E. H. SHOLAR.

FIREPLACE GRATE.

APPLICATION FILED SEPT. 21, 1909.

978,227.

Patented Dec. 13, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

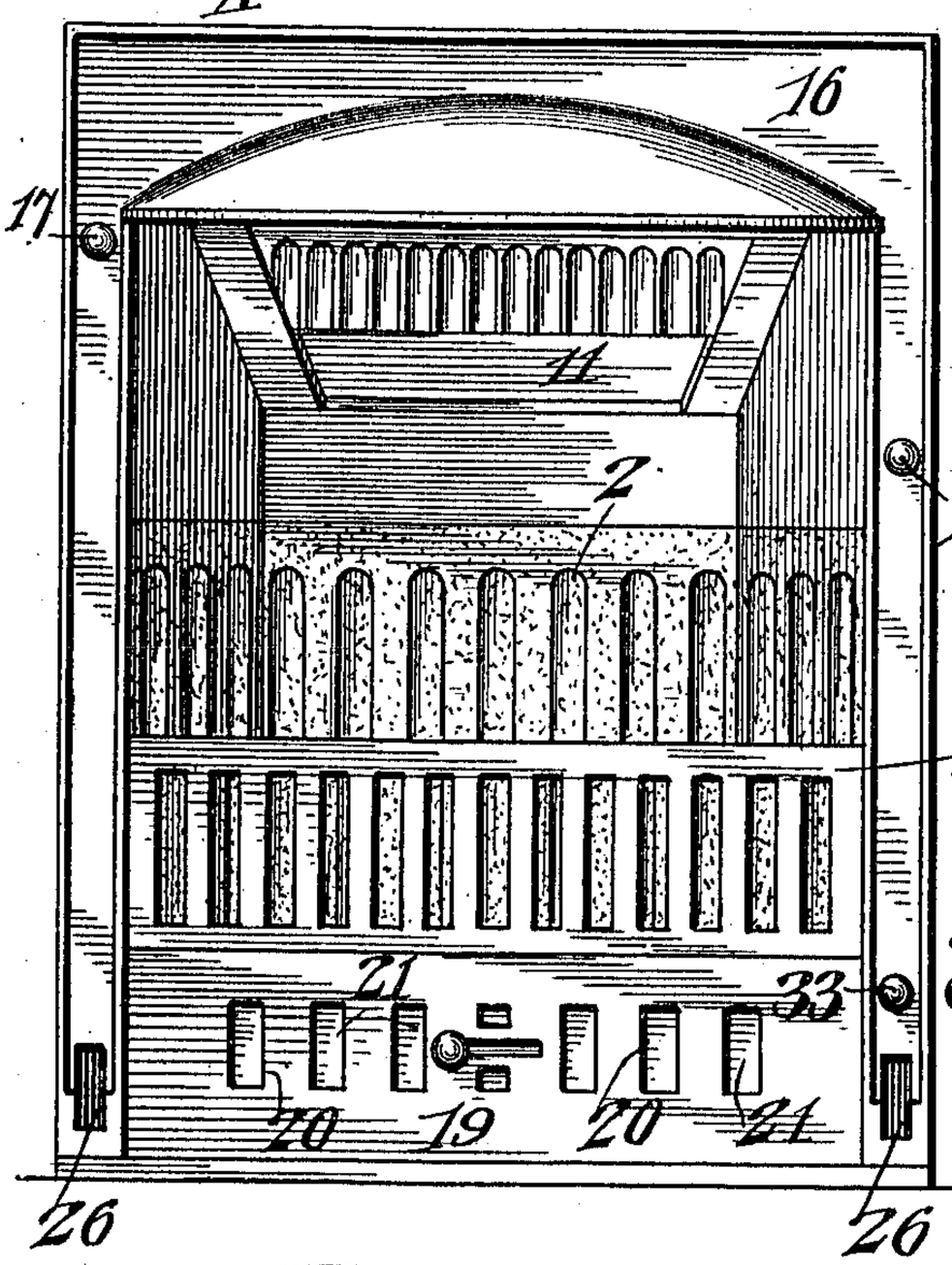


Fig. 2.

