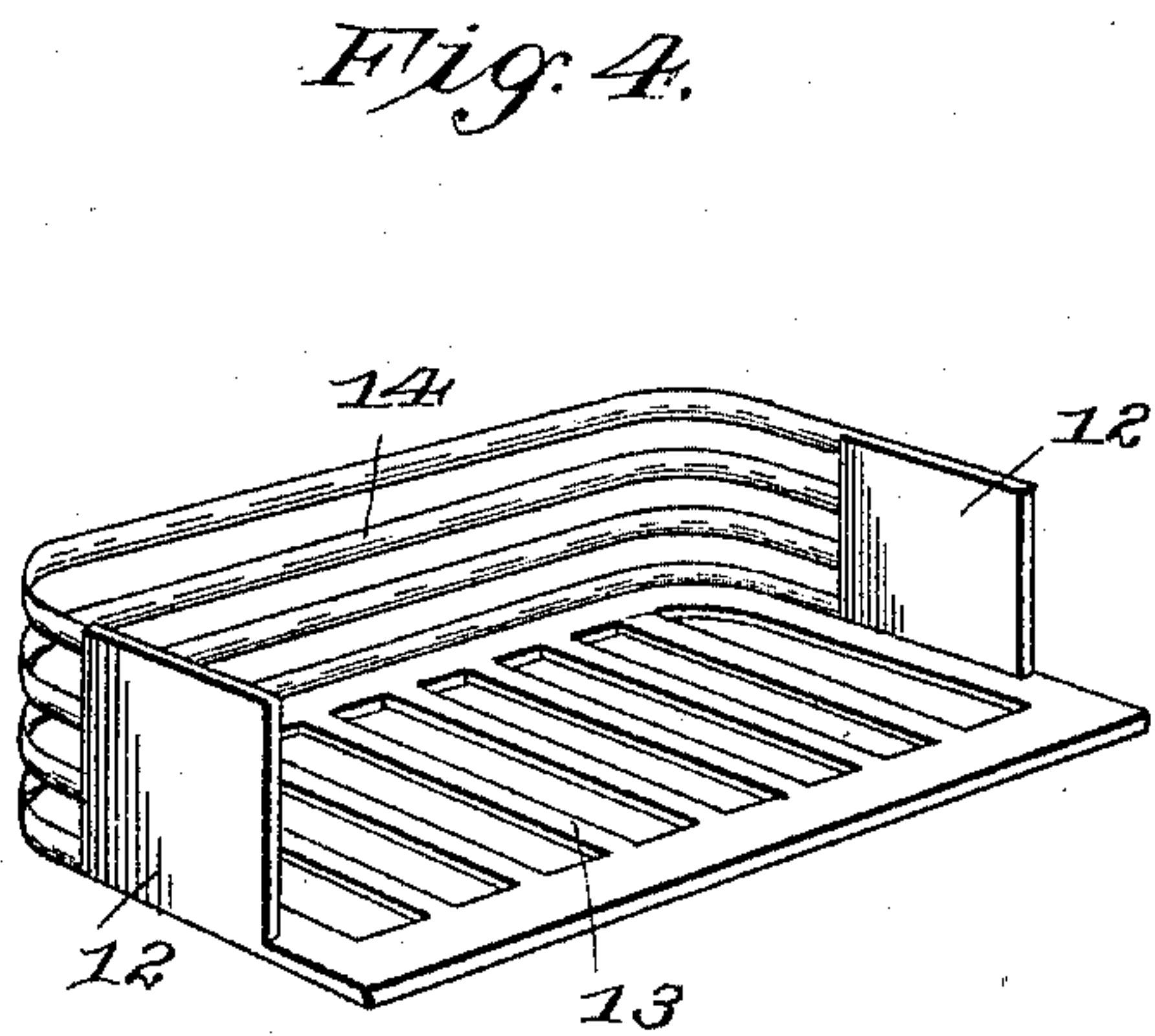
