

No. 791,339.

PATENTED MAY 30, 1905.

E. H. GOLD.

VALVE.

APPLIOATION FILED MAY 15, 1901.

Fig. 1.

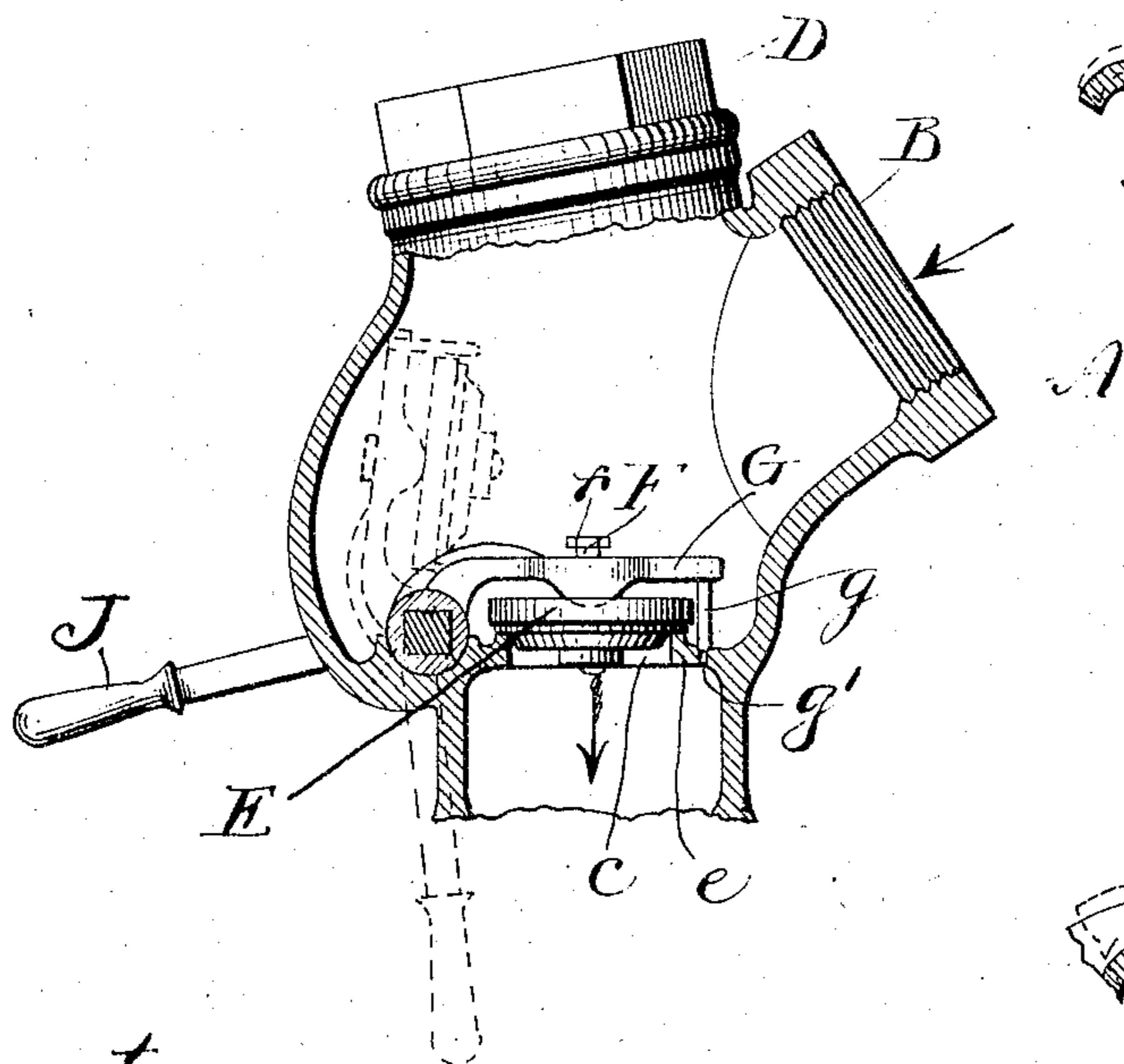


FIG. 5.

