(No Model.)

A. P. BROOMELL.

MAGAZINE FOR STEAM BOILER FURNACES.

No. 418,159. Patented Dec. 31, 1889.

Fig. 1.

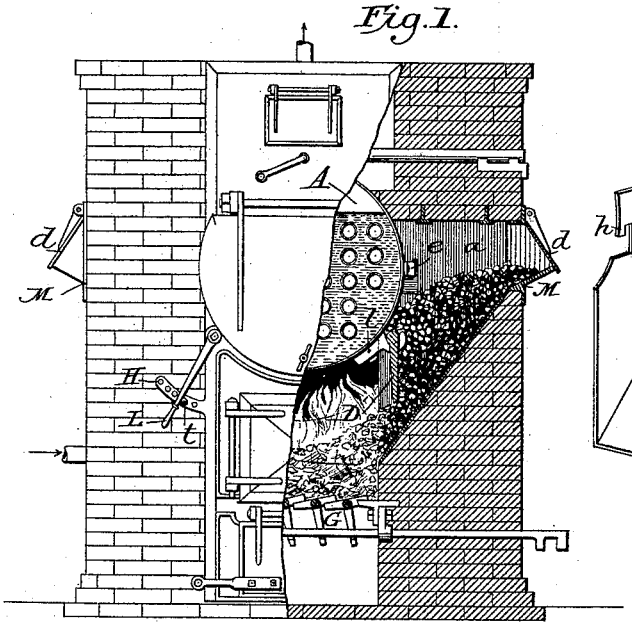


Fig. 3.

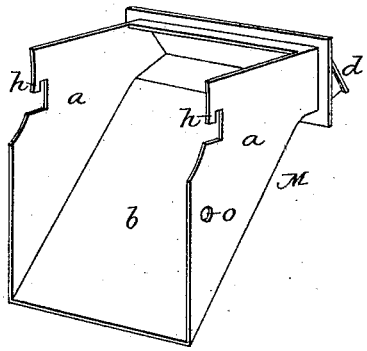
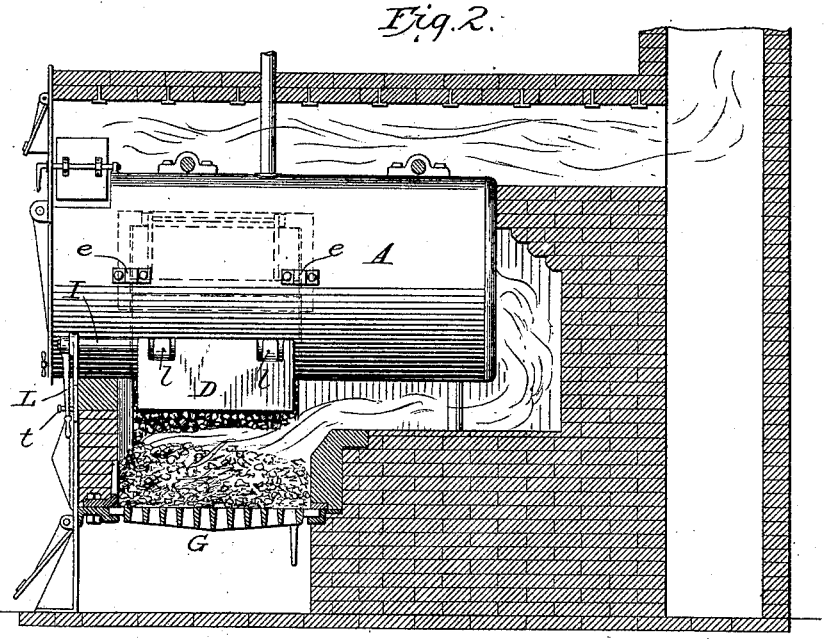


Fig. 2.



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MAGAZINE FOR STEAM-BOILER FURNACES.

SPECIFICATION forming part of Letters Patent No. 418,159, dated December 31, 1889.

Application filed November 2, 1889. Serial No. 329,029. (No model.)

To all whom it may concern:

Be it known that I, ALBERT P. BROOMELL, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Magazines for Steam-Boiler Furnaces, of which the following is a specification.

My present invention relates to steam-heating apparatus; and the invention consists in a novel construction and arrangement of devices for controlling or regulating the feed of the fuel, as hereinafter more fully described.

Figure 1 is a front elevation of a boiler set ready for use with my improvement applied thereto, a portion being shown in section. Fig. 2 is a side elevation of the same with a portion shown in section; and Fig. 3 is a perspective view of the feed chute or magazine shown detached.

Many forms of magazine-boilers have been devised for heating houses by steam, the more common being upright boilers having a cylindrical reservoir or magazine for the fuel suspended in the center. As a general rule, it is difficult to fill these magazines, as the fuel has to be poured in from the top, necessitating the use of steps or a raised platform, on which the attendant must stand in order to reach the magazine; and not only must the attendant carry the fuel up in hods, but when there must reach over some distance in order to pour the coal into the magazine. As usually constructed, these magazines are open at their lower end, without any means for shutting off or regulating in any manner the flow of the coal to the grate, and which of course is fed to the grate with a constantly-decreasing pressure as the fuel is consumed and lowers in the magazine.

The object of my invention is to provide a horizontal boiler with two magazines, one on each side, in a position that will enable the fuel to be more easily put therein, and also to provide means by which the feeding of the fuel to the grate or fire-chamber can be regulated at will, or be entirely shut off whenever desired for any reason whatever.

