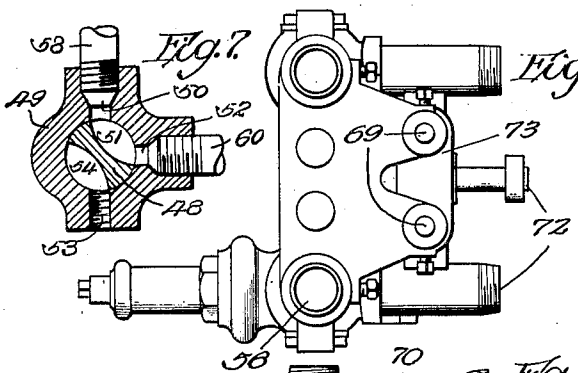
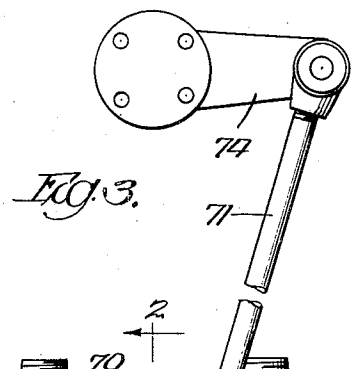
Nov. 25, 1924. 1,516,979

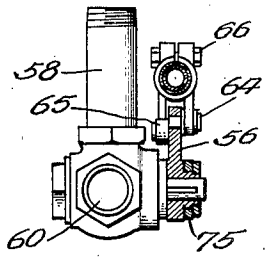
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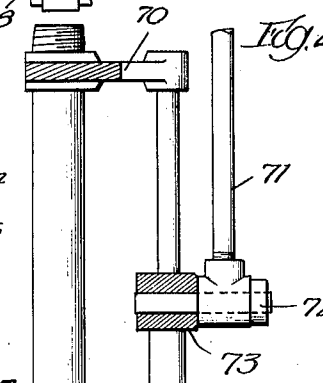
VALVE OPERATING MECHANISM

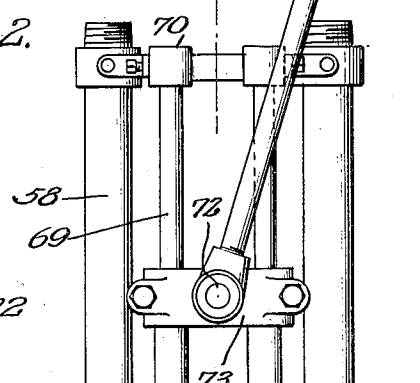
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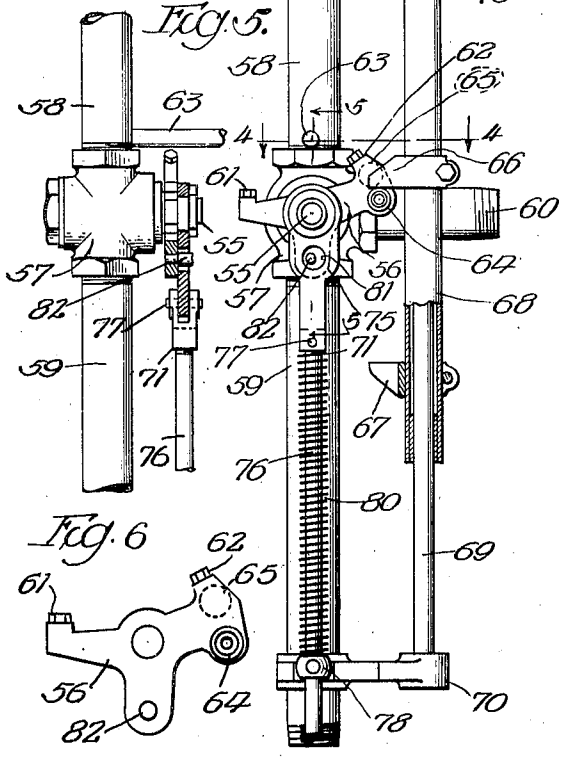


