G. E. SHARPE.

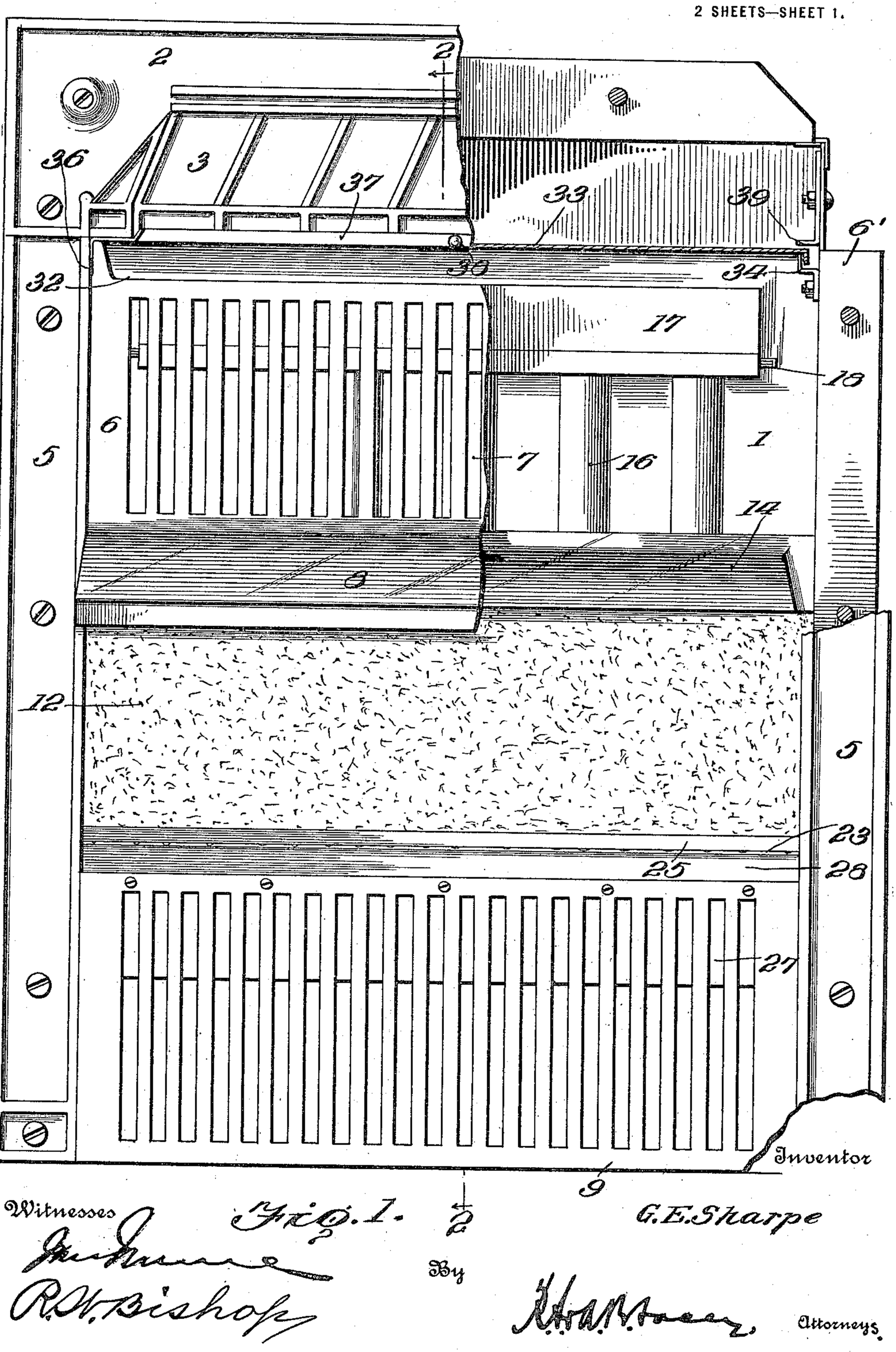
GAS HEATER.

APPLICATION FILED FEB. 25, 1915.

1,155,283.

Patented Sept. 28, 1915.

2 SHEETS—SHEET 1.



Witnesses

J. Thurman

R. W. Bishop

Fig. 1. ½

Inventor

G. E. Sharpe

By

H. H. A. Brown

Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 2.

