

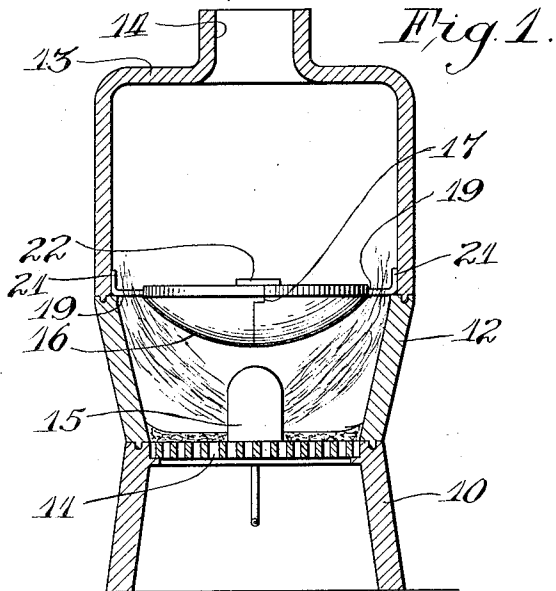
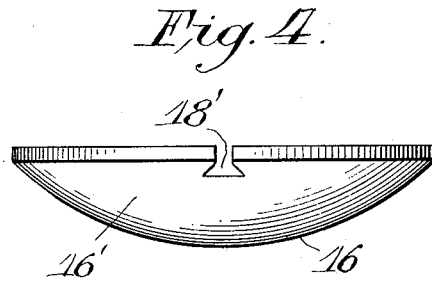
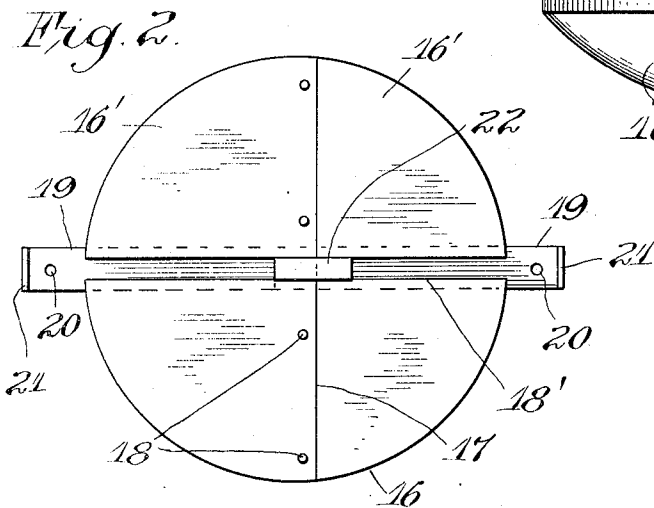
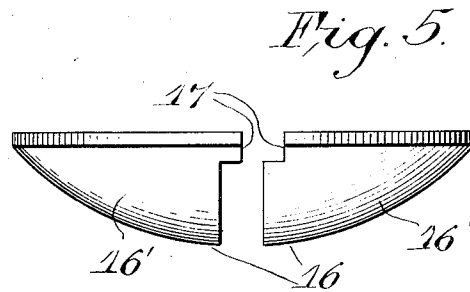
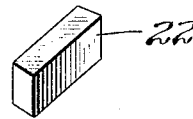
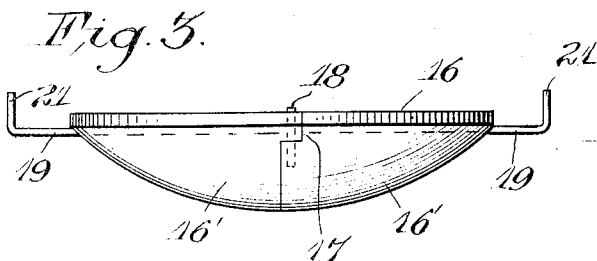
Aug. 27, 1929.

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1,725,974

FIRE AND HEAT DEFLECTOR AND HEAT RETAINER

Filed Dec. 16, 1926



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UNITED STATES PATENT OFFICE.

