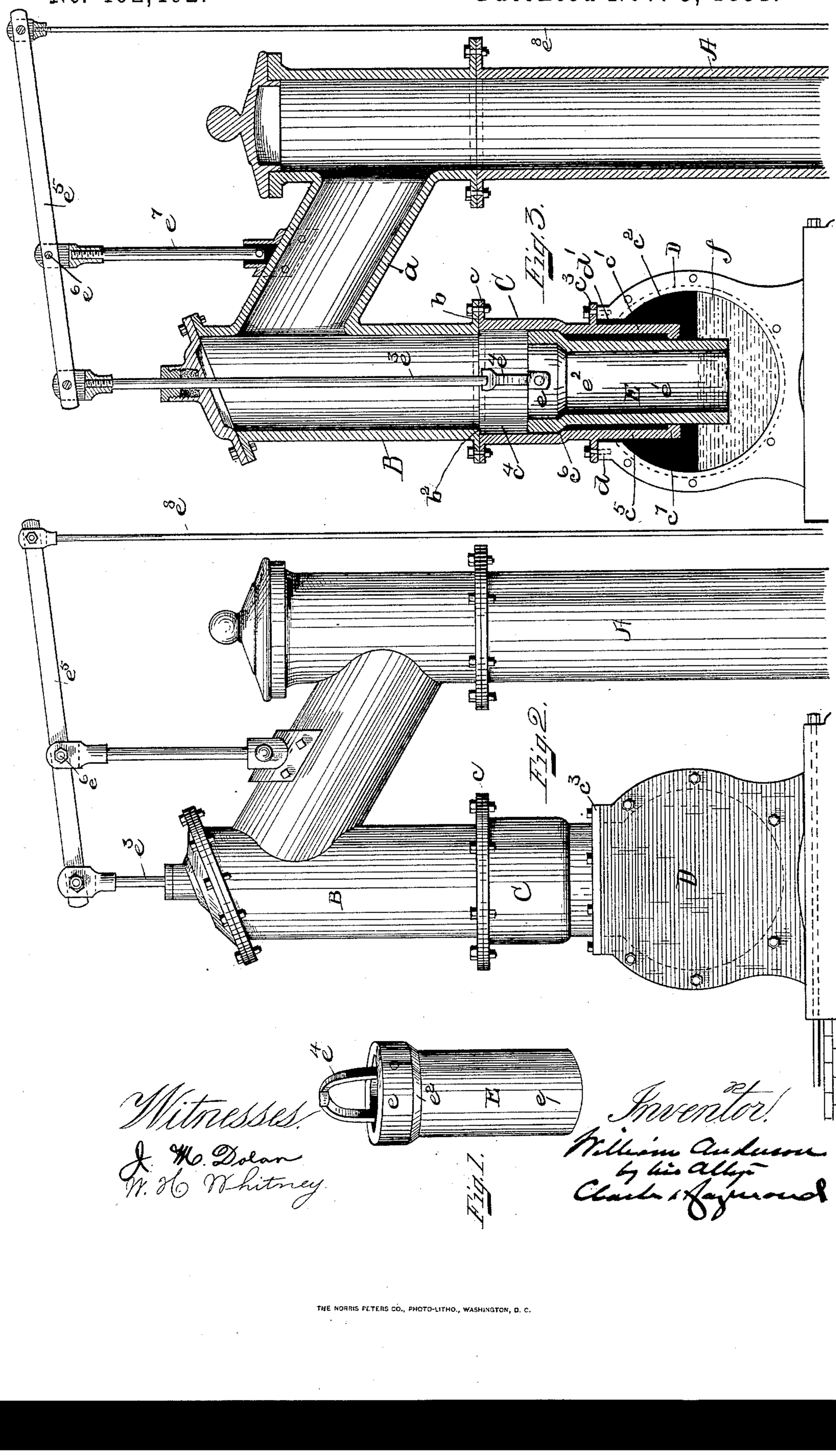
(No Model.)

W. ANDERSON.

DIP PIPE VALVE.

No. 462,462. Patented Nov. 3, 1891.



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DIP-PIPE VALVE.

SPECIFICATION forming part of Letters Patent No. 462,462, dated November 3, 1891.

Application filed March 30, 1891. Serial No. 386,953. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ANDERSON, a citizen of the United States, residing at Marlborough, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Dip-Pipe Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of the specification, in explaining its nature.

In the manufacture of illuminating-gas the retorts are connected with a main or conduit, through which the gas passes to the purifying apparatus by means of a pipe, and this pipe has a valve which is known as a "dip-valve," in that it is dropped or let into water which is contained in the said main or conduit when it is desired to close the connection between the retort and the conduit, and is lifted from said water when it is desired to establish a connection between the retort and the main. This connection is required to permit the gas to escape from the retort while the charge is being worked; but when the retort is open it is essential that a backflow of gas from the main or conduit be prevented.

