P. W. HENNESSY.

CHECK VALVE STRUCTURE.

APPLICATION FILED DEC. 28, 1914.

1,170,813. Patented Feb. 8, 1916.

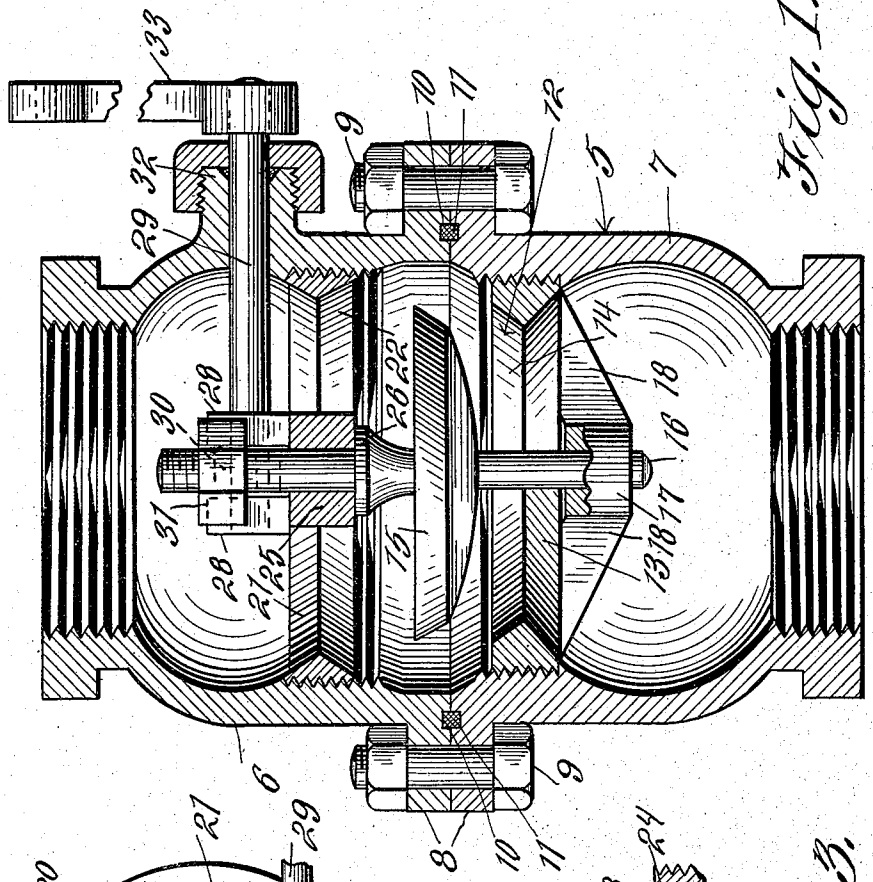


Fig. 1.

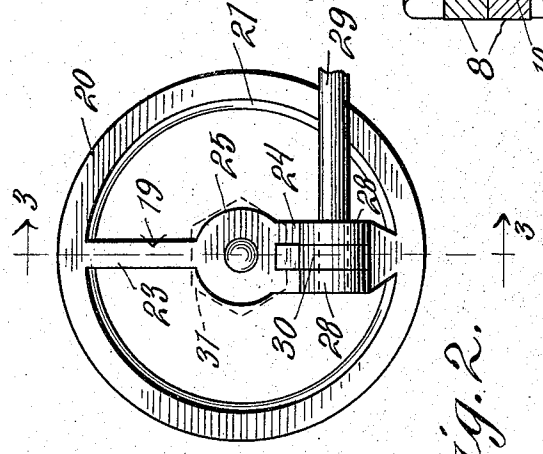


Fig. 2.

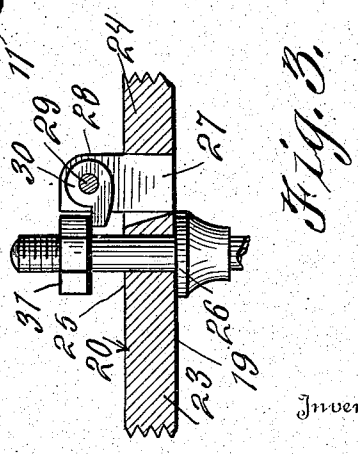


Fig. 3.

Witnesses

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CHECK-VALVE STRUCTURE.

1,170,813. Specification of Letters Patent. Patented Feb. 8, 1916.

Application filed December 28, 1914. Serial No. 879,360.

To all whom it may concern:

Be it known that I, PATRICK W. HENNESSY, a citizen of the United States, residing at Joplin, in the county of Jasper and State of Missouri, have invented certain new and useful Improvements in Check-Valve Structures, of which the following is a specification.

My invention relates to improvements in check-valves.