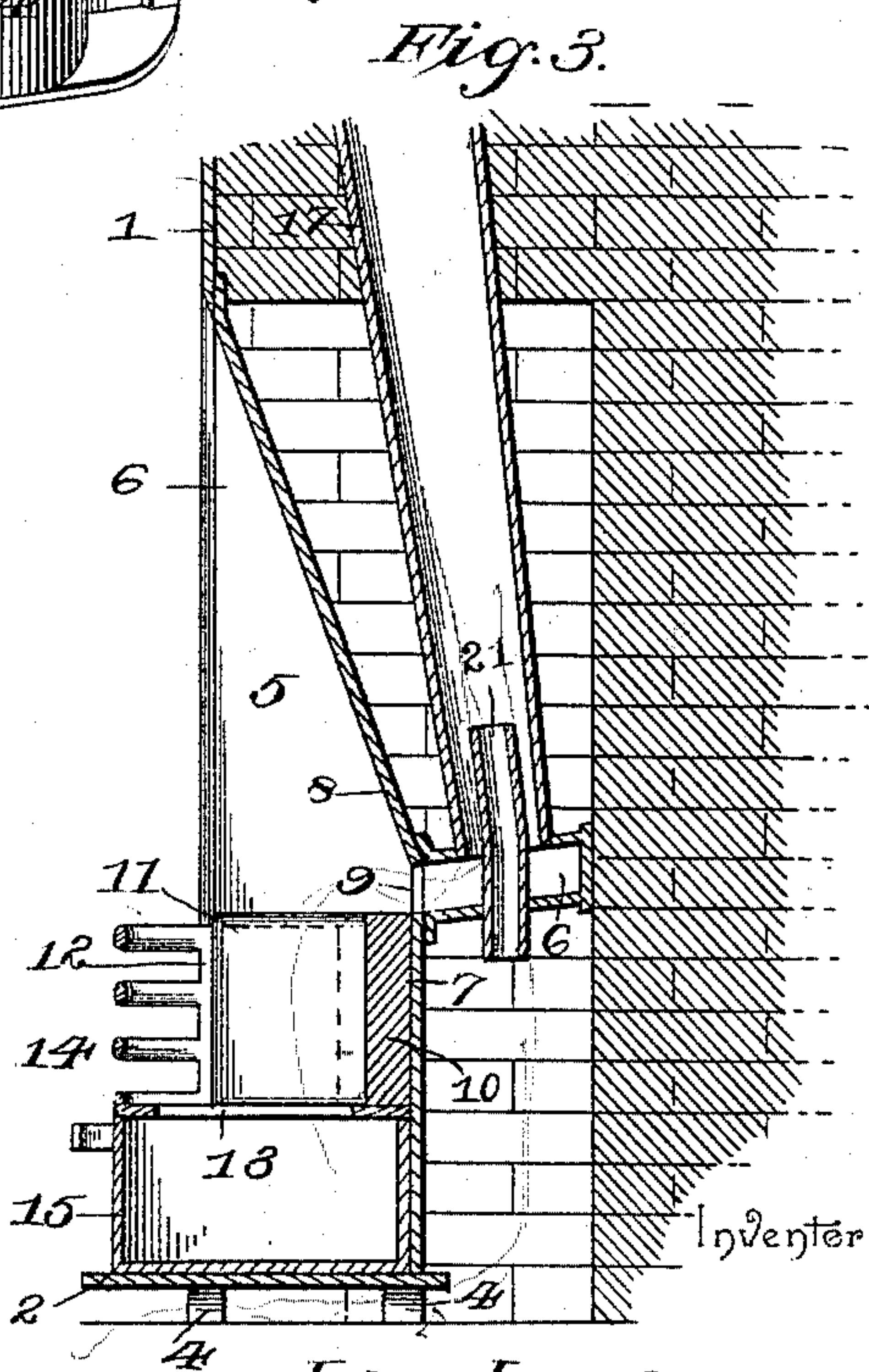
