

(No Model.)

N. J. PRITCHARD.
CHECK VALVE.

No. 529,667.

Patented Nov. 20, 1894.

FIG. 1 -

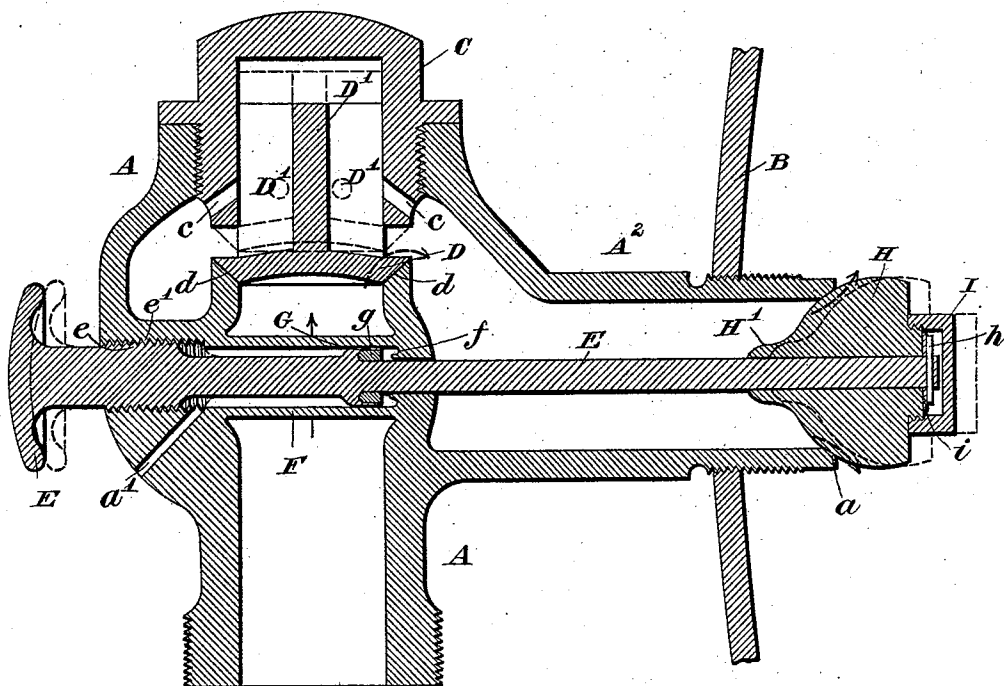
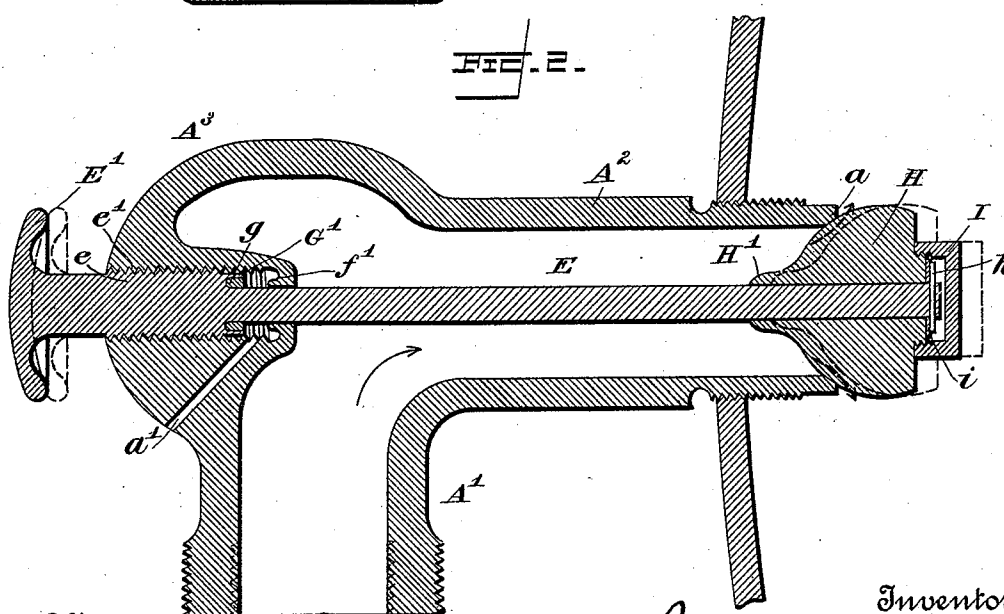


FIG. 2 -



Witnesses
Edw. S. Duvall, Jr.
Geo. L. Clark

Inventor
Nathaniel J. Pritchard
per Fred W. Asker
Attorney

UNITED STATES PATENT OFFICE.

