Aug. 9, 1927. 1,638,083

A. A. BLOMFELDT

UNIT HEATER FOR AIR SPACES

Filed Oct. 27, 1925 2 Sheets-Sheet 1

Fig. 1.

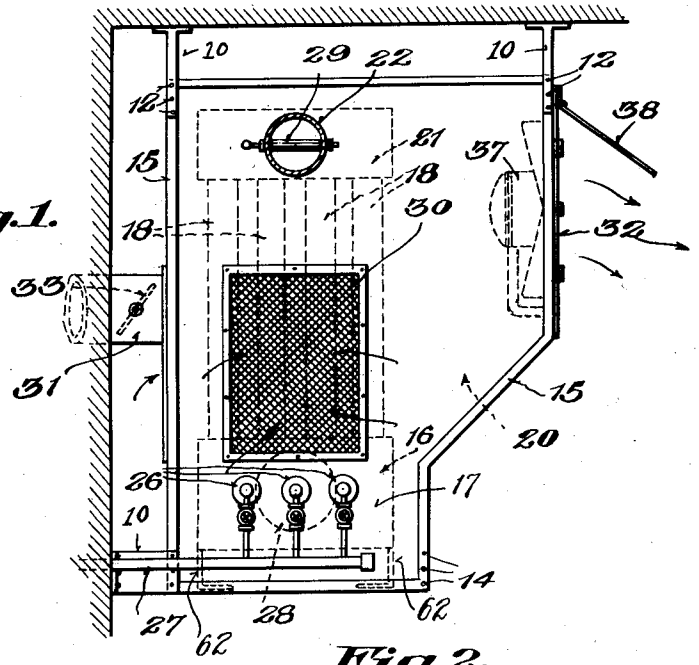
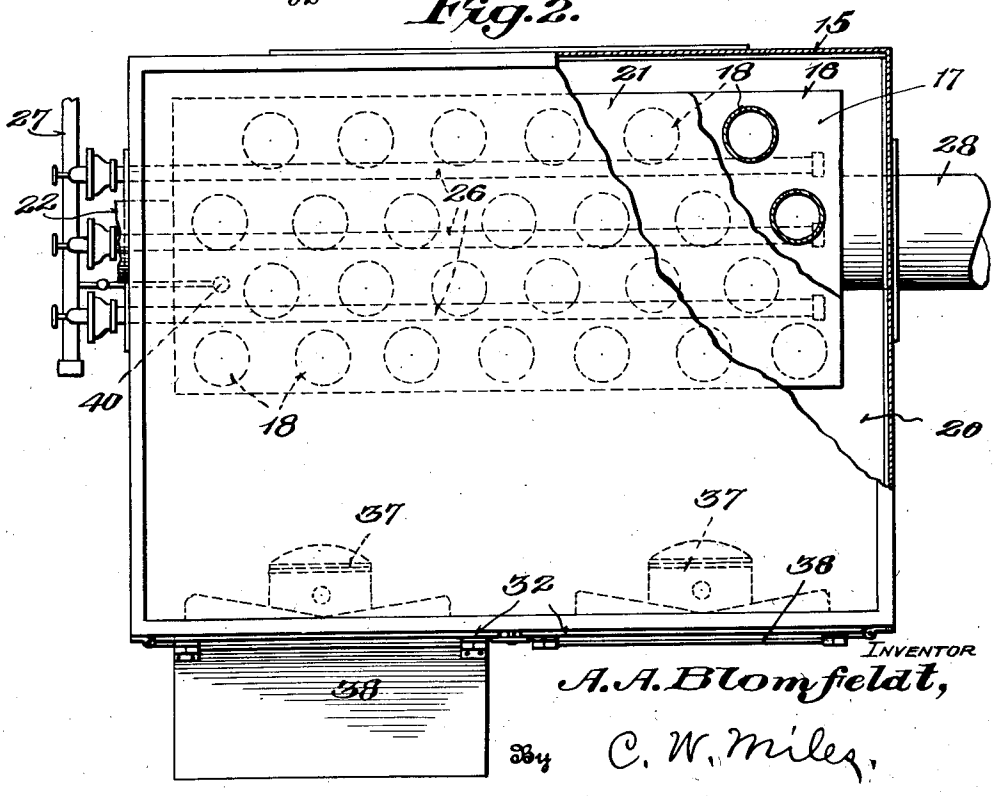


Fig. 2.