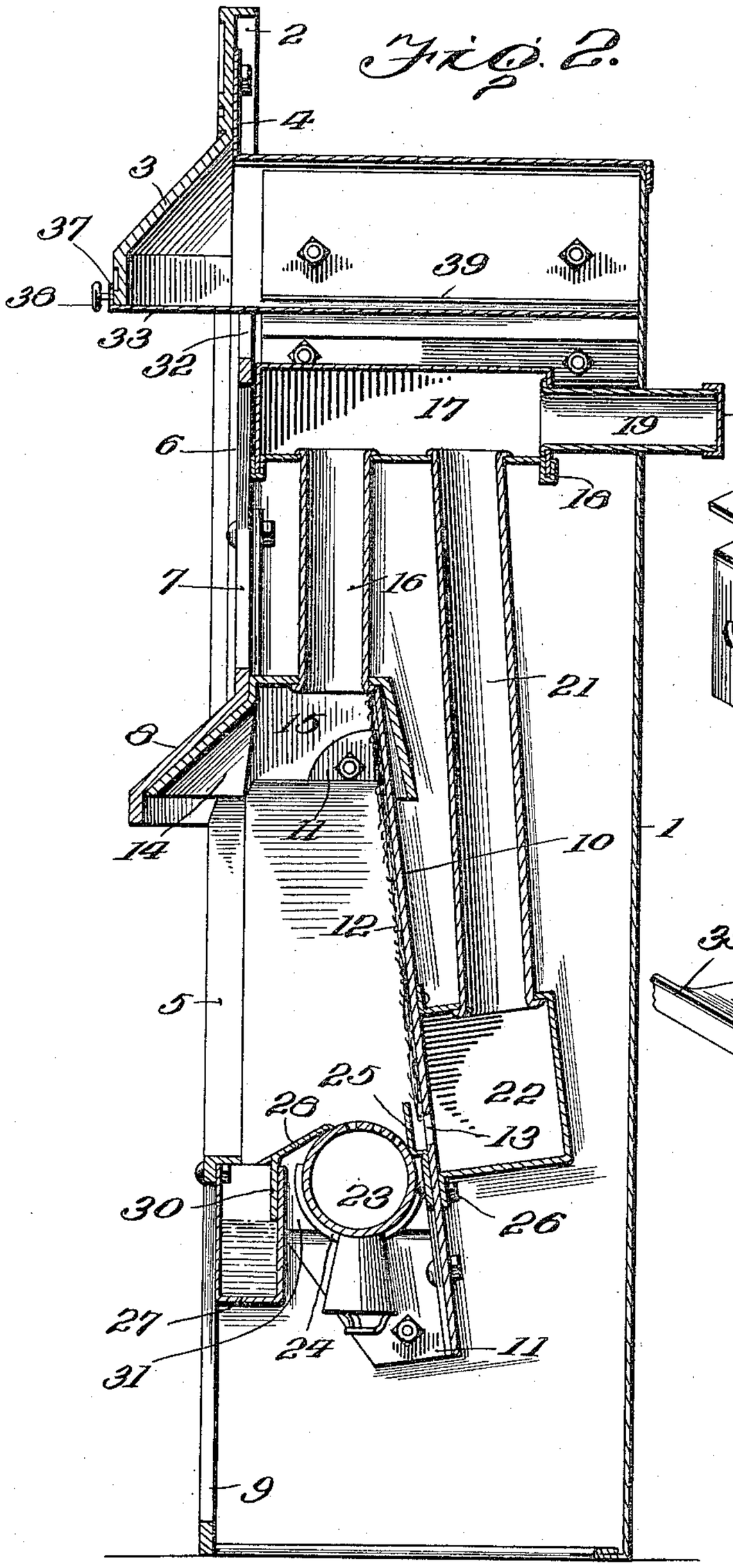
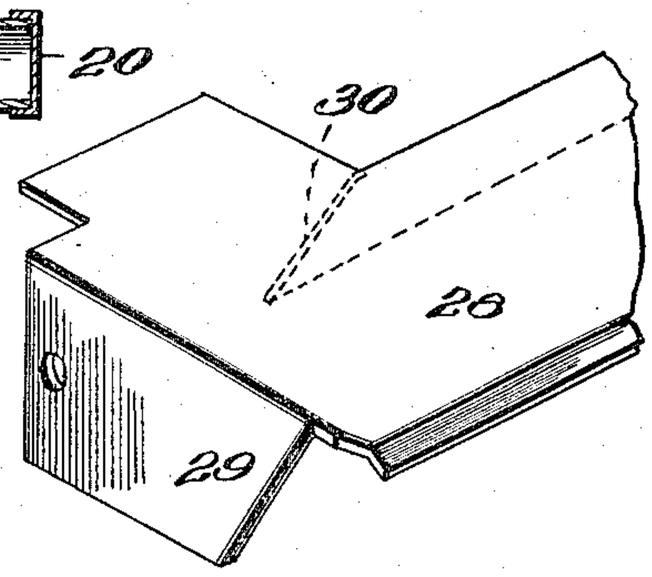


