

No. 640,442.

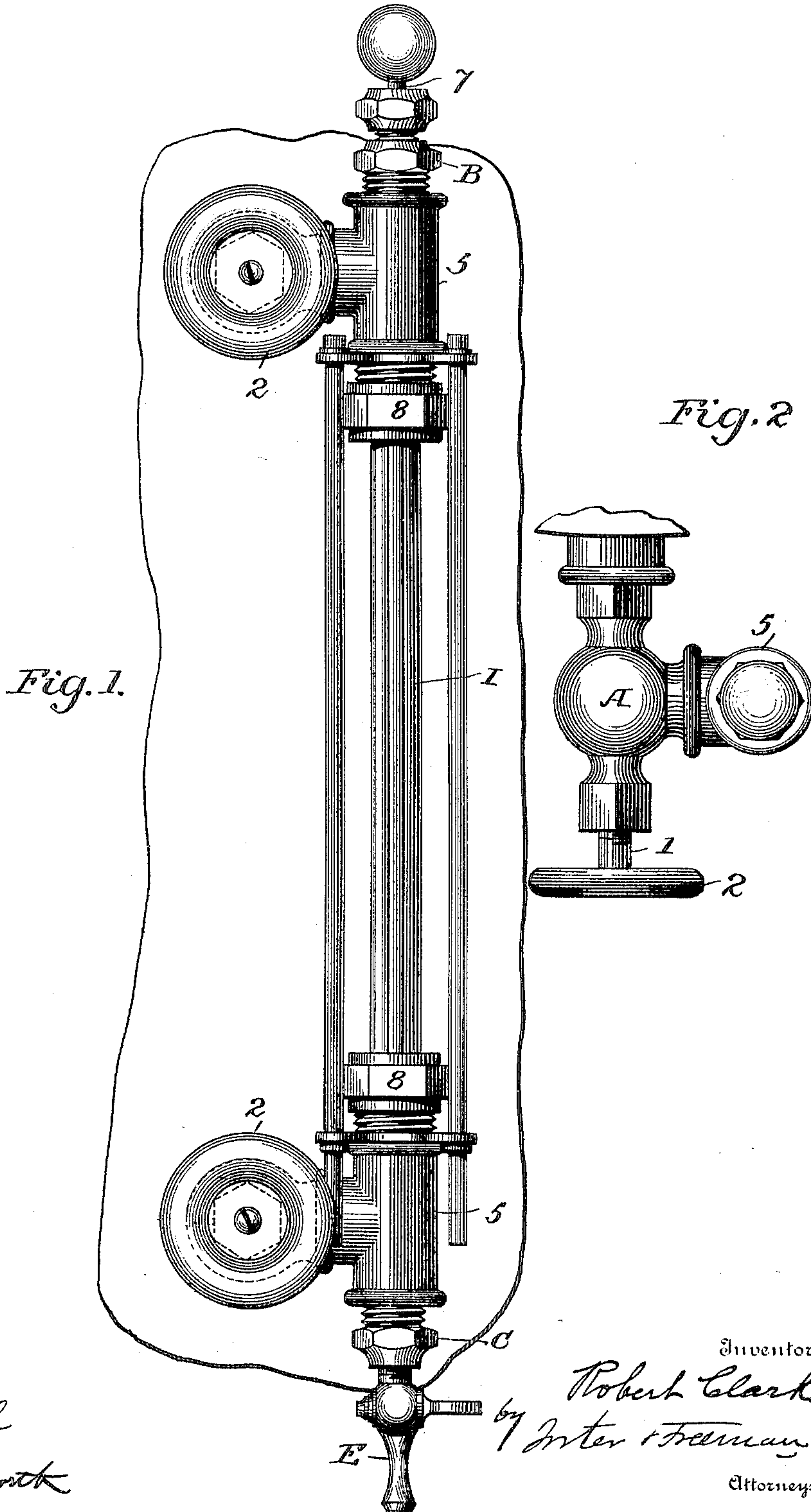
Patented Jan. 2, 1900.

R. CLARKE.  
WATER GAGE.

(Application filed Jan. 13, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 3.

