

No. 671,194.

Patented Apr. 2, 1901.

W. J. McCAUSLAND.
VALVE.

(Application filed Dec. 7, 1900.)

(No Model.)

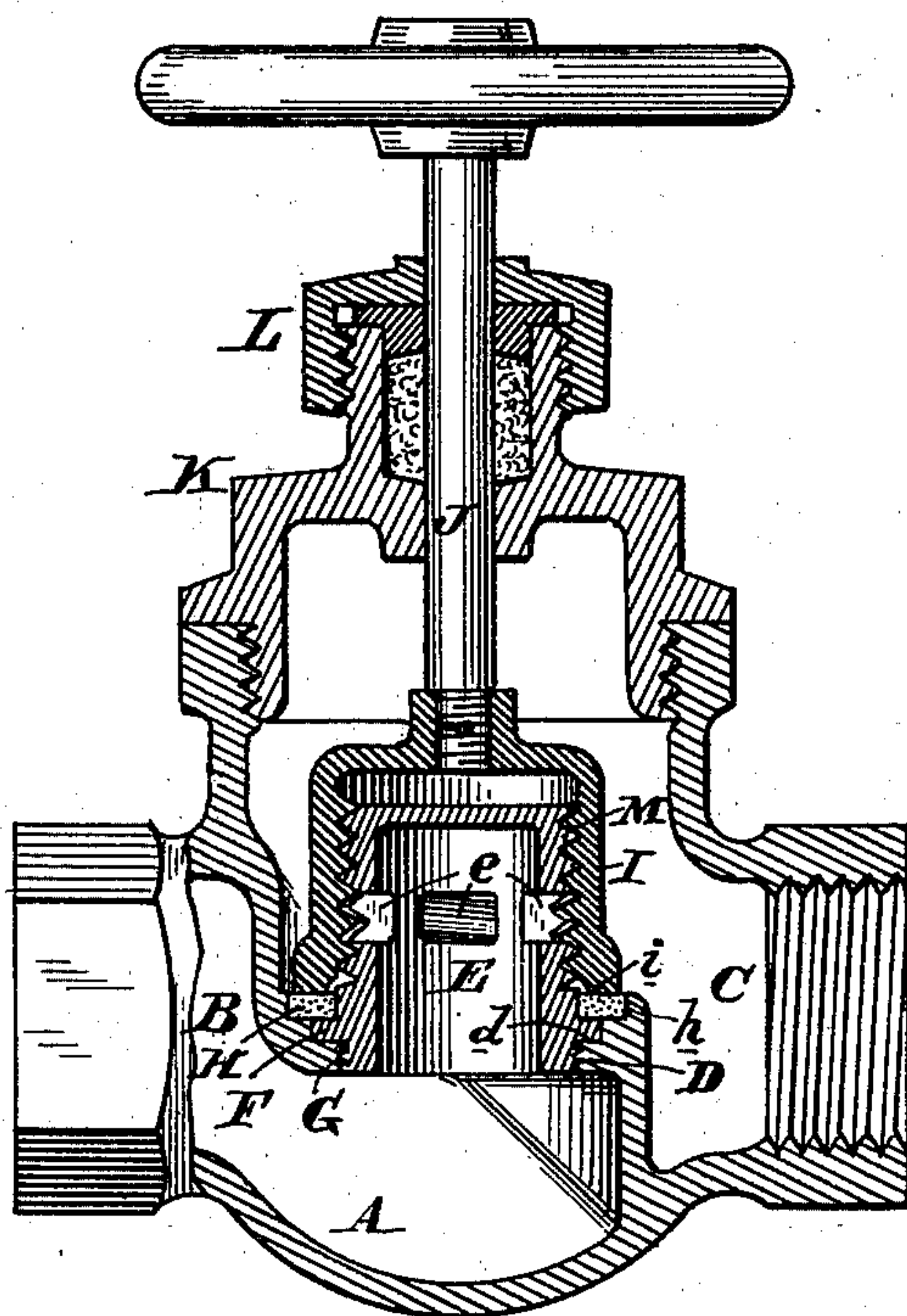


FIG. 1

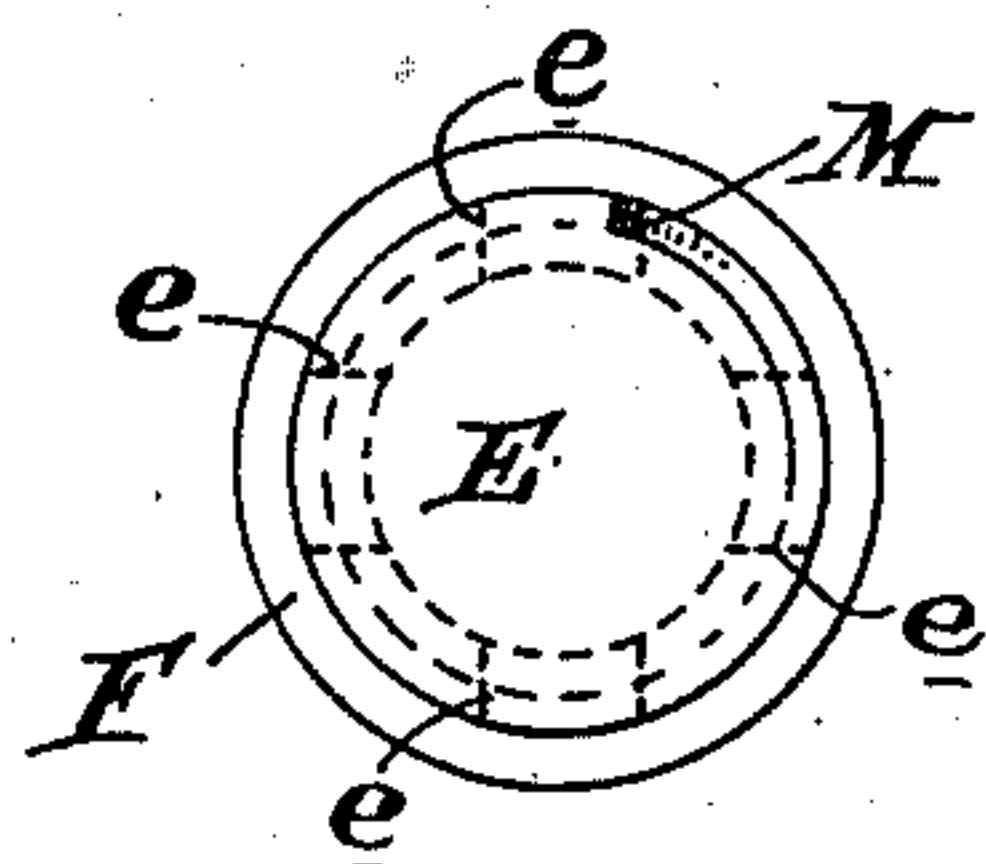


FIG. 2

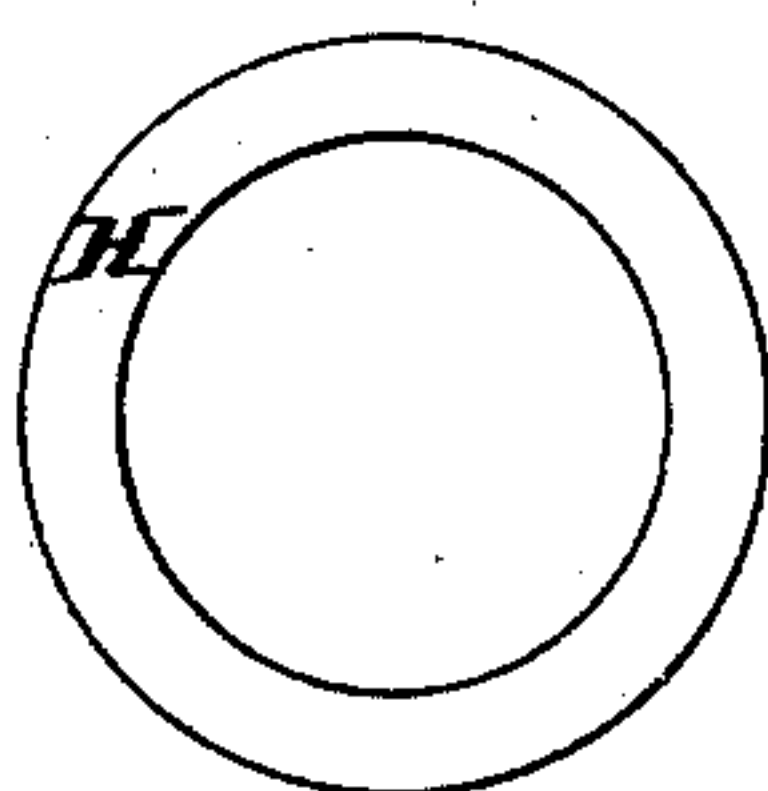


FIG. 3

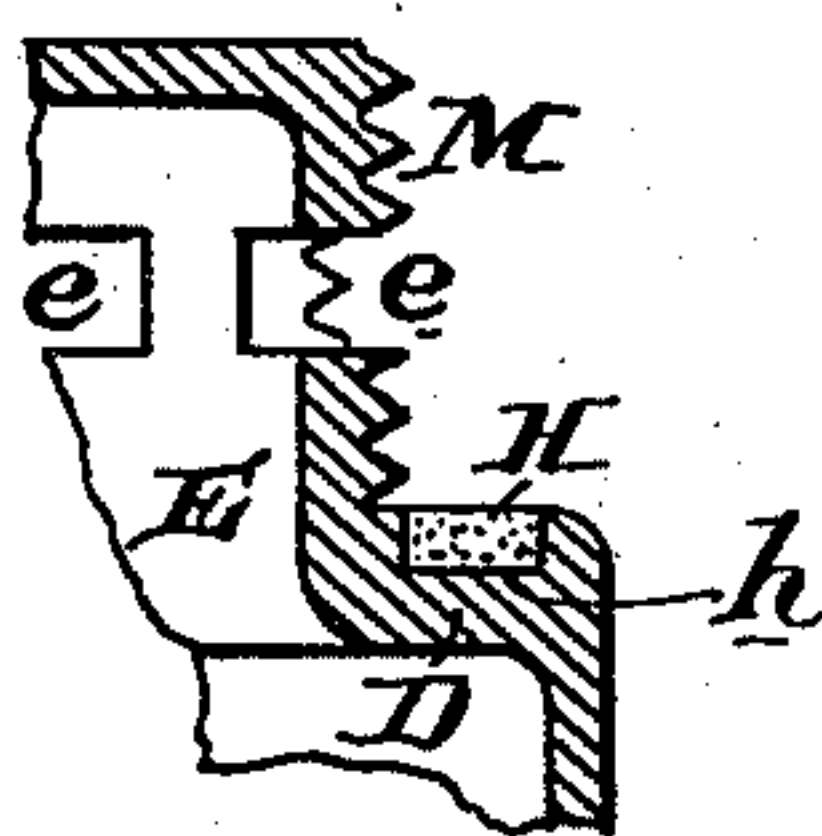


FIG. 4

Attest

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WILLIAM J. McCAUSLAND, OF CAMDEN, NEW JERSEY.

VALVE.

SPECIFICATION forming part of Letters Patent No. 671,194, dated April 2, 1901.

Application filed December 7, 1900. Serial No. 39,038. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. McCAUSLAND, of Camden, Camden county, New Jersey, have invented an Improvement in Valves, of which the following is a specification.

My invention has reference to valves; and it consists of certain improvements, which are fully set forth in the following specification, and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a suitable construction of valve adapted to steam or hydraulic use and which shall employ a perforated dome in the diaphragm, combined with a cup-shaped valve adapted to be screwed upon said dome to control the steam or water passing through the perforations of the dome, and a valve-seat carried by the diaphragm and upon which the valve seats itself when fully shut, the said valve-seat being out of the direct line of passage of the steam or water controlled, and therefore not liable to the usual abrasion or channeling of the seat, which so frequently occurs in ordinary types of valves upon the market.

My object is, further, to so construct the valve that the seat may be easily removed and a new one substituted if from any cause the same becomes injured.

My invention will be better understood by reference to the drawings, in which—

Figure 1 is a sectional elevation of a valve embodying my improvements. Fig. 2 is a plan view of the valve-dome removed. Fig. 3 is a plan view of the valve-seat; and Fig. 4 is a sectional elevation of a portion of the valve, showing a modification thereof wherein the dome and diaphragm are in one piece.

A is the body of the valve.

B is the inlet and C the outlet ports.

D is the diaphragm and is provided with a central aperture, through which the steam or water may pass.