INVENTOR

A. A. Blomfeldt,

By C. W. Miles.

Attorney

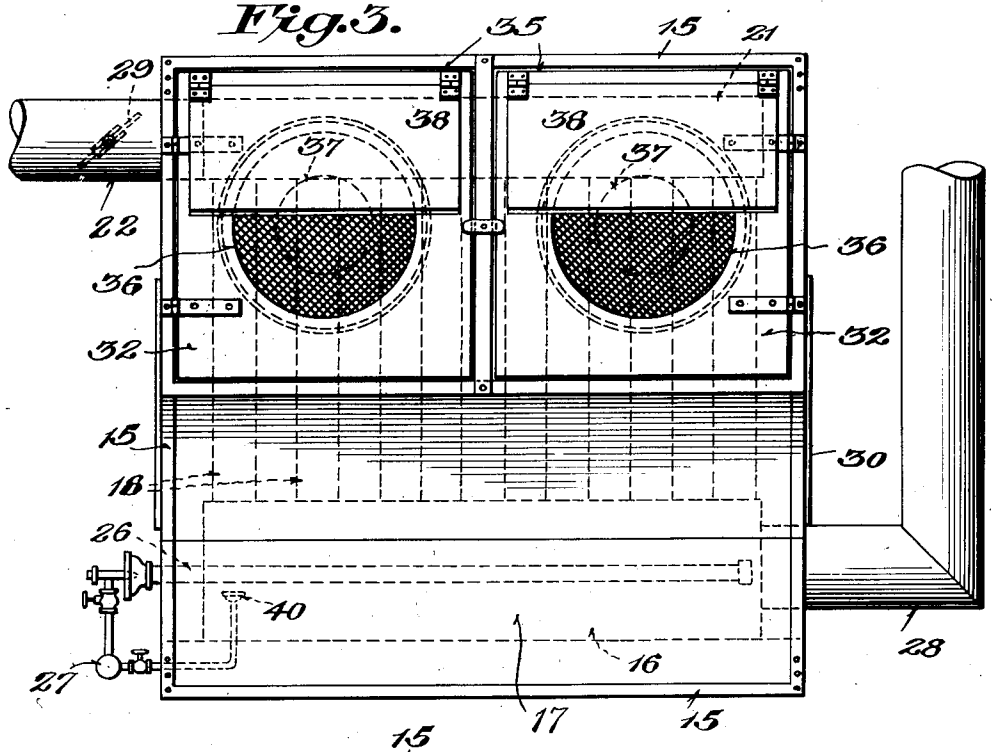
Aug. 9, 1927. 1,638,083

A. A. BLOMFELDT

UNIT HEATER FOR AIR SPACES

Filed Oct. 27, 1925 2 Sheets-Sheet 2

Fig. 3.



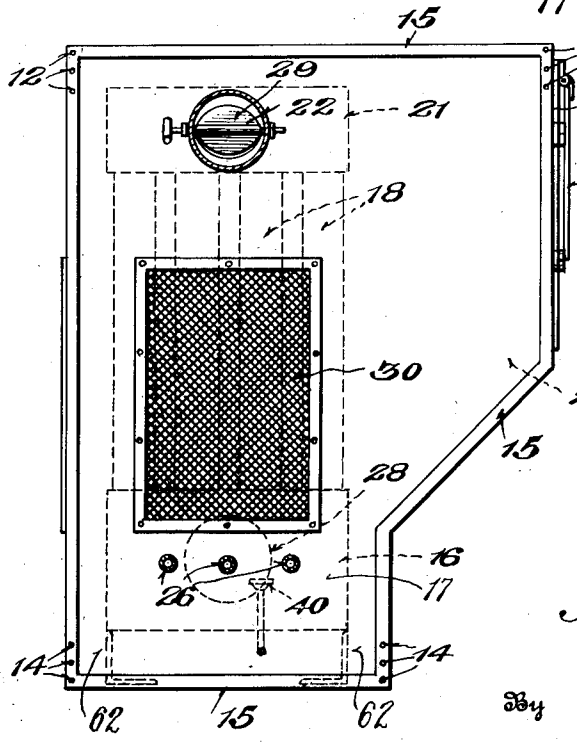


Fig. 4.

