(No Model.)

J. HANLON.

WATER COOLED VALVE.

No. 434,867. Patented Aug. 19, 1890.

Fig. 1.

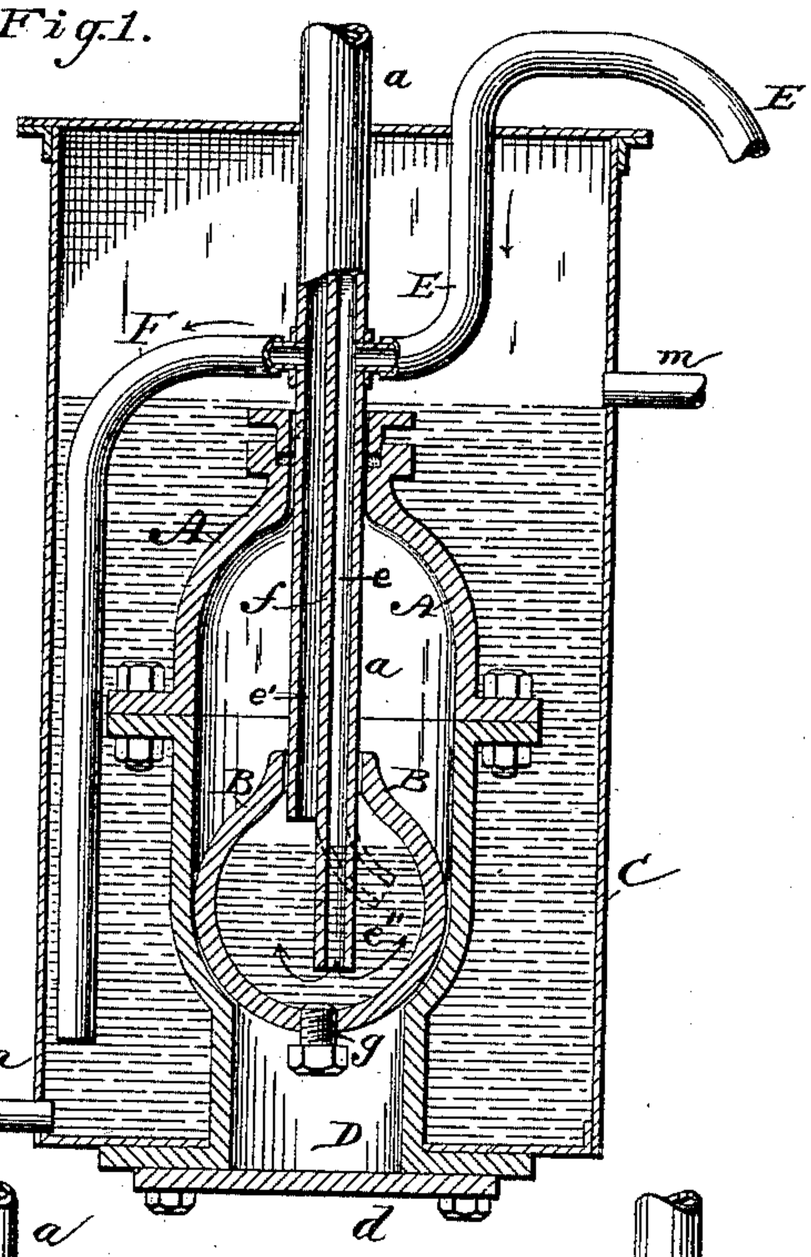

Fig. 2.

Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN HANLON, OF NEW YORK, N. Y.

WATER-COOLED VALVE.

SPECIFICATION forming part of Letters Patent No. 434,867, dated August 19, 1890.

Application filed April 13, 1889. Serial No. 307,158. (No model.)

To all whom it may concern:

Be it known that I, JOHN HANLON, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Water-Cooled Valves; and I do hereby 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

This invention relates to water-cooled valves adapted for use in pipes, flues, and connections of gas-generators, metallurgic furnaces, and other pipes through which a highly-heated fluid is passed.

My present invention is an improvement upon the water-cooled valve covered by Letters Patent granted to Jas. E. Leadley, No. 289,277, dated November 7, 1883.