Fig. 3.



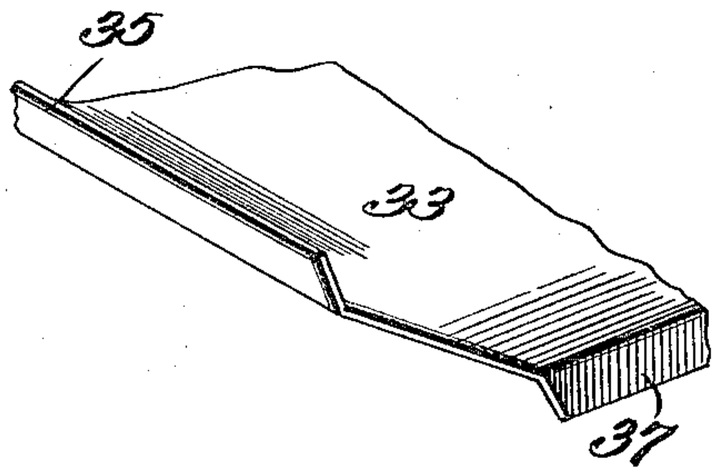


Fig. 4.

Witnesses

R. F. Bishop.

Inventor

G. E. Sharpe

By

Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE E. SHARPE, OF STEUBENVILLE, OHIO.

GAS-HEATER.

1,155,283. Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed February 25, 1915. Serial No. 10,620.

To all whom it may concern:

Be it known that I, GEORGE E. SHARPE, a citizen of the United States, residing at Steubenville, in the county of Jefferson and State of Ohio, have invented certain new and useful Improvements in Gas-Heaters, of which the following is a specification.

This invention relates to gas heaters, and has for its object the provision of an inexpensive device which may be set in an open fire-place or used at any point in a room as a stove and in which the fumes and currents rising from the gas burner will be caused to circulate in a path which will return them to a point immediately adjacent and above the burner where they will be mingled with the flame and, consequently, all particles of carbon and similar matter consumed with an economical flow of gas.

The invention also seeks to improve the construction of the heater to the end that the parts of the same may be readily assembled and the device as a whole given an ornamental appearance, the odors ordinarily attendant upon the use of gas heaters being overcome and the air within the room quickly raised to the desired temperature.

A further object of the invention is to provide a structure which may be connected to a flue to carry off the products of combustion and to also provide means whereby the mantel will be protected when the device is located in a fire-place.

The invention is fully illustrated in the accompanying drawings and consists in certain novel features which will be first fully described and then more particularly pointed out in the claims following the description.

In the drawings: Figure 1 is a front elevation, partly broken away, of a heater embodying my present improvements; Fig. 2 is a vertical section of the same taken on the line 2—2 of Fig. 1; Fig. 3 is a detail perspective view of a portion of the shield which is interposed between the water box or pan and the burner; and Fig. 4 is a detached perspective view of a portion of the upper damper or upper hood protector.

In carrying out my invention, I employ a housing 1 which is preferably of sheet metal and is of a size to fit within a fireplace, as will be readily understood, the said housing being of any desired dimensions and comprising a back, sides and a top, as will be readily understood. I also employ a front, which may be of any preferred design, and is preferably of cast metal so as to possess the necessary strength and durability.

In the drawings, I have shown the front as comprising an upper section 2 having a hood 3 projecting forwardly and downwardly and secured to the top of the housing by suitable bolts inserted through the flange 4 of the housing and the section 2 of the front, as will be readily understood. Below the said top section 2 are side members 5 which are secured by suitable bolts to side flanges 6′ of the housing, and between the said side members 5 below the hood 3 is secured a screen or grille 6 which, in the illustrated form, comprises a plate having vertical slots 7 and also provided with a downwardly and outwardly projecting hood 8 below the said slots. Between the lower ends of the side members 5, I secure the lower screen or grille 9 which, in the present drawings, is shown as similar in appearance and construction to the upper screen or grille 6 but which may, of course, be of any other design which may provide openings through which cold air may pass into the housing.