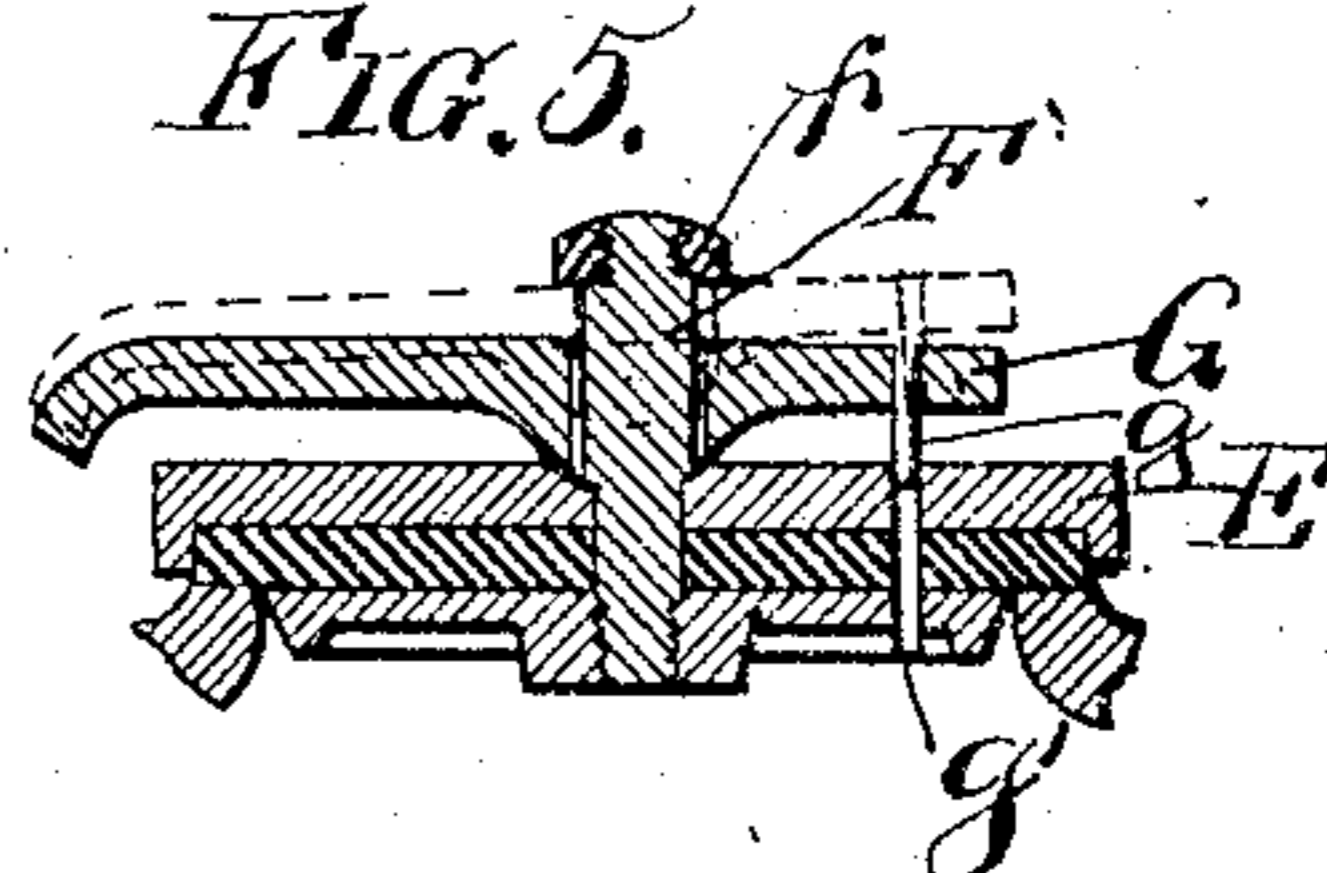


Fig. 4.

