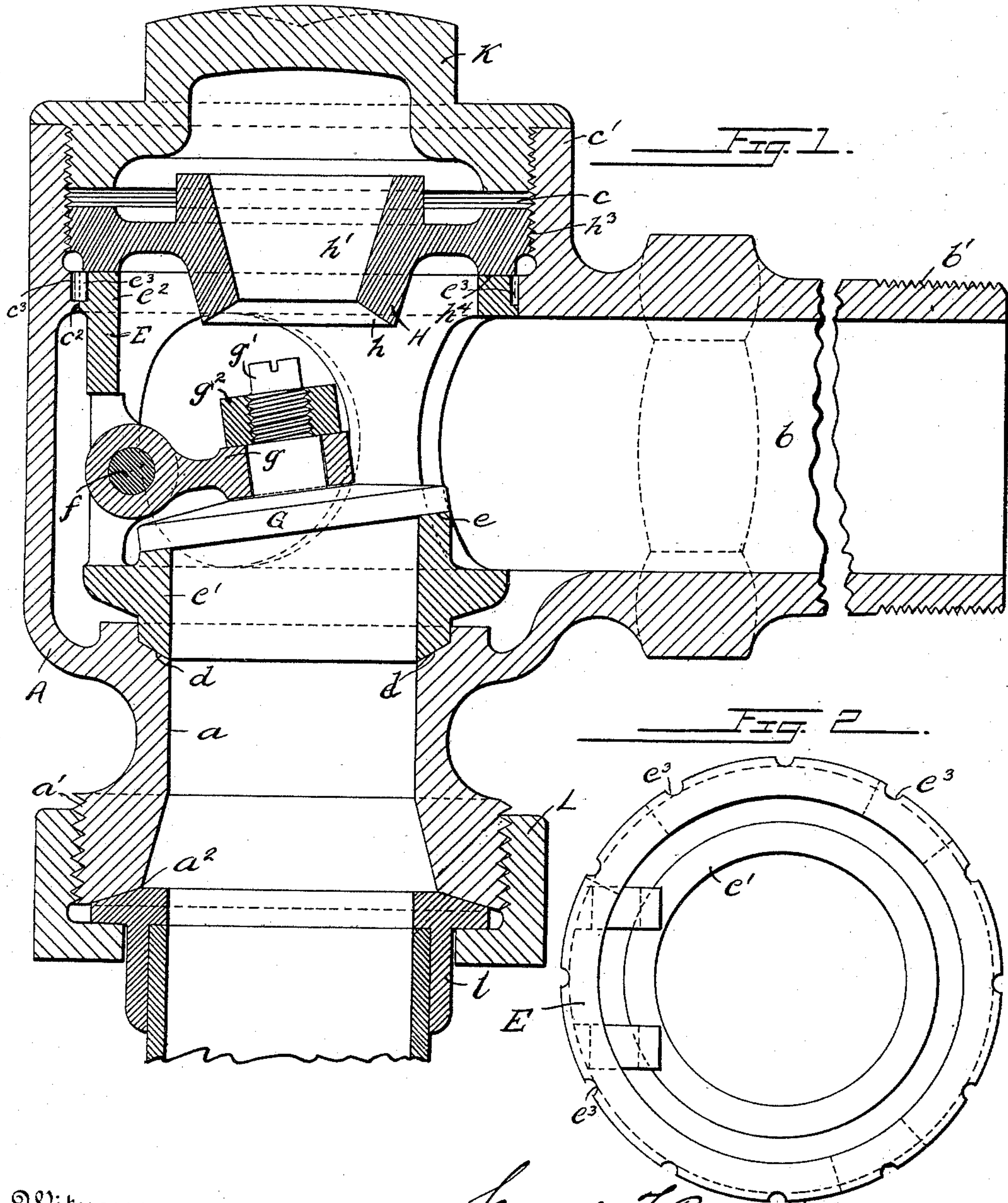


(No Model.)

S. F. PRINCE, Jr.  
CHECK VALVE.

No. 483,635.

Patented Oct. 4, 1892.



Witnesses

*E. J. Kelly*  
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# UNITED STATES PATENT OFFICE.

SAMUEL F. PRINCE, JR., OF READING, PENNSYLVANIA.

## CHECK-VALVE.

SPECIFICATION forming part of Letters Patent No. 483,635, dated October 4, 1892.

Application filed January 2, 1892. Serial No. 416,798. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL F. PRINCE, JR., a citizen of the United States, residing at Reading, in the county of Berks, State of Pennsylvania, have invented certain Improvements in Check-Valves, of which the following is a specification.

My invention relates to check-valves, and especially to that class in which the valve may be arranged to close by gravity no matter at what point or angle the casing is attached to the boiler.

