No. 753,836. PATENTED MAR. 8, 1904.

R. BAKER.

APPARATUS FOR BURNING SOFT COAL.

APPLICATION FILED JUNE 29, 1903.

NO MODEL.

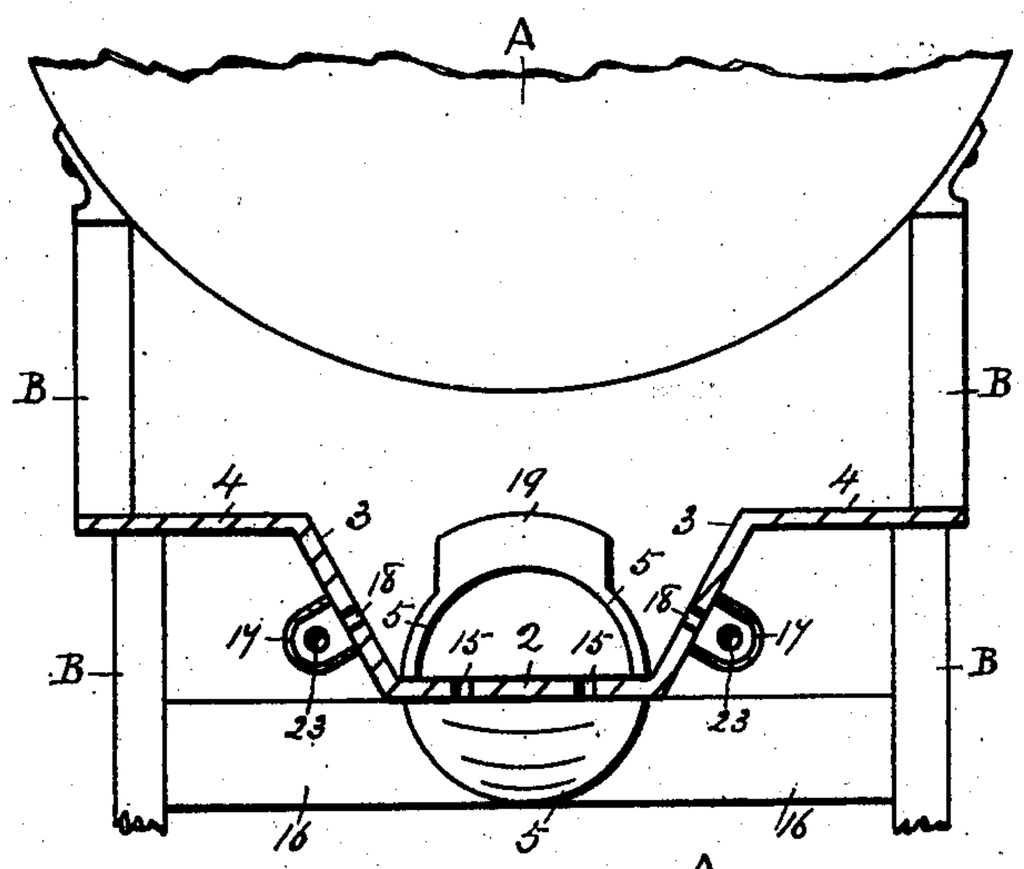

Fig. 1.

