

(No Model.)

G. J. GRAEBERT.
VALVE OPERATING MECHANISM.

No. 423,240.

Patented Mar. 11, 1890.

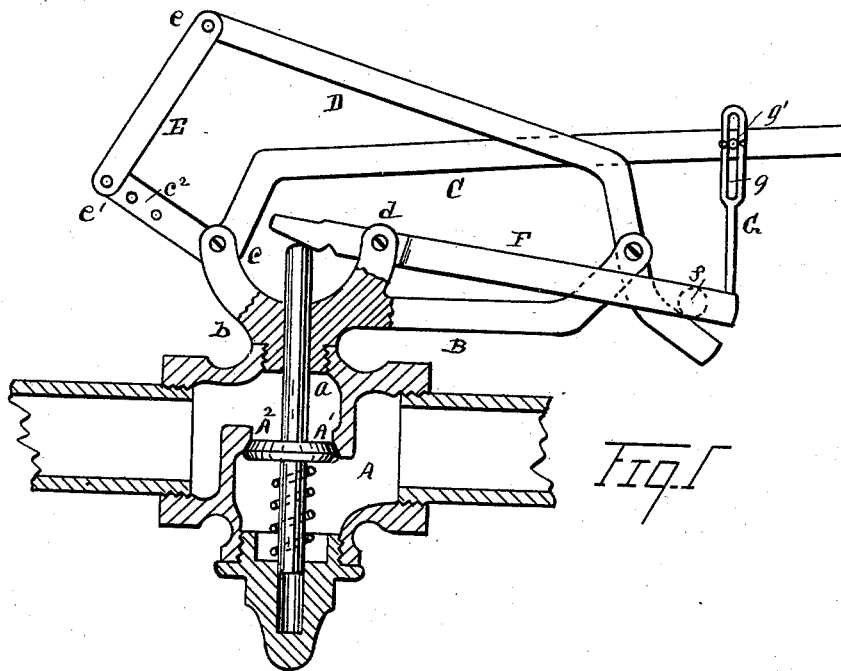


Fig. 1

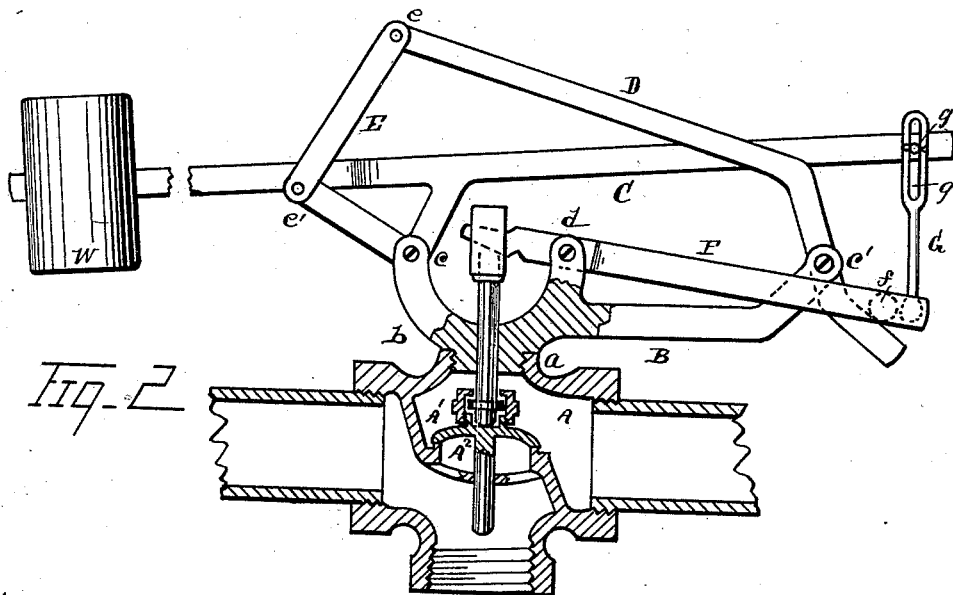


Fig. 2

Witnesses
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UNITED STATES PATENT OFFICE.

GUSTAV J. GRAEBERT, OF DETROIT, MICHIGAN.

VALVE-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 423,240, dated March 11, 1890.

Application filed August 31, 1889. Serial No. 322,618. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV J. GRAEBERT, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Valve-Operating Mechanism; and I 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, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain new and useful improvements in valve-operating mechanism, having reference more particularly to a lever mechanism for operating the valve by hand, a float, or otherwise.

