

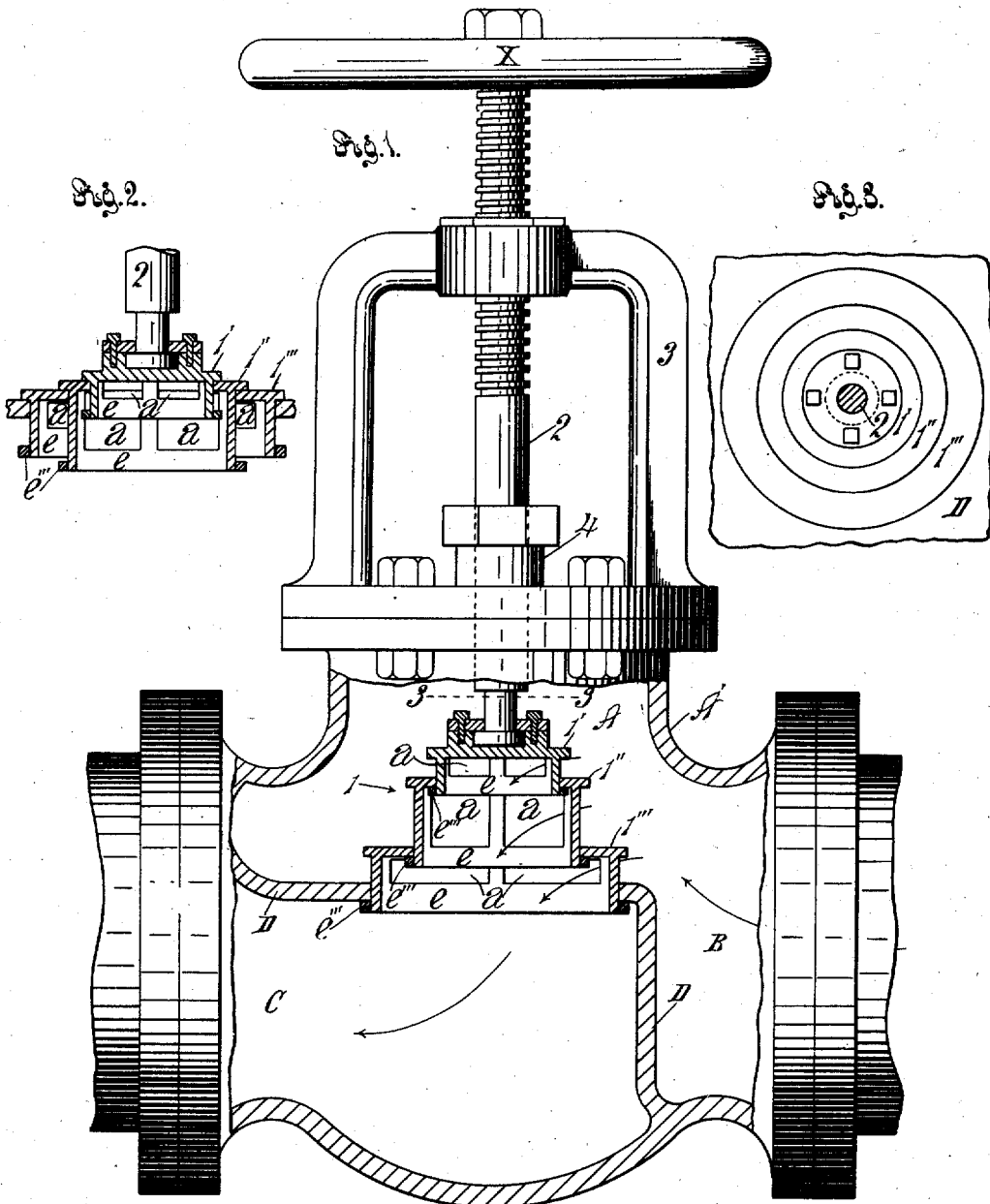
No. 628,671.

Patented July 11, 1899.

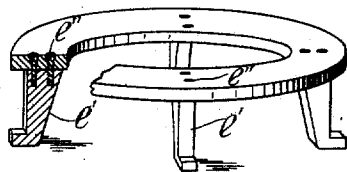
G. O. NEWMAN.
HIGH PRESSURE VALVE.

(Application filed Dec. 19, 1898.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

GUSTAVUS OLIVIO NEWMAN, OF RIVERSIDE, CALIFORNIA.

HIGH-PRESSURE VALVE.

SPECIFICATION forming part of Letters Patent No. 628,671, dated July 11, 1899.

Application filed December 19, 1898. Serial No. 699,749. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVUS OLIVIO NEWMAN, a citizen of the United States, residing at Riverside, in the county of Riverside and State of California, have invented a new and useful High-Pressure Valve, of which the following is a specification.

My invention relates to that class of valves for use where hydraulic pressure is used under great head and is designed to produce a valve which, while resisting and stopping the flow of water under heads from very small fall up to three thousand or more feet fall, will yet at the time of opening be operated against only a portion of the total head, wherefore the valve is easier to open than are the old forms.

The object of my invention is to produce a valve for high pressures which can be easily opened against such high pressures and which will have no sliding contact-points to produce friction and increase the amount of power required to operate the valve.