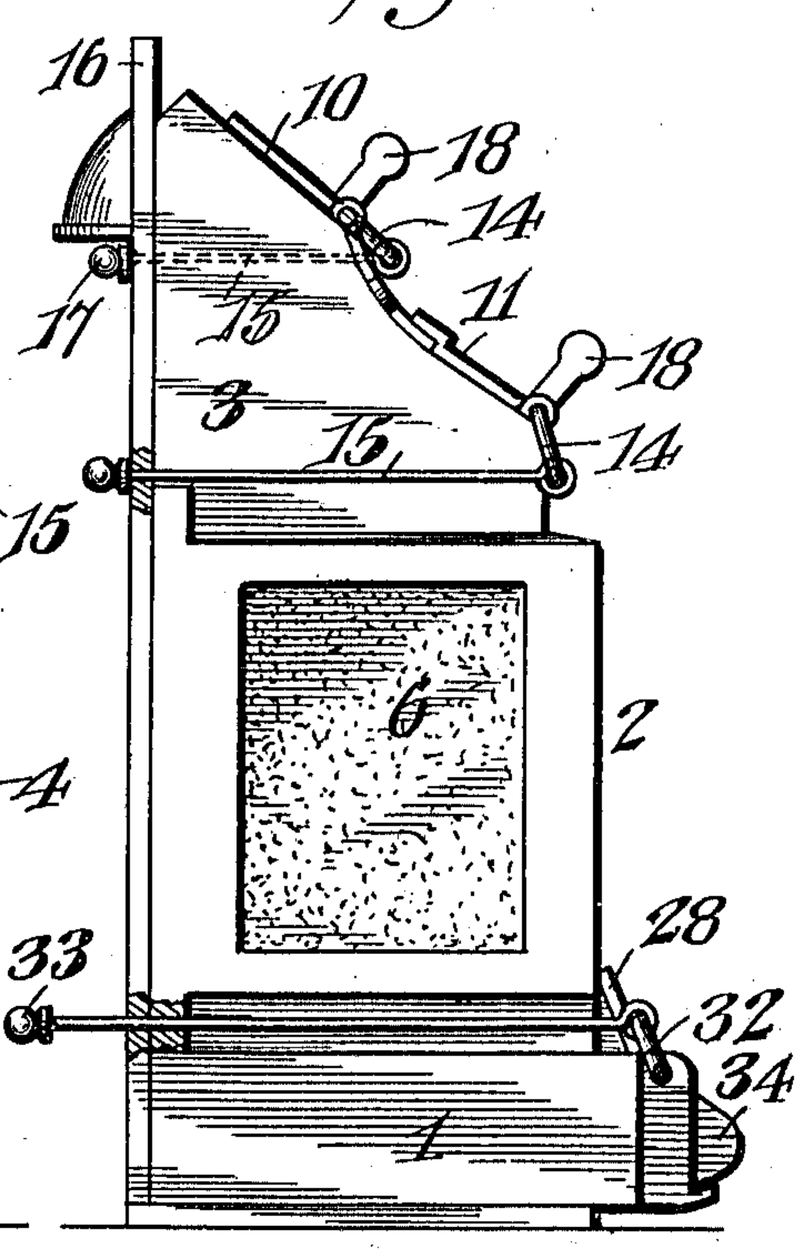


Fig. 6.