NATHANIEL J. PRITCHARD, OF SHENANDOAH, VIRGINIA.

CHECK-VALVE.

SPECIFICATION forming part of Letters Patent No. 529,667, dated November 20, 1894.

Application filed February 5, 1894. Serial No. 499,173. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL J. PRITCHARD, a citizen of the United States, residing at Shenandoah, in the county of Page and State of Virginia, have invented certain new and useful Improvements in Check-Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in check-valves for use with boilers and for other purposes, the object being to provide means whereby the valve may be more easily removed from its casing for any desired purpose, such as cleaning the same or grinding its face and also to promote safety in the case of accident, and the invention therefore consists in the construction, arrangement and combination of parts, substantially as will be hereinafter described and claimed.

In the annexed drawings illustrating my invention: Figure 1 is a longitudinal sectional elevational view of my improved check-valve. Fig. 2 is a similar sectional elevational view of a modification of the same showing only the stop feature and dispensing with the check-valve proper.

Similar letters of reference designate corresponding parts throughout the different figures.

A denotes the main casing of my improved check-valve or combined check and stop-valve as it may otherwise be called, said casing being of any desired shape and size and provided with the nozzle-provided branches A' and A². To the nozzle A' the pipe is attached leading from the injector or other source of water supply for the boiler. The nozzle A² is screw-threaded and screwed into a suitable opening in the wall of the boiler B, said nozzle being furnished with the ball-seat *a*, as shown in both Figs. 1 and 2, upon which seat a stop valve operates as will be presently described.

Into the upper part of the valve-casing A a plug or cap C is screwed. See Fig. 1. This plug is a stopper for the opening through which the check valve is inserted into casing A. D denotes the check-valve proper having D' D' which are situated within the tubular

interior opening of the plug C, all as clearly shown in the drawings. The valve D fits upon the seat *d*. It will be obvious that feed water coming through the branch A' will lift the valve D and thereby gain access to the branch A² from which it directly has entrance to boiler B. The ports *c c* permit pressure enough to pass above valve D to prevent a steam tight joint being formed thereby when the valve is wide open. I lay no particular claim to this construction of the check-valve as it is a common one; neither do I desire to be restricted thereto in applying my invention, since numerous changes may be made in the construction of the check proper without lessening the applicability of the other features of my invention thereto. In Fig. 2 the check-valve proper is entirely omitted and only the other features are shown. In this case the plug C is obviously unnecessary and is not used.

Within the branch A² which is preferably at right-angles to branch A' is located a valve-stem E. This stem E near one end has a screw-threaded portion *e* which screws into an internally screw-threaded passage *e'* in the wall of casing A, the outer end of stem E being provided with an operating wheel or handle E'. By manipulating this handle E', the stem E can be adjusted endwise in consequence of the aforesaid screw-threaded connection. The portion of the stem E next to the screw-threaded part *e* and opposite to handle E' lies within a horizontal sleeve-like or other shaped part F of the casing A, said inclosing part F being situated below the valve D and so arranged across the branch A' that the entering water may pass each side of it and not be obstructed thereby. The interior of sleeve F is provided with an inclined or grooved seat *f* which surrounds the stem E and on this stem is an annular indented flange G filled with packing material *g*, of lead or some similar soft metal and serving as a valve and designed to seat itself upon the seat *f*. When the valve G is so seated upon the seat *f*, a steam-tight joint is formed at that point and the entrance of any water or steam into the annular space around the stem E is effectually prevented. When the valve G is open, that is to say, when it is removed from seat *f* a trifling amount of water

may pass along the stem, but all such water will be removed through the outlet port a' . See Fig. 1. The object of the tight joint at seat f which is secured in the manner described, is to prevent any moisture from attacking and corroding the threads e and e' . Such corrosion would of course clog the working of the valve-stem and be very detrimental, and I desire to avoid it. The metallic packing g can easily be replenished whenever it becomes necessary.

