

J. B. GARBER.
CHECK VALVE.
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1,160,707.

Patented Nov. 16, 1915.

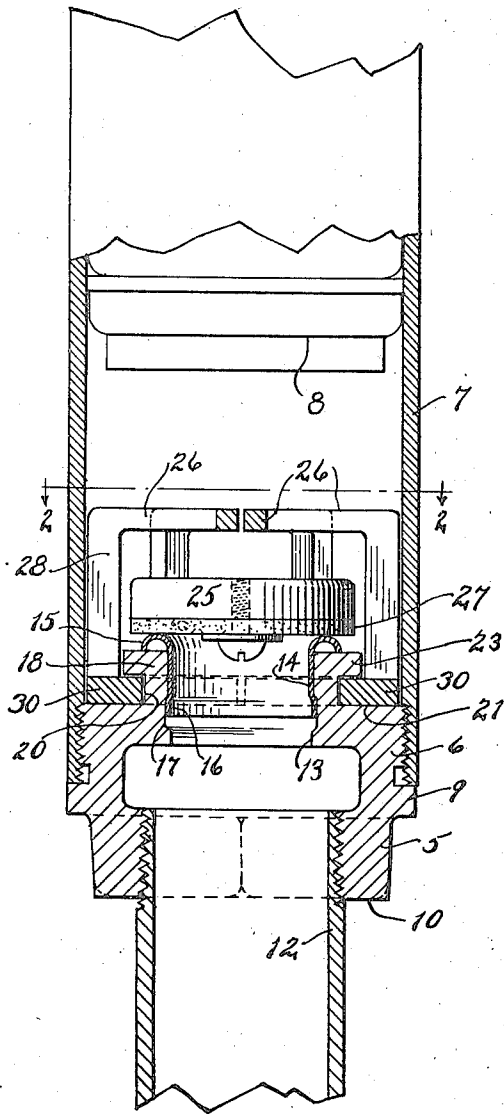


FIG. 1.

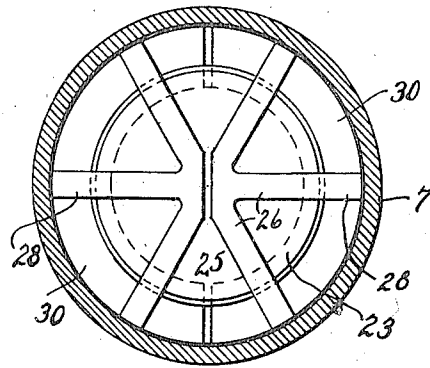


FIG. 2.

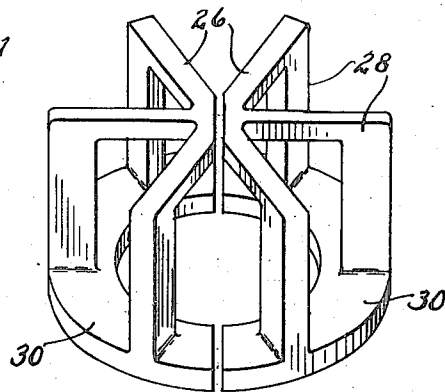


FIG. 3.

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UNITED STATES PATENT OFFICE.

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CHECK-VALVE.

1,160,707.

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To all whom it may concern:

Be it known that I, JESSE B. GARBER, a citizen of the United States, residing at Salem, in the county of Columbiana and State of Ohio, have invented a certain new and useful Improvement in Check-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

10 This invention relates to check valves and has for an object the providing of simple efficient means for limiting the opening movement of the valve closure, and another object is to so construct such means that it may be cheaply manufactured and readily applied to the valve mechanism when assembling.

Another object is to so arrange the construction that this means, limiting the movement of the valve closure, may be securely and permanently held in its proper relation to the associated parts, while allowing the convenient assembling thereof.

The drawings illustrate a preferred form of my invention, which is hereinafter more fully described in connection therewith.

The essential characteristics are set forth in the claims.

30 In the drawings, Figure 1 is a vertical section through a valve embodying my invention, showing the same mounted in the end of a pump cylinder; Fig. 2 is a section on the line 2—2 of Fig. 1, showing a plan of the valve parts, and Fig. 3 is a perspective view of the retaining means for the valve closure.

Referring to the drawings by reference numerals, 5 indicates a valve body shown as threaded at 6 into the lower end of the pump cylinder 7 provided with the usual suction plunger, indicated at 8. The valve body is preferably provided with an annular flange 9 abutting the end of the pump cylinder and has an extension 10, provided with an angular exterior suitable for the application of a wrench. The extension 10 is shown as internally threaded for a suitable pipe 12, leading to the valve. The body 5 is

shown as provided with a central bore 13 into which is tightly fitted a sleeve 14 of softer metal, such as brass tubing, for example, rolled outwardly and downwardly as at 15 to meet the upper surface of the valve body, providing a suitable valve seat. The tube may be secured in place by expanding the lower portion of the tube as at 16, into a slightly enlarged portion 17 of the bore 13.

The bore 13 extends through an upwardly projecting boss 18, into which is cut an annular groove 20, one side of which is formed by a shoulder 21 extending inwardly from the threaded portion 6, and the other side of which is formed by a flange 23.

