No. 858,012. PATENTED JUNE 25, 1907.

T. MURRIN.

SMOKE CONSUMING FURNACE.

APPLICATION FILED OCT. 17, 1906.

Fig. 1.

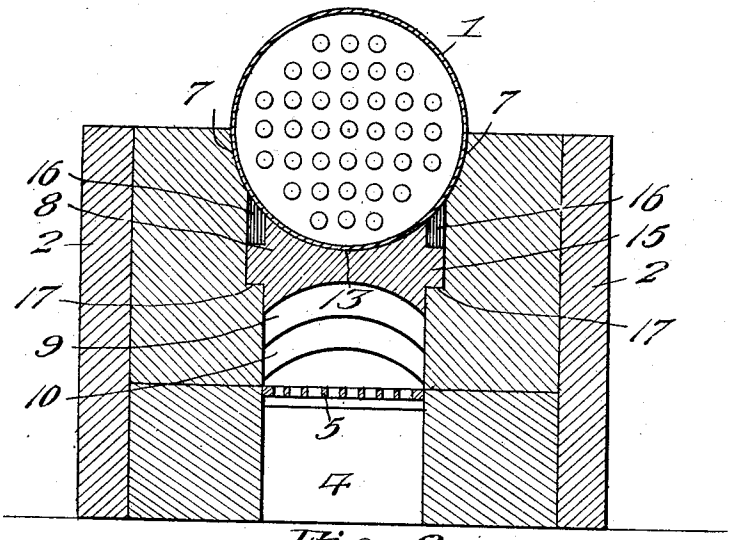


Fig. 2.

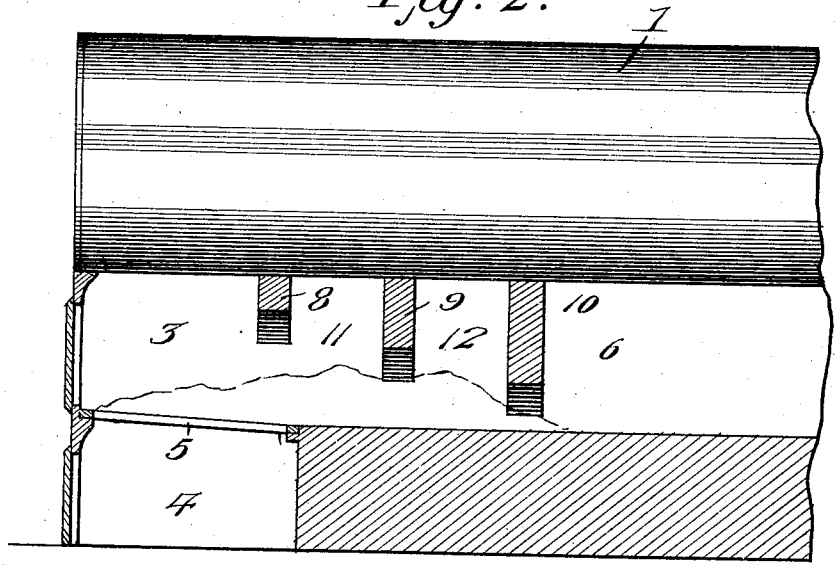
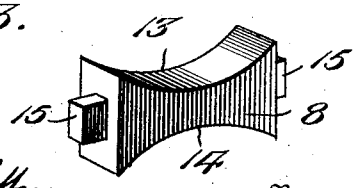


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

TERRENCE MURRIN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO C. J. DE BOOR AND ONE-HALF TO DAVID GELDER, BOTH OF CHICAGO, ILLINOIS.

SMOKE-CONSUMING FURNACE.

No. 858,012. Specification of Letters Patent. Patented June 25, 1907.

Application filed October 17, 1906. Serial No. 339,409.

To all whom it may concern:

Be it known that I, TERRENCE MURRIN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Smoke-Consuming Furnaces, of which the following is a specification.

This invention relates to an improvement in smoke-consuming furnaces, designed to secure the perfect consumption of the products of combustion, the main object of the invention being to provide a boiler arch so constructed and arranged as to form incandescent bodies and intervening pockets or chambers above and in rear of the fire box to retain the heat and combine and consume the unconsumed gases without affecting the draft.

