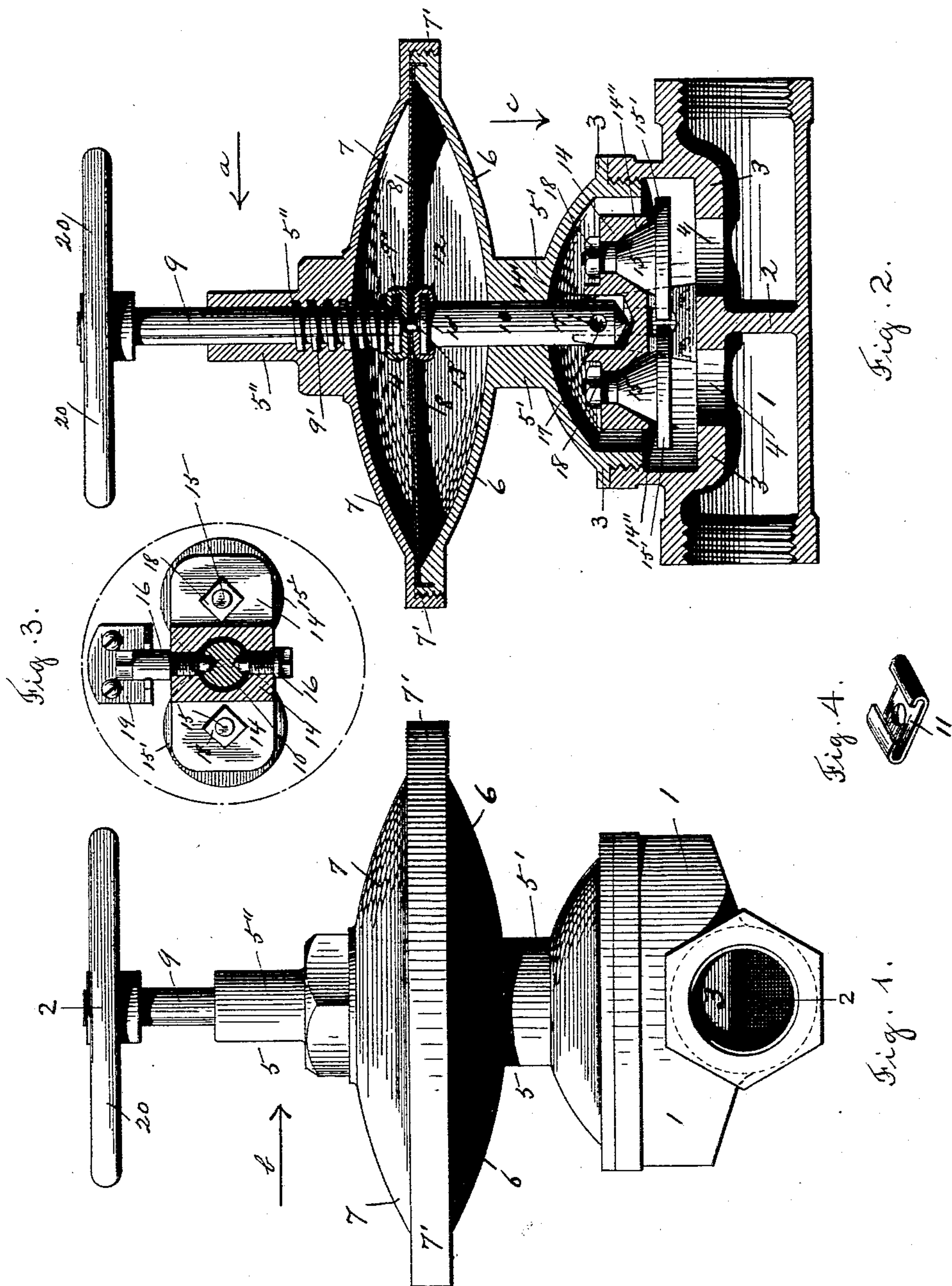


(No Model.)

J. JEANNOTTE.
VALVE.

No. 504,838.

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VALVE.

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To all whom it may concern:

Be it known that I, JOSEPH JEANNOTTE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to valves, and more particularly to steam valves, and the object of my invention is to improve upon the construction of valves, as now ordinarily made, and to provide a valve which will require no packing, and in which there will be no leakage of steam or water no matter what the pressure.

My invention consists in certain novel features of construction and operation of a valve, as will be hereinafter fully described, and the nature thereof indicated by the claims.

Referring to the drawings: Figure 1 is an elevation of my improved valve, looking in the direction of arrow *a*, Fig. 2. Fig. 2 is a central vertical section on line 2, 2, Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 3 is a cross section on line 3, 3, Fig. 2, looking in the direction of arrow *c*, same figure, with the valve shell removed. Fig. 4 is a detail of the stem holding strap, on the diaphragm.

In the drawings I have shown a double gate valve, but my invention may be used in connection with a single gate valve, if preferred.

In the accompanying drawings, 1 is the body or shell of the valve, having threaded inlet and outlet holes, and provided with a vertical division 2, and a central division 3, having the two holes 4 therein through which the steam or water passes, and which form the seats for the valves. In the top part of the shell 1 is a threaded opening into which the lower threaded end of the neck 5 extends. The neck is made in this instance, in two parts, the lower part 5', and the upper part 5'', preferably of substantially the shape shown in the drawings, having the cup portions 6 and 7, which in this instance are united together by means of a downwardly extending

flange 7' on the upper cup portion 7, which is provided with an internal screw thread, adapted to screw on to the threaded edge of the lower cup portion 6, as shown in Fig. 2.

Within the cup portions 6 and 7 extends a movable diaphragm 8, preferably made of two thicknesses of copper plate, with the edges 8' of the upper plate bent downwardly, and extending into a groove in the cup portion 6, and tightly secured therein.

