(No Model.)

L. G. GILBERT.

COMBINED STOP AND CHECK VALVE.

No. 315,273. Patented Apr. 7, 1885.

Fig. 1.

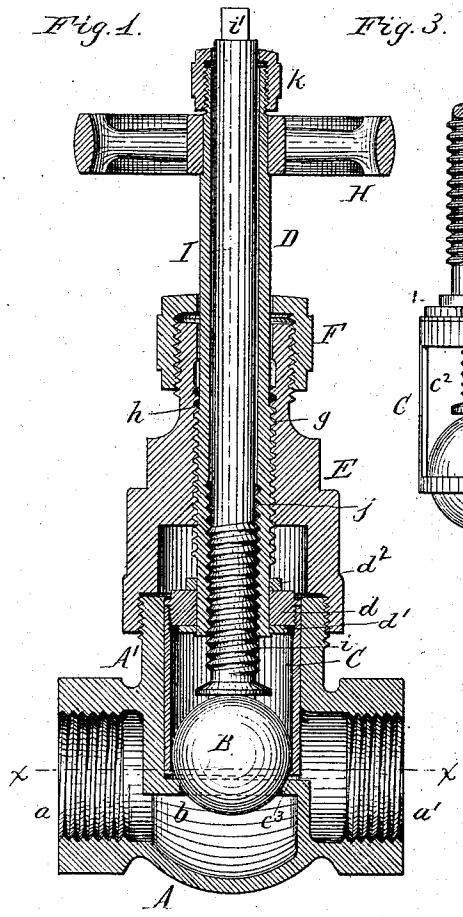


Fig. 3.

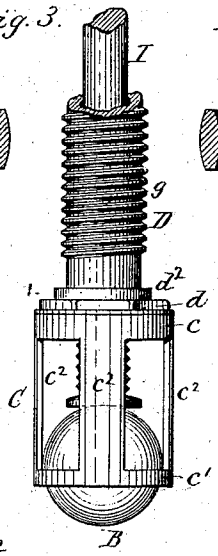


Fig. 2.

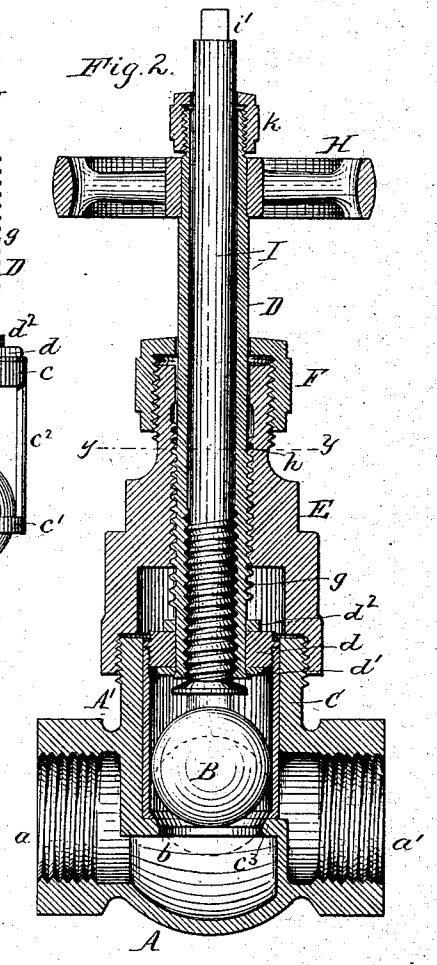


Fig. 4.

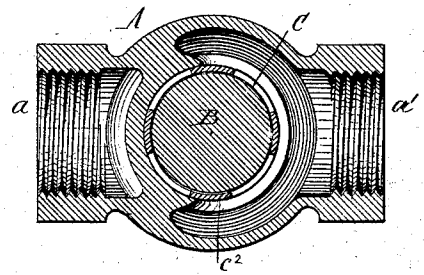
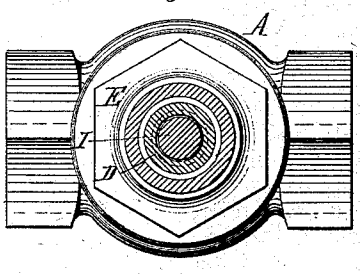


Fig. 5.



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UNITED STATES PATENT OFFICE.

LEANDER G. GILBERT, OF BUFFALO, NEW YORK.

COMBINED STOP AND CHECK VALVE.

SPECIFICATION forming part of Letters Patent No. 315,273, dated April 7, 1885.

Application filed May 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, LEANDER G. GILBERT, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Combined Stop and Check Valves, of which the following is a specification.