Inventor

A. A. Blomfeldt,

By C. W. Miles,

Attorney

Patented Aug. 9, 1927.

1,638,083

UNITED STATES PATENT OFFICE.

ALLEN AXEL BLOMFELDT, OF NEWPORT, KENTUCKY.

UNIT HEATER FOR AIR SPACES.

Application filed October 27, 1925. Serial No. 65,107.

My invention relates to improvements in heaters. One of its objects is to provide an improved heater for heating the interior of buildings of various types, and for different purposes, wherever it is desired to heat and circulate the gaseous contents of a room or building. Another object is to provide an improved heater which can be set in motion and stopped at will, and in which the heating effect becomes immediately effective. Another object is to provide an improved heater adapted to employ fluid fuel and to evacuate the products of combustion through a flue, and avoid the introduction of products of combustion into the atmosphere of the room. Another object is to provide a heater casing having an exit closed by a door and an air circulating member mounted upon the door. Another object is to provide for the regulation of the supply of air to the heater either from the room or its exterior, or partially from each source. Another object is to provide a clean and sanitary heater available at short notice.

My invention also comprises certain details of form and arrangement, and combination of components, all of which will be fully set forth in the description of the accompanying drawings, in which:

Figure 1 is a vertical section through a portion of a room to be heated with my improved heater in position in the upper portion of the room.

Figure 2 is a plan of my improved heater partly in section to show the interior construction.

Figure 3 is a front elevation of the heater.

Figure 4 is a side elevation of the heater, Fig. 2.

The accompanying drawings illustrate the preferred embodiment of my invention in which 15 represents the shell or casing of the heater unit, which has perforations 12 and 14 for screws and legs or brackets 10 by which it may be mounted upon the floor of the room to be heated, where floor space therefor is available, and which, as shown in Figure 1, is adapted to be supported in an elevated position in the upper portion of the room, where floor space for the heater is not available.

The heater unit 16 is mounted within the casing 15 preferably upon short legs 62 with an air jacket space upon all sides between the heater unit and its casing. The heater unit comprises a combustion chamber 17 at its lower end and a flue header chamber 21 at its upper end, said combustion chamber 17 and flue header chamber 21 being connected by means of a series of substantially vertical flues 18, through which heated products of combustion flow from the combustion chamber 17 upwardly to the flue header chamber 21, said flues 18 being exteriorly in contact with the air to be heated contained within the casing 15. The heater unit 16 is adapted to be introduced into the casing 15 before the lid of the casing 15 is attached thereto. The flues 18 are preferably in staggered relation and the bulk of the air to be heated is designed to be circulated in contact with the exterior of said flues.

A series of gas or other fluid fuel burners 26 are located in the combustion chamber 17 beneath the lower ends of the respective vertical flues 18 and are respectively supplied with gas or other fluid fuel through a valve controlled fuel supply pipe 27 and ignited through a pilot light 40, while air to support combustion is admitted to the combustion chamber through the air intake port 28.

The products of combustion flow upwardly through the vertical flues 18 and enter the flue header 21, and thence through the off-take flue 22 to a chimney not shown. A regulating damper 29 is provided in the off-take flue 22.

The air to be heated may be taken from the room into the casing 15, through a port 30, of which there may be more than one if desired. Air may also be taken from the exterior atmosphere into casing 15 through a port or conduit 31. The port or ports 30 admit air from the room to the interior of the casing while the port 31 may be employed, if desired, to admit air from the exterior of the room to the interior of casing 15. A damper 33 in the port or conduit 31

provides for cutting off or regulating the air supply through the port 31. The air entering the air heating chamber 20 of the casing 15 through the intake ports 30 or 31 is circulated about and between the vertical flues 18 and over the exterior of heating unit 16 so as to extract practically all of the heat from the products of combustion before the products of combustion reach the flue header 21, thereby quickly heating the air in the chamber 20. A major air off-take port or doorway 35 is adapted to lead the heated air from the chamber 20 of the casing 15 out into the room to be heated under natural draft.