The general shape or design of the valve-body may be modified to suit the desire of the manufacturer.

E is the valve-dome, which consists, essentially, of an inverted-cup-shaped part screwed into the diaphragm, opening at its lower or under part and provided near its top or closed portion with apertures *e* for the passage of the steam or water. This dome may be

screwed tightly into the diaphragm D, as at G, and is provided with an annular flange F, received in an annular recess *d* in the diaphragm. The upper surface of the diaphragm is provided with an additional annular groove *h*, which, with the top of the flange F, forms an annular recess for the annular seat H, which may be formed of metal, fiber, or other suitable substance. The upper and outer surface of the dome E is screw-threaded, as at M, and upon this screws the valve I, which is also of an inverted-cup-shaped form, but screw-threaded upon its inner surface. The lower edge *i* of this valve is made to seat itself upon the seat H when the valve is fully shut. The upper part of the valve is closed and secured rigidly to a valve-stem J, carrying at its top the usual handle. The valve-stem J is guided through a cap K, screwed into the upper opening in the valve-body, and is made steam or water tight by the packing-box L of any of the usual constructions. When the valve I is fully raised, the ports *e* are exposed and the fluid passes directly from the dome to the outlet-port C and is not forcibly directed against the valve-seat H. Also when the valve I is screwed down to close the ports *e* very little leakage will find its way through the threads, and this will assume a more or less circular motion and without force, and such force as may exist will be least when the valve-face *i* reaches the seat H.

I would point out that while I prefer to have a removable seat H it is to be understood that where the said seat is to be of the same metal as the dome the seat might be made integral with the dome by simply increasing the size of the flange F, as will be readily understood. In fact, the part *i* may be made to seat upon the flange F, as now shown, by simply removing the additional annular seat H.

While I prefer the construction shown, I do not limit myself to the details thereof, as they may be modified without departing from the spirit of my invention.

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

1. In a valve, a body having inlet and outlet ports and a diaphragm provided with a valve-seat and an upwardly-extending dome closed at its top having screw-threads upon

its outer surface extending to the diaphragm and apertures or ports in its side walls located at a considerable distance from the valve-seat at the diaphragm so as to leave
5 screw-threads between the ports and seat, in combination with an inverted-cup-shaped valve screwed upon the dome and having a valve-stem extending outside of the valve-body, and packing between said stem and
10 body.

2. In a valve, a body having inlet and outlet ports and a diaphragm provided with an upwardly-extending dome closed at its top having screw-threads upon its outer surface
15 extending to the diaphragm and apertures or ports in its side walls located at a considerable distance from the valve-seat at the diaphragm so as to leave screw-threads between the ports and seat, and an annular
20 grooved valve-seat around the base of the dome and upon the diaphragm, in combination with a removable annular valve-seat independent of the dome and fitting into the annular groove, an inverted-cup-shaped valve
25 screwed upon the dome and having a lower portion adapted to seat upon the annular valve-seat, a valve-stem extending outside of the valve-body, and packing between said stem and body.

30 3. In a valve a body portion having a diaphragm provided with a cylindrical screw-threaded part extending to one side of the diaphragm and closed on its end and having a series of ports in its wall about its cir-

cumference and at a distance from the dia- 35
phragm, in combination with a cylindrical valve portion screwed upon the cylindrical portion which extends from the diaphragm and adapted to open or close the series of
40 ports thereof, and a smooth valve-stem firmly secured to the valve portion and extending through a packed bearing in the body portion.

4. In a valve a body portion having a diaphragm provided with a cylindrical dome 45
portion extending to one side of the diaphragm and closed on one end and having ports in its wall located at a considerable distance from the diaphragm, in combination
50 with a cylindrical valve portion longitudinally adjustable over the cylindrical dome portion and adapted to open or close the ports thereof and also seat itself adjacent to the diaphragm, a removable annular soft
55 valve-seat arranged upon the diaphragm at the bottom of the circular dome portion, and a valve-stem secured to the valve portion and extending through a packed bearing in the
60 body portion for adjusting the valve portion longitudinally relatively to the ports in the dome portion.

In testimony of which invention I have hereunto set my hand.

WM. J. McCAUSLAND.

Witnesses:

ERNEST HOWARD HUNTER,
J. W. KENWORTHY.