This invention relates to that class of valves which are designed to be used either as a stop-valve or as a check-valve, and in which a ball or spherical valve is employed.

The object of my invention is to provide a valve of this character which can be readily changed from a stop-valve to a check-valve, or vice versa, and in which a perfectly steam or water tight joint is obtained.

My invention consists to that end of the improvements which will be hereinafter fully set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a longitudinal section of my improvement, showing the parts in position whereby the valve can be used as a stop-valve. Fig. 2 is a similar view showing the parts in position, so that the valve can be used as a check-valve. Fig. 3 is a side elevation of the valve and connecting parts removed from the valve-casing. Fig. 4 is a horizontal section in line *x x*, Fig. 1. Fig. 5 is a horizontal section in line *y y*, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A represents the valve-casing provided with the usual inlet and outlet ports *a a'*.

B is the valve, and *b* the valve-seat formed in the casing A. The valve B is of spherical form, and is preferably made of metal.

C is an open cylindrical cage surrounding the valve B, and arranged vertically in the cylindrical enlargement A' of the casing A. The cage C consists of an upper and a lower ring, *c c'*, connected by vertical ribs c^2, the lower ring, *c'*, being provided with an inwardly-projecting flange, c^3, which forms a seat for the valve when the cage is raised and retains the valve within the cage. The upper ring, *c*, is provided with an internal screw-thread, and is secured to a ring or cover, *d*.

D is a hollow stem secured to the ring *d* by suitable collars, *d' d²*, and extending upwardly through a sleeve or cap, E, which closes the cylindrical enlargement A' of the casing. The cap E is closed at its top by a screw-nut, F, which is provided with a suitable packing, forming a tight joint between the bore of the sleeve E and the stem D in the usual manner. The stem D is provided above the collar d^2 with an external screw-thread, *g*, and the sleeve E is provided with an internal screw-thread, *h*, which receives the thread *g* of the stem D. The latter is provided at its upper end with a suitable hand-wheel, H.

I is a rod extending through the hollow stem D and provided at its lower end with a screw-thread, *i*, which works in an internal screw-thread, *j*, formed in the stem D.

k is a screw nut or cap secured to the top of the tubular stem D, and provided with a suitable packing, whereby a tight joint is formed between the tubular stem and the rod I. The latter projects through the screw-nut *k*, and is provided with a flattened head, *i'*, to receive a wrench or other suitable device for turning it. When the rod I is screwed down so that its lower end bears upon the valve B, the latter is clamped between the rod I and the flange c^3 at the lower end of the cage, and the valve can be raised and lowered with the cage by turning the screw-stem D, and be opened and closed like an ordinary stop-valve.

When the valve is desired to be used as a check-valve, the rod I is adjusted to clear the valve, as shown in Fig. 2, when the valve is free to move vertically in the cage C and seat itself automatically. The cage C retains the ball in position above the valve-seat and prevents any lateral movement or wedging of the valve in its seat. The valve B can turn freely in the cage, and will constantly change its position in its seat by the pressure of the steam or water against the valve when open. By this means any unequal wear of the valve is prevented, and a perfectly-tight fit of the valve in its seat is assured at all times.

I claim as my invention—

1. The combination, with a valve-casing, of a cage provided with a valve-support, a stem attached to said cage, a ball-valve arranged within the cage, and a locking-screw whereby the valve can be secured in the cage against said valve-support, thereby enabling the valve to be lifted from its seat with the cage when desired, substantially as set forth.

2. The combination, with a ball-valve and

its casing, of a cage, C, provided with a valve-support, and a tubular stem, D, attached to the cage, and a screw-rod, I, adapted to bear against the valve B, substantially as set forth.

3. The combination, with a ball-valve, B, and its casing, of a cage, C, provided with a valve-support, and inclosing said valve, a tubular stem, D, provided with an internal screw-thread, *j*, and a screw-rod, I, arranged within the stem D, and adapted to bear against the valve B, substantially as set forth.

4. The combination, with the valve-casing A, having a cylindrical enlargement, A′, and valve-seat *b*, of a cage, C, arranged in the enlargement A′ of the casing, and provided with a valve-support, a ball-valve, B, confined within the cage C, screw-stem D, and screw-rod I, substantially as set forth.

5. The combination, with the valve-casing A, having a cylindrical enlargement, A′, and valve-seat *b*, of a cage, C, arranged in the enlargement A′, and provided with a valve-support, ball-valve B, confined in the cage C, hollow screw-stem D, secured to the cage B, and screw-rod I, extending through the sleeve D and into the cage C, substantially as set forth.

Witness my hand this 14th day of May, 1884.

LEANDER G. GILBERT.

Witnesses:
JNO. J. BONNER,
CARL F. GEYER.