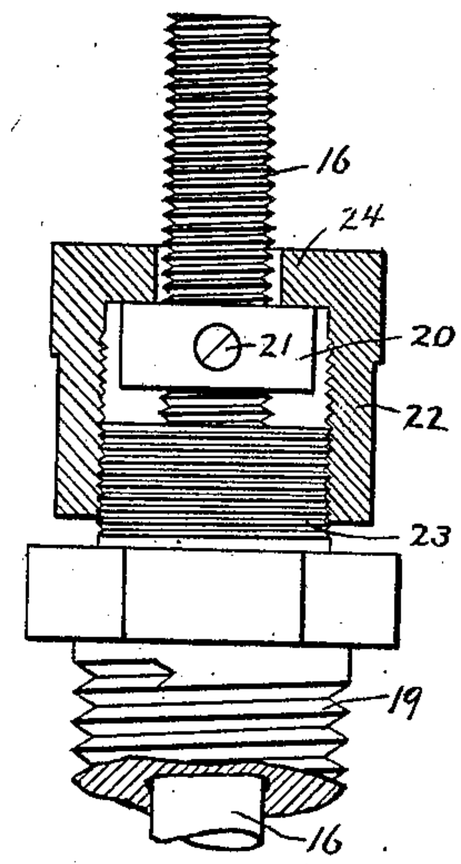


Fig. 3.

Fig. 5.

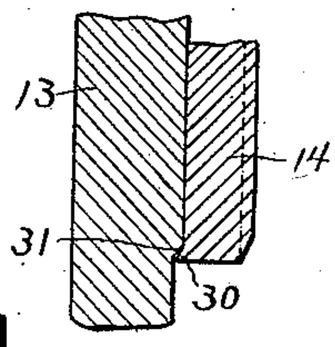
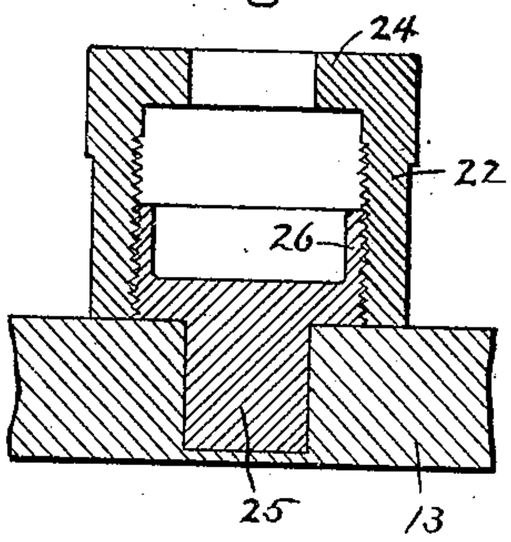


Fig. 4.



WITNESSES

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TESTING ATTACHMENT FOR SPRING-LOADED VALVES.

No. 920,472. Specification of Letters Patent. Patented May 4, 1909.

Application filed August 20, 1908. Serial No. 449,537.

To all whom it may concern:

Be it known that I, WILLIAM EDWARD JERAULD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Testing Attachments for Spring-Loaded Valves, of which the following is a specification.

This invention relates to spring-loaded safety or relief valves, and particularly to so-called pop safety valves, comprising a valve disk having a stem on which holding-down pressure is exerted by a spring adapted to yield under a given pressure to relieve pressure within a boiler. In testing a boiler which has a valve of this character so applied, it is customary to employ a pressure considerably greater than that which the valve spring is adapted to resist. For example, while the spring of a pop safety valve is usually adapted to yield and permit the opening of the valve under a pressure of about 200 pounds, it is desirable to apply a hydraulic testing pressure to the boiler of about 300 pounds. When this testing pressure is applied, it is of course necessary to confine the valve so that it cannot yield to the testing pressure.

My invention has for its object to provide simple, convenient and efficient means for rigidly securing the valve during the pressure of the hydraulic boiler test, and in such manner that no excessive strain is exerted on the spring.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings forming a part of this specification,—Figure 1 represents a top plan view of a pop safety valve embodying my invention. Fig. 2 represents a section on line 2—2 of Fig. 1. Fig. 3 represents a fragmentary sectional view showing the stem of the valve disk rigidly confined. Fig. 4 represents a section on line 4—4 of Fig. 1. Fig. 5 represents an enlargement of a portion of Fig. 2.

The same reference characters indicate the same parts in all the figures.

In the drawings, 12 represents the valve proper, or in other words, the movable part which bears upon the valve seat and closes the passage through the same. As the term "valve" is herein applied to the entire structure including the casing, I designate the part 12 as the valve disk although it is understood that by using the term "disk," I do not intend to limit my invention, hereinafter described, to a structure in which the valve part 12 is of circular form, although this is the form commonly used.

13 represents the valve casing having a bushing 14, one end of which forms the valve seat 15.