My main object is to provide a valve of this character which will not only be adapted for use upon either side and at various angles upon the boiler, but which may also be connected both to the boiler and the pipes in the ordinary manner and at the same time permit ready access to the interior of the casing without breaking such connections, either for adjusting or removing the valve-seat and valve or for grinding the valve without disturbing the position of the seat or breaking the joint by which it is attached to the casing. The improvements in construction whereby I attain these advantages are fully described in connection with the accompanying drawings, in which—

Figure 1 is a longitudinal section of a check-valve embodying all the features of my invention. Fig. 2 is a plan view of the cage alone.

A represents the valve-casing, which is formed with an inlet branch *a*, an outlet branch *b*, (shown at right angles to the inlet branch,) and an opening *c* opposite the latter in a cylindrical extension *c'*. The branch *b* is screw-threaded, as usual, at *b'* for the purpose of securing it to the boiler, and the branch *a* is likewise threaded at *a'* and provided with a ground seat *a<sup>2</sup>* to adapt it for the ordinary pipe connection, consisting of a spanner-nut L, which engages a flange *l* upon the end of the pipe. The upper portion of the independent opening *c* is screw-threaded, while the lower portion *c<sup>2</sup>*, which joins the main chamber of the casing, is bored out to a slightly-smaller diameter than the threaded portion, but sufficiently large to permit the passage of the valve-cage E, which is introduced through the opening *c* into the main chamber of the casing. The lower portion *e'* of this cage

forms an extension of the inlet-passage *a*, the beveled bottom resting upon a ground seat *d* in the casing, while a valve-seat *e* is provided some distance above said cage-seat *d*. The upper end *e<sup>2</sup>* of the cage fits in the bored portion *c<sup>2</sup>* of the opening *c*, and the intermediate portion is open to the main chamber of the casing and to the outlet-passage *b*, but is cut off from the inlet-passage *a* by a valve G, which normally falls upon the valve-seat *e* of the cage. This valve, as represented, is provided with a stem *g*, which passes through a carrier-arm *f*, pivoted to lugs on the cage, and is extended to receive a nut *g<sup>2</sup>*, beyond which it projects.

The valve-seat *e* may be inclined as shown, so that by turning the cage to different positions in the casing the valve may be better arranged to suit varying locations of the check-valve upon the boiler-shell. In order to positively maintain the cage in its proper position when once ascertained and to enable it to be readily returned to such position when removed, I have provided a series of semicircular recesses *e<sup>3</sup>* in the periphery of the upper portion of the cage, which register with a single corresponding recess *c<sup>3</sup>* in the opening *c* of the casing, so that the cage may be positively prevented from turning by placing a small piece of wire in such recesses when brought together.

The cage E having been placed within the casing, as described, and set to such a position that the pivoted valve will naturally fall to its seat, is tightly secured therein by means of a screw-sleeve H, the threaded portion *h<sup>3</sup>* of which is adapted to the threaded opening *c* of the casing, so that when its face *h<sup>4</sup>* comes in contact with the top of the cage the base of the latter is pressed against its seat *d* in the inlet branch of the casing. This sleeve is provided with a central opening *h'*, which allows access to the valve for grinding the same by means of a suitable tool adapted to engage the projecting valve-stem *g'* without loosening the sleeve. The depending circular flange *h* of this sleeve is also arranged to serve as a stop to limit the lift of the valve, the stem of which comes in contact with said flange after rising a sufficient distance from its seat. The cap K, which is finally screwed upon the extension *C'* of the casing independently of the



sleeve H, serves to close tightly the opening c. If the valve requires attention, it may only be necessary to remove this cap; but if the cage must be taken out or adjusted the sleeve H is also removed, in either case the pipe connection being unbroken; or, on the other hand, the pipe may be disconnected, as with an ordinary check-valve, without disturbing the valve or seat.

10 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, with the casing having inlet and outlet branches 15 arranged at an angle to each other and an independent opening thereto, of the valve-cage adapted to enter the casing through said opening and provided with an inclined valve-seat, means for maintaining said cage at any 20 desired position in the casing circumferentially, and independent means for pressing it firmly against its seat, substantially as set forth.

2. In a check-valve, the combination, with 25 the casing having inlet and outlet branches arranged at an angle to each other and an independent opening thereto, of the valve-cage forming an extension of said inlet branch and entering said opening, the exteriorly-

threaded sleeve within said opening, whereby 30 the cage is adjustably secured, and the screw-cap to close said opening, all substantially as and for the purpose set forth.

3. In a check-valve, the combination, with the casing having inlet and outlet branches 35 arranged at an angle to each other and an independent opening thereto, of the valve-cage, the valve seated therein, and the screw-sleeve for securing said cage, having a central opening whereby access may be had to said 40 valve, substantially as and for the purpose set forth.

4. In a check-valve, the combination, with the casing having inlet and outlet branches 45 arranged at an angle to each other and an independent opening thereto, of the valve-cage and valve seated therein and the screw-sleeve for securing said cage, having a central opening whereby access may be had to said 50 valve, and a circular flange which serves to limit the valve-lift, all substantially as and for the purpose set forth.

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

SAML. F. PRINCE, JR.

Witnesses:

W. G. STEWART,

P. A. BUSHONG.