

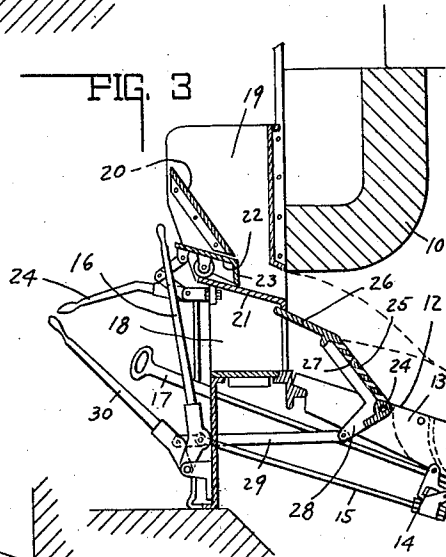
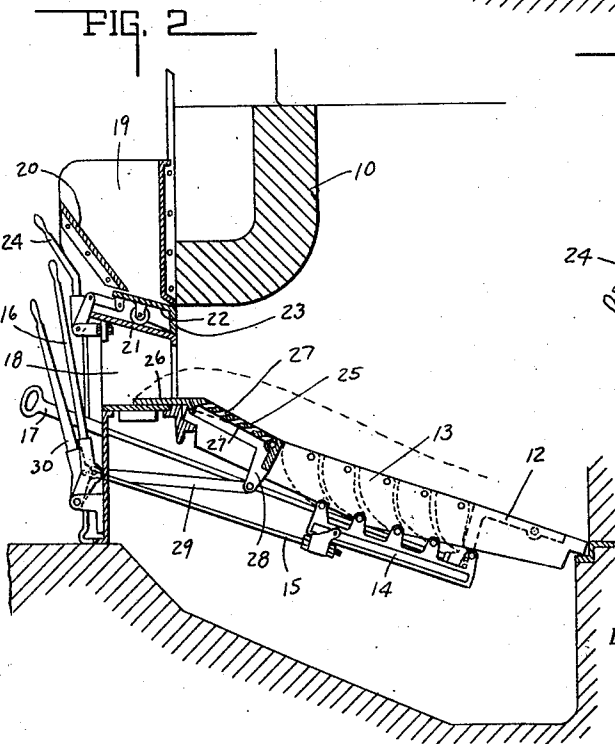
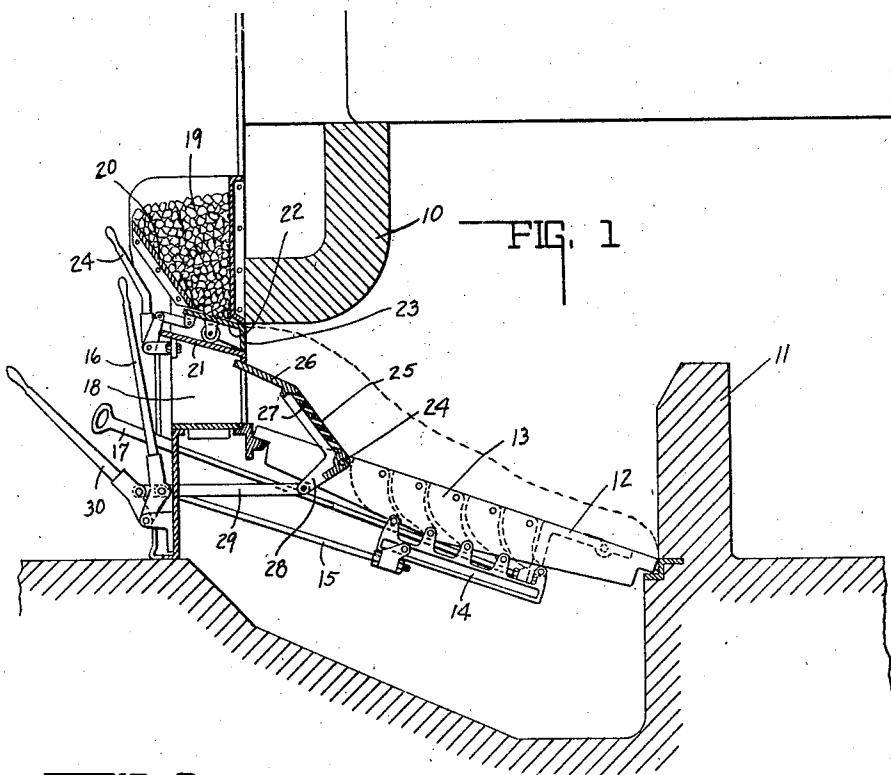
June 30, 1925.

1,543,801

E. B. SMITH

GRATE CONSTRUCTION

Filed March 22, 1924



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UNITED STATES PATENT OFFICE.

