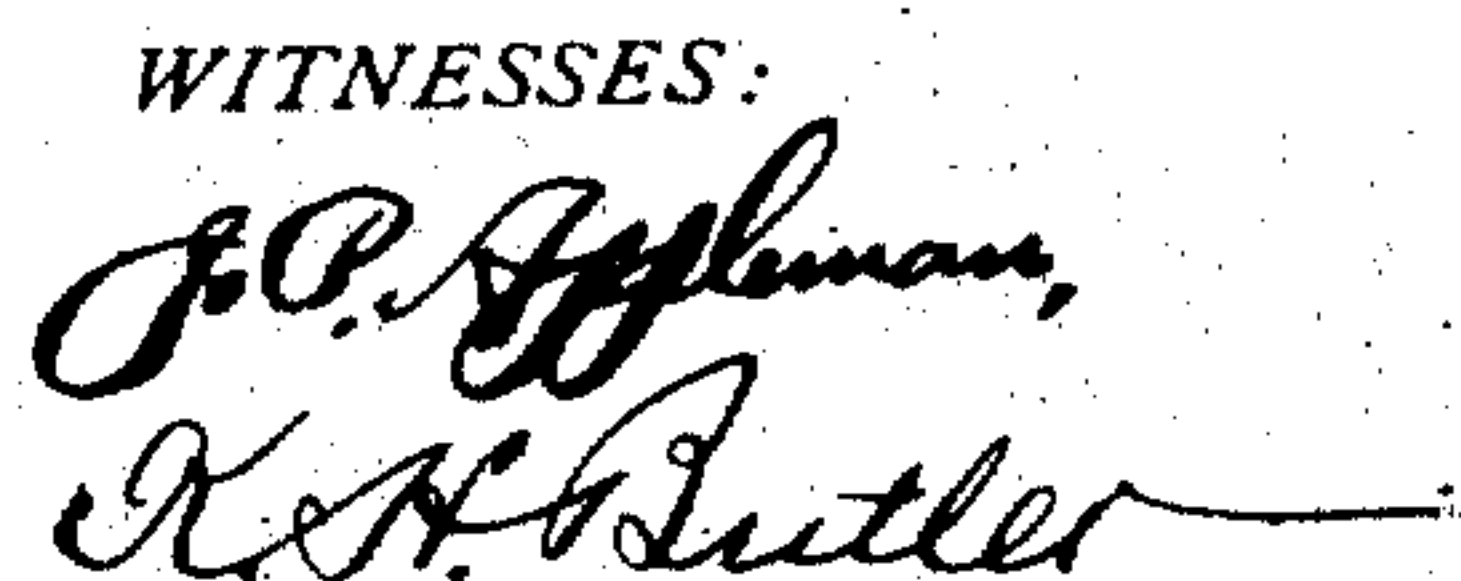


**994,544.**

Patented June 6, 1911



INVENTORS  
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# UNITED STATES PATENT OFFICE.

CHARLES SUTTER, OF ELIZABETH, AND LEMUEL L. WILLFONG, OF CLAIRTON, PENNSYLVANIA.

## HYDRAULIC VALVE.

994,544.

Specification of Letters Patent.

Patented June 6, 1911.

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*To all whom it may concern:*

Be it known that we, (1) CHARLES SUTTER and (2) LEMUEL L. WILLFONG, citizens of the United States of America, residing at 5 (1) Elizabeth and (2) Clairton, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Hydraulic Valves, of which the following is a specification, reference 10 being had therein to the accompanying drawing.

This invention relates to hydraulic valves, and the primary object of the invention is to provide a valve of the above type that can be 15 used for various purposes, the valve being constructed upon the principle of a slide valve and the parts thereof arranged whereby easy access can be had to said parts for adjusting and lubricating purposes.

20 Another object of this invention is to provide a three-way hydraulic valve that is positive in its operation and free from injury by ordinary use.

25 With these and such other objects in view as may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts to be hereinafter referred to and particularly claimed.

30 Reference will now be had to the drawing, wherein like numerals of reference designate corresponding parts throughout the several views, in which:—

35 Figure 1 is a longitudinal sectional view of the valve, Fig. 2 is a vertical cross sectional view of the same, and Fig. 3 is a diagrammatic view showing the valve relatively to a cylinder.