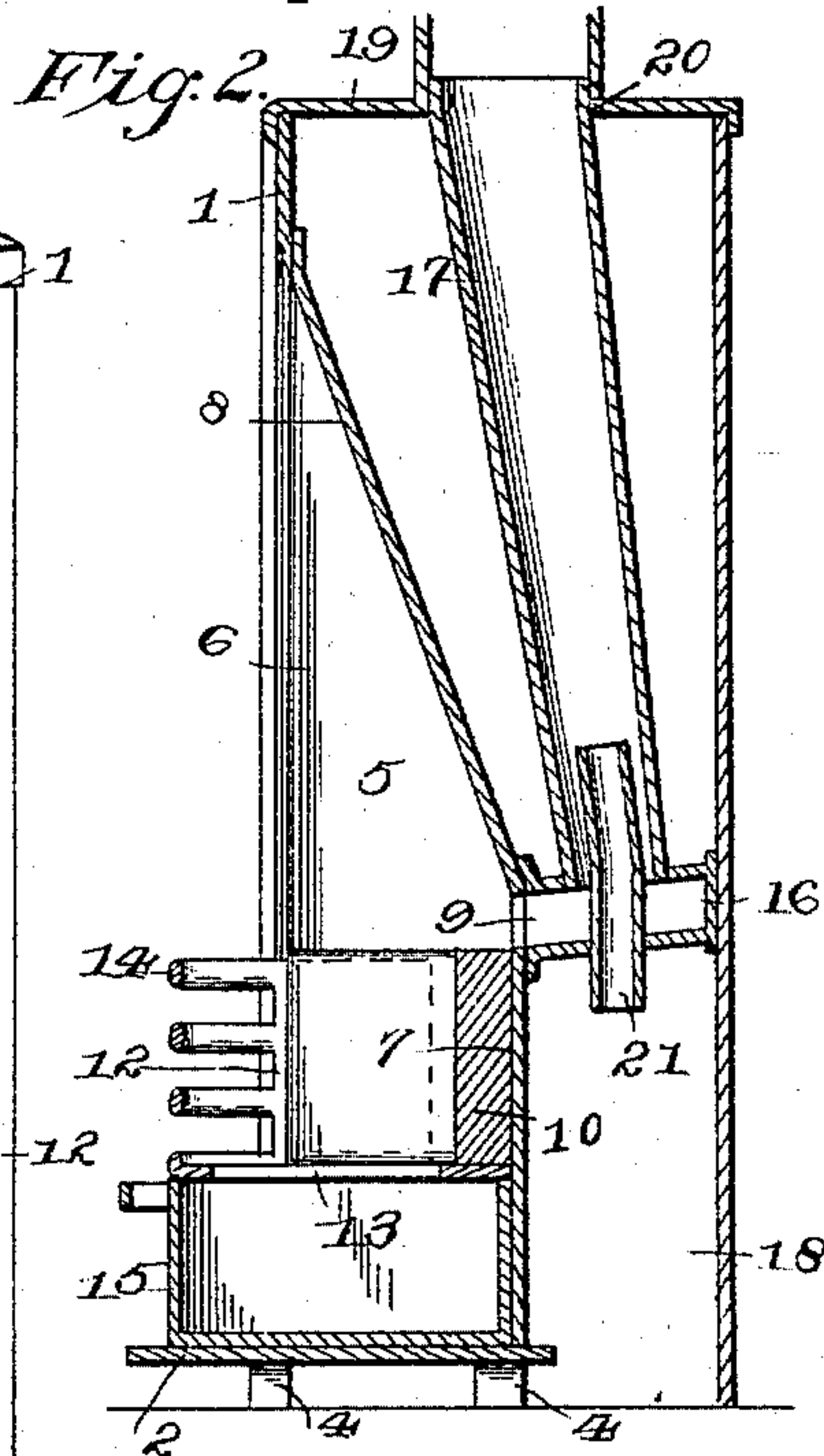