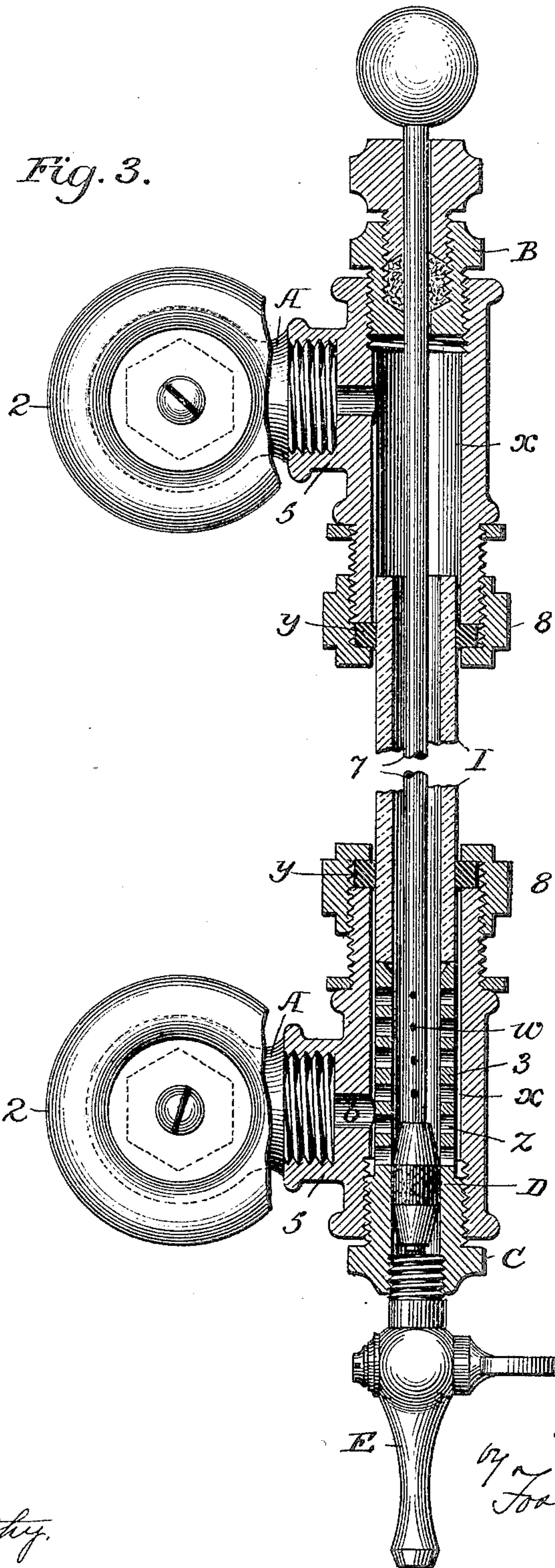
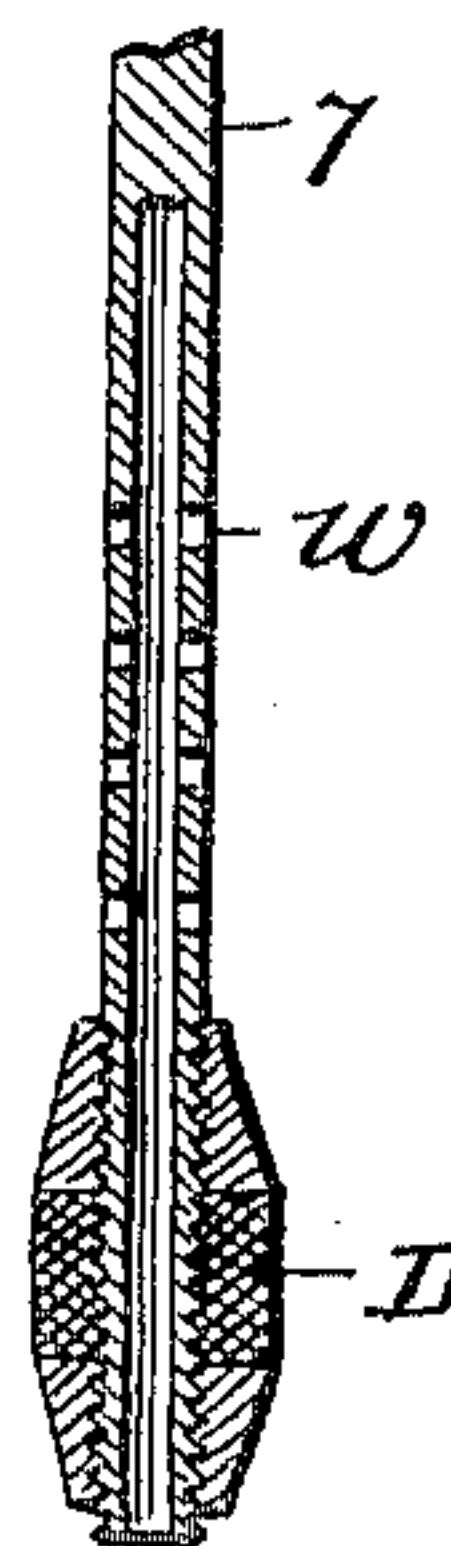