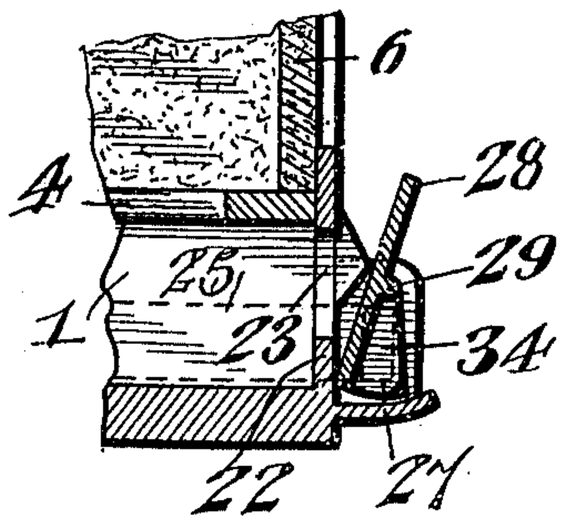
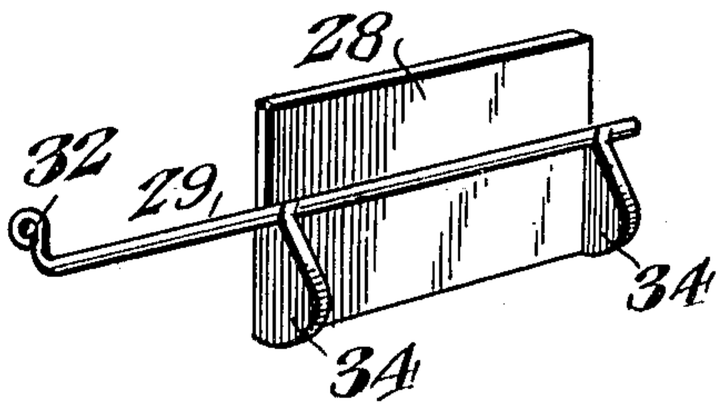