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FIRE AND HEAT DEFLECTOR AND HEAT RETAINER.

Application filed December 16, 1926. Serial No. 155,166.

This invention relates to boilers and furnaces and particularly to an attachment therefor, which will enhance and promote the heating efficiency of such heating units. More specifically, this invention relates to a fire and heat deflector and heat retainer for attachment to, and use with standard boilers and furnaces.

Boilers or furnaces, as now known in the art, usually comprise a grate, an ash pit therebelow, a heating member such as an oil burner being carried on said grate or in the ash pit beneath the grate. The flame and heat from the burner is deflected outwardly against the walls of the boiler or furnace or directly upwardly, and then travels upwardly and out through an exhaust flue or port, in a manner resulting in dead heat spaces in the upper part of the boiler or furnace, accompanied by considerable heat losses.

Therefore, the objects of this invention are to provide a simple, cheaply constructed attachment for boilers or furnaces which will promote their heating efficiency by overcoming these dead spaces; to provide such a device which will function as a heat retainer as well as properly to deflect the heat and fire from the burner to prevent heat losses; to provide such an attachment of novel construction in association with means for attaching the same in a boiler or furnace; and, lastly, generally to improve the heating efficiency of boilers and furnaces.

Briefly, these very desirable objects are accomplished in the provision of an attachment comprising a member, preferably made of refractory material, and having a rounded bottom, said attachment including a novel, adjustable means for supporting the same in a boiler or furnace in such a position above a burner that it may function as a heat retainer and fire and heat deflector.

An illustrative embodiment of the invention is shown in the accompanying sheet of drawings, in which—

Figure 1 is a vertical, sectional view of a standard boiler or furnace showing the improved attachment in association therewith;

Figure 2 is a plan view of the attachment;

Figure 3 is a side view thereof;

Figure 4 is a side view as seen at a right angle to the showing in Figure 3;

Figures 5 and 6 are respectively detail views of the main attachment parts, and an obstructor.

As shown in the drawings, Figure 1 is a general representation of a boiler or furnace having a base 10, supporting a grate 11, above which are the enclosing walls 12. An ash pit is shown beneath the grate. A top 13 has formed centrally therein, an exhaust flue or port 14. Any form of burner, such as an oil burner 15, may be supported on the grate.

In the operation of the boilers and burners of this type the flame and heat from the burner is deflected outwardly, contacting the boiler walls along a region substantially midway between the boiler top 13 and the grate 11. In this region the heat energy is at a maximum. From this region the heat and flame is deflected upwardly and centrally to the exhaust port 14 where considerable heat energy goes out of the boiler to be lost. Additionally, this action leaves a dead boiler space between the region of maximum heat and the top, adjacent the walls. Obviously, under such conditions, the boiler or furnace cannot give a maximum heat output.

To overcome these objections and to make the boiler or furnace function efficiently, an attachment, generally indicated at 16 in Figure 1, has been provided which will function, when supported above the burner, as a fire and heat deflector to overcome the dead spaces and as a heat retainer.

As illustrated, this attachment in its preferred embodiment will be formed of two complementary semicircular sections 16', which are jointed together at 17, as shown in Figures 3 and 5, and so held in place, by readily removable king pins 18. When the sections are secured together, the attachment comprises a circular member having a flat top and a rounded bottom. The joint 17, in the form of a dovetail, is diametrical, so that each section will be of the same size.

Diametrically opposed at a right angle to this dovetail joint, the upper side of the attachment has formed therein a key slot 18', open at its top, as shown in Figure 4. The wide part of the slot slidably has fitted therein from its ends two band iron members 19, which may be provided at their free ends with a hole 20 or an upturned end 21, or both, as

shown, for a purpose presently to appear. The attachment in practice will preferably be molded of refractory material.

The structural details having now been described, the manner of use and operation of the invention will now be briefly set forth.