Fig. 4.



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# UNITED STATES PATENT OFFICE.

ROBERT CLARKE, OF NEW YORK, N. Y.

## WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 640,442, dated January 2, 1900.

Application filed January 13, 1899. Serial No. 702,115. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT CLARKE, a citizen of the United States, residing at New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Water-Gages, of which the following is a specification.

My invention relates to that class of water-gages in which a glass tube extends vertically between two casings communicating with a boiler or water or other receptacle, the level of the fluid in such receptacle being indicated by that of the water in the tube; and my invention consists of means whereby to facilitate the insertion and removal of the tube and to maintain it free from deposits, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a front view of my improved water-gage as arranged upon the front of the boiler. Fig. 2 is a plan of Fig. 1. Fig. 3 is a full-sized sectional elevation through the center of the gage. Fig. 4 is a detail view of the hollow piston-rod.

In the gage are two casings A A, preferably duplicates of each other, and a glass water-tube fitting sockets of said casings, and the said sockets are open at both ends—that is, at both top and bottom—so that the tube may be inserted and withdrawn through the socket.

In that class of gages where the casings are not provided with valve-seats and valves the sockets may extend centrally to the casings; but I have shown in the drawings casings constructed, as usual, with seats for valves upon stems 1, extending through packed openings in the casing and provided with handles 2, and in such case each casing has a lateral extension 5, in which is the vertical open-ended socket *a*. Each extension 5 is threaded externally at the inner end to receive a screw-cap 8, holding the packing *y*, through which the glass gage-tube I extends. The opposite end of each socket is threaded internally to receive a threaded plug. The plug C, fitting the outer end of the socket of the lower casing, is tubular and contracted in diameter at the upper end, forming a nozzle 3 less in diameter than the socket and perforated, the upper end of the nozzle affording the bearing for the lower end of the tube I and the inter-

nal diameter of the nozzle corresponding with that of the tube for the purpose described hereinafter. The lower end of the opening in the plug C is suitably closed—as, for instance, by the casing of a petcock E. The upper or outer end of the socket of the upper casing receives the threaded plug B, which may be a solid plug or otherwise, as hereinafter described.

It is well known that the glass tubes of water-gages soon become incrustated or coated by deposits from the water, so that in a little while it becomes practically impossible to determine with any facility the height of the water in any of the tubes. This demands the frequent removal of the tubes, which in the construction above described is greatly facilitated by providing the casing with sockets open at both ends, as described. In some instances the casing, with an ordinary socket open at one end, may be employed in connection with a casing, as described, having a socket open at both ends, the tube being inserted and removed through the latter socket. It is preferable, however, to make use of both casings, each with a socket open at both ends, especially when the casings are provided with valves and with lateral extensions, because in such case the tube may be set to either the right or left of the gage by simply substituting the upper for the lower casing, thereby bringing the extensions to opposite sides. As both casings are similar in construction, the plug C in case of such reversal is removed from the lower casing and a plug B from the upper one and then replaced after the casings have been reversed.