My invention comprises a valve-body having a partition therein with a horizontal portion and a passage through the horizontal portion, a plurality of superposed plates comprising a top plate carried by a valve-stem, one or more annular plates arranged below the top plate, and means for connecting the plates to allow them to separate a given distance only, thus to successively lift when the valve-stem is raised. Preferably in carrying out my invention each of the plates is provided with downwardly and outwardly projecting extensions, which may be lugs or a flange, which serves the same purpose, the flange or lugs of the upper plate extending underneath the plate immediately below to catch under the same and the flange or lugs of the lower plate extending underneath the partition and catching under the same, so that when the valve-stem is drawn upward the flange or lugs will draw the plates successively upward and apart until the extension flange or lugs of the lowest plate engage with the under side of the partition, thus stopping the valve-stem from any further upward movement. Openings are provided, so that when any plate is lifted from the plate next below a passage is left between the two. When the plates are together, the openings are closed. Preferably the area of the openings between the upper

plate and the plate next below is equal to the efficient area of the opening through said plate next below, and the area of the openings between any two plates is equal to the area of the opening of the lower plate to be supplied through such openings, and the combined area of the openings between all the plates and the partition is equal to the area of the efficient opening in the partition.

The accompanying drawings illustrate my invention.

Figure 1 is a view partly in vertical axial section, showing my valve fully opened. The course of the water is indicated by arrows. Fig. 2 is a fragmental sectional detail of the working parts of the valve fully closed. Fig. 3 is a fragmental plan of the valve, the valve-stem being cut off at 3 3, Fig. 1. Fig. 4 is a view showing the ring with legs or lugs depending from it instead of a flange.

A is a valve-chamber in the valve case or body A', which is provided with the inlet-passage B and outlet-passage C.

D is the partition.

1 is the valve, which consists of separate plates or members 1' 1'', &c.

2 is the valve-stem, which is screw-threaded into the yoke 3 and passes through the stuffing-box 4 in the top of the valve-body A' and is swiveled into the top of the top or central plate 1' of the valve.

a a indicate the openings provided between the several plates for the passage of the water through the valve.

e indicates the catch-flanges of the several plates, and e' indicates the catch lugs or legs.

e'' indicates screws by which the legs are detachably fastened to their plates, so that the plates can be put together to form the valve instead of that shown in Fig. 1.

e''' indicates a ring screwed onto the lower end of each flange to form a detachable catch thereon to allow the valve to be put together and taken apart.

The operation is as follows: The valve being closed, as in Fig. 2, we will assume for illustration that there is a pressure of one thousand feet of water upon the valve and we have an area of twenty-four square inches, through which the water must pass with approximately a one-thousand-feet head. The weight on the valve would amount to over

fourteen thousand pounds and it would require a lifting force of considerable complication to control this surface and weight in the ordinary valves; but by my valve arrangement this pressure is not all operated against at once. As the valve-stem 2 is rotated by means of the wheel X it operates to lift the first plate 1', which for purposes of illustration we will say is one-fourth of the area of the entire valve, which would approximately be withstanding a pressure of over three thousand pounds. As soon as the first plate is raised above its seat on plate 1" the water begins to pass through the openings, and when the catch *c* of plate 1' engages the plate 1" the pressure on the valve is relieved to the extent of over three thousand pounds. A further upward movement of the valve-stem causes the catch of plate 1' to lift plate 1" from its seat upon ring 1"', and so on until the valve is opened as wide as is desired. It is readily seen that the lifting strain is distributed by this means, and there is no friction, which is increased by the weight of the water being against one side, and there can be no water-hammer. The flow must be steady and uniform from the start of the lifting of the valve-plates. It is obvious that these valve-plates may be provided with other means of lifting one another or of telescoping them together; but it is my desire to broadly claim and protect the valve constructed of the separate plates and adapted to be operated successively one after the other to admit of the opening independently of portions of the passage-way for the water.

In high-pressure valves the seats between the plates will ordinarily be ground together; but, if desired, gaskets may be arranged between the rings.

When the first plate has been raised against the pressure of water, the water will flow through the upper openings and relieve the pressure upon the next plate or ring because of the movement of the water, and therefore in practice the opening covered by the second and third plates may be of greater area than the openings between the first and second plates, and so on as the pressure per square inch is diminished by the movement of the water.

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

1. A valve comprising a valve-body having a partition therein with a passage through the partition; a plurality of superposed plates comprising a top plate carried by a valve-stem; one or more annular plates arranged below the top plate, and means connecting each plate with the plate below it to lift said plates, substantially as and for the purpose herein set forth.

2. The combination of a valve-body having therein a partition with a horizontal portion and a passage through the horizontal portion; a plurality of superposed plates comprising a top plate carried by the valve-stem; one or more annular plates arranged below the top plate; and means for connecting the plates to allow them to separate only a given distance and thus to successively lift when the valve-stem is raised.

3. The combination of a valve-body having a partition with a horizontal portion and a passage through the horizontal portion; a plurality of superposed plates comprising a top plate carried by the valve-stem, and one or more annular plates arranged below the top plate, each of the plates being provided with downwardly outwardly extending catches; the catch of any upper plate extending underneath the plate immediately below, and the catch of the lowest plate extending underneath the partition, so that when the valve-stem is drawn upward, the catches will draw the plates successively upward until the catch of the lowest plate engages with the under side of the partition.

4. A valve comprising a valve-body having therein a partition with a horizontal portion, and a passage through the horizontal portion; a plurality of superposed plates comprising a top plate carried by the valve-stem, one or more annular plates arranged below the top plate, each of the plates being provided with downward outwardly extending legs; and screws screwed through the plate into the legs to detachably attach the legs to the plates; each of the legs being provided with a catch, the catch to the legs of any plate extending underneath the plate immediately below; and the catch of the lowest plate extending underneath the partition.

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Witnesses:

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