Fig. 7.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

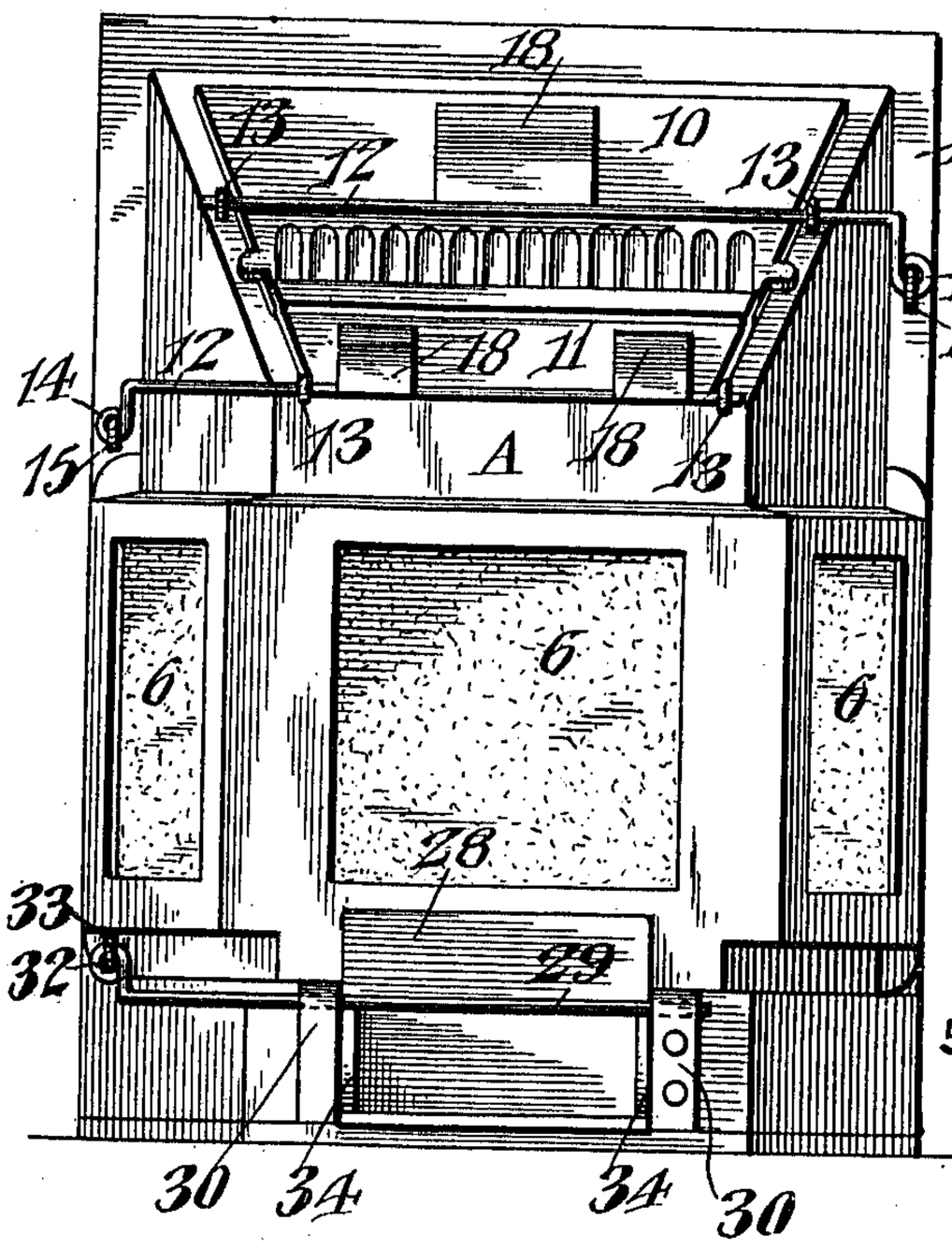


Fig. 4.

