

(No Model.)

A. E. BOARDMAN.

HYDRAULIC MAIN FOR GAS APPARATUS.

No. 306,053.

Patented Oct. 7, 1884.

FIG-1.

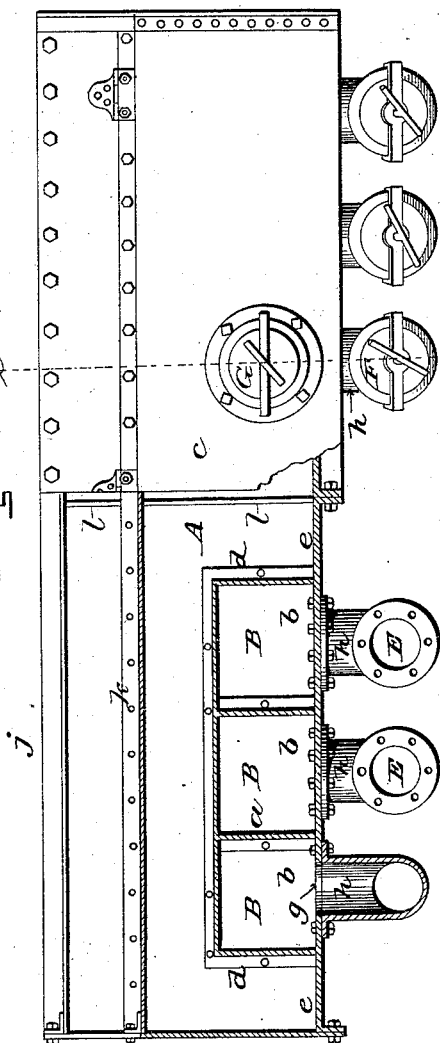


FIG-2.

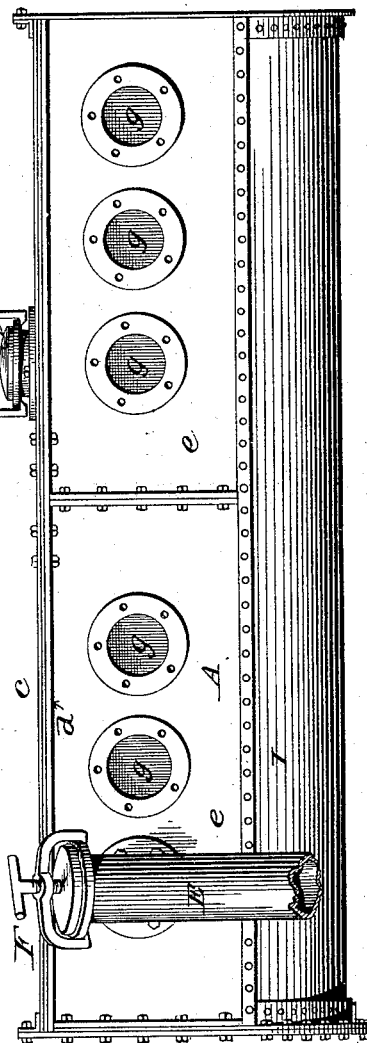
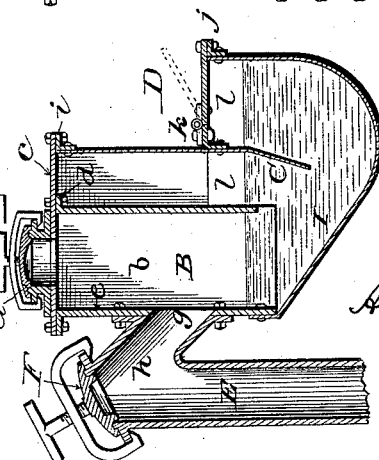


FIG-3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ARTHUR EDWIN BOARDMAN, OF MACON, GEORGIA.

## HYDRAULIC MAIN FOR GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 306,053, dated October 7, 1884.

Application filed April 30, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR E. BOARDMAN, of Macon, in the county of Bibb and State of Georgia, have invented certain Improvements in Hydraulic Mains for Gas Apparatus, of which the following is a specification.

My invention relates to hydraulic mains for gas-making apparatus; and it consists in a novel construction of the same, whereby cleaning of the main is facilitated.

In the accompanying drawings, Figure 1 is a top plan view of the improved main, partly in section; Fig. 2, a face elevation of the same, and Fig. 3 a transverse vertical section of the same on the line *x x* of Fig. 1.

This invention is more particularly designed to meet a necessity which has arisen within the past few years by reason of the rapid formation and deposit of pitch within the hydraulic main in consequence of the high heat employed in modern gas-retort ovens or furnaces. This pitch accumulates in the hydraulic main and often hardens therein, so that considerable difficulty is experienced in its removal.

To enable the workmen to more readily reach the accumulation and remove the same is the primary object of this invention, and particularly it is designed to permit the portion of the main occupied or entered by each dip-pipe to be cleaned without interfering with the other portions, and without necessitating the stoppage of the apparatus.

Referring again to the drawings, A indicates the main; B, the dip-pipes; C, vertical apron within the main, between the dip-pipes and the removable doors or caps D, which are provided for cleaning purposes, and E the stand-pipes, which enter the sides of the dip-pipes B or connect therewith by lateral branches. Each stand-pipe is furnished with a removable cap or lid, E, to give access to the interior of the main and stand-pipe for cleaning them.

The dip-pipes B, instead of being independent vertical pipes, as usual, are preferably formed, as illustrated in Figs. 1 and 3, in one casting, in the shape of a rectangular box divided by vertical partitions *a* into separate compartments *b*, the lower ends of which are of course open, while the tops of all the compartments are covered by a plate, *c*, of sheet or plate iron, bolted, riveted, or otherwise se-

cured in place, the box or casting being formed with flanges *d* to receive the bolts or rivets.