One or more doors 32 are hinged to the doorway 35 so as to be employed to open or close said doorway. The doors 32 are provided with minor air off-take ports 36 through which heated air is adapted to be circulated or fed from the heating chamber 20 into the room by means of power driven air circulating members 37, as for instance, variable speed electrically driven fans, which air circulating members are attached to and move with the doors 32. In practice when the doors 32 are closed the fans are set in motion to supply a circulation of air to and from the heater at a rate which will maintain the desired room temperature, for instance, during the day time or working hours. At night when less heat is required the circulating fans may be stopped and the doors opened to allow air to circulate by natural draft into and out of the heating chamber 20 of casing 15. When the doors are open, access may be had to the circulating fans, which are inside the casing when the doors are closed. I preferably provide air deflector plates 38 of aluminum sheets or other relatively light weight material, which are hinged to the upper edges of the doors and normally hang down so as to partially close the minor air off-take ports 36, but which are lifted to an inclined position when the circulating fans are in motion, and in their inclined position serve to deflect the current of heated air downwardly into the lower portion of the room. The fuel and air supply to the combustion chamber is adapted to be regulated to supply a greater or less quantity of heat, as may be required and when the fuel supply is cut off, which may readily and quickly be effected, the apparatus requires no draining, and is not liable, to injury, from low temperatures or freezing. The apparatus is adapted to be quickly put into operation, and to quickly reach maximum heating effect, and to closely follow changes of external temperature. It also serves to circulate the air of the room so as to maintain substantially uniform temperature in all parts thereof. All products of combustion, are conducted away from the room to be heated, and the introduction of dust and dirt avoided.

The apparatus herein shown and described is capable of considerable modification within the scope of the claims without departing from the spirit of my invention.

What I claim is:

1. A heater comprising a casing having an air inlet port, an air heater member mounted within said casing to heat the air entering said casing through said air inlet port, a casing door having an air exit port therein, and a power driven air circulating element mounted upon said door to drive the heated air from said casing through said air exit port when the door is closed, said door when open affording a low pressure exit for the heated air and affording access to said air circulating element.

2. A heater comprising a casing having an air inlet port, an air heating member mounted within said casing, a door way leading from said casing and serving when the door is open as a low pressure exit port from said casing for heated air, a door to close said door way, a high pressure exit port for heated air through said door, and a power driven air circulating member mounted upon said door and access to which may be had when said door is in open position.

3. A heater comprising a casing having an air inlet port from the room to be heated and a valve controlled air inlet port from the exterior of the building, and an air exit port to circulate the air to be heated through said casing, an enclosed heating member provided with a fuel supply conduit and air supply conduit leading thereto and an off-take flue leading therefrom through the walls of said casing and means to maintain a forced circulation of air through the air exit port of said casing, said heating member being mounted within said casing and externally in contact with the air to be heated.

4. A heater comprising a casing having an air inlet port, a relatively large air exit port for the escape of heated air under natural draft, a door operable to open or close said relatively large air exit port, a relatively small air exit port through said door, a power driven air circulating member mounted upon said door in position to positively feed air under pressure through said relatively small air exit port, and an air heater member mounted within said casing in contact with the air to be heated.

5. A heater comprising a casing having an air inlet port and a doorway serving as a major air exit port, a heater unit mounted within said casing and adapted to heat air circulated through said casing, a door to

close said doorway, a minor air exit port through said door, and a power actuated air circulating member mounted upon said door and adapted to produce a forced air circulation through said minor air exit port.

6. A heater comprising a casing having an air inlet port and an air exit port, a heater unit mounted within said casing, a power actuated air circulating member adapted to produce a forced circulation of air through said casing, and a deflector plate hinged above said air exit port and supported in an inclined position upon the air current escaping from said casing and serving to deflect said escaping air downwardly.

In testimony whereof I have affixed my signature.

ALLEN AXEL BLOMFELDT.