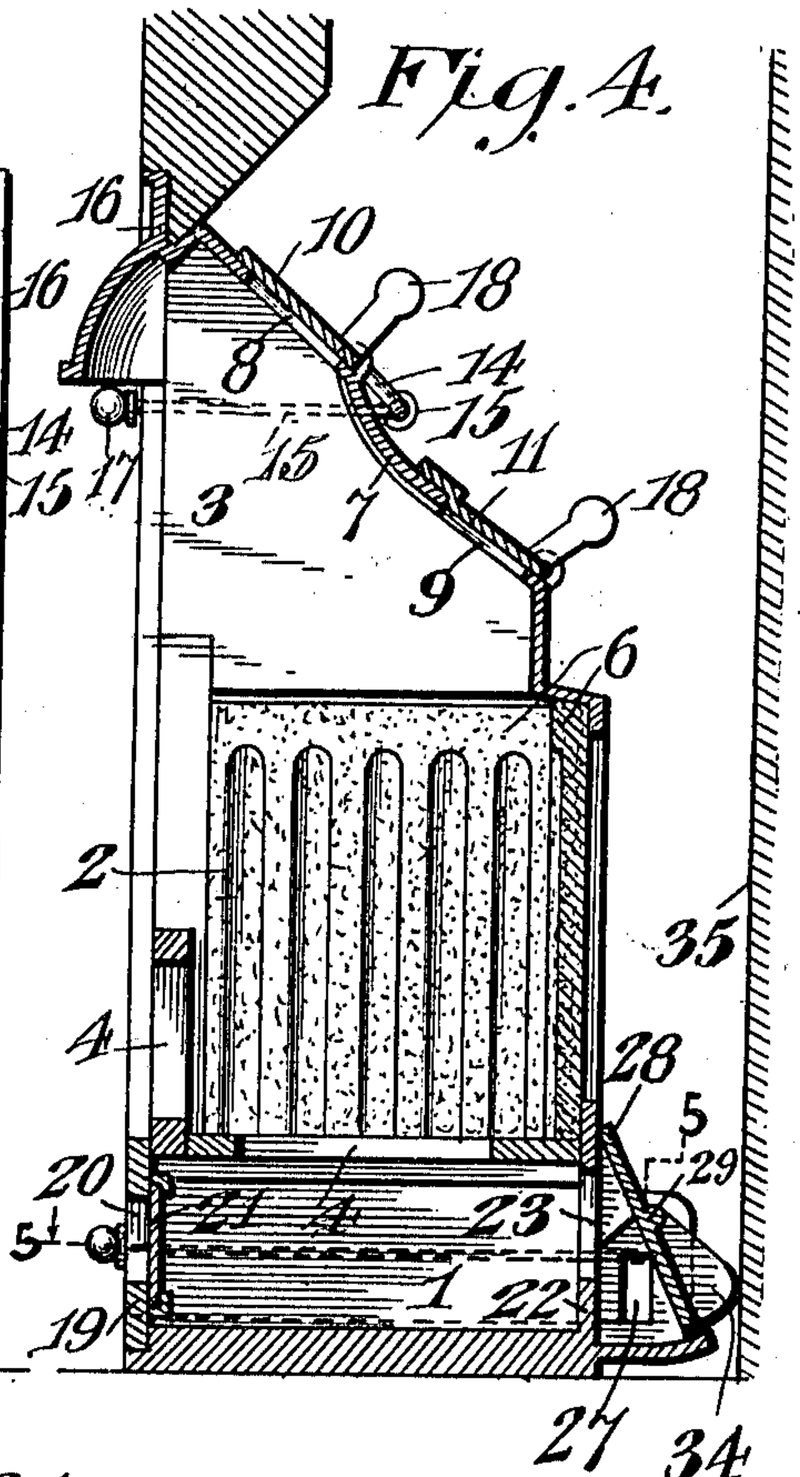


Fig. 5.

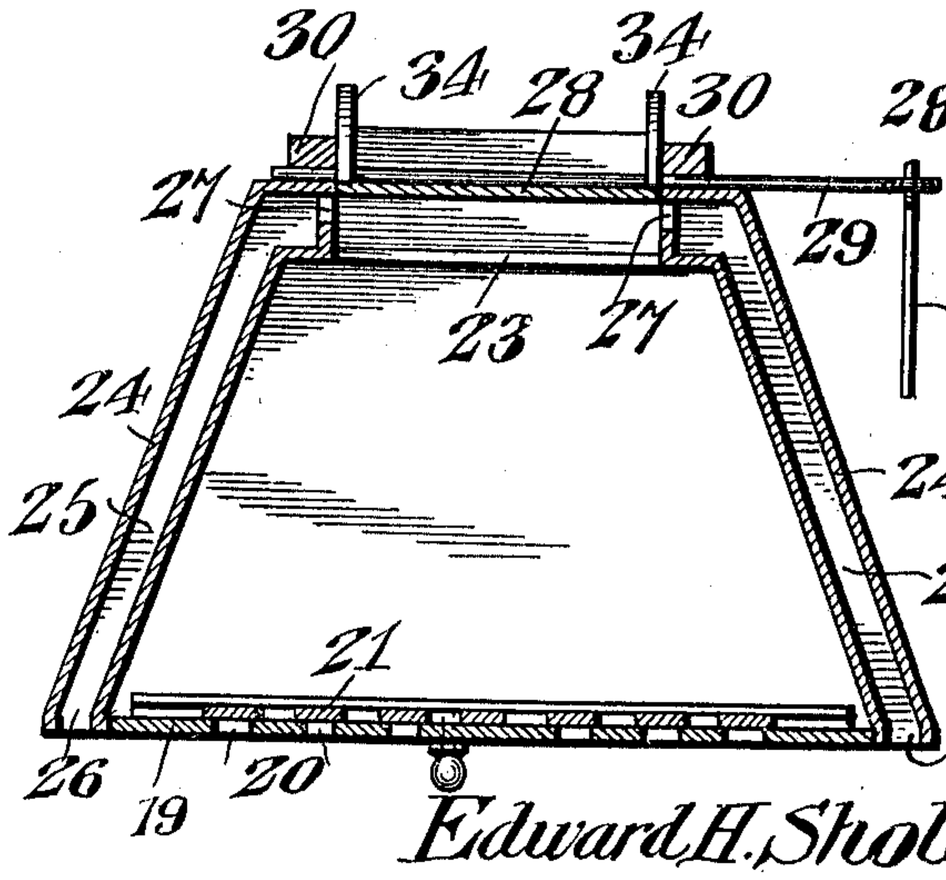
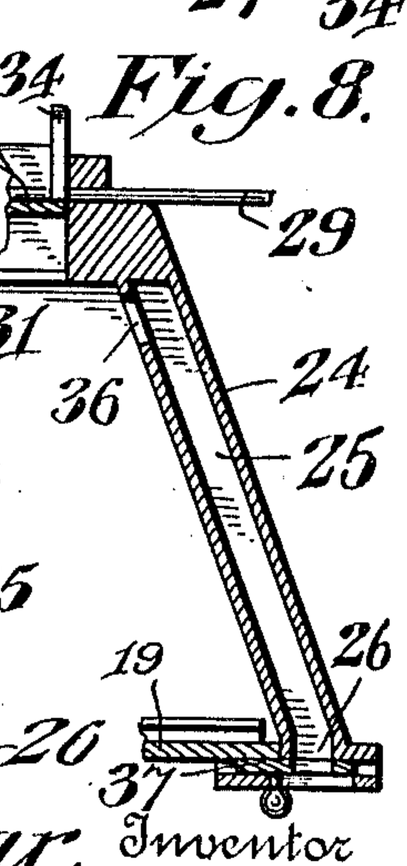