Each compartment or dip-pipe may be furnished with a removable cap or lid, G, or this may be omitted, as desired.

Any desired number of compartments or dip-pipes may be cast together, three being shown in the drawings. This number is convenient for the ordinary bench of retorts, two such castings being employed to make up the complete set.

The front plate, *e*, of each box or casting is extended beyond the dip-pipes or compartments, and is flanged to permit it to be bolted to the adjoining section, and to permit the end plates of the main to be bolted to it, the front plates of the casting thus forming one side of the main, as shown in Figs. 1 and 2. Openings *g* are formed in the front plates, *e*, of the compartments or boxes *b*, to receive the gas brought up by the stand-pipes E, which connect with the dip-pipes by the lateral branches *h*, which incline downward to the openings *g*, as shown. This inclination is for the purpose of permitting tools or implements to be more readily passed through the lateral branches *h* and through the lower open ends of the dip-pipes into the bottom part of the main, where the pitch accumulates. In order to facilitate such insertion and free manipulation of the cleaning implements, the upper ends of the stand-pipes are inclined at substantially right angles to the axis of the lateral branches *h*, so that when the caps or covers F of the stand-pipes are removed or opened a free and ample opening will be secured, and space will be afforded for readily moving such implements about to any required extent.

I indicates a plate or sheet iron bottom, riveted, bolted, or otherwise secured to the lower edge of front plates, *e*, of the dip-pipe castings along their whole length, and which inclines downward from said front plate, then bends in an easy curve upward, and terminates in a vertical or substantially vertical rear side, which rises somewhat above the normal water-line, and is riveted, bolted, or otherwise secured to a supporting angle-iron strip, *j*, as shown. The inclination of the bottom causes the pitch to flow downward and accumulate at a point where it can be easily reached,

and in a great measure prevents accumulation at the mouth or lower end of the dip-pipe. The top plate or covering, *c*, projects horizontally in rear of the dip-pipes or compartments *b*, and has suspended from its rear edge an apron, *C*, of sheet-iron, the lower edge of which extends down into the main some distance below the lower ends of the dip-pipes, in order that there may always be a more ready escape for the gas up through the water between the dip-pipes and the apron than in rear of said apron. It should also be noted that the partitions *a*, which separate the dip-pipes or compartments, are carried down farther than the rear walls of the dip-pipes, so that the gas shall be caused to escape at said rear side, instead of passing from one dip-pipe to another, as might otherwise happen under some circumstances.

The top plate, *c*, and apron *C* may be bolted to and supported by an angle-iron strip, *i*, or either may be bent over to form the equivalents of the angle-iron.

The rear wall of the main or the upright portion of bottom plate, *I*, may be extended up to the line of the top plate, and a hinged top or door, or series of such doors, provided to close the space between the apron *C* and said rear wall of the main; but as a rear wall of such height would materially interfere with the convenient insertion and manipulation of tools or implements for cleaning the space mentioned, it is preferred to carry the wall but a short distance above the normal water-line, as shown, and to bolt or otherwise firmly secure the cap or covers *D* thereon, so that the water may not escape if elevated above the normal line by pressure in the main. Angle-iron supporting and strengthening strips *j* and *k* are applied, respectively, to apron *C* and the rear walls of the main, to which to bolt the caps.

In practice I prefer to place transverse partitions *l* higher than the line to which the water rises between each set of three dip-pipes or between each pair of dip-pipes, so that any one section of the main can be cleaned without fear of overflow from back-pressure in the adjoining compartments, a separate cover, *K*, being in that case provided to correspond with each dip-pipe or compartment.

To give greater range of movement to the implements inserted between the apron *C* and the rear wall of the main, the lower part of

the curtain is bent inward toward the dip-pipes, as shown in Fig. 3.

The precise manner of casting the dip-pipe sections, whether they be made in a single casting or in parts and bolted together, the manner of connecting the sheet or plate metal to the casting, and the manner of bracing or staying the parts is quite immaterial, the important features being the general construction and arrangement of parts by which convenient access to the portions of the main liable to become clogged is insured, and the cleaning of the main without stopping the reports is permitted.

The details of construction may obviously be modified as mechanical skill may suggest or occasion require.

Having thus described my invention, what I claim is—

1. The herein-described hydraulic main and stand-pipe, consisting of a dip-pipe, a stand-pipe provided with a cap or cover and with a lateral branch inclined downward to and opening into the side of the dip-pipe and main, a bottom attached to the lower front side of the dip-pipe and extending backward and downward therefrom and rising above the normal water-line, an apron extending from the top of the main downward below the bottom of the dip-pipe and in rear thereof, and a cover closing the space between the apron and the rear wall of the main, substantially as and for the purpose set forth.

2. The herein-described hydraulic main and stand-pipe, consisting of dip-pipe *B*, cover *c*, apron *C*, bottom *I*, cover *D*, and stand-pipe *E*, provided with a cap, *H*, and connected with dip-pipe *B* by lateral branch *h*, inclined downward toward said dip-pipe, substantially as and for the purpose explained.

3. A hydraulic main having one of its sides formed by a casting divided into compartments forming dip-pipes, substantially as shown and described.

4. In combination with main *A* and dip-pipe *B*, having an opening in its side, apron *C* and removable cap or cover *D*, as and for the purpose set forth.

ARTHUR EDWIN BOARDMAN.

Witnesses:

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H. T. POWELL.