

No. 820,917.

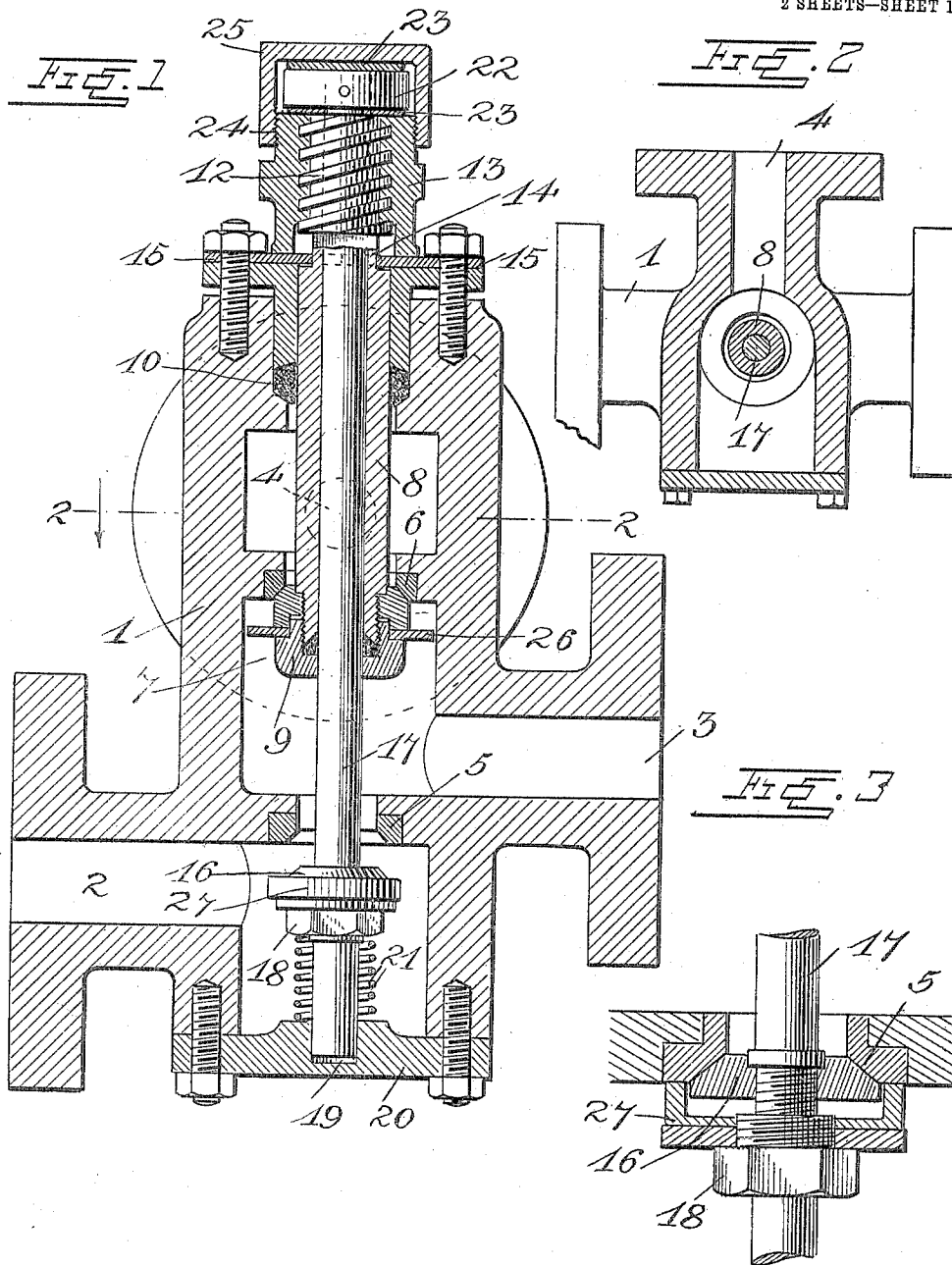
PATENTED MAY 15, 1906.

J. B. CULLER,

VALVE.

APPLICATION FILED JUNE 5, 1905.