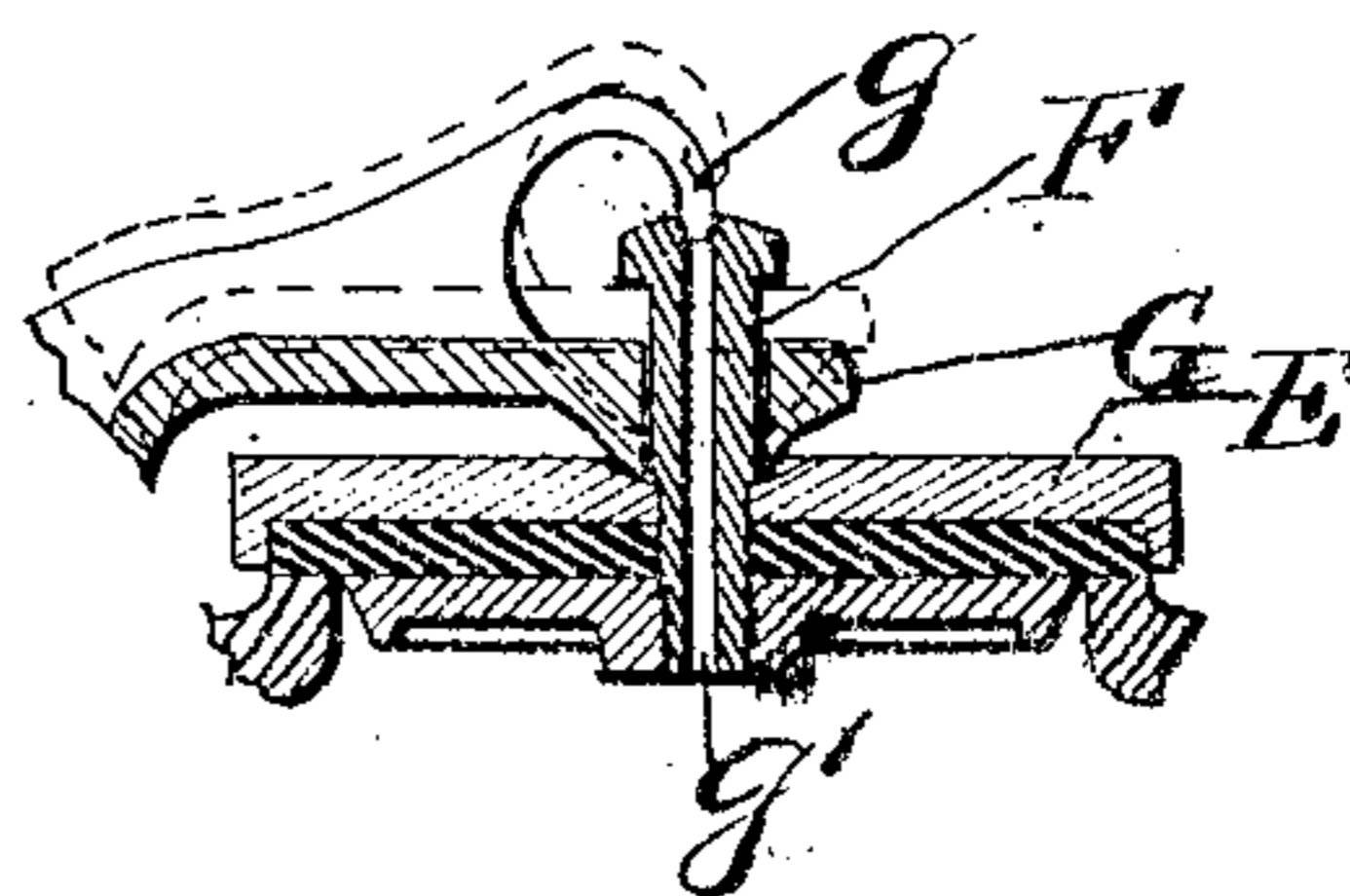