40 A valve in accordance with this invention comprises a box-like casing 1 having the bottom 2 thereof upon the inner side provided with a longitudinal seat 3 of less width than the bottom of the box and extending from one end thereof to the opposite end. The bottom 2 of the casing 1 is provided with a central exhaust port 4 and with 45 two depending bosses 5, said bosses being provided with vertical ports 6 and 6<sup>a</sup> respectively and interiorly screw threaded to receive the ends of pipes 7 and 7<sup>a</sup> respectively.

50 Detachably mounted upon the upper edges of the casing 1 by screws 8 or other fastening means is a lid or cover 9, and formed integral with said lid or cover intermediate the ends thereof is an elbow 10 in communication with the casing 1 through the medium

of an inlet port 11. The top of the elbow 10 is provided with a detachable plug 12 and arranged in said elbow is a check valve 13, said check valve being placed within the elbow through the medium of the detachable 60 plug 12.

The side of the casing 1 is provided with a stuffing-box 14, and journaled in said stuffing-box and extending transversely of the casing 1 is a shaft 15 having a rectangular 65 portion 16 within the casing upon which is mounted a segment-gear 17, said gear being retained upon the shaft by screws 18 passing through the hub 19 of said gear. The segment-gear 17 is adapted to mesh with a longitudinal rack 20, carried by a slide valve 21, 70 said slide valve having the under side thereof provided with a recess 22 adapted to establish communication between the ports 4 and 6 or 4 and 6<sup>a</sup>. The outer end of the 75 shaft 15 is provided with an operating lever 23.

As an instance of the operation of the valve, we have illustrated in Figure 3 of the drawing the ports 6 and 6<sup>a</sup> as connected by 80 the pipes 7 and 7<sup>a</sup> respectively to the lower and upper ends respectively of a cylinder 24 having a piston 25 arranged therein. With steam or air passing through the elbow 10 and the port 11 into the casing 1, the steam 85 or air can pass through the port 6 and the pipe 7 into the lower end of the cylinder 24 and raise the piston 25, the steam or air above the piston exhausting through the pipe 7<sup>a</sup>, port 6<sup>a</sup>, recess 22 and port 4. To 90 lower the piston 25, the operating lever 23 is shifted to move the slide valve 21 whereby the recess 22 will establish communication between the ports 4 and 6. The steam or air will then be deflected into the port 6<sup>a</sup>, 95 through the pipe 7<sup>a</sup> and enter the upper end of the cylinder 24 above the piston 25. The piston 25 will be forced downwardly and the steam or air beneath said piston will exhaust through the pipe 7, port 6, recess 22 and ex- 100 haust port 4.

By plugging or blanketing one of the ports 6 or 6<sup>a</sup>, the valve can be used for two-way purposes.

The check valve 13 is provided to prevent 105 steam or air within the casing from escaping should the connection with the elbow 10 burst and cause a leakage. This is essential where large bodies are raised or controlled by the piston 25, inasmuch as a sudden ex- 110



haust of steam from the cylinder 24 would cause large bodies to descend and injure property and in all probability life.

The valve in its entirety can be made of light and durable metal and we reserve the right to use such packing as is necessary to insure non-leakable connections.

What we claim is:—

10 A valve of the type described comprising a casing having the bottom thereof provided with a longitudinal valve seat having an exhaust port and two outlet ports, a lid mounted upon said casing, an elbow carried by said lid and in communication with said casing, a check valve arranged in said elbow, a shaft journaled transversely of said casing, a segment-gear carried by said shaft within

said casing, a slide valve arranged upon said seat within said casing and provided with a recess adapted to establish communication between the exhaust port and either one of the outlet ports of said casing and to uncover the other outlet port, and a rack carried by said valve and meshing with said segment-gear, substantially as, and for the purpose herein described. 20 25

In testimony whereof we affix our signatures in the presence of two witnesses.

CHARLES SUTTER.  
LEMUEL L. WILLFONG.

Witnesses:

MAX H. SROLOVITZ,  
CHRISTINA T. HOOD.