2 SHEETS—SHEET 1.



Witnesses

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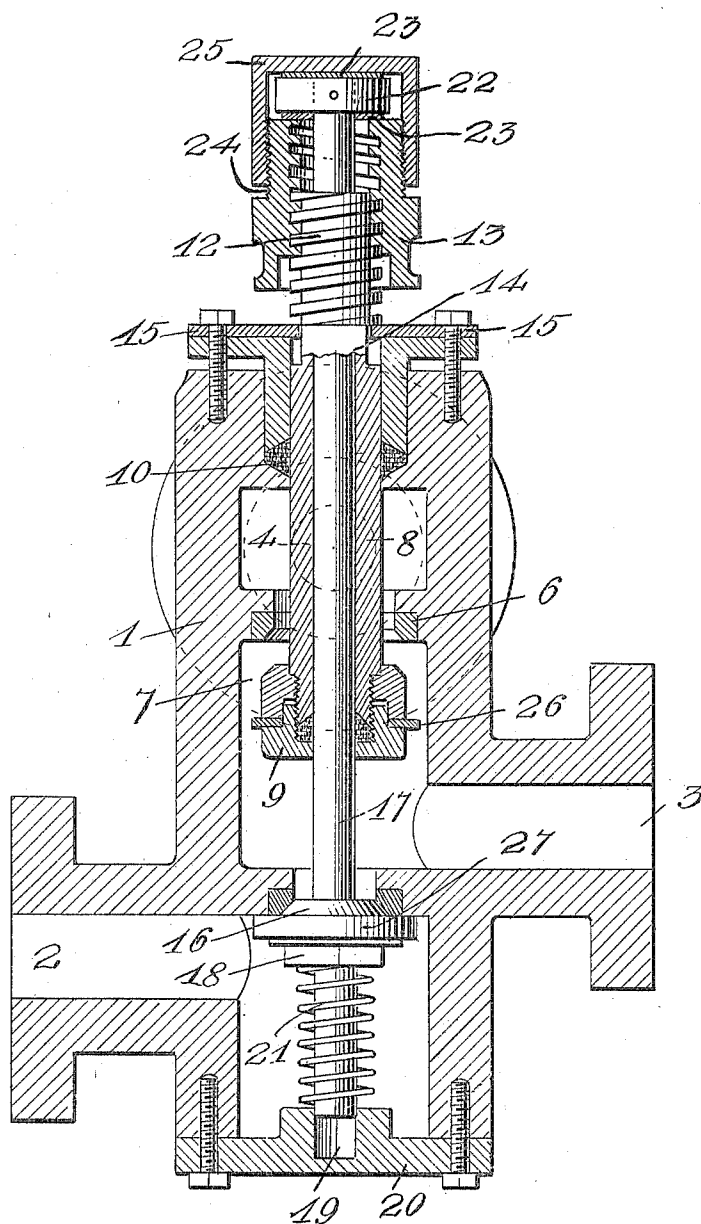
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2 SHEETS—SHEET 2.

FIG. 4



Witnesses

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UNITED STATES PATENT OFFICE.

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ONE-HALF TO GEORGE S. BOWES, OF MONESSEN, PENNSYLVANIA.

VALVE.

No. 820,917.

Specification of Letters Patent.

Patented May 15, 1906.

Application filed June 5, 1905. Serial No. 263,812.

To all whom it may concern:

Be it known that I, JAMES B. CULLER, a citizen of the United States, residing at Belle Vernon, in the county of Fayette and State of Pennsylvania, have invented certain new and useful Improvements in Valves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in three-way hydraulic valves.

The object of the invention is to improve the construction, arrangement, and manner of operating valves of this character.

A further object is to provide a valve of this character which will be simple, strong, and durable in construction, efficient in operation, and well adapted to the purpose for which it is designed.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical sectional view through a valve constructed in accordance with the invention. Fig. 2 is a horizontal sectional view through the same taken on the line 2 2 of Fig. 1. Fig. 3 is a detail sectional view showing the construction and arrangement of the inlet-valve, and Fig. 4 is a vertical sectional view through the valve with parts in the opposite direction from that shown in Fig. 1.

Referring more particularly to the drawings, 1 denotes the valve-casing, which is formed with an inlet-port 2, a port 3, and a discharge-port 4. If desired, the casing may also be provided with a suitably-closed hand-hole to facilitate the assembling of the parts within the casing.

In the lower portion of the casing is disposed an inlet-valve seat 5, which is preferably formed separate from the casing and adapted to be removed therefrom. Above the inlet-valve seat and between the cylinder-port and discharge-port is disposed a removable valve-seat 6. Adapted to be engaged with the valve-seat 6 is a valve 7, said valve being arranged upon the lower end of a tubular valve-stem 8 and is secured thereon by means of a packed nut 9. The tubular valve-stem 8 projects upwardly through the

casing 1 and passes out of the same through a stuffing-box 10. The upper projecting end of the stem 8 is provided with coarse screw-threads 12, upon which is adapted to be screwed an elongated nut 13, said nut being adapted to be engaged by a wrench, whereby the same is screwed up and down on the threads of said tubular stem 8. The stem 8 is further provided immediately below the threaded portion 12 with a square recessed portion 14, which is adapted to be engaged by locking-plates 15, whereby the movement of the stem 8 in the casing 1 is limited and said stem is prevented from rotating.