Fig. 2

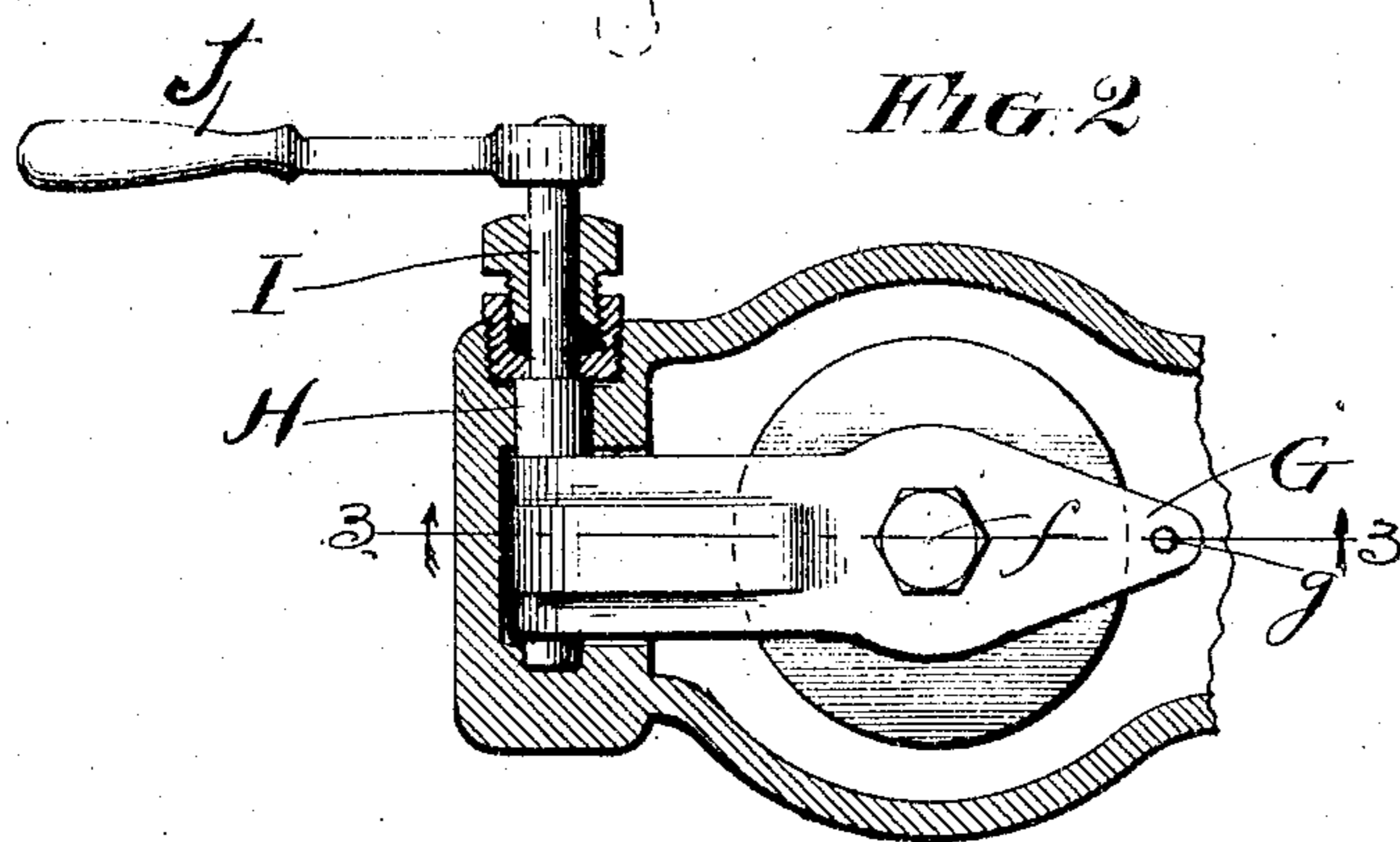