EDWIN B. SMITH, OF MARION, INDIANA, ASSIGNOR TO MARION MACHINE, FOUNDRY & SUPPLY COMPANY, OF MARION, INDIANA, A CORPORATION.

GRATE CONSTRUCTION.

Application filed March 22, 1924. Serial No. 701,080.

To all whom it may concern:

Be it known that I, EDWIN B. SMITH, a citizen of the United States, and a resident of Marion, county of Grant, and State of Indiana, have invented a certain new and useful Grate Construction; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

This invention relates to a grate construction incorporated in a manually operated furnace or boiler.

The chief object of the invention is to provide a grate construction in a furnace or boiler which will permit the fireman to have ready access to the fire for cleaning and slicing purposes and for starting a fire.

Another object of the invention is to provide a construction which is adapted to connect a hopper and the usual grate through an intermediate grate construction that is adapted to act as a feeder for the grate construction and is also adapted to act as a part and extension of the hopper construction.

The chief feature of the invention consists in associating intermediate a hopper and a grate an inclined connecting grate and pivotally supporting the same for tilting movement, and herein for lowering movement, to provide access to the furnace or boiler.

Other objects and features of the invention will be pointed out hereinafter in the following description and claims.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

In the drawings, Fig. 1 is a central sectional view of a boiler construction with the invention shown associated with standard boiler parts and in the normal or operative position. Fig. 2 shows the auxiliary grate in a second operative position, whereby ready access may be had to the fire and the boiler. Fig. 3 is a view similar to Fig. 1 but illustrates the ram associated with the hopper in another position, and the formation of the fuel bed by the return of the auxiliary grate from the position shown in Fig. 2 to the position shown in Figs. 1 or 3.

In the drawings 10 indicates an ignition

arch; 11 the bridge wall; 12 a dumping plate; 13 stoking grate members which are suitably supported by the supporting member 14 actuated by the rod 15, in turn actuated by the lever 16. The handled rod 17 controls the dumping plate 12. Positioned above the opening 18 formed beneath the ignition arch is a hopper 19 having an inclined rear wall 20 and a bottom wall 21 between which is positioned a manually actuatable ram 22 having the pushing face 23 and manually actuatable by means of the lever 24 through suitable linkage. All of the foregoing may be commonly found in the art and forms no part of the present invention except so far as the several parts cooperate with the auxiliary grate. There is pivotally supported at 24 an auxiliary or intermediate grate which may be termed a coking plate. This has a multiple inclination as indicated by the numerals 25 and 26, and the upper end of this coking plate is adapted to abut the bottom plate 21 and close the opening to the fire box provided through the door opening 18. Herein that portion of the plate which has the inclination 25 is shown provided with a plurality of downwardly directed apertures 27, and these apertures are adapted to supply air to the fuel on the same, and thus substantially increases the grate air in the boiler. The aforesaid construction also by reason of the positioning of these apertures permits slack and relatively fine coal to be burned with great economy, since by the time said fine coal or slack reaches the grate members 13, the same is in a coked condition, and, therefore, is in relatively large masses. The coking plate pivotally supported at 24 is provided with a depending arm 28 and connected thereto is a link 29 actuatable by a lever 30. When the lever 30 is moved from the position shown to the upright in Fig. 1, the coking plate is tilted upon its pivot 24 and provides free access through the door opening 18 to the fire box. Preferably when in this position, the ram 22 also is positioned as shown in Figs. 1 and 2 which cuts off the supply of fuel to the fire. The fireman thereupon may operate by slicing or otherwise upon the fire, and if a new fire is to be started, may start the same in the usual manner through the door opening 18. After the fire is started, the lever 30 is actuated which elevates the coking plate

into the normal operating position. With this movement, the fired coal is forced along the stoking grates from the coking plate and green coal is admitted to the coking plate by the ram 22. This is shown in Fig. 3. In this way the green coal is not positioned over the main portion of the fire, but is added thereto as shown, so that it gradually cokes as it is forced toward the dumping grate, by gravity, when the stoking grates are actuated or when the ram is also actuated.

The invention claimed is:

1. In a force feed boiler construction, the combination with a hopper having a fuel discharge throat, a grate below the same and offset therefrom, said boiler having an opening between the hopper and the grate, and a ram reciprocable in said hopper

throat and including a fuel feeding face and a fuel supporting face, of an inclined coking device pivotally supported at its lower edge adjacent the opening for normally closing the same and movable into lowered position for providing access to the fire bed on the coking device and the grate and for forming an extension of the grate and connecting the same to the hopper, said device in its pivotal movement serving as a ram for feeding the bed upon the grate.

2. A device of the character described in claim 1 characterized by the inclined coking device having a fuel bed supporting surface with a double inclination and having the lower portion thereof apertured.

In witness whereof, I have hereunto affixed my signature.

EDWIN B. SMITH.