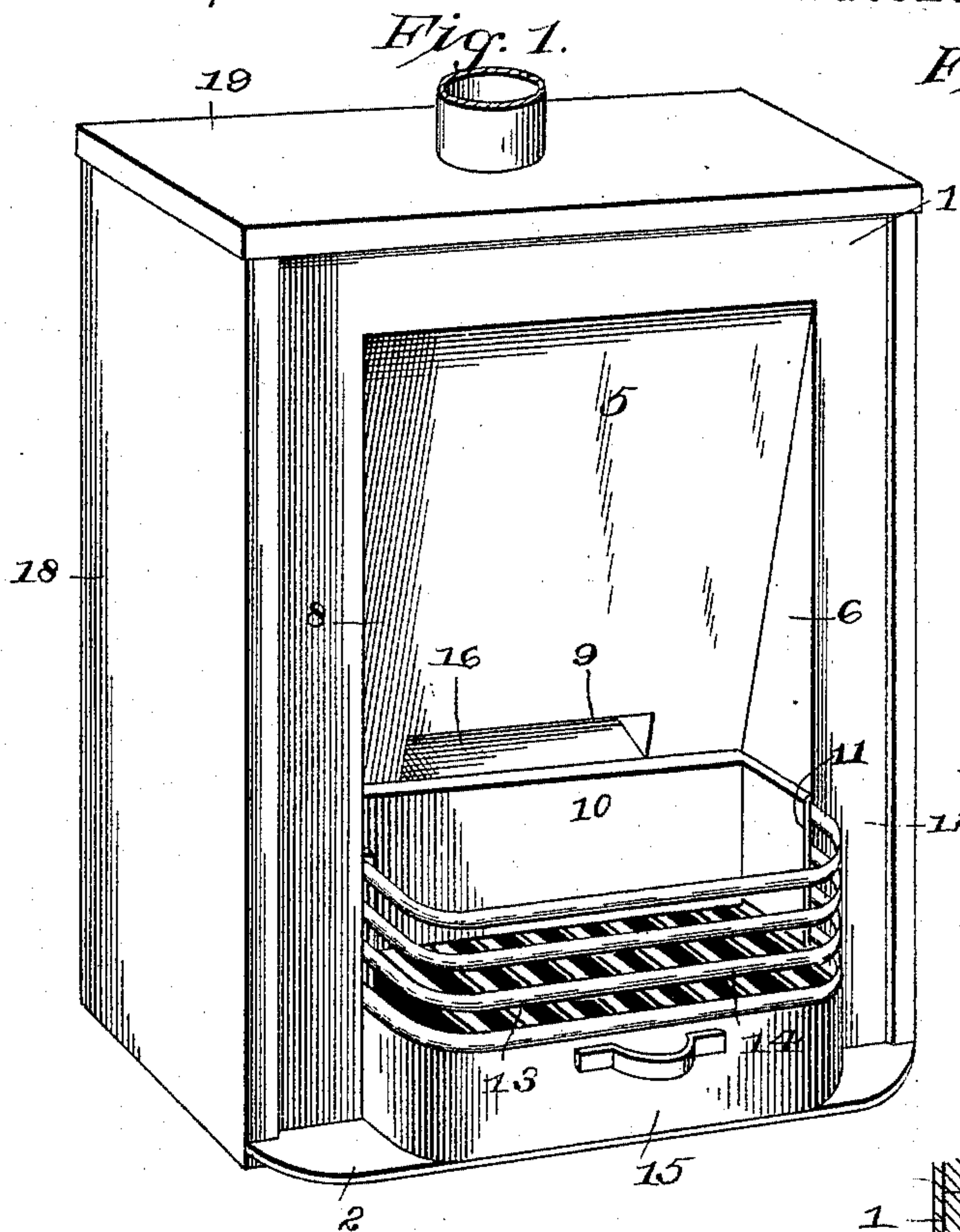