Adapted to engage the inlet-valve seat 5 is an inlet-valve 16, said valve being secured on the lower portion of a valve-stem 17 by means of a nut 18. The lower end of the valve-stem projects below said nut and is adapted to engage a socket 19, formed on a cap-plate 20 on the lower end of the valve-casing 1. Around the lower projecting end of the stem 17 between the nut 18 and the cap-plate 20 is arranged a coiled spring 21, the tension of which is normally exerted to force the valve-stem upwardly and to hold the valve 16 into engagement with the seat 5.

The valve-stem 17 is adapted to pass upwardly through the tubular stem 8 of the exhaust-valve 7, the upper end of said stem 17 projecting above the upper threaded end of the stem 8, and to said projecting end of the inlet-valve stem is secured a collar 22, above and below which is arranged a washer 23. The upper end of the nut 13 is provided with exterior screw-threads 24, upon which is adapted to be screwed an interiorly-threaded cap 25, which incloses the collar 22 and the washer 23 on the upper end of the valve-stem 17, thereby connecting said valve-stem with the nut 13, so that when said nut is screwed upwardly on the threaded upper end of the exhaust-valve stem 8 the inlet-valve 16 will be closed upon its seat, thus cutting off or closing the inlet end of the casing. After the valve 16 has been thus closed upon its seat a further rotation of the nut 13 will by reason of the closing of the inlet-valve upon its seat, thus locking the stem thereon against further upward movement, force the tubular stem of the exhaust-valve downwardly, thus opening or unseating the exhaust-valve on the lower end of the same. The size and pitch of the threads 12 on the

upper end of the tubular valve-stem 8 is such that by a half-turn of the nut 13 to the left the inlet-valve will be closed, after which another half-turn of the nut in the same direction will force the tubular valve - stem 8
5 downwardly, thereby opening the exhaust-valve. Similar movements of the nut 13 in the opposite direction will cause a reverse movement of said valves. Any suitable
10 means may be employed for turning the nut 13, a removable wrench (not shown) being preferably used for this purpose.

If desired, the valves 7 and 16 may be provided with washers or rings 26 and 27, which
15 are adapted to check the velocity of water until the valves are partly open, thus reducing the wear of the valve to a minimum, the construction and arrangement of the inlet-valve and the washer or ring 27 being clearly
20 shown in Fig. 3 of the drawings.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without re-
25 quiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of
30 this invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A three-way valve comprising a casing
35 having inlet and discharge ports formed therein, valve-seats arranged in said casing, a discharge-valve adapted to engage one of said seats, a tubular stem secured to said valve, an inlet-valve adapted to engage the
40 other valve-seat, a stem secured to said inlet-valve and adapted to work through the tubular stem of the discharge-valve, threads formed on the upper end of the tubular valve-stem of said discharge-valve, a nut
45 adapted to be screwed up and down on said threads and means whereby the stem of said inlet-valve is loosely connected to said nut, and operated thereby, substantially as described.

50 2. A three-way valve comprising a casing having inlet and discharge ports formed

therein, valve-seats arranged in said casing, a discharge-valve adapted to engage one of said seats, a tubular stem secured to said valve, an inlet-valve adapted to engage the
55 other valve-seat, a stem secured to said inlet-valve and adapted to work through the tubular stem of the discharge-valve, threads formed on the upper end of the tubular stem of said exhaust-valve, a nut adapted to be
60 screwed up and down on said threads, a packing-gland arranged around the tubular stem of said exhaust-valve where the same passes through said valve-casing, means to limit the movement of said exhaust-valve stem and
65 valve, a collar secured to the upper end of said inlet-valve stem, and means whereby said collar is secured to and operated by the nut on the stem of said exhaust-valve, substantially as described.

3. A three-way valve comprising a casing having inlet and discharge ports formed therein, valve-seats arranged in said casing, a discharge-valve adapted to engage one of
75 said seats, a tubular stem secured to said valve, an inlet-valve adapted to engage the other valve-seat, a stem secured to said inlet-valve and adapted to work through the tubular stem of the discharge-valve, threads
80 formed on the upper end of the tubular stem of said exhaust-valve, a nut adapted to be screwed up and down on said threads, a packing-gland arranged around the tubular stem of said exhaust-valve where the same passes
85 through said valve - casing, a stop - plate adapted to engage an annular recess in the tubular stem of said exhaust-valve whereby the movement of the same is limited, a collar secured to the upper end of said inlet-valve
90 stem in position to engage the nut on the exhaust-valve stem and a cap adapted to be screwed onto said nut thereby loosely securing the inlet-valve stem to said nut, substantially as described.

In testimony whereof I have hereunto set
95 my hand in presence of two subscribing witnesses.

JAMES B. CULLER.

Witnesses:

FRANK H. STEEN,
ANNIE BLOWER.