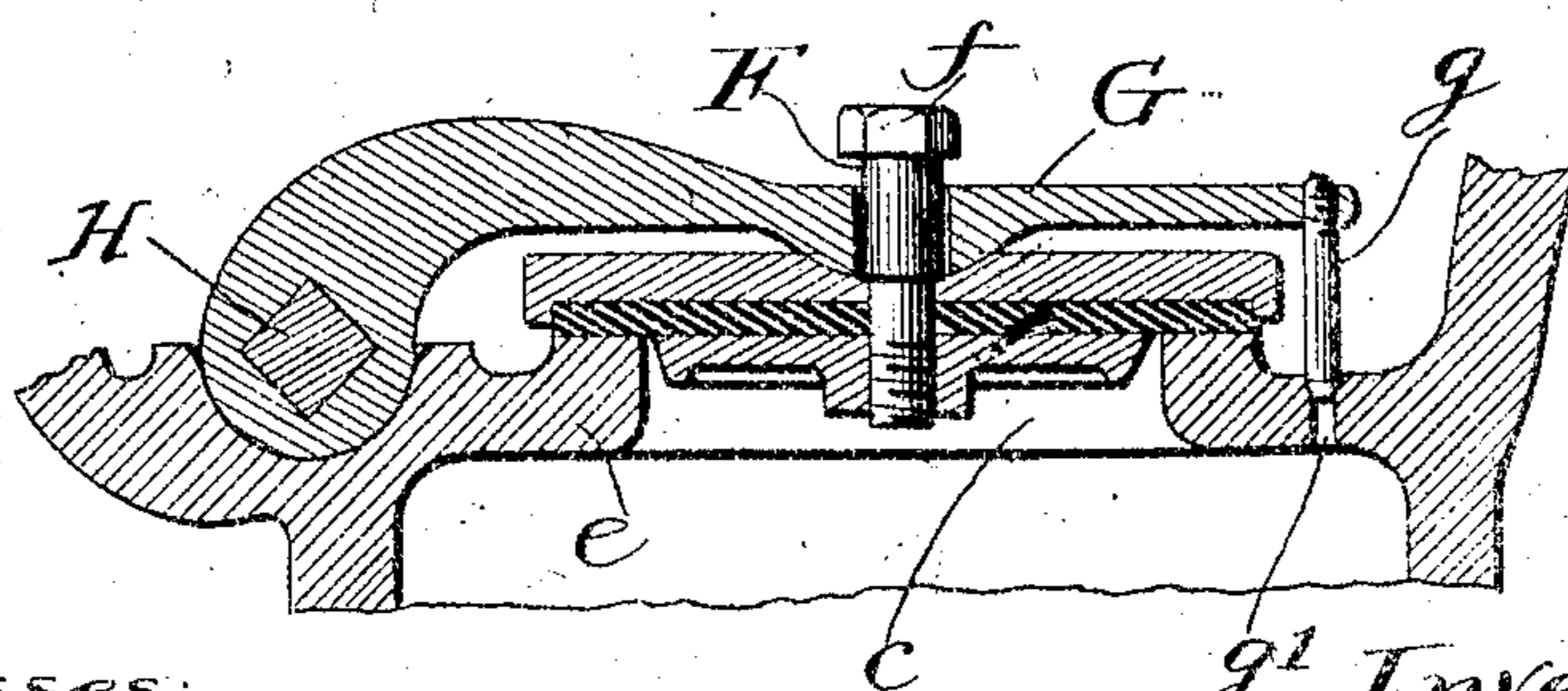