Another object of the invention is to provide an arch composed of independent blocks of refractory material adapted to be raised to a state of incandescence, and of progressively increasing depth to secure a stepped arrangement for the provision of the smoke consuming chambers, which blocks are removable and reversible to prolong their effective usefulness.

In the accompanying drawings—Figure 1 is a vertical cross section of a steam boiler furnace embodying my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a perspective view of one of the arch-blocks.

Referring to the drawings, the numeral 1 denotes the boiler; 2, the boiler setting forming the walls of the furnace; 3, the fire box; 4, the ash pit; 5, the grate; and 6, the flue or passage beneath the boiler for the products of combustion.

The sides of the body of the boiler setting are recessed to form seats 7 for the boiler, below the forward end of which are arranged the arch-forming blocks 8, 9 and 10, said blocks being composed of some suitable refractory material. The block 8 is arranged above the rear of the grate 5, while the blocks 9 and 10 are arranged in the forward portion of the flue 6, the series of blocks being equidistantly spaced to provide intervening retort chambers 11 and 12.

Each block is provided with upper and lower concaved faces 13 and 14 and end tongues or lugs 15. The lugs 15 fit within receiving or guide grooves 16 opening at their upper ends through the seats 7 and terminating at their lower ends in shoulders 17 upon which the lugs rest to support the block in position. The bottom of the boiler seats within and rests upon the upper concaved faces of the blocks, whereby the latter are adapted to serve as auxiliary supports therefor and to close communication between the flue and retort chambers except through the lower ends of said chambers. The blocks may thus be conveniently removed when worn or injured for the substitution of new blocks and by the construction described they are adapted to be reversed to position either of their concaved faces uppermost to form a seat for the boiler. By making the blocks reversible the lower concaved surfaces when warped or injured by the flames may be brought into position to form the boiler seat, while the upper concaved surface is shifted to take its place as the impinging portion against which the flames initially strike.

The blocks 8, 9 and 10 gradually increase in depth and thus have a stepped arrangement and relatively vary the size of the pockets 11 and 12 and also diminish progressively the size of the passage 6 immediately in rear of the fire box to cause the flames and products of combustion to be preliminarily retarded in their flow to the boiler and to impinge against the incandescent blocks and circulate in the retort chambers 11 and 12, whereby the temperature of the combustible gases is raised and their consumption effected.

In practice, the body of fuel resting on the grate may be extended back under the arch, to assist in slackening the current of combustible gases and to cause the flames therefrom to project into the retort chamber to facilitate the combustion of the unconsumed products. By this means the circulation of the products of combustion will be retarded to the requisite extent to commingle the unconsumed gases and effect their consumption without affecting the draft and, as owing to the complete combustion of the gases, the temperature of the carbon constituents will be raised to incandescence, such constituents will be wholly if not entirely consumed, so that no smoke will be emitted from the furnace.

As a result of constructing the arch of removable and reversible blocks convenience

is afforded in making repairs and substituting new for worn out blocks, as will be readily understood.

Having thus described the invention, what is claimed as new, is:—

1. A boiler furnace provided with a seat recess, and having guides communicating at their upper ends with said recess and provided at their lower ends with supporting shoulders, a boiler supported within the seat recess, and a smoke consuming retort arranged in the flue passage below the boiler, said retort comprising a series of reversible blocks bearing against the base of the boiler and provided with supporting lugs resting on said shoulders and slidably engaged with the guideways.

2. A boiler furnace setting provided with a boiler seat recess and having vertical guideways opening at their upper ends into said recess and terminating at their lower ends in shoulders, a boiler supported in said receiving recess, and a smoke consuming retort arranged in the flue passage below the boiler, said retort comprising a series of removable and reversible blocks having upper and lower concave faces to bear upon the bottom of the boiler, said blocks being also provided with end lugs resting on said shoulders and slidably engaging the guideways.

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

TERRENCE MURRIN.

Witnesses:

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