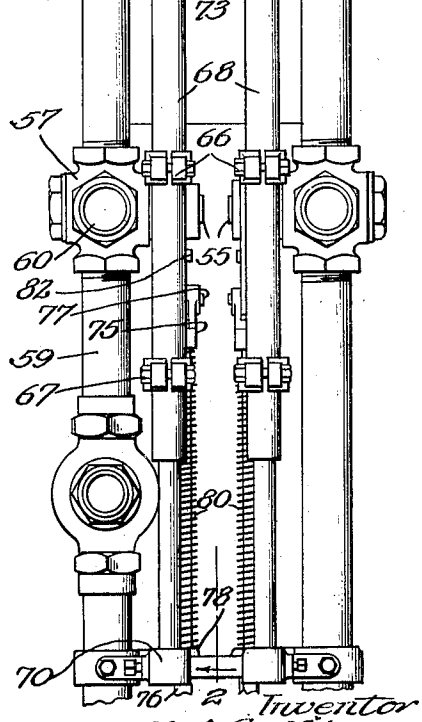












By.

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Atty

Patented Nov. 25, 1924. 1,516,979

UNITED STATES PATENT OFFICE.

OLOF G. NILSON AND RUDOLPH W. GLASNER, OF CHICAGO, ILLINOIS, ASSIGNORS TO MARQUETTE TOOL & MANUFACTURING CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

VALVE-OPERATING MECHANISM.

Application filed May 14, 1923. Serial No. 638,774.

To all whom it may concern:

Be it known that we, OLOF G. NILSON and RUDOLPH W. GLASNER, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Valve-Operating Mechanism, of which the following is a specification.

This invention relates to improvements in valve operating mechanism particularly adapted though not necessarily limited in its use for controlling the direction of flow or pressure of fluids, and one of the objects of the invention is to provide improved mechanism of this character including means whereby the valve may be actuated at predetermined intervals in the cycle of operation of the mechanism, and means whereby the time of operation of the valve with respect to the cycle of operation of the mechanism may be varied.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings illustrating this invention and in which—

Figure 1 is a top plan view of Figure 2, with parts omitted.

Figure 2 is a sectional view taken on line 2—2, Figure 3, of a valve and the operating mechanism therefor, constructed in accordance with the principles of this invention.

Figure 3 is a right hand end elevation of Figure 2.

Figure 4 is a sectional view taken on line 4—4, Figure 2.

Figure 5 is a sectional view taken on line 5—5, Figure 2.

Figure 6 is a plan view of a detail.

Figure 7 is a sectional view of the valve and casing therefor.

Referring more particularly to the drawings there is disclosed a double valve operating mechanism and as each of the operating mechanisms is the same, the description of one will apply also to the other.

The valve 48 is arranged in a casing 49 having a port 50. The valve is also provided with a passage 51 adapted to connect the ports 50 and 52 which latter also leads from the casing 49, so that when the valve 48 assumes the position shown in Figure 7, the port 50 will be in direct communication with the port 52 through the passage 51 in the valve.

The casing 49 is also provided with a passage 54 so that when the valve 48 assumes a predetermined position, the port 52 will have direct communication with the port 53, as will be understood.

The valve is provided with a stem 55 secured to which is a member 56 located outside of the valve casing 57. Connected with the port 50 is a pipe 58, and connected with the port 52 is a pipe 59, a pipe 60 being connected with the port 52.

The member 56 is provided with spaced projections 61—62 adapted to engage a suitable stop device 63 to limit the movement of the member 56.

This member 56 is also provided with projections 64—65 preferably located on opposite sides thereof and are also preferably in the form of anti-friction rollers by means of which the member 56 may be rocked to rotate the valve.

The member 56 is preferably rocked by means of spaced tappets 66—67 which are adjustably mounted upon a reciprocable member 68, which slides loosely upon a guide member 69, the latter being held in position by means of suitable brackets 70.

By adjustably connecting the tappets 66—67 with the member 68, it will be manifest that the time of operation of the member 56 by the tappets may be varied.