Fig. 8.



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UNITED STATES PATENT OFFICE.

EDWARD H. SHOLAR, OF CHATTANOOGA, TENNESSEE.

FIREPLACE-GRATE.

978,227. Specification of Letters Patent. **Patented Dec. 13, 1910.**

Application filed September 21, 1909. Serial No. 518,887.

To all whom it may concern:

Be it known that I, EDWARD H. SHOLAR, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Fireplace-Grate, of which the following is a specification.

This invention relates to a fireplace grate or heater, and the principal object of the invention is the provision of a novel and efficient draft system whereby the maximum combustion can be obtained when desired, by supplying air to the rear of the grate basket where there has usually been great difficulty in maintaining combustion with the grates as ordinarily constructed.

Another object of the invention is the provision of an effective draft device whereby a down-draft through the coals in the grate may be obtained when slow and steady combustion is desired, or whereby an up-draft through the coals, both at the rear of the basket as well as the front, can be secured.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate the invention, Figure 1 is a front view of a fireplace heater or grate constructed in accordance with the invention. Fig. 2 is a side view thereof. Fig. 3 is a rear view of the heater. Fig. 4 is a central vertical section. Fig. 5 is a horizontal section on line 5—5, Fig. 4. Fig. 6 is a fragmentary sectional view, showing the back and down-draft controlling valve in a different position from that shown in Fig. 4. Fig. 7 is a perspective view of the down and back draft controlling valve or damper. Fig. 8 is a fragmentary horizontal section through the ash pit, showing a modified form of the back draft device.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawings, A designates the metal or other frame or shell of the heater which may be of any approved construction and has an ash pit 1, a combustion or firebox chamber 2 above the same, and an upper hood-shaped top portion 3 forming a heat-deflecting chamber, there being a grate basket 4 which may be of the shaker or fixed type, as desired. The firebox is lined in the usual manner by fire-brick tiles 6. In the inclined wall 7 at the top of the shell are flue ports 8 and 9 controlled by dampers 10 and 11, respectively, for permitting the products of combustion to pass off into the chimney flue. As shown in Fig. 3, each damper is mounted on a rock-shaft 12 journaled in bearings 13 on the frame of the heater and terminates in a crank arm 14 to which is connected a pull rod 15 extending forwardly along the sides of the shell of the heater and terminating at the front plate 16 thereof in a handle 17. By pulling these rods outwardly, the dampers are thrown open and are held automatically in open position by weight arms 18 extending rearwardly from the lower portions of the dampers. The ash pit has a front plate 19 provided with a plurality of air inlet ports 20 which are opened and closed by a slide damper 21 for controlling the supply of air passing to the coals. In combination with a fireplace grate of this character, a combined down and back draft appliance is provided for facilitating the control of the combustion of the coals. In the rear wall 22 of the ash pit is a port 23 extending approximately the full width of the grate at the rear, which port forms an inlet for fresh air when the back draft is operating, and an outlet for the products of combustion when the down-draft is operating. The side walls 24 of the ash pit are formed with air ducts 25 that have front openings 26 for admitting air thereto, and rear openings 27 for discharging air through the port 23 to the rear portion of the ash pit so as to provide sufficient air to the rear part of the grate basket, this being a point where it is extremely important that combustion should be maintained in order to secure efficient operation of the heater. Behind the port 23 and air discharge openings 27 is a swinging damper 28 which deflects the air from the ducts 25 into the port 23 when the said damper is in the position shown in Fig. 4. This damper 28, which constitutes a combined back and down-draft controlling valve, is in the form of a plate carried by a horizontal rock-shaft 29 journaled in bearings 30 formed by rearward extensions on the frame. The plate moves between these bearings and is actuated by a rod 31 connected with a crank