It is well known that owing to the pressure often exerted upon a valve it is hard to open it. My invention is intended to provide means for overcoming this difficulty and render the operation an easy one.

I carry out my invention, as more fully hereinafter specified, and pointed out in the claims, and as more fully illustrated in the accompanying drawings, in which—

Figure 1 is a view in elevation showing the valve and case in section. Fig. 2 is a similar view showing my invention applied to a safety-valve.

A represents a valve-case.

A¹ is the valve, in this instance provided with a valve-stem projecting through the case.

A² is the valve-seat.

I would have it definitely understood that I do not limit myself to any specific form of valve, as the invention is intended and adapted for various valves and for various uses in which they are employed. The valve shown herewith is designed to be illustrative merely of my invention.

B denotes a supporting-yoke having a screw-threaded engagement with the valve-case, as shown at *a*, the yoke being formed with a collar *b* for this purpose, through which the valve-stem is projected. Upon the one end of the yoke a lever C is jointly connected, as shown at *c*. Upon the opposite end of the yoke an additional lever D is jointly connected, as shown at *c'*. The lever D at one

end is connected with the lever C by a link or connecting-bar E, having its extremities jointly connected with the levers C and D, respectively, as shown at *e e'*. This latter connection may be an adjustable one. For this purpose the lever C is shown with a series of perforations *c²* to permit of the varying adjustment of the link E therewith.

Intermediate the jointed engagements of the levers C and D upon the yoke B a presser frame or bar F is jointly connected with the yoke, as shown at *d*, a projecting point of the said frame having a bearing upon the end of the valve-stem. At the rear or opposite extremity of said frame a cross-bar *f* is engaged by the extremity of the lever D, as shown. The lever C may be extended to any required length. It will be observed now that a proper movement of the lever C will cause the extremity of the lever D to exert its power upon the extremity of the frame or bar F, whereby the force will be communicated upon the valve-stem to force it from its seat. A very slight movement of the valve off the seat will be sufficient to relieve it from the pressure which tends to keep it closed.

To throw the valve wide open, I connect the frame or bar F with the lever C in any suitable manner, as by a connecting-bar G, said bar having a jointed engagement with said lever through an elongated slot *g*, as shown at *g'*. When the pressure has been removed by the initial power applied by the lever C, the further operation of said lever will lift the free end of the frame F to open the valve wide.

My invention enables a single-seated valve thus to be opened with ease and without leakage. The yoke B may be engaged in any suitable manner to permit the operation of the leverage mechanism upon the valve. The levers C and D, as so connected and operating upon the bar or frame F in the manner described, constitute in reality a compound leverage system. The bar F bearing on the valve-stem is in reality a lever having its fulcrum at *d*. The lever C is fulcrumed at *c*, while the lever D is fulcrumed at the point *c'*. The yoke thus furnishes the fulcrum-points of all, and the compound leverage all concentrate the force upon the valve, render-

ing its operation easy and efficient. The levers and bar F may be fulcrumed on any suitable support.

When the operating mechanism is employed upon a safety-valve, the lever C may be provided with a weight W, the lever in this case being suitably projected to carry the weight in such position as to hold down the valve as required. In the one figure I have shown the valve seated on one side of the valve-seat, and in the other figure the valve is seated on the opposite side; but this is immaterial in my invention.

What I claim as my invention is—

1. A valve-operating mechanism consisting of a lever C, a bar F, bearing upon the valve, and a lever D adjustably connected with the lever C and engaging said bar, said levers and bar fulcrumed upon a suitable support, substantially as set forth.

2. A valve-operating mechanism consisting of a lever C, a pivoted bar F, bearing upon the valve and provided with a cross-bar *f*, and a lever D, connected with the lever C and the cross-bar *f*, said levers and bar fulcrumed on a suitable support, substantially as set forth.

3. A valve-operating mechanism consisting of a lever C, a bar F, bearing upon the valve, and a lever D, connected with the lever C and engaging said bar, said levers and bar fulcrumed on a suitable support, substantially as set forth.

4. A valve-operating mechanism consisting of a lever C, a bar F, bearing upon the valve, a lever D, connected with the lever C and engaging said bar, and a support upon which said bar and levers are fulcrumed, said lever C and bar F connected substantially as and for the purpose described.

5. A valve-operating mechanism consisting of a lever C, a bar F, bearing upon the valve, a lever D, connected with the lever C and engaging said bar, and a sliding connection between lever C and bar F, said levers and bar suitably fulcrumed upon a support, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

GUSTAV J. GRAEBERT.

Witnesses:

N. S. WRIGHT,
CHAS. F. SALOW.