The space between the hood 8 and the screen or grille 9 is open, as clearly shown in the drawings, and within the housing, back of the said open space, is a deflector plate 10 which is preferably constructed of sheet metal for the sake of economy and lightness and is provided with side flanges, indicated at 11, through which suitable bolts are inserted to secure the same to the sides of the housing. The front face of this deflector plate is covered with asbestos, as shown at 12, and near the lower end of the said plate is a passage 13 for heated currents, which passage may be a single slot extending across the width of the plate or a series of alined short slots or perforations. The upper end of the deflector plate is secured to an inner hood 14 which is suitably shaped to fit within and constitute a lining for the hood 8 and also provide a chamber 15 in which the heat may collect before passing through a vertical flue or a series of flues 16 into a drum 17 which is located back of the upper end or edge of the screen or grille 6. The drum 17 is supported by the upper ends of the flues 16 and is prefer-

ably constructed of sheet metal plates having their meeting edges interlocked in any desired manner, as indicated at 18, the said interlocking edges being brazed or otherwise intimately connected so that tight joints will be provided. A short flue 19 leads from the back of the drum 17 through the back plate of the housing 1, and this flue may be connected with a chimney or other conduit to carry off the products of combustion, if desired. It is not necessary, however, to so connect this flue, and ordinarily I close the outer end thereof by a cap 20. In rear of the flues 16, I provide longer flues 21 which open at their upper ends into the drum 17 and extend downwardly from the said drum in rear of the deflector plate 10 and have their lower ends opening into the box or drum 22 which is secured to the back of the deflector plate and extends over the opening 13.

A burner 23 is located in advance of the deflector plate at the lower end thereof and may be of any desired construction, it being equipped in practice with a suitable valve and controlling handle therefor, which handle may project through the grille 9 or may be otherwise conveniently located. This burner is conveniently supported by brackets 24 secured to the front of the deflector plate, and between the burner and the said plate I provide a shield or lip 25 which is arranged over the opening 13 and extends upwardly above the same. This lip is easily provided by forming an offset in a sheet metal plate, which plate is rigidly secured to the front side of the deflector plate 10 by the same bolts 26 which secure the lower side of the box 22 thereto. It will be readily understood that the heated gas currents flowing from the box 22 will be turned upwardly by this lip 25 so that instead of flowing across the burner 23 they will rise therefrom and be fed directly into the flame.

A pan or water box 27 is secured to the rear side of the grille 9 at the upper edge thereof, and the top of this pan or water box is always open so that water may be readily poured into the same. To impart an ornamental appearance to the heater, and to prevent the water flowing onto the burner when the supply is being replenished, I provide a shield 28 which is preferably of burnished sheet copper and is provided at its ends with depending flanges 29 through which bolts may be inserted to secure it to the sides of the housing between the same and the ends of the water box, the ends of the said shield being suitably shaped to fit closely to the sides of the deflector plate and to the ends of the pan, as will be readily understood. The said shield is also provided with a depending flange 30 which enters the water box, as shown clearly in Fig. 2, and thereby covers the rear wall of the same. Copper plates 31 may also be placed against the side portions of the deflector so as to cover the same and thereby add to the ornamental appearance of the heater.

The upper grille 6 is so shaped or arranged as to provide an open space 32 between its upper edge and the lower edge of the hood 3 through which the heated air may escape into the room above the drum 17, and to protect the mantel when the device is located in a fire-place I provide the shield or damper 33 which consists of a flat sheet metal plate slidably supported upon guides 34 secured to the sides of the housing 1 near the upper end thereof, the plate 33 being provided with longitudinal flanges or ribs 35 at its ends to fit over the said guides 34, as shown in Fig. 1. It will also be noted from said figure that the grille 6 is provided with small notches 36 at its ends to facilitate the entrance of the damper or shield into position, and the front edge of the said shield is turned upwardly, as shown at 37, and equipped with a handle 38 so that it may be readily manipulated and will be limited in its inward movement by the said up-turned flange engaging the front face of the lower edge of the hood 3. To guard against buckling of the said plate 33 at the ends of the same, I provide the keeper guides 39 which consist of sheet metal plates secured to the sides of the housing and having their lower ends projected inwardly to extend over the ends of the damper plate, as clearly shown.