The valve stem is made in two parts, the upper part 9, and the lower part 10. Upon the top of the upper part 9 is secured the hand wheel 20, in any ordinary way, and upon the lower end of the upper part 9 of the stem, is a screw thread 9', adapted to engage and turn in a screw threaded hole in the upper part of the neck, and the lower end of the upper part 9 of the valve stem is provided with a flanged head 9'' thereon, which is adapted to extend into the strap 11, secured upon the upper side of the diaphragm 8. The strap 11 connects the lower end of the stem portion 9 to the diaphragm 8, but allows the stem to be freely turned independently of said strap. A corresponding strap 12 is secured upon the lower side of the diaphragm 8, and said straps 11 and 12 are preferably secured to the opposite sides of the diaphragm by a pin or rivet 13, see Fig. 2. The upper end of the lower portion 10 of the stem is provided with a flanged head 10', adapted to engage the strap 12, and to be held therein, and the lower end of said stem portion 10 is adapted to extend loosely into a hole 14' in the central portion of the block 14, in which are supported the two valves 15. The block 14 is attached to the lower end of the stem portion 10, so as to be supported and have a slight tilting motion thereon, and be moved up or down therewith, to open and close the valves, by means of two screws or centers 16, which are screwed into threaded holes in opposite sides of the block 14, with their inner ends extending into tapering holes 17 in the lower end of the stem portion 10, as shown in Fig. 3. The block 14 is provided with two conical shaped holes or openings 14'' in the under side thereof, one on each side of the stem portion of the valve, and in said holes are loosely supported the valves 15, which are made conical shaped with the enlarged flanged ends 15' to extend over

and cover the openings 4 in the division 3 of the body 1, and the screw threads on their upper ends, on which are screwed nuts 18 to hold the valves in the block 14, as shown in Fig. 2. A slotted stand 19 is secured on the upper side of the horizontal division 3 of the body of the valve, on one side of the block 14, and one of the center screws 16 is made long enough to extend into the vertical slot in said stand, as shown in Fig. 3, to hold the block 14 in its proper position, so that the valves will extend over the holes 4, and not interfere with the raising and lowering of the block as the valve stem is turned out or in.

The operation of my improved non-packing valve will be readily understood by those skilled in the art from the above description in connection with the drawings. The several parts of the valve are put together in the manner shown in Fig. 2, of the drawings, the block 14, supporting the valves 15, being attached to the lower end of the stem before the body of the valve is screwed on to the lower end of the neck of the valve. The valve is shown open in the drawings. When it is desired to close the valve the hand wheel 20 is turned, causing the stem portion 9 to move downwardly and the movable diaphragm 8 to be forced downwardly, carrying the lower portion 10 of the stem with it, and also the block 14 carrying the valves 15, until the lower ends of the valves shut down over the holes 4 in the horizontal division 3. In case of any inequality or any unevenness in the division 3, the valves will find their seats to tightly fit over the holes 4, by reason of the manner of suspending the valves 15 in the block 14; said valves being loosely suspended so as to have a slight motion in said block, as shown in Fig. 2. After the valve is closed, the pressure of the steam entering the shell, and seeking an escape through one of the holes 4, will tend to raise slightly the valve closing said hole, and in case of sufficient pressure to slightly raise said valve, the other valve will be more tightly closed, by reason of the pivotal support of the block 14, in which the valves 15 are supported, thus preventing any passage of the steam or water through the body 1. In case of any escape of steam or water through the valve openings, the same will be confined in the lower part of the valve neck, and will be prevented from passing out of the upper end thereof, by reason of the diaphragm 8, the edges of which are tightly secured in the cup portion 6 of the neck, as shown in Fig. 2. In case of a single gate valve, or a valve having one opening in the body or shell thereof, for the passage of the steam or water, the block 14 would only be provided with one valve 15, instead of two, as shown in the drawings. The construction and operation of the rest of

the valve would not vary materially from the construction and operation of the valve provided with a double gate, as shown in Fig. 2 of the drawings.

It will be understood, that the details of construction of some of the parts of the valve, and the shape of the neck portion, may be varied from what is shown and described, if desired, and my improvements may be combined with a single gate valve, instead of a double gate valve as shown, if desired.

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

1. In a valve, the combination with the body or shell, provided with a vertical division, and a horizontal division therein, and holes in the horizontal division forming the valve seats, and the neck of the valve, made in two parts, the lower end of the neck adapted to screw into the opening in the upper part of the body or shell, and the two parts of the neck provided with cup portions adjacent to each other, said cup portions secured together by a screw thread, and a movable diaphragm interposed between said cup portions, and secured at its outer edge to one of said cup portions, of the valve stem made in two parts, the upper part provided with a hand wheel at its upper end, and a screw thread at its lower end, with a flanged head thereon, attached to the upper side of the diaphragm, to have a free revolving motion thereon, and the lower portion of the stem provided with a flanged head at its upper end attached to the lower side of the movable diaphragm, and a block pivotally supported on the lower end thereof, and provided with conical shaped holes therein, in which are loosely supported the valves, and said valves, substantially as shown and described.

2. In a valve, the combination with the body or shell, provided with a valve seat with two openings therein, and the neck of the valve made in two parts, and provided with adjacent cup portions, and a movable diaphragm, made of one or more plates, interposed between said cup portions, of the valve stem made in two parts, the upper part of the stem provided with a hand wheel on its upper end, and a screw thread on its lower end, and attached to the upper side of the movable diaphragm, and the lower part of the stem attached to the lower side of the movable diaphragm, and a block supporting the valves, pivotally connected with the lower end of the stem of the valve, substantially as shown and described.

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