(No Model.)

J. LAWLOR.
PORTABLE OPEN GRATE HEATER.

No. 526,629.

Patented Sept. 25, 1894.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN LAWLOR, OF BROOKLYN, ASSIGNOR OF ONE-HALF TO MARY R. GEIS,
OF NEW YORK, N. Y.

PORTABLE OPEN-GRATE HEATER.

SPECIFICATION forming part of Letters Patent No. 526,629, dated September 25, 1894.

Application filed April 19, 1894. Serial No. 508,204. (No model.)

To all whom it may concern:

Be it known that I, JOHN LAWLOR, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Portable Open-Grate Heater, of which the following is a specification.

This invention relates to portable open grate heaters; and it has for its object to provide certain improvements in heaters of that character that are used in connection with ordinary open fire places, but which can be readily employed as a portable heater without being used in connection with an open fire place, where there is none.

To this end the main and primary object of the present invention, is to provide a new and useful open grate heater that can be either used within or without an open fire place, and in either event providing efficient means for thoroughly ventilating a room to relieve it of heavy and impure air while at the same time providing for a uniform perfect draft and complete combustion of the fuel, thereby rendering the heater especially useful for sanitary purposes in hospitals, nurseries, sanitariums, &c.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of an open grate heater constructed in accordance with this invention shown as adapted for use outside of an open fire place. Fig. 2 is a central vertical sectional view of the same. Fig. 3 is a similar view of the heater arranged within an open fire place. Fig. 4 is a detail in perspective of the removable grate.

Referring to the accompanying drawings, 1 designates an upright rectangular front frame of the ordinary construction as is usually employed in open grate heaters, and in the present invention, the lower ends of said frame are secured to the imperforate frame base plate 2, that is provided with a series of bottom projected feet 4, which serve to elevate the base plate above the plane of the

floor, or the hearth of an open fire place, in order to leave a space for the free circulation of heavy or foul air under the said base plate to the rear of the heater and out through the smoke pipe as will be more particularly referred to.

An imperforate heater fire-box 5, is firmly secured to one side of the rectangular front frame 1 and also to the elevated frame base plate 2, and extends from said base plate to the full height or to the top of the said front frame, and said heater fire box 5, comprises the opposite side walls 6, that inclose in the opposite sides of the heater, the straight back wall 7, that extends immediately above the frame base plate 1, and the inclined baffle wall or plate 8, that extends upwardly and forwardly from the upper terminal of the straight back wall 7, to the top of the front frame 1, and not only completes the back wall of the fire box, but forms an imperforate top therefor to prevent the escape of the heated air and smoke that rises upwardly from the grate, and to cause the heat to be thrown out into the room and the smoke and other products of combustion to be deflected downwardly and out through the intermediate draft opening or slot 9, that is arranged horizontally in the rear wall of the fire box at the meeting point of the straight and inclined portions thereof.

Arranged horizontally within the fire box 5, and below the plane of the draft opening or slot 9, is a rectangular fire back 10 that is constructed in the usual manner, and at the front extremities of the fire back 10, are arranged the opposite keepers 11, that removably receive the opposite grate supporting plates 12, that are secured to opposite sides of the fire grate 13 and are adapted to be removably slid in and out of the said keeper when the grate is being adjusted in and out of position. The said fire grate 13, is constructed in the same general shape as the fire grates in ordinary fire place or open grate heaters, and is provided at the front with the open front wall 14, that not only serves to confine the fuel on the grate in the ordinary manner, but in the present invention is designed to supply most of the draft for the fuel inasmuch as an ash pan 15, is provided

to slide on the base plate 2, directly under the open bottom of the grate, and is of a height equaling the space in which it fits, so that its front wall will extend up to the bottom of the grate, thereby preventing the draft under the grate to cause any check to the direct draft through the front and over the top of the grate directly into the draft opening or slot 9.

By reason of providing a draft for the fuel in the manner described, a more thorough and complete combustion of the fuel will be secured than could otherwise be secured without the use of the ordinary blower, while at the same time the heated air is more effectually thrown out into the room by the baffle wall or plate 8, that directs the draft through the opening or slot 9, that is located directly back of and in line with the top of the fire-back 10, for the grate, and is therefore usually located in a plane with the top of the fire. The smoke and other products of combustion that pass through the draft opening or slot 9, escape into the rectangular draft box 16, secured to the rear side of the fire box 5, and communicating with the opening or slot 9, and attached to the top side of the draft box 16, is the lower end of the smoke pipe 17, that extends up into the chimney flue of the open fire place when the heater is arranged therein.