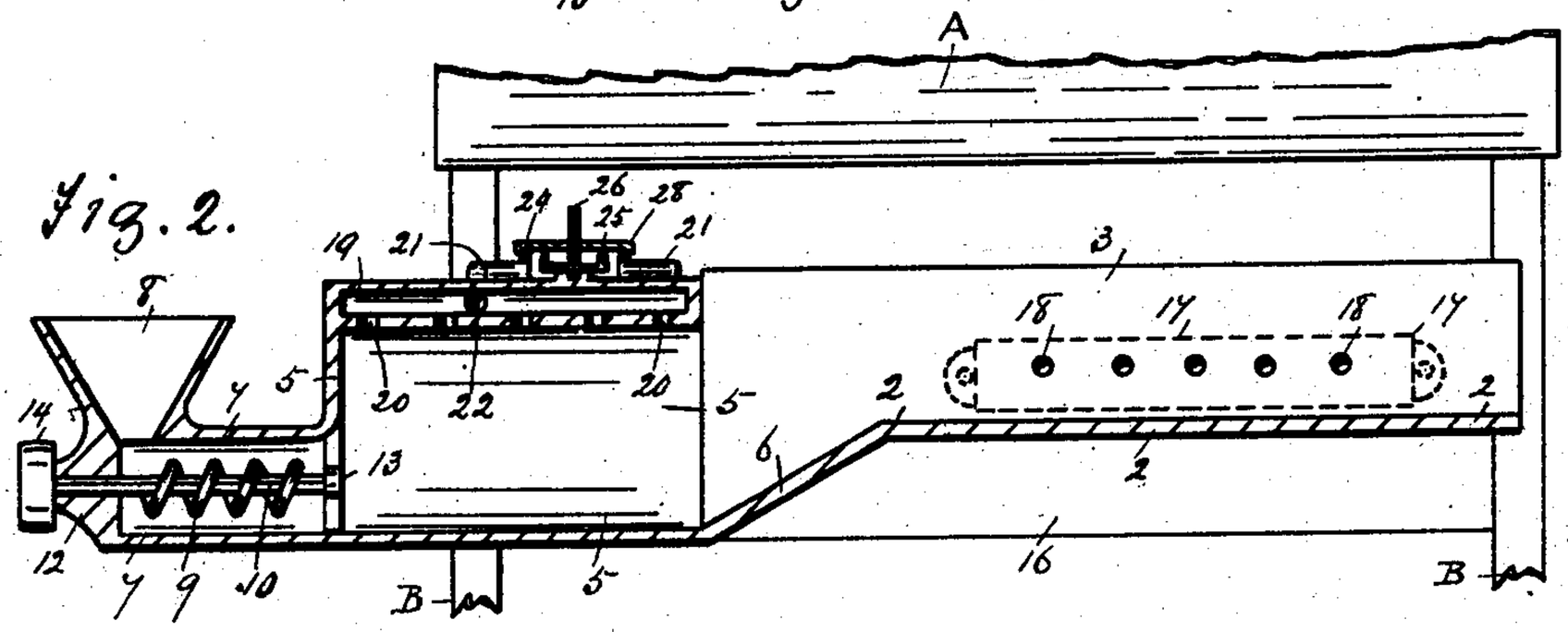

Fig. 2.