The object of this invention is to simplify the construction and operation of the valve. The lateral water-circulating pipes and their stuffing-boxes connecting with the valve-casing as heretofore constructed are omitted in my present improvement, and in lieu thereof the valve stem or rod is made hollow and provided with a vertical division-plate, the inlet and outlet water-pipes being connected directly to the stem—one on each side of the partition-plate—as hereinafter more fully described. The lateral circulating-pipes heretofore used were apt to cause trouble by sticking or binding in their bearings or stuffing-boxes. By my present invention this difficulty is overcome. I also provide a removable screw-plug in the bottom of the valve-body for the removal of dirt or other obstructions which may be deposited within the valve-body.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical transverse section of a valve and its connections, showing the means for maintaining a practically uniform temperature in the valve and around its body. Fig. 2 represents an elevation, partly in section, of a valve and its casing without the surrounding reservoir. Fig. 3 represents a vertical section taken at right angles to the view shown in Figs. 1 and 2.

The pipe-section S has secured to and extending above it the valve-casing A. There is cast with the section S the usual seat A′ for a slide-valve and a downwardly-extending chamber D, forming a dust-trap, whereby soot or ashes falling on or above the sloping valve-seat are collected for removal at any convenient time. The lower end of chamber D is closed by removable lid *d*. The dust-chamber may be riveted or otherwise secured to the pipe-section, instead of being cast with it. The valve B is chambered or made hollow, as shown, for the circulation of water through it, and is provided at its lower extremity with an opening, into which is fitted a screw-plug *g*, for the removal of dirt or other foreign matter which may be deposited in the valve. The valve-stem or rod *a* is made hollow and provided with a longitudinal partition *f*, forming two passages *e e′*. The stem is secured in the valve B by a screw-joint or other well-known means. The partition *f* and the wall of the stem *a*, to which is attached the water-inlet pipe E, are extended down into the valve-chamber B, forming an extension *e″*, while the wall *e′* terminates near the top of the valve-chamber. The extension *e″* may be bent laterally, as indicated by dotted lines, so as to discharge water tangentially against the inner wall of the valve, if desired, for better scouring the interior of chamber of the valve. This construction, however, will not usually be required. The hollow stem *a* passes through a stuffing-box in the top of the valve-casing in the usual manner, and in practice is connected exteriorly with any suitable mechanism to operate the valve—such as a rack and pinion, the rack being formed on the hollow stem, or a pivoted lever resting upon or pivoted to a standard on the tank C. The valve-stem is provided on each side with short nipples for connecting the flexible supply and discharge pipes E and F. The water-inlet pipe E in practice is connected outside of tank C with an elevated reservoir or other suitable means for supplying water, and the outlet-pipe F extends, as shown, down to near the bottom of tank C, where water is discharged for circulating around the valve seat and casing. The tank C is made of sheet metal, preferably of rectangular form, and is suitably secured to the pipe-section and valve-casing. It is pro-

vided with an overflow-pipe *m* and with a drain-pipe N, having a valve *n*. It will be seen that water flowing into the interior of the valve through pipe E, one division of the hollow stem *a*, and the extension *e''*, and out through the other division of the hollow stem and pipe F into tank C will thoroughly cool the valve, its seat, and casing, so as to prevent any warping or twisting of parts under the action of highly-heated fluids which may be passed through the connecting pipe or flue. It has given perfect satisfaction in practical operation. Should dust or ashes collect in chamber D, they are readily removed by taking off lid *d*, and any foreign matter which is deposited in the interior chamber of the valve is readily removed by taking out screw-plug *g*.

The water-cooled valve and connecting-pipes may be used with excellent results without the surrounding water-tank, as the invention is not limited to the tank in such connection.

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

In combination with a pipe having a valve-seat, an opening through the pipe below such seat provided with a lid, a hollow water-cooled valve having at the bottom an opening registering with the opening in the pipe and closed by a removable screw-plug, and water supply and discharge pipes connecting with the hollow valve, for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN HANLON.

Witnesses:
F. W. SEMKEN,
FRANKLIN A. STEMMLER.