A heater constructed as just described will furnish all the heat that is required without the use of a blower, by preventing the heat and smoke from escaping directly into the chimney flue that is usually arranged in a direct line above the grate, and the heated draft of the heater will naturally cause a circulation of the heavy or foul air in a room under the elevated frame base plate 2, such heavy or foul air passing to the rear of the closed fire box 5, and up through the chimney flue into which extends the smoke pipe 17.

Where it is not convenient to use the heater in connection with an open fire place, and the same is to be used within a room as any other ordinary heater, the same is used in connection with a portable heater casing 18. The heater casing 18, is rectangular in shape and is of a size sufficient to inclose therein the front frame 1, and the other parts of the heater herein described, as illustrated clearly in Fig. 2, of the drawings, and said heater casing 18, is provided with a removable flanged top plate 19, that embraces the top edge of the front frame 1, and is provided with a pipe opening 20, through which is adapted to pass the smoke pipe 17. The heater casing 18, is adapted to rest at its lower end on the floor or hearth wherever the heater is located, so as to close in the inner end of the draft space formed under the base plate 2, and in order to provide for carrying off the foul or heavy air that passes into the lower end of the heater casing 18, from under the base plate 2, a supplemental foul air pipe 21, is employed. The foul air pipe 21, is fitted at its upper end in the draft box 16, and extends

up into the smoke pipe 17, so that means shall be provided for properly carrying off the heavy or foul air.

It will be obvious that when the heater is used in connection with the heater casing 18, the same is rendered portable and may be readily moved from place to place by taking off the casing 18, and separating the other removable parts from their connections whereby the entire heater may be readily moved, and when employed within an open fire place without the heater casing, the same may also be easily taken out for repairs or other purposes, and in either event provides a heater well adapted for the purposes specified.

The many advantages of the herein-described heater will be readily apparent to those skilled in the art, and it will be understood that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In an open grate heater, the combination with the front frame of a closed top fire box comprising opposite side walls, a lower straight back wall and a forwardly and upwardly inclined baffle wall or plate extended above the straight back wall and meeting the front frame at its upper end in a closed joint, said fire box being provided with a draft opening at the intersection of the baffle wall or plate and the straight back wall, and a fire grate supported within the fire box in front of and below the draft openings therein, substantially as set forth.

2. In an open grate heater, the combination with the front frame and base plate; of a closed top fire box arranged at one side of the front frame and provided with an upper inclined baffle wall or plate meeting the front frame in a closed joint and forming the inclosing top of the fire box and a portion of its rear wall, and a horizontally arranged draft opening or slot at the lower terminal of the incline baffle wall or plate, a draft box secured to the rear side of the fire box over the draft opening or slot therein, a smoke pipe connected with said draft box, a supplemental pipe connected at one end to said draft box and opening into the smoke pipe, and a fire grate removably supported within the fire box below and in front of its draft opening or slot, substantially as set forth.

3. In an open grate heater, the combination with the closed fire box of the fire back arranged within the fire box, opposite keepers arranged at the front extremities of the fire back, a removable fire grate provided with an open front wall and opposite supporting plates adapted to removably engage said keepers, and a removable ash pan arranged to be supported on the base plate under the fire grate and having its front wall of a height equaling

the space between the base plate and the bottom of said grate, substantially as set forth.

4. In an open grate heater, the combination of the frame base plate provided with a series of bottom projected feet to elevate the same above its support and form a draft space thereunder, the inclosed fire box supported on the base plate and provided with an intermediate draft opening or slot, a smoke pipe connected with said opening or slot, the fire grate removably supported within the fire box below and in front of its draft opening or slot and a separate foul air pipe arranged in rear of the fire-box and leading into said smoke pipe, substantially as set forth.

5. In an open grate heater, the combination of the frame base plate provided with a series of bottom projected feet, the closed fire

box supported on the base plate, the fire grate removably supported within the fire box, and a portable heater casing adapted to inclose the fire box and to rest at its lower end on the support of the base plate, and provided with a removable flanged top plate having a pipe opening, the smoke pipe for the fire-box fitted in said pipe opening, and a foul air pipe arranged within the casing and leading into the smoke pipe, substantially as set forth.

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

JOHN LAWLOR.

Witnesses:

F. J. GUS, Jr.,
N. J. GEIS.