In the accompanying drawings, A represents a horizontal tubular boiler set ready for use, with a rectangular fire-chamber underneath its front portion. At each side of the boiler I locate a coal chute or magazine M, of the form shown in Figs. 1 and 3. This magazine is made of a width equal to the length of the fire-chamber, or nearly so, and of a length sufficient to extend out through the brick-work, as shown in Fig. 1, its outer end projecting far enough to enable the coal to be put in with ease. It is composed of two side plates *a* and a bottom plate *b*, which latter is inclined at an angle of about forty-five degrees, and has its lower edge terminating at the inner edge of the side wall of the fire-chamber, as shown in Fig. 1, the side plates *a* being curved on the front edges at their upper part, so as to fit against the rounded side of the boiler. Its outer end is inclined, and is provided with a hinged lid *d*, as shown in Figs. 1 and 2.

In order to secure the magazine to the boiler and prevent any displacement of the same by the cracking or settling of the brick-work, I rivet to the boiler on each side two loops *e*, (shown more clearly in Fig. 2,) and make on the edges of the side plates *a* a hook *h*, as shown in Fig. 3, these hooks engaging in the loops or eyes *e*, by which means, when the boiler is placed in position, the magazines can be hooked thereon and hang suspended in the position where they are to remain, and so that the brick-work can be built up under and around them with a certainty that the magazines will be in the exact position required, and will not be displaced or drawn away from the boiler by any settlement or displacement of the brick wall.

The weight of the magazine and its contents, when properly set, will be mainly supported by the brick wall underneath it, the upper end of the plate *b* for some little distance being extended outward in a horizontal plane to afford a good bearing on the brick-work underneath it, as shown in Figs. 2 and 3.

To regulate the feed, I locate within each of these magazines a swinging gate or valve D, as shown in Figs. 1 and 2. This valve is hung on a couple of hooks *l*, riveted to the side of the boiler, as shown, and is of such a size that when swung so as to be at right angles with the face of the bottom plate *b* it will fill the space and completely shut off the flow of the coal. This valve or gate D is provided with

a rod I, which extends out to the front of the face-plate, where there is secured to it a handle or lever L, by which it can be opened or closed or moved to any intermediate point at will, there being a hole *o* in the side plate of the magazine, and also in the face-plate, for it to project through. In order to hold the valve at any desired point, the face-plate has secured to it or cast with it a curved arm H, as shown in Fig. 1, along the face of which the handle or lever L is moved, and this arm is provided with a series of holes, in which a pin can be inserted to lock the lever and thereby the valve in any position to which it may be adjusted, as shown in Figs. 1 and 2. It will of course be understood that there are two of these magazines and valves, duplicates in all respects, and that each of them is located and arranged to feed the coal into the fire-chamber at the sides and directly onto the grate under the boiler, as represented in Fig. 1. By this construction it will be seen that the coal can readily be put into the magazine from the sides, that the inclined bottom will cause it to feed or gradually slide down upon the grate with little or no variation in pressure, and by adjusting the valve the feed can be regulated at will to any degree desired, thus adapting the fire to the varying conditions of the weather. The valve also enables the feed to be shut off entirely at any time, when desired for any reason whatever, without waiting until the magazine is exhausted, as is usually the case. So, too, one magazine can be used alone, as is often sufficient in mild weather, the other being held in reserve until more fire is needed. In those cases where the magazine has no means for regulating the feed the fire is regulated by closing the draft more or less, and when the draft is closed it is obvious that the gases given off by the coking coal are not fully consumed, but pass off through the chimney and are lost, whereas by this arrangement the fire can be reduced by cutting off in part the supply of fuel and the draft be left open sufficiently to supply all the air required to consume the gas given off by the burning and coking coal.

While this improvement is of great advantage in apparatus for heating private dwellings, it is of special advantage in the case of large buildings, where large boilers are required, as it enables the fire, and consequently the steam-supply, to be kept much more uniform, and economizes in the use of fuel. It also enables the fire to be so regulated as to keep a small supply of steam during the night, when less is usually required than during the day, without the attendance of a fireman, it only being necessary to supply the magazines with coal and then adjust the feed properly.

I am aware that it is not broadly new to use a valve or gate in connection with hoppers or magazines for supplying fuel to boilers, especially in locomotives and mechanical stokers; and I am also aware that it has been proposed to provide a horizontal boiler with a series of openings at the top of the brick-work in which the boiler is set, said openings being provided with a cover at the top and a slide a short distance below to prevent the escape of gas when the covers are raised to put in coal, and therefore I do not claim such; but,

Having described my invention, what I claim is—

1. In combination with a horizontal boiler, a magazine located at the side of the boiler and having its mouth project through the side wall of the brick-work which incloses or supports the boiler, and having a valve at or near its lower end, whereby the fuel can be put in at the side and its feed to the grate be regulated at will, substantially as set forth.

2. In combination with the boiler A, provided with the loops or eyes *e*, the magazine M, provided with hooks arranged to engage with said loops or eyes and thereby secure the magazine to the boiler, substantially as described.

3. In combination, the swinging valve D, located within the magazine M and having its journal I extended out at the front, with a lever or handle rigidly secured thereto, and the curved arm or plate H, provided with a series of holes for adjusting and holding the valve at any desired position, substantially as and for the purpose set forth.

4. In combination with a horizontal boiler, two magazines arranged at opposite sides of the boiler, with their mouths projecting through the side walls of the brick-work, and each provided with a valve or gate at or near its lower end, whereby the fuel can be put in at the sides and the grate can be supplied from either or both magazines at will, substantially as shown and described.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

ALBERT P. BROOMELL.

Witnesses:

GEO. S. SCHMIDT,

GEORGE SCHARZBERGER.