arm 32 on the rock-shaft 29 and extending forwardly to the front of the heater where it terminates in a handle 33. The damper is formed with rearwardly-extending wings 34 at its side edges which cover the outlet openings 27 of the air ducts when the damper is moved to the position shown in Fig. 6 to open the down-draft. Behind the fireplace heater is a passage 35 indicated by dotted lines, Fig. 4, which communicates with the chimney flue, and by closing the upper dampers 10 and 11, the course of the draft is downwardly through the coals, into the ash pit, thence out of the port 23, and upwardly through the passage 35 to the chimney. It will thus be seen that but a single valve is required for changing the course of the draft in the proper regulation of the heater.

Referring to Fig. 8, it will be observed that the air supply ducts 25 in the side walls of the ash pit are provided with outlet ports 36 arranged in the sides of the ash pit, instead of in rear thereof, as in the first construction, so that the valve 28 will not be used for opening and closing the air discharging ports. In this form, the air is controlled by slide valves 37 or equivalent means arranged at the inlet ends 26 of the air ducts. When the back draft device is not in use, the slide valves 37 will be moved to close the inlet ends of the ducts and the valve 28 will be thrown open to permit the downward draft through the coals.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. A fireplace heater including an ash-pit, means at the front of the ash-pit for admitting air thereto, separate means opening into the rear portion of the ash-pit for admitting air thereto, a grate basket arranged over the ash-pit and above both air-admitting means, a damper means disposed above the basket for permitting the products of combustion to pass upwardly into the chimney from the heater, there being a port between the rear portion of the ash-pit and chimney for permitting a draft downwardly through the basket, and a device arranged at the port for establishing communication between the ash-pit and chimney while cutting off the supply of air from the last-mentioned means or opening the supply of air while cutting off communication between the ash-pit and chimney.

2. A fireplace heater including a firebox having a grate basket, an ash pit under the basket, and a draft controlling means above the firebox for discharging the products of combustion into the chimney, in combination with a combined back and down draft device consisting of a port in the rear of the ash pit, an air duct open at one end at the front of the heater and at the opposite end at the rear portion of the ash pit for conducting air directly from the room through the said port into the ash pit to pass upwardly through the rear portion of the grate basket when the draft means is open, and a valve for controlling communication between the ash pit and chimney and for cutting off the supply of air through the duct to permit a down-draft through the firebox and grate when the valve is open and the draft means is closed and for opening the supply when the valve is closed and the draft means open.

3. A fireplace heater including a firebox having a grate basket, an ash pit under the same, dampers for controlling the discharge of the products of combustion out of the top of the heater to the chimney, there being a port in the rear of the ash pit, a device controlling communication between the rear of the ash pit and chimney, and means for supplying air through the said port to the rear portion of the grate and controlled by the said device to interrupt the air supply when the ash pit and chimney are in communication and to open the supply when they are not in communication.