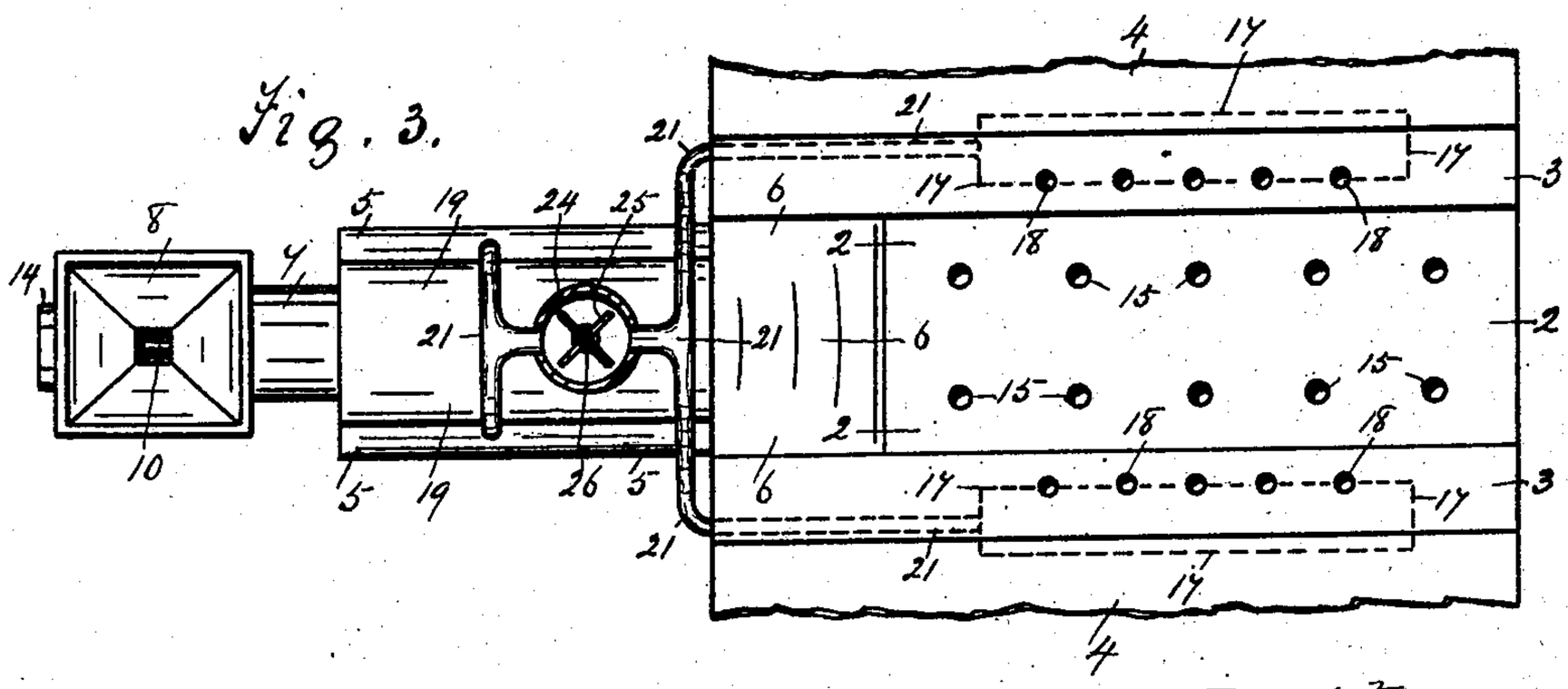

Fig. 3.

Witnesses.
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No. 753,836. Patented March 8, 1904.

UNITED STATES PATENT OFFICE.

ROBERT BAKER, OF HAMILTON, CANADA.

APPARATUS FOR BURNING SOFT COAL.

SPECIFICATION forming part of Letters Patent No. 753,836, dated March 8, 1904.

Application filed June 29, 1903. Serial No. 163,494. (No model.)

To all whom it may concern:

Be it known that I, ROBERT BAKER, a citizen of Canada, residing at Hamilton, in the county of Wentworth, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Apparatus for Burning Soft Coal, of which the following is a specification.

My invention relates to improvements in an apparatus for burning bituminous or soft coal and adapted for boilers, furnaces, stoves, and the like, in which a gas-generator is connected to and communicates with a fire-box, a gas-chamber connected to the gas-generator and communicating with said fire-box, and means for facilitating the combustion of the gas in the fire-box, whereby the heat therefrom may be directed to its desired place.

The objects of my invention are, first, to provide an apparatus adapted to extract and burn gas and smoke from soft coal; second, to provide means whereby gas and smoke from soft coal may be utilized and generated into heat for heating purposes, and, third, to afford facilities whereby the apparatus may be adapted to perform its functions in connection with boilers, furnaces, stoves, and other heat-generating articles. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of the fire-box part of the apparatus, showing the attached gas and smoke distributers in section communicating with the fire-box and attached to the inclined sides thereof, and the lower part of the gas-generator. Fig. 2 is a longitudinal sectional side elevation of the apparatus, showing the gas and smoke distributer in broken lines. Fig. 3 is a plan of the same.

Similar characters refer to similar parts throughout the several views.

In the drawings the outline of a boiler is indicated by A and is substantially supported by walls B in desired places. The fire-box comprises the bottom 2, with inclined sides or walls 3 and horizontal supporting-flanges 4, extending from the upper part of the inclined sides 3. The fire-box is located in suitable position immediately underneath the boiler A to heat said boiler.

5 is the gas-generator adjoining the rear end of the fire-box and forming a part of the same. The gas-generator and the fire-box are connected by the inclined floor 6, which inclines from the fire-box to the lowest part of the gas-generator 5. The lower part of the gas-generator extends rearward in tubular shape and forms a soft-coal receptacle 7, provided with a coal-hopper 8 on the end part thereof to feed the fire-box. The coal-receptacle 7 is adapted to support a spiral worm 9 on its central shaft 10, which, together with its worm 9, is adapted to revolve in the end bearing 12 of the receptacle and in the interior arm-bearing 13 at the inner end of the receptacle. The bearing 13 may be omitted, providing the bearing 12 is extended and the worm 9 contracted in proportion, so that no possible obstruction to the passage of the coal through the receptacle 7 may take place.