FIG. 3.



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EGBERT H. GOLD, OF CHICAGO, ILLINOIS.

VALVE.

SPECIFICATION forming part of Letters Patent No. 791,339, dated May 30, 1905.

Application filed May 15, 1901. Serial No. 60,370.

To all whom it may concern:

Be it known that I, EGBERT H. GOLD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention is adapted for use as an air-valve, steam-valve, or the like, but is particularly adapted to meet the requirements and exigencies of service which must be met by a train-pipe valve upon railway-trains.

My device relates especially to one-way valves, and has for its objects, first, to provide a simple, strong, and positively-operating valve; second, to provide a valve which when open will be thrown to one side of the valve-casing, thereby allowing a free and unobstructed opening from the inlet-port through the valve-casing and the outlet-port; third, to provide an auxiliary bleeding-valve which may be opened to allow the escape of water of condensation without unseating the main valve, such bleeding-valve being operated by the main-valve handle, and, fourth, to provide an auxiliary or bleeding valve so constructed and operated by the main-valve-operating mechanism that when bleeding the valve no especial pains or care will be necessary beyond making a full enough sweep of the valve-operating lever, as upon the release of the lever the main valve will automatically set itself and the bleeding-valve will automatically remain open. These and such other objects as may hereinafter appear are attained by the devices illustrated in the accompanying drawings, in which—

Figure 1 shows a vertical transverse section through the valve-casing, the valve proper appearing in elevation. Fig. 2 is a plan view of my valve, the casing appearing in section. Fig. 3 is a detail vertical sectional view on the line 3 3 of Fig. 2, and Figs. 4 and 5 are like sectional views of modified forms of my bleeding-valve.

Like letters of reference indicate the same parts in the several figures of the drawings.

Referring by letter to the accompanying drawings, A is a valve-casing having a steam-inlet port B and a steam-outlet port C. The

casing is also provided with a suitable opening, which is closed by the screw-cap D, through which the interior of the casing is accessible for the purpose of assembling and repair.

E is a valve for closing the outlet-port C. The valve E is provided with a valve-stem F, which passes loosely through an arm G and is provided with a terminal nut *f*, the under side of which furnishes a shoulder for engaging the upper surface of the arm G, so that the arm G as it rises will lift the valve-stem F and the valve E attached thereto. The nut *f*, however, is so located upon the stem F as to provide lost motion between the arm G and the under side of the nut *f* for the purpose hereinafter indicated. The arm G is attached to a spindle H, which is journaled in the casing A at one side of the valve E and is provided with an extension I, which passes out of the casing through a stuffing-box. Upon the outer end of the extension I is mounted a handle J.

g is a bleeding-valve, which, as shown in the drawings, may consist merely of a simple stem attached at its upper end to the arm G and having its conical lower end seated in the bleeding-port *g'*.

As shown in the drawings, the inner side of the casing A is provided with an annular lug or shoulder *e*, the upper surface of which constitutes the seat for the valve E.

As shown in Fig. 3, the bleeding-port *g'* is an opening drilled through the shoulder *e* at one side of the valve-seat. In Fig. 4, however, I have shown the bleeding-port as an opening through the stem F and nut *f*, and in Fig. 5 I have shown it as an opening through the valve E.

The operation of my device is as follows: Normally the pressure of steam entering through the port B will hold the main valve and the bleeding-valve tightly to their respective seats. Whenever it is deemed desirable to bleed the valve to allow the escape of water of condensation, it has been customary heretofore to slightly open the main valve. The result of this practice, as is well known to railroad men and others accustomed to handling steam under high pressure, is that the action of live steam escaping through

the slightly-opened valve causes a wear and rapid destruction of the valve, commonly known as "wiredrawing." With my device I am enabled to entirely avoid this unnecessary destruction of the valve, for when the handle J is moved to open the valve the arm G and the bleeding-valve *g* attached thereto are immediately lifted, thereby unseating the bleeding-valve and allowing the bleeding of the main valve and the free escape of water of condensation through the bleeding-port *g*/. As, however, the main valve will not be lifted until the arm G comes in contact with the nut *f*, it is evident that the lost motion between the arm G and the nut *f* allows the free opening of the bleeding-valve without unseating the main valve, as is shown in dotted lines in Figs. 4 and 5.