These tappets are so arranged that one of the tappets will engage the projection 64 on one side of the member 56 during one direction of movement of the tappets to rock the member 56 in one direction, and the other tappet will engage the projection 65 on the other side of the member 56 to rock the latter in the opposite direction.

The member 68 is reciprocable by means of a link 71, which is pivotally connected as at 72 with a cross head 73. The other end of the link is preferably connected with a crank arm 74, which receives its motion from any suitable source.

It will therefore be manifest that with this construction and as the crank arm 74 is operated, the member 68 will be reciprocated and the member 56, which is connected with

the valve, will be moved first in one direction and then in the opposite direction in response to the reciprocation of the tappets to shift or rotate the valve within the casing 57.

As a means for assisting in operating the valve so that after it has been moved to a predetermined extent by the member 56 and thereby impart a quick or sudden movement to the valve, there may be provided a member 75 which is pivotally connected by one end preferably to the stem 55 of the valve so as to move independently with respect thereto. A rod 76 is pivotally connected as at 77 with the member 75 and extends loosely through a pivotally mounted guide 78. The rod is provided with a shoulder against which one end of a coil spring 80, which encompasses the rod 76, rests. The other end of the spring 80 abuts the rocking bearing 78 and the stress of the spring is such that it will normally tend to knuckle the members 75—76 with respect to each other to cause them to move about the pivot 77.

The guide 78 is so located with respect to the axis of rotation of the stem 55 that the pivot point 77 may be moved to a point in direct alinement therewith so as to maintain the rod 76 and member 75 against knuckling and in a locked or straight position, at which time the member 75 will be idle.

In order to cause the stress of the spring 80 to act upon the member 56 to shift the latter, the member 75 is provided with an aperture 81 and the member 56 is provided with a pin or projection 82 normally standing within the opening 81. The external diameter of the pin or projection 82 is considerably less than the internal diameter of the aperture 81 so that the member 56 may have an initial and independent movement with respect to the member 75. This will permit of the operation of the valve in the casing 57 positively by means of one of the tappets 66—67 engaging the respective projections 65—64 according to the direction of movement of the member 68. As soon as the member 56 has reached a predetermined position the pin or projection 82 will engage the wall of the aperture 81 to rock the member 75 about the stem 55 and knuckle the member 75 and bar 76 by moving the point of pivotal connection 77 out of alinement with the axes of rotation of the stem 55 and the bearing 78. This will permit the stress of the spring 80 to operate upon the member 75 to move the latter to a greater extent about the axis of the stem 55, with the result that the spring will impart a quick or snapping movement to the valve within the casing 55.

With this improved construction it will be manifest that by shifting of the valve communication may be established between the pipes 58, 59 and 60, according to the position of the valve and which valve is of a two-way construction, similar to that shown in Figure 1.

While the preferred forms of the invention have been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claims, without departing from the spirit of this invention.

What is claimed as new is:—

1. A rotatable valve, an operating member connected therewith, a pivotally mounted element, a link pivotally connected with the said element, a guide for the link, spaced tappets, means for reciprocating the tappets, projections carried by the said member and adapted to be successively positioned in the path of movement of the said tappets to be engaged thereby for moving the first recited element about its pivot, and means rendered active at a predetermined point in the movement of the first recited element for imparting a rapid movement to the said operating member and valve.

2. A rotatable valve, an operating member connected therewith, a pivotally mounted element, a link pivotally connected with the said element, a guide for the link, spaced tappets, means for reciprocating the tappets, projections carried by the said member and adapted to be successively positioned in the path of movement of the said tappets to be engaged thereby for moving the first recited element about its pivot, and an elastic element rendered active at a predetermined point in the movement of the first recited element for imparting a rapid movement to the said operating member and valve.

3. A rotatable valve, an operating member connected therewith, a pivotally mounted element, a link pivotally connected with the said element, a guide for the link, spaced tappets, means for reciprocating the tappets, projections carried by the said member and adapted to be successively positioned in the path of movement of the said tappets to be engaged thereby for moving the first recited element about its pivot, means rendered active at a predetermined point in the movement of the first recited element for imparting a rapid movement to the said operating member and valve, and means for limiting the extent of movement of the said operating member under the influence of the last recited means.