14 is a pulley secured on the shaft 10 to revolve said shaft and worm. When fine coal, coal-dust, or slack-coal is dumped into the hopper 8 and the worm 9 revolved, the coal is gradually carried through the receptacle 7 by means of the worm acting upon the coal, which is at the same time carried on the floor of the gas-generator 5 and gradually up the inclined floor 6 of the fire-box 2 and into said fire-box to be consumed and heat, gas, and smoke generated therefrom. The floor 2 of the fire-box has a number of air-ducts 15, which communicate with the flue 16, which may have a suitable ash-receiver connected thereto. The air-ducts 15 distribute air into the fire-box in order to facilitate combustion of the gaseous elements of the coal and burn the same, together with the gases and smoke extracted from the coal and returned through the pipes 21 and the distributers 17. The gas and smoke distributers 17 are attached to the outer part of the inclined walls 3 of the fire-box, the sections of which are shown in Fig. 1 of the drawings. The distributers 17 communicate with the fire-box by means of a number of apertures 18 through the inclined sides 3 thereof. Smoke and gas from the distributers 17 enter the fire-box through the apertures 18.

The upper part of the gas-generator 5 has

a gas and smoke chamber 19, which receives gas and smoke from the gas-generator 5 by means of the apertures 20, which communicate with the gas-generator 5 and the gas and smoke chamber 19. Suitable gas and smoke conducting pipes 21 connect the sides of the gas-chamber 19 at 22 (shown in Fig. 2 of the drawings) and with the end of the distributers 17 at 23. (Shown in Fig. 1 of the drawings.)

The pipes 21 form a junction at a convenient place, and at said junction a fan-casing 24 is provided and connected to said pipes and communicates with the pipes. A fan 25 is suitably journaled in the casing 24 and is adapted to revolve therein by suitable means connected with the fan-shaft 26. 28 is a suitable cover on the casing 24. (Shown in Fig. 2 of the drawings and removed in Fig. 3 of the drawings to show the fan 25.)

When the apparatus is in operation, the soft coal in the fire-box is burning, and the gaseous elements, together with the smoke therefrom, pass to the gas-generator 5 and through the apertures 20 and into the gas-chamber 19, thence through the conducting-pipes 21, and into the fan-casing 24 of said pipes. At this time the fan 25 is revolving, and the suction caused by the fan draws the said elements through the pipes to the fan, as set forth, and propels said elements from the fan-casing to the distributers 17, thence through the apertures 18, and into the fire-box, there to be consumed by combustion into heat to serve the purposes as set forth.

It will readily be seen how that this invention may be applied to furnaces, stoves, and boilers in general and to various kinds of heating apparatuses for heating purposes where soft coal is required.

Various changes in the form, proportion, and minor details of this invention may be resorted to without departing from the spirit and scope thereof. Hence

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an apparatus for burning soft coal, the combination of a fire-box with inclined sides, a gas-generator connected therewith by a rear-inclined floor, and opening into the fire-box, a coal-receptacle in rear of the generator and communicating therewith, a hopper on the receptacle, a gas and smoke chamber on the generator gas and smoke apertures communicating with the generator and the chamber, gas and smoke distributers connected to the inclined sides of the fire-box and communicating therewith, means communicating with the gas and smoke chamber and said distributers, substantially as described and set forth.

2. In an apparatus for burning soft coal, the combination of a suitable fire-box with inclined sides, air-ducts in the floor thereof of a gas-generator opening into the rear part of said fire-box by means of an inclined floor, a soft-coal receptacle at the rear end of the gas-generator and communicating therewith, and means for directing the coal from said receptacle into said generator and up the inclined floor into the fire-box, substantially as described and set forth.

3. In an apparatus for burning soft coal, in combination, a fire-box with inclined sides, air-ducts in the floor thereof; a gas-generator, an inclined floor connecting said generator with the rear part of the fire-box, a gas-chamber on the generator and communicating therewith, a coal-receiver extending from the rear end of the generator, gas and smoke distributers connected to the outer part of said inclined sides of the fire-box, and means connecting with the gas and smoke chamber, and said gas and smoke distributers, substantially as described and set forth.

4. In an apparatus for burning soft coal, a fire-box with inclined sides, air-ducts in the floor thereof, a gas-generator, an inclined floor extending from the rear part of the floor of the fire-box to the generator and communicating therewith, gas and smoke distributers connected to the outer part of said inclined sides of the fire-box and communicating with the fire-box, a gas and smoke chamber on the gas-generator and communicating therewith, a coal-receptacle connected to the rear end of the generator and communicating therewith, means connecting the gas-chamber with said distributers, and means for propelling gas and smoke from the generator to the distributers, substantially as described and set forth.

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

ROBERT BAKER.

Witnesses:

JOHN H. HENDRY,

W. S. MCBRAYNE.