It is thought the use and advantages of may improved device will be readily understood from the foregoing description taken in connection with the accompanying drawings. The gas is ignited in the ordinary manner and the flame will extend upwardly in front of the deflector plate, as is evident. The heat thrown out directly by the flame will be reflected into the room through the open space between the lower grille and the lower hood, while the fumes of the gas will pass up through the flues 16 into the drum 17. From the drum 17, the gas fumes and the products of combustion will descend through the flues 21 into the box 22 and thence escape through the opening or openings 13 to the space above the burner. The heat from the flame will, of course, create an upward flow of air currents, and the lip 25 will prevent the currents from the box 22 passing across the burner and will turn the same upwardly thereby acting in conjunction with the natural suction created by the flame. The currents from the flame will thus be given circulation from the burner and back to the same so that the odor-giving particles will be consumed and a small supply of gas will serve to quickly

bring the temperature of the room to the desired degree. The cold air from the room will pass through the lower grille or screen under the deflector plate and then rise within the housing around the flues 16 and 21 and the drum 17 and finally escape through the upper screen and over the upper edge of the same. If the heater be located in a fire-place, the shield or damper 33 may be drawn forward so that it will extend out beyond the hood 3 and will thus serve to prevent the heated air from flowing directly over the front face of the said hood 3 and against the mantel. They will be, moreover, thrown out into the room and toward the floor of the same so that the room will be quickly heated.

It will be readily noted that the device effects two counter-circulations, the air of the room being caused to rise back of the deflector plate and around the flues and drum and then escaping into the room from the upper portion of the heater, while the products of combustion and the gaseous currents will be caused to rise through the flues 16 and the drum and then descend through the flues 21 and return to a point above the burner. The drum and the flues, as well as the box 22 being constructed of sheet metal, will be quickly heated so that the fresh air currents rising around the same will be quickly raised in temperature. The drum 17 is, of course, spaced from the back of the housing so as to facilitate the circulation of the fresh air currents, and it will be noted that the drum, the flues, the lower box 22, together with the deflector plate and the inner hood and heat chamber 15, will form one rigid structure so that the parts may be readily assembled when setting up the apparatus.

The provision of the water box or pan 27 provides for the supply of a vapor above the burner to replenish the consumed particles in the gaseous currents, and the shield 28 between the pan and the burner will prevent the flooding of the burner when the supply of water is being replenished and will also impart an ornamental appearance to the device which will perceptibly increase its attractiveness. Moreover, this shield 28 and the side plates 21 being of burnished copper will serve as reflectors to throw heat out into the room and as the shield rests directly on the burner close to the openings therein, it will become heated and, consequently, aid in the vaporization of the water in the box 27.

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

1. In a heater, the combination of a deflector plate having an opening therethrough near its lower end, a heat chamber at the upper end of said plate in advance of the same, a drum above and spaced from said heat chamber and in direct communication therewith, a box on the back of said plate covering the opening therein, flues back of the deflector plate connecting said box with the drum, and a burner in advance of the deflector plate adjacent the opening therein.

2. In a heater, the combination of a deflector plate having an opening therethrough near its lower end, a drum above the deflector plate in communication with the space on front of said plate, a box on the back of the plate covering the opening therethrough and in communication with the drum, a guard carried by said deflector plate and offset therefrom to project over the opening therethrough, and a burner below and in advance of said guard.

3. In a heater, the combination of a housing, a hood projecting from the front end of said housing, a grille across the front of said housing below said hood, heating members supported within the housing in rear of said grille and below said hood and spaced from the housing, and a damper slidably supported by said housing below the top of the same and at the lower edge of the said hood.

4. The combination of a housing, a hood secured to and projecting from the upper end of said housing, heating members supported within the housing below the said hood, guides upon the side walls of the housing, a slide mounted on said guides and projecting under and forward of the said hood, and keepers on the side walls of the housing adjacent and above said guides.

5. The combination of a housing, a hood on the front of the housing at the upper end of the same, heating members within the housing below and spaced from the hood, and a movable shield interposed between the hood and the heating members and arranged to be extended in front of the hood.

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

GEORGE E. SHARPE. [L. S.]

Witnesses:
JOHN A. HUSTON,
WM. L. SHARPE.