4. A rotatable valve, an operating member connected therewith, spaced tappets cooperating with the said member for actuating the latter, means for actuating the tappets, a pivotally mounted element, an elastic element tending normally to shift the said element about its pivot, means for rendering

the said elastic element inactive, and means responsive in its movement to the movement of the said operating element for initially shifting the first said element to render the said elastic element active to impart a sudden movement to the valve separate from the motion imparted to the valve by the said tappets.

5. A rotatable valve, an operating member connected therewith, spaced tappets co-operating with the said member for actuating the latter, means for actuating the tappets, a pivotally mounted element, an elastic element tending normally to shift the said element about its pivot, means for rendering the said elastic element inactive, and a loose connection between the said operating member and the said pivotally mounted element, the said loose connection operating at a predetermined point in the cycle of movement of the said operating member for rendering the said elastic element active to impart a sudden movement to the valve separate from the motion imparted to the valve by the said tappets.

6. A rotatable valve, an operating member connected therewith, spaced tappets co-operating with the said member for actuating the latter, means for actuating the tappets, a pivotally mounted element, an elastic element tending normally to shift the said element about its pivot, means for rendering the said elastic element inactive, and a loose connection between the said operating member and the said pivotally mounted element, the said loose connection operating at a predetermined point in the cycle of movement of the said operating member in each direction of movement of the latter for rendering the said elastic element active to impart a sudden movement to the valve separate from the motion imparted to the valve by the said tappets.

7. A rotatable valve, an operating member therefor, spaced tappets co-operating with the member for shifting the latter to rotate the valve in opposite directions, means for operating the tappets, a jointed member, the free end of one of the joint members being mounted for pivotal movement about the axis of rotation of the valve, a pivoted guide for the free end of the other joint member, an elastic element tending normally to knuckle the said jointed member, the joint of the said member being adapted to assume a position in alinement with the center of the axes of the said pivoted guide and the said valve to render the elastic element inactive, and means responsive to the movement of the said operating element to knuckle the jointed member to render the said elastic element active whereby the latter will impart a sudden movement to the valve.

8. A rotatable valve, an operating member therefor, spaced tappets co-operating with the member for shifting the latter to rotate the valve in opposite directions, means for operating the tappets, a jointed member, the free end of one of the joint members being mounted for pivotal movement about the axis of rotation of the valve, a pivoted guide for the free end of the other joint member, an elastic element tending normally to knuckle the said jointed member, the joint of the said member being adapted to assume a position in alinement with the center of the axes of the said pivoted guide and the said valve to render the elastic element inactive, and a loose connection between the said operating member and the adjacent portion of the jointed member and operable at a predetermined point in the movement of the said operating member to move the pivot of the jointed member out of alinement with the center of the said axes to render the said elastic member active to impart a quick rotation to the valve.

9. A rotatable valve, an operating member therefor, spaced tappets co-operating with the member for shifting the latter to rotate the valve in opposite directions, means for operating the tappets, a jointed member, the free end of one of the joint members being mounted for pivotal movement about the axis of rotation of the valve, a pivoted guide for the free end of the other joint member, an elastic element tending normally to knuckle the said jointed member, the joint of the said member being adapted to assume a position in alinement with the center of the axes of the said pivoted guide and the said valve to render the elastic element inactive, and a lateral projection on the said operating member, there being an aperture through the adjacent portion of the said jointed member to receive the said projection, the said projection co-operating with the wall of the aperture to move the pivot of the jointed member out of alinement with the center of the axes of the said guide and the said valve to render the elastic element active, the said aperture being of a diameter considerably greater than the diameter of the projection to permit an independent initial movement of the parts.

In testimony whereof we have signed our names to this specification, on this 14th day of April, A. D. 1923.

OLOF G. NILSON.
RUDOLPH W. GLASNER.