The attachment is intended for use with any standard boiler or furnace. Because the fire doors of such boilers and furnaces are too small to permit insertion of the assembled attachment of this invention, the same has been formed in two complementary sections, which may be easily assembled and supported in a boiler or furnace of any standard size. Accordingly, each section 16' is inserted, one at a time, through the fire door (not shown). From the outside, it is an easy matter to line up the sections and drop the king pins 18 in place to secure the sections together. The band irons 19 can now be moved oppositely outwardly, to form supports, as indicated in Figure 1, where they rest on a ledge on the boiler walls in the boiler region of maximum heat. As an alternative, if a ledge is not available, hooks may be suspended from the boiler top 13, which hooks will engage in the holes 20 to support the irons 19 and the attachment. In this fashion the heat retainer and deflector may be supported in proper position above the burner and independently thereof. An obstructor 22 in the form of an iron block or of fire clay is then dropped into the open slot 18' to hold the band iron supports in adjusted position, as will be readily understood.

In operation we will assume that flame and heat is being deflected outwardly and upwardly from the burner 15, as indicated by the lines in Figure 1. Of course, the attachment 16 will presently become heated, which heat will be retained to a very great extent, thereby materially increasing the heat energy in the boiler. Additionally the flame and heat will strike the under side of the attachment, and because of its rounded shape, will deflect this heat and flame upwardly into the boiler region, which without this invention would be a dead space. Thus, there is retained the central region of maximum heat and in addition the dead spaces of the boiler are also highly heated, and as a consequence the entire boiler space is utilized for heat output. Thus, that heat energy which formerly went out the exhaust flue to be lost is now first ricocheted into the dead boiler space at its top before being exhausted, thereby materially adding to the heat output and efficiency of the boiler. Furthermore, the device functions to burn such incompletely burned fuel particles which issue from the burner, because the retained heat of the device causes complete combustion of such unburned fuel particles upon contact.

Obviously, the device is simple, and, be-

cause of its adjustable supporting means, can be supported in any standard boiler or furnace. It can also be seen that it achieves all of the desirable objects heretofore expressed.

It is the intention to cover all such changes and modifications which do not depart from the spirit and scope of this invention, as is indicated in the following claims.

What I claim as new is:

1. The combination with a boiler or the like, including a burner, of an attachment therefor, comprising two complementary sections detachably secured together and formed with a rounded bottom, and means for supporting said attachment immediately above the burner from within the boiler and independently of the burner.

2. The combination with a boiler or the like, including a burner, of an attachment therefor, comprising two complementary sections detachably secured together and formed with a rounded bottom, and laterally adjustable means for supporting said attachment from within the boiler above the burner and independently thereof.

3. The combination with a boiler or the like, including a burner, of an attachment therefor, comprising two complementary sections detachably secured together, said attachment being formed of refractory material and having a rounded bottom, and means for supporting said attachment in the boiler immediately above the burner.

4. An attachment of the kind described, comprising two semi-circular sections jointed together along their straight sides, said attachment having a rounded bottom, and supporting means for the attachment disposed at a right angle to the joint between the sections.

5. An attachment of the kind described, comprising two semi-circular sections detachably secured together along their straight sides, said attachment being formed with a key slot right angularly disposed across the attachment with respect to the joint between the sections, and supporting means adjustably arranged in said key slot.

6. A fire and heat deflector and heat retainer attachment for boilers, comprising a pair of semi-circular sections having their adjacent straight edges interlocked, said sections having aligned open cross slots therein, laterally adjustable hangers in said slots, and an obstructor to retain said hangers in adjusted position.

7. A fire and heat deflector and heat retainer attachment for boilers, comprising two substantially semi-circular sections provided along their straight sides with complementary interlocking joint portions, removable means adapted for passing through the interlocked joint to hold the two sections together, and laterally adjustable hanger

means carried by said attachment as a part thereof.

8. A fire and heat deflector and heat retainer attachment for boilers, comprising a
5 pair of substantially semi-circular sections, an interlock joint including removable means for locking said sections together along their

straight edges, and laterally adjustable hangers carried by said attachment, said attachment having a rounded bottom and further being relatively shallow in proportion to its diameter. 10

In testimony whereof I affix my signature.
PAUL P. BRAUTIGAM.