(No Model.)

M. W. BARSE.

STEAM BOILER FURNACE.

No. 345,357. Patented July 13, 1886.

Fig. 1.

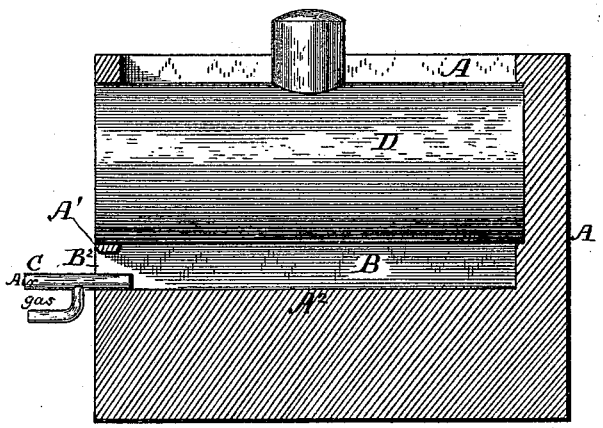


Fig. 2.

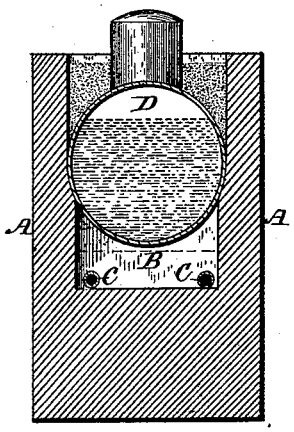


Fig. 3.

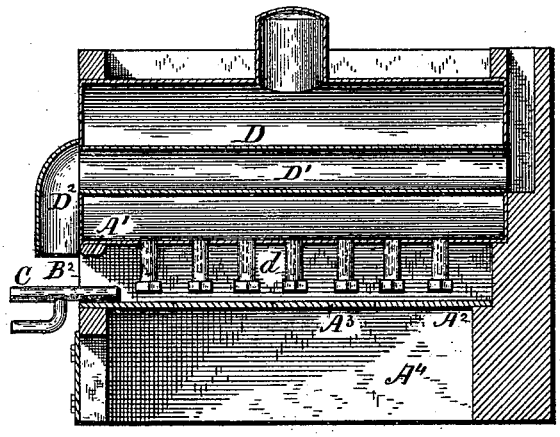
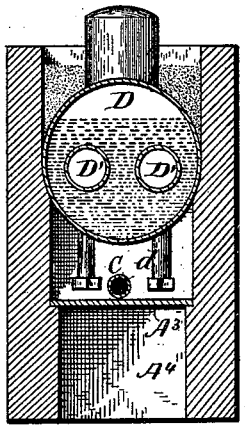


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

MILLS W. BARSE, OF OLEAN, NEW YORK.

STEAM-BOILER FURNACE.

SPECIFICATION forming part of Letters Patent No. 345,357, dated July 13, 1886.

Application filed February 18, 1886. Serial No. 192,368. (No model.)

To all whom it may concern:

Be it known that I, MILLS W. BARSE, a citizen of the United States, residing at Olean, in the county of Cattaraugus and State of New York, have invented certain new and useful Improvements in Steam-Boiler Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in furnaces for steam-boilers, and the object of my improvement is to produce a simple and inexpensive furnace in which a mixture of hydrocarbon gas and air can be used economically to heat steam-boilers of various forms. I attain these objects by the furnace and means illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section through a furnace constructed in accordance with my invention, the ceiling of which is formed by the body of a plain cylindrical steam-boiler, supported horizontally upon the walls of said furnace. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a longitudinal vertical section of a substantially similar furnace supporting a flue-boiler provided also with pendent tubes extending nearly down to the floor of the furnace. Fig. 4 is a transverse vertical section of the same.

The side and rear walls, A, of the furnace are generally formed of bricks, and form a substantially rectangular chamber, B, the floor A^2 of which is either built solid, as shown in Figs. 1 and 2, or is made of large tiles or of cast-metal plates A^3, as shown in Figs. 3 and 4, that are removably supported by the side walls, in which case there is a hollow chamber, A^4, under said plates large enough to admit men to unseal the lower end of the pendent tubes *d* and remove the mud that may possibly become collected therein. The boiler D is so supported by the walls of the furnace that its under side is only a few inches (more or less) above the floor of the furnace. The front end of the boiler is supported by a transom, A′, that also partly closes the opening in the front of the furnace. In this opening B^2 (preferably in the bottom thereof) is inserted one end of a pipe or pipes, C, through which is forced, by a fan-wheel or other suitable means, a current of mixed air and gas, or of mixed steam, air, and hydrocarbon gas, or other combustible material, the furnace being specially adapted for use where natural hydrocarbon gas is obtained from gas-wells and used for heating purposes.

The pipe or pipes C are inserted in the opening B^2, and the discharge of combustible material is parallel to the sides of the furnace. The rush of gas from the end of the pipes C, when lighted, causes currents of heated air and gases that curl around the interior of the furnace, and becomes considerably packed and compressed in the rear portion thereof, and being drawn again into the flame from the pipe C they become highly heated and naturally rise against the boiler and follow its under side until they escape again through the front opening, B^2. Said opening may be provided with a door to be partly closed to retard the exit of the heated gases and products of combustion over its upper edge, and as it is important that nothing should be present to remove the pressure of gas from within the furnace, there is no chimney in Fig. 1 to produce a draft and useless waste of inflammable gases.

If it is desired to increase the heating-surface of the boiler it may be provided with one or more rows of the pendent tubes *d*. They are vertically partitioned to produce a current through them, and have a screw-cap at their lower end that can be removed to clean their interior when desired. The boiler may also be provided with horizontal flues D′, to carry off the hot gases issuing from the front opening, B^2, and to direct them into said flues, a hood, D^2, may be secured to the front end of the boiler, and the gases will escape naturally at the rear end of the boiler.

I do not claim, broadly, a furnace having a closed rear end and an opening at the front, with a gas and air pipe entering said opening, as said construction is shown and described in my application No. 181,845, filed November 4, 1885, and allowed February 10, 1886.

Having now fully described my invention, I claim—

1. In a boiler-furnace, the combination of a combustion-chamber and a boiler located

above said chamber and forming a tight ceiling therefor, said chamber having a closed rear end and an opening, B^2, at the front, substantially on the same level with the floor of said chamber, to discharge the products of combustion, with a pipe, C, entering said opening to direct a current of inflammable gases into said chamber, substantially as and for the purpose described.

2. A boiler-furnace consisting of a chamber having a boiler for a tight ceiling thereof, a closed rear end, a floor removably supported, an opening, B^2, at the front to receive and discharge inflammable gases, and a pipe entering said opening to direct a current of inflammable gases into said chamber, substantially as and for the purpose described.

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

MILLS W. BARSE.

Witnesses:
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