May 6, 1941. A. F. WEDDERSPOON 2,241,025

HEATER

Filed Feb. 9, 1940

FIG. 7

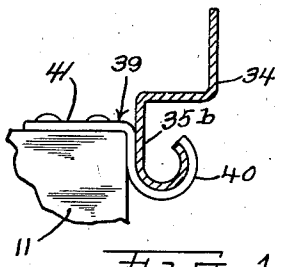


FIG. 2

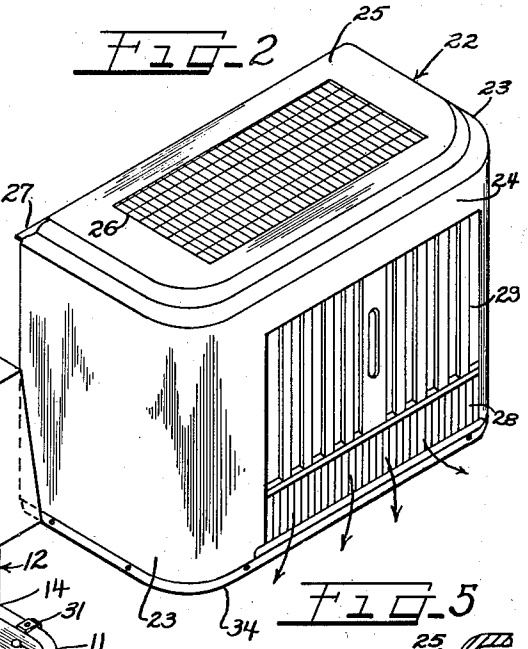


FIG. 1