An important object of the invention is to provide simple nad reliable means, operatable from the exterior of the check-valve casing, and adapted when operated to unseat the check-valve if the same should stick, but not impairing the automatic operation of the check-valve.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a central vertical longitudinal sectional view of a check-valve embodying my invention, Fig. 2 is a plan view of a spider-guide, and, Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 5 designates the improved valve structure as a whole, comprising upper and lower casing sections 6 and 7, having their engaging ends provided with flanges 8, secured together by bolts 9, as shown. These flanges are preferably provided with grooves 10, in registration with each other, and receiving packing 11, as shown.

Arranged within the upper portion of the lower casing section 7 is a preferably annular valve-seat 12, having a lower beveled or curved wall 13, flush with the inner surface of the casing section 7, and forming in effect, a continuation thereof. The inner surface of the casing section 7 is curved to offer the least resistance to the incoming liquid. The annular valve-seat 12 is provided with an upper beveled or inclined face 14, engaged and disengaged by the beveled edge of a vertically movable check-valve 15, arranged above the same. This check-valve is rigidly secured to a rod or shaft 16, the lower portion of which is mounted to reciprocate within a sleeve 17, secured to and held in place by spaced arms 18, carried by the annular valve-seat 12. The valve 15 is adapted to move away from the valve-seat 12, a sufficient distance whereby the cross-sectional area of the space between the same will be substantially equal to the cross-sectional area of the inlet pipe discharging into the valve casing, whereby the valve structure offers the least resistance to the passage of the liquid. The valve-seat 12 preferably has screw-threaded engagement with the casing section 7, as shown.

Arranged within the upper casing section 6 is a spider-guide 19 embodying an outer ring 20, having upper and lower beveled faces 21 and 22, flush with the curved inner surfaces of the casing section 6, forming in effect a continuation thereof, as shown. This ring 20 preferably has screw-threaded engagement with the casing section 6, as shown. Carried by the ring 20 are arms 23 and 24, carrying a sleeve 25, receiving the upper end of the shaft 16, and adapted to engage with a stop 26, secured to the shaft above and adjacent the check-valve 15, as shown. The arm 24 is provided with a longitudinal slot 27, and carries spaced upstanding ears 28, apertured for the reception of a transverse rock-shaft 29, having a lifting dog 30, rigidly secured thereto. This lifting dog is arranged between the ears 28, with its nose disposed below a nut 31, preferably having screw-threaded engagement with the shaft 16 to be longitudinally adjustable thereon. It is obvious that when the shaft 29 is turned in the proper direction, the dog 30 will engage with the nut 31 to move the same upwardly, to elevate the shaft 16 and its check-valve 15.

The shaft 29 is journaled through a stuffing box 32, arranged upon the exterior of the casing section 6, and has a crank 33 rigidly secured to the outer end thereof, by means of which the rock-shaft is turned. This crank may be moved and held in the desired position, by any suitable means.

In operation, the rock-shaft 29 is normally held in a position whereby the dog 30 is moved out of engagement with the nut 31, thus allowing the check-valve 15 to return to its seat, and automatically operate in the usual manner.

It not infrequently happens that the check-valve becomes fouled or clogged,

sticking to its seat. This causes considerable inconvienence and it is sometimes impossible to get a check-valve to operate after sticking without opening the casing of the valve structure. When the check-valve 15 sticks the rock-shaft 29 is turned in the direction to bring the dog 30 into engagement with the lower side of the nut 31, whereby the check-valve is lifted from its seat.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described the invention, I claim:—

1. In a valve structure, a pair of casing sections arranged in end to end relation and suitably connected, a valve seat having its opposite sides beveled and having screw-threaded engagement with one casing section, a spider connected with and depending from the valve seat, a reciprocatory valve stem slidably engaging the spider to be guided thereby, a gravity operated valve connected with the valve stem and disposed above the valve seat to engage therewith, a support ring having screw-threaded engagement with the other casing section above the valve seat and having oppositely arranged bevel faces, an apertured guide arm carried by the support ring and receiving the upper end of the valve stem in the aperture and having spaced upstanding ears projecting above it for a substantial distance, a member carried by the upper end of the valve stem, a lift dog arranged between the ears and beneath the member to engage therewith, and means to swing the lift dog.

2. In a valve structure, a lower casing section, an annular valve seat arranged within and having screw-threaded engagement with the upper portion of the valve casing section and provided with upper and lower beveled faces, an apertured spider carried by the valve seat and depending therefrom, a substantially vertical valve stem having its lower end operating within the aperture of the spider, a gravity operated check-valve rigidly secured to the valve stem above the valve seat to engage and disengage the upper beveled face thereof, an upper casing section having its lower end engaging the upper end of the lower casing section, a support ring disposed within and having screw-threaded engagement with the lower end of the upper casing section and having upper and lower beveled faces, a substantially horizontal guide arm carried by and extending diametrically of the support ring and provided with a central aperture to receive the valve stem and spaced ears arranged upon one side of the aperture, a substantially horizontal rock-shaft extending through one side of the upper casing section and journaled through the spaced ears, a lift dog rigidly secured to the end of the rock-shaft and arranged between the spaced ears, and a nut having screw-threaded engagement with the upper end of the valve stem and disposed above the lift dog.

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

PATRICK W. HENNESSY.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."