While the construction described permits of the ready removal and replacing of the water-tubes, I obviate to a great extent the necessity of such frequent removals by providing the gage with a cleaning device. This may be of any suitable character adapted by its movement to remove the coating from the inside of the glass tube I and provided with means for operating it. As shown, the cleaner consists of a piston D, connected to a piston-rod 7, extending upward to a packed opening in the plug B, so that the piston may be carried vertically through the tube by a reciprocating piston-rod. The lower end of the piston-rod is hollow, open at the lower end, and



provided with lateral openings  $w$ , so that the water can flow freely to opposite sides of the piston when the latter is reciprocated in the tube. The piston may be carried below the port  $b$  of the lower casing, which is effected by providing the nozzle 3 in line with the tube I and of like diameter, so that the piston can pass from one to the other, the water passing from the channel  $b$  through the openings  $z$  in the nozzle 3 into the tube I. By thus providing the gage with a device for cleansing the interior of the tube I, I am enabled to maintain the gage at all times at its maximum efficiency. It will also be seen that the cleansing of the gage may be effected without the necessity of opening the gage and without any variation in the temperature of the parts which would result if communication with the boiler is cut off and the gage-tube were cleaned by the application of any external appliance.

While I have shown the piston-rod 7 as sliding to the plug B, it might be connected fixedly with the latter and operated after unscrewing the plug from the casing.

Without limiting myself to the precise construction and arrangement of parts shown, I claim as my invention—

1. In a water-gage, the combination with casings, of a gage-tube in sockets in said casings, and a cleaning device fitting in said tube and adapted to be reciprocated therein from end to end while the tube contains fluids, substantially as described.

2. In a water-gage, the combination with two casings, of a gage-tube in sockets in said casings, a suitably-packed plug for one of said casings, a cleaning device fitting in said tube and provided with a rod extending through said plug, and means for permitting the flow of water through the cleaning device between opposite sides of said cleaning device, substantially as described.

3. In a water-gage, a cleaning device consisting of a piston-rod hollow near one end, provided with an opening in the same end and lateral openings in the hollow portion, and a cleaning-piston mounted on the same end of the piston-rod below the lateral openings, substantially as described.

4. In a water-gage, the combination with two casings, of a gage-tube, a cleaning device fitting in said tube and adapted to be reciprocated therein, and a nozzle serving as a guide for said cleaning device beyond said tube, adapted to permit the flow of fluid into said tube and to serve also as a support for said tube, substantially as described.

5. The combination in a water-gage, of a glass gage-tube, casings supporting the latter,

a tube-cleaning device movable from end to end within the tube, and an operating-rod therefor extending through a packed opening in the casing, substantially as set forth.

6. A water-gage provided with a casing having a lateral projection with a tube-receiving socket open at both ends, a plug fitting one end, a rod extending through a hole in the plug into the tube, and a cleaning device carried by said rod within the tube and movable in the latter from end to end, substantially as set forth.

7. The combination in a water-gage, of a valve-casing, a lateral extension on said casing provided with a tube-receiving socket open at both ends, a plug fitted in one end of the socket and a tube in the other end, a rod extending through a hole in the plug into the tube, and a cleaning device carried by the rod within the tube and movable in the latter from end to end, substantially as set forth.

8. The combination with the casings and water-tube of a water-gage, of a perforated nozzle supporting the lower end of the tube and in line therewith, and a cleaning-piston sliding in the tube and nozzle and connected with an operating-rod, substantially as set forth.

9. The combination with the casings and water-tube of a water-gage, of a perforated nozzle supporting the lower end of the tube and in line therewith, and a cleaning-piston sliding in the tube and nozzle and connected with a hollow perforated operating-rod, substantially as set forth.

10. A water-gage consisting of a water-tube and two casings, each with a socket open at both ends and adapted at the inner end to receive the end of the tube and threaded at the outer end to receive a plug, and plugs fitting the outer ends of the sockets, one of said plugs supporting a perforated nozzle 3, and a cleaning-piston arranged within the tube and connected to a piston-rod extending through a packed opening in one of the plugs, substantially as set forth.

11. The combination with the tube of a water-gage, of a casing having a socket receiving the tube at one end, a nozzle provided with lateral openings and a screw-plug supporting the latter fitting the other end of the socket, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBT. CLARKE.

Witnesses:

CHARLES E. FOSTER,  
W. CLARENCE DUVALL.