At the end of the branch A^2 , where the latter enters boiler B or other apparatus with which my invention is arranged, is a valve H having a stop function, and operating in connection with the seat a . This valve H is supported on the stem E which passes loosely through it, the end having thereon a washer i and a pin h , which normally prevent the withdrawal of the stem, but permit of such withdrawal whenever it is desired to disengage these parts from each other. The valve H is of a somewhat semi-globular form having a curved face that rests upon the curved seat a when the valve is closed. The inner end of the valve H however within the branch A^2 is extended into a rounded point H' , as shown in the drawings. Over the end of the stem E which carries washer i and pin h , is a removable screw-threaded cap I, which covers said parts and forms a tight joint on the inside face of the valve that is exposed to the steam within the boiler. This shape of valve H is found to be of great value in enabling the valve to quickly and surely seat itself under unfavorable conditions such as often occur in railway accidents, when the exposed check valves are broken off. If the casing A should be demolished and the stem E bent or broken, the effect upon valve H would be simply to revolve it more or less, the revolution being limited by the point H' striking against the wall of branch A^2 and not in any manner to prevent it from being securely placed upon its seat under the action of the pressure within the boiler acting forcibly outward upon the said valve H. The position of the valve H when it is off its seat and the passage is open is shown in dotted lines in Fig. 1 and also in Fig. 2. Thus it will be seen that my improved valve is perfectly automatic in the action of all its parts. Also the interior of branch A^2 often becomes filled up with corroding matter which clogs the working of an ordinary valve therein and prevents clearing same. With this ball-shaped valve of mine however the closing cannot be prevented in this way and as the valve is freely supported by the stem outside of branch A^2 and away from its seat, it cannot by the corroding action become firmly attached to any part so as to prevent closing.

The modified construction shown in Fig. 2 is similar in most respects to that in Fig. 1. The casing A however has no top opening and no inserted plug because there is no check-valve therein. The valve H which or-

dinarily acts as a stop-valve will in the case of accident as described in connection with Fig. 1 operate as an automatic check-valve to close the opening in which it is placed and prevent the escape of steam. This construction without the check-valve D will be found very useful for many purposes.

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

1. In a check valve, the combination of the casing having branches and the hollow sleeve-like portion, the globular shaped valve and its operating stem, said stem passing through said sleeve and having a valve thereon within the sleeve, a drip opening for said sleeve, and the check valve which is seated within the casing at a point between the two branches, substantially as described.

2. In a check valve, the combination of the casing having branches, a valve controlling the communication between said branches, an integral hollow sleeve-like portion located transversely across one of the branches, the globular shaped valve located at the extremity of one of the branches and having an operating stem which passes through the aforesaid sleeve and a valve G on said stem within the sleeve, together with a drip opening for said sleeve, substantially as described.

3. The herein-described automatically-operating check-valve consisting in the combination with the main casing having branches attached to the boiler and coupled to the water supply, of the globular shaped valve H, having extension H' and cap I, and stem E attached to valve H, said stem E having a screw-threaded part engaging a screw-threaded part of the casing and having an adjusting handle E' .

4. In a check-valve, the combination of casing A, having branches A' A^2 , said branch A^2 having seat a , the valve D arranged between branches A' and A^2 , the sleeve F made integral with the casing A and crossing branch A' and having seat f , and the globular shaped valve H operating on seat a with stem E connected to valve H, passing through sleeve F and having valve G thereon which operates in connection with seat f , said stem having also a screw-threaded section by which it is adjusted, substantially as described.

5. In a check valve, the combination of the casing having branches and the hollow sleeve-like portion F, the globular shaped valve and its operating stem, said stem passing through sleeve F and having valve G thereon which operates in connection with its seat and said stem having also a screw-threaded section by which it is adjusted, together with the drip opening substantially as described.

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

NATHANIEL J. PRITCHARD.

Witnesses:

FRED E. TASKER,

EDW. S. DUVALL, Jr.