4. A fireplace heater having a grate basket, an ash-pit under the same provided with a port communicating with the chimney, dampers for controlling the passage of the products of combustion to the chimney, air ducts in the side walls of the ash-pit open at the front for receiving air and arranged to communicate with the rear of the ash-pit, and a common valve at the said port for closing both ducts to interrupt the supply of air while establishing communication between the ash-pit and the chimney and opening the air supply when communication between the ash-pit and chimney is interrupted, said valve being operated in conjunction with the dampers to provide an upward back draft or downward draft through the heater.

5. A fireplace heater having a firebox, an ash pit under the same, damper means above the firebox for controlling the discharge of the products of combustion to the chimney, there being a port in the ash-pit forming an air inlet or an outlet for the products of

combustion, an air duct leading from the front of the heater to the rear thereof and communicating with the firebox through the said port, a swinging valve arranged to simultaneously close the air duct and establish communication between the port and chimney and open the duct when the communication between the port and chimney is interrupted, and means for actuating the valve in coöperation with the damper means to produce a draft in either direction through the port.

6. A fireplace heater including a firebox, an ash pit under the same, means above the firebox for controlling the draft therethrough, there being a port in the rear wall of the ash pit communicating with the chimney, air supply ducts in the side walls of the ash pit and open at the front of the heater for receiving a supply of air and having discharge openings disposed in proximity to the said port, a valve movable between the last-mentioned openings for controlling the supply of air and for controlling communication between the ash-pit and chimney, said valve being in the form of a swinging plate having rearwardly-extending wings for covering the discharge openings of the ports, and means for actuating the valve to direct air into the ash pit and firebox while communication between the ash-pit and chimney is cut off by the valve or for permitting products of combustion to pass from the firebox and ash pit out of the said port while the valve closes the ducts.

7. A fireplace heater comprising a firebox including a grate basket, an ash pit under the grate basket, a damper device at the top of the heater for controlling the passage of the products of combustion to the chimney, there being a port in the ash pit under the rear portion of the basket communicating with the chimney, air supply ducts in the side walls of the ash pit having inlet openings at their front ends and discharge openings at their rear ends disposed at opposite sides of the said port, a horizontally-disposed rock shaft, an oscillatory valve mounted on the rock-shaft in spaced relation to the port and having means for opening and closing the rear openings of the ducts while the valve cuts off or establishes communication between the ash-pit and chimney, respectively, and a device connected with the rock-shaft for moving the valve to direct air inwardly through the port from the ducts or permit products of combustion to pass outwardly through the port to the rear of the heater whereby the valve cooperates with the damper device for producing an up or down draft through the firebox.

8. A fireplace heater including a firebox having a grate basket, an ash-pit under said basket provided with a large port in its rear wall communicating with a chimney and further provided with air ducts in its opposite side walls communicating at their rear ends with the ash-pit, means whereby the draft may be caused to flow through the air ducts to the under rear side of the grate basket, and means whereby the draft may be caused to flow through the grate basket or from the grate basket through the rear wall of the ash-pit to the chimney.

9. A fireplace heater comprising a frame or shell having an ash-pit, a combustion chamber or firebox above the same, and an upper hood-shaped top portion forming a heat-deflecting chamber, said top portion being provided with flue ports which lead to the chimney, and dampers controlling said ports, said ash pit having in its rear wall a port extending approximately the full width of the grate and arranged below the horizontal plane of the latter, said port forming an outlet for the products of combustion, said ash-pit being further provided with air ducts in its opposite side walls, said air ducts extending from front to rear and having front openings to receive fresh air and rear openings which communicate with the ash-pit, and a damper constituting a combined back and down-draft controlling valve and arranged at one side of the rear port of the ash-pit.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

E. H. SHOLAR.

Witnesses:
A. R. McKenzie, Jr.,
George Hixon.