16 represents the stem of the valve disk, said stem being engaged in any suitable way with the valve disk at its lower end, and provided with a collar or spring seat 17, bearing on a shouldered enlargement on the stem, and supporting the valve-closing pressure of the usual valve-closing spring 18.

19 represents the compression screw which is engaged with a tapped socket in the upper portion of the casing 13, and bears on a collar or spring abutment 200 which engages the upper end of the spring. The compression screw is tubular, and the stem 16 extends through it, and is adapted to slide lengthwise in the compression screw as usual. The construction above described is common and well known.

In carrying out my invention, I provide the upper portion of the stem 16 with a stop member, which is affixed to the stem. With a suitable fixed part of the valve structure, I adjustably connect a complemental stop member adapted to engage the stop member on the stem, and hold the same rigidly with the valve disk closed against its seat, so that the spring 18 becomes inoperative.

The stop member on the stem is preferably a collar 20 which may be internally threaded to engage the usual thread formed on the upper end portion of the stem, and provided with a binding screw 21 to secure it at any desired adjustment, and prevent its accidental rotation. The complemental stop member is here shown as a sleeve 22 having an internal screw thread adapted to engage an especially formed external thread 23 on the outer end portion of the compression screw 19, the sleeve 22 having an inwardly projecting flange 24 adapted to abut against the collar or stop member 20 on the stem, as shown in Fig. 3, and thus confine the stem rigidly in position to hold the valve disk rigidly against its seat.

The valve casing is provided with a holder

with which the sleeve 22 is engaged when not in use, said holder comprising a plug 25 adapted to be forced with a close driving fit into a socket formed for its reception in the upper portion of the casing, said plug being riveted, if desired, to insure its permanent connection with the casing, and an enlargement 26 formed on the plug, and projecting above the portion of the casing in which the plug is inserted, said enlargement having an external screw-thread adapted to engage the internal thread of the sleeve 22.

When the boiler is to be tested, the sleeve 22 is removed from the holder 26, and engaged with the upper screw-thread 23 of the compression screw, the rotation of the sleeve 22 being continued until the flange 24 bears upon the collar 20, as shown in Fig. 3. After the boiler has been tested, the sleeve 22 is removed from the compression screw and restored to its holder. Provision is therefore made for keeping the sleeve 22 in an accessible position, so that it is not liable to be displaced or lost.

It will be seen that the stop members above described are of simple and compact construction, and may be very conveniently applied and removed. The stop member 20 on the stem may remain permanently engaged with the stem, the usual nut 25′ applied to the upper end of the stem being provided with a recess 26′ to receive the collar, as shown in Fig. 2.

The bushing 14 on which the valve seat 15 is formed is made of a suitable metal, such as bronze or nickel, and is secured to the base portion of the casing by driving a tapering plug into the lower end of the bushing, thus expanding said lower end and forming an enlargement 30 thereon, which enlargement engages an internal shoulder 31 formed in the socket portion of the casing in which the bushing 14 is inserted. A permanent and secure connection is thus established between the bushing and the valve casing.

The stop members 20 and 22, constitute a substitute for the so-called testing clamp or gag which has been used heretofore, said clamp being a curved yoke formed at its ends to engage the under side of the casing flange 33, its central portion being formed to bear at the same time on the upper end of the stem 16, or on the usual lock-nut 35 engaged with the stem, the clamp when thus engaged being adapted to hold the stem rigidly with the valve disk seated. Said clamp is necessarily so bulky that it cannot be conveniently stored on the valve casing. It is therefore liable to be lost or mislaid and its application and removal are attended with considerable inconvenience. These objections are avoided by my improvement, the stop member 22, which is the only part requiring change of position, being so small and compact that it may be stored by the holder 26 on the casing, and may be readily applied to and removed from the compression screw.

I claim:

1. A spring-loaded valve having a stop member affixed to the stem of the valve disk, and a complemental stop member having means for adjustable and detachable connection with a fixed part of the valve, and adapted when connected with said fixed part to engage the stop member on the stem and hold the valve disk rigidly on its seat.

2. A spring-loaded valve having a stop member affixed to the stem of the valve disk, and a complemental stop member having means for adjustable connection with the compression screw of the valve, and adapted, when connected with the compression screw to engage the other stop member and hold the valve disk rigidly to its seat.

3. A spring-loaded valve having a collar, adjustably secured to the stem of the valve disk, and constituting a stop member, and an internally threaded sleeve adapted for adjustable connection with the compression screw of the valve, said sleeve when engaged with the compression screw, constituting a stop member adapted to engage the stop member on the stem.

4. A spring-loaded valve having a stop member affixed to the stem of the valve disk, and an internally threaded sleeve adapted for adjustable and detachable connection with the compression screw of the valve as a complemental stop member, the valve casing being provided with a screw-threaded holder adapted to engage and store said sleeve.

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

WILLIAM EDWARD JERAULD.

Witnesses:
C. F. Brown,
E. Batchelder.