As a result of numerous service tests I have learned that in operating my improved device for the purpose of bleeding the valve no care is necessary beyond seeing that the valve-handle J is given a sufficiently full swing. This will usually result in unseating the main valve to a greater or less degree. As soon as the handle is released by the operator the steam-pressure will immediately close the main valve with a snap; but the area of the bleeding-port is so small and the consequent pressure upon the bleeding-valve is so slight that such pressure is not sufficient to overcome the friction between the part I and the stuffing-box and the spindle H and its journal. The result is that while it is impossible to leave the main valve accidentally open when there is steam in the train-pipe the bleeding-valve may be thrown wide open and will remain in that condition until manually closed. If, however, it is desired to open the main valve, the arm J is swung over to its extreme open position, unseating the valve E and at the same time swinging the valve back and to one side of the casing, thereby carrying it out of the direct line of the current of steam and providing a free and unobstructed passage from the inlet-port B through the casing and out through the outlet-port C. The advantage of this construction in securing a positive, rapid, and free action is obvious.

A further advantage gained by my construction which enables me to use the handle J for opening and closing the valve is that the handle J serves as an infallible pointer or indicator to show whether the valve is open or closed. In actual practice it has often happened that with the usual form of train-pipe valve, in which the valve is drawn directly upward from its seat by the rotation of a wheel upon its spindle, train inspectors have mistakenly supposed such valves were open when they were, in fact, closed, with the result that water has accumulated in such closed valves, the valves have been frozen, and the heating systems of entire trains have been thrown out of operation. With my valve

such mistakes cannot happen except through gross negligence, as when the valve is open that position is infallibly indicated by the position of the handle, which will then stand at a pronounced angle to the position occupied by it when the valve is closed.

Obviously various modifications other than those indicated in the drawings may be made without departing from the spirit of my invention, and such modifications are contemplated hereby.

I do not here claim the specific form of my valve which is claimed in my Patent No. 709,262, issued upon my copending application, Serial No. 78,801, filed October 16, 1901.

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

1. In a valve, the combination with a casing, of a main valve, a valve-stem rigidly connected therewith, a bleeding-port, a bleeding-valve having a loose connection with said valve-stem so as to be operated by the main-valve-operating mechanism, and yet be free to open and close without operating the main valve, and means providing frictional engagement between the main-valve-operating mechanism and a portion of the structure, whereby said bleeding-valve will be automatically held open against steam-pressure, substantially as described.

2. In a valve, the combination with a casing, of a main valve, a valve-operating mechanism having a lost-motion connection with said main valve, a bleeding-valve arranged to be operated by the main-valve-operating mechanism without operating the main valve, and means providing frictional engagement between the valve-operating mechanism and a portion of the structure whereby the bleeding-valve will be automatically held open against steam-pressure, substantially as described.

3. In a valve, the combination with a casing, of a valve seated therein, a valve-operating mechanism having a lost-motion connection with said valve, a bleeding-valve arranged to be operated by said main-valve-operating mechanism without operating the main valve, and a spindle constituting part of the valve-operating mechanism and extending through a stuffing-box, so that the bleeding-valve will be held open against steam-pressure by the friction between said spindle and the stuffing-box, substantially as described.

4. In a valve, the combination with a casing, of a valve seated therein, an arm journaled at one side of said valve, means for connecting said arm with said valve so as to provide lost motion therebetween, a bleeding-valve attached to said arm and adapted to close a bleeding-port, and means extending through a stuffing-box for operating said arm to first open said bleeding-valve and then open said main valve, substantially as described.

5. In a valve, the combination with a casing, of a main valve seated therein, an arm journaled at one side of said main valve, a valve-stem attached to said main valve and loosely engaging said arm, a bleeding-valve attached to said arm and adapted to close a bleeding-port, and means for operating said arm to successively unseat said bleeding-valve and said main valve, substantially as described.
6. In a valve, the combination with a casing, of a main valve seated therein, an arm journaled at one side of said main valve, means for connecting said arm and said main valve so as to provide lost motion therebetween, a bleeding-port through said casing at one side of said main valve, a bleeding-valve attached to said arm and adapted to close said bleeding-port, and means for operating said arm to successively unseat said bleeding-valve and said main valve, substantially as described.

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