A suitable valve closure 25 having a resilient pad 27 on its under side, is adapted to co-act with the seat 15 to prevent a backward passage of the liquid through the valve in the usual manner. The upward movement of this valve closure is limited by overhanging portions 26 extending inwardly from fingers 28, which are rigidly carried by two half-circular ring portions 30, resting on the shoulder 21 and projecting into the groove 20 and held in this position by the flange 23. As shown, each of the half-ring members carries three of the fingers 28, providing six equally spaced guides for the valve closure, and the inwardly projecting stops 26 may be brought together and joined integrally at points each side of the center. Thus these parts may be made of one integral casting, the ring members 30 forming a complete ring and the stop members 26 being integral at the center. Then, to allow for placing the parts in position with the ring in the groove 20, they may be sawed apart, as shown. It may be desirable, however, to stop the fingers 26 short of the center, extending inwardly only a sufficient distance to engage the valve closure 25. As shown, the width of the ring members is such that when in position they substantially fit the inner surface of the cylinder 7, and the fingers 28 having their outer edges rising substantially vertically from the rings also lie along the inner surface of the cylinder.

Now it will be seen that it is a very simple matter to assemble the parts described. The closure is first placed on its seat and the portions of the retaining means (shown in Fig. 3) are then placed onto the valve body with the inner edges of the portions of the sectioned ring engaging the groove 20. The valve body is then screwed into position in the cylinder until the flange 9 tightly engages the end thereof. In this position the ring members are held in engagement with the groove in the valve body by means of the inner surface of the cylinder, the sides of the groove preventing vertical movement or other displacement thereof.

The parts may be simply and strongly constructed.

It will be seen that this construction provides an efficient means for guiding the valve closure and limiting its opening movement.

Having thus described my invention, what I claim is:

1. The combination with a chamber having a wall, a valve seat and an overhanging shoulder, of a closure cooperating with the seat, and a limiting device made in separate sections overhanging the closure and underhanging the shoulder, said limiting device being prevented by the wall of the chamber from moving outwardly sufficiently to clear the overhanging shoulder.

2. The combination with a chamber, of a check valve body mounted therein having a seat and a valve closure and means for limiting the opening movement of the closure comprising an overhanging shoulder formed in the valve body, and means underhanging such shoulder and overhanging said closure, said means being adapted to engage the wall of said chamber and be held in position thereby.

3. The combination with a chamber, of a check valve body carried thereby and extending into the same having a passage leading therethrough to the chamber, a valve seat surrounding the passage and a closure cooperating with the seat, a flange formed on the valve body, and a member engaging said flange and abutting the wall of the chamber whereby it is held in such engagement, said member carrying means overhanging the valve closure.

4. The combination with a suction chamber, of a valve body connected therewith and having a passage opening into the chamber, a seat surrounding the passage and a closure cooperating therewith, an annular groove in the valve body and arcuate members engaging said groove and extending to the wall of the chamber when in position, and means carried by said arcuate members extending past the valve closure and overhanging the same.

5. The combination with a chamber cylinder, of a valve body having a threaded engagement with one end thereof and having a passage communicating therewith, a seat surrounding the passage and a valve closure cooperating with the seat, an annular groove in the valve body surrounding the passage, and means for guiding and limiting the opening movement of the closure comprising ring sections extending into said groove, each section of the ring carrying projections extending past the closure and overhanging the same.

6. The combination with a pump cylinder, of a valve body having a threaded engagement therewith at one end and having an opening communicating with the chamber, a valve seat surrounding the opening and a closure cooperating therewith, an annular groove in the valve body adjacent the valve seat, and a divided ring adapted to extend into said groove and be held in position by the wall of the cylinder, and fingers carried by the ring extending past the valve closure and having inwardly projecting portions for engaging the same.

7. In a check valve, the combination of a body adapted to be carried by a chamber and having a passage opening into the chamber, a valve seat surrounding the passage, a loose flat closure cooperating with the seat, a cage for guiding and limiting the opening movement of said closure, said cage having inwardly projecting means, and an outwardly projecting shoulder on the valve body adapted to cooperate with the inwardly projecting means, said cage being adapted to engage the wall of the chamber to hold the same in engagement with the valve body when in position.

8. The combination with a pump cylinder having threads, of a valve body having cooperating threads and a passage communicating with the cylinder when in position, a valve seat surrounding the passage and a disk-like closure cooperating with the seat, an annular flange projecting outwardly from the valve body, a shoulder parallel with the flange, and flat ring sections fitting against said shoulder and extending beneath the flange when in position and engaging the wall of the chamber, and means carried by the ring sections acting as guides for and limiting the opening movement of the closure.

9. The combination with a pump cylinder having threads at one end, of a valve body having cooperating threads and a passage communicating with the cylinder when in position, a valve seat surrounding the passage and a disk-like closure cooperating with the seat, an annular flange on the valve body, a shoulder formed on the valve body

adjacent the flange, ring sections fitting said
shoulder and extending beneath the flange
when in position and engaging the wall of
the chamber, and upwardly extending
5 guides integral with the ring sections and
having means overhanging the closure to
limit its opening movement.

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

JESSE B. GARBER.

Witnesses:

WALTER H. MEYERHOFER,
GEORGE H. CHANTREY.