My invention relates to a dip-valve of simple construction and having valve-seats easily shaped or provided and not liable to be choked by coal-tar or other gas products sufficiently to interfere with its perfect operation.

In the drawings, Figure 1 is a view in perspective of the plunger. Fig. 2 is a view in elevation, and Fig. 3 is a view in vertical section of sufficient of the apparatus to illustrate my invention.

A is a pipe connected at its lower end with the retort and having at its upper end an upwardly-inclined branch pipe *a*, which connects the pipe A with the vertical pipe B. There is attached to the lower end of the vertical pipe B the valve-casing C, the pipe having a flange *b* and the valve-casing a flange *c* and the two flanges being secured by bolts and nuts. A section *c'* of the valve-casing extends into the cavity c^2 of the conduit or main D, and the valve-casing has a flange c^3, which extends upon and is bolted to the cylindrical neck *d* about the opening *d'* to the conduit D. This valve-casing has two bores—namely, the bore c^4, which is the larger and upper, and the bore c^5. Between the bores there is an inclined valve-seat c^6. In the lower end of the valve-casing there is a hole c^7 of somewhat less size than the bore c^5. The bore c^4, the valve-seat c^6, and the hole c^7 are made of a size to receive the dip-valve or plunger E. This valve has the upper section *e* of a diameter to quite snugly fit the bore c^4, the lower section *e'* of a diameter to fit the hole c^7, but smaller than the bore c^5, and the inclined intermediate section or seat e^2 of an inclination or shape to correspond with that of the valve-seat c^6. The valve is hollow or open from one end to the other. Vertical movement is imparted to it by means of the rod e^3, which is connected at its lower end with the valve by a bail, the lever e^5, pivoted at e^6 to a standard e^7, and the rod e^8.

In the conduit or main D there is always the water *f*, very nearly half filling it, and the valve E is of such length that when seated its lower end projects considerably below the lower end of the valve-casing and into the water. When the valve is so located, the communication between the upper portion of the conduit or main, through which the gas ordinarily travels from the retort, is shut off by a water seal, the opening in the valve E then being below the upper surface of the water in the conduit. To establish such a connection between the retort and the conduit or main as will permit of the regular flow of gas therefrom, the rod e^8 is drawn downward and the valve or plunger E lifted until its lower edge is above the level of the water in the conduit and substantially flush with the lower edge of the valve-casing. The lower edge b^2 of the vertical pipe B acts as a stop in preventing the plunger E from being moved upward more than the desired distance.

It will be seen that a valve-casing and valve constructed as herein indicated has three seats—namely, the upper sliding seat, being the section *e* of the valve and the upper portion of the valve-casing; the lower sliding seat, being the section *e'* of the valve and the portion of the valve-casing about the hole c^7, and the fixed seat, being the inclined section e^2 of the plunger and the inclined seat c^6 of the valve-casing. This insures two things. First, it prevents the escape of gas from the

conduit through the pipe B to the retort when the valve is closed, it being practically impossible for gas to pass from the conduit past the three seats into the pipe B; second, it provides for the efficient working of the valve in the presence of coal-tar and other coal-gas products, in that the presence of such substances upon or about the valve-seats will not prevent the proper working of the valve.

While I have shown the valve-casing and valve as having three seats, yet one of the seats may be dispensed with and very fair results be reached. I should prefer in such case to dispense with the valve-casing, seat c^6, and the valve-seat e^2. It will be seen that the sections c^4 c^7 of the valve-casing not only act as valve-seats, but also to center and guide the plunger or guide E in its movements.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A dip-pipe valve comprising a valve-casing C, provided with bores c^4 c^5, the bore c^4 being the upper and larger, the narrow valve-seat c^6 between the two bores, and the narrow bearing c^7 at the lower end of the said casing of less diameter than that of the bore section c^5, the hollow plunger or valve E, having the upper cylindrical valve section e to fit the bore c^4, the valve-seat e^2 to coact with the stationary valve-seat c^6, the lower cylindrical valve-section e' of a diameter to fit the narrow bearing c^7, a chamber below the valve-seat c^6 between it and the bearing c^7, and means for actuating said plunger in said casing, the whole being constructed to provide a continuously-acting slide-valve, as and for the purposes described.

2. The combination of the conduit D, partly filled with water f, having an opening d' at its top and cylindrical neck d, a valve-casing C, having the exterior flange c bolted to the neck D, the extension c' into the conduit-cavity, the said valve-casing having above the conduit the relatively large bore c^4 and the valve-seat c^6 and below the valve-seat and within the conduit-cavity the smaller bore c^5 and at its lower end the bearing c^7 of a diameter less than the bore c^5, the vertically-movable hollow plunger or valve E, having the enlarged cylindrical upper section e to fit the bore c^4, forming a slide-valve therewith, the valve-seat e^2, and the relatively long cylindrical lower section e' of the size of the bearing c^7 and forming a slide-valve therewith and extending from the same and movable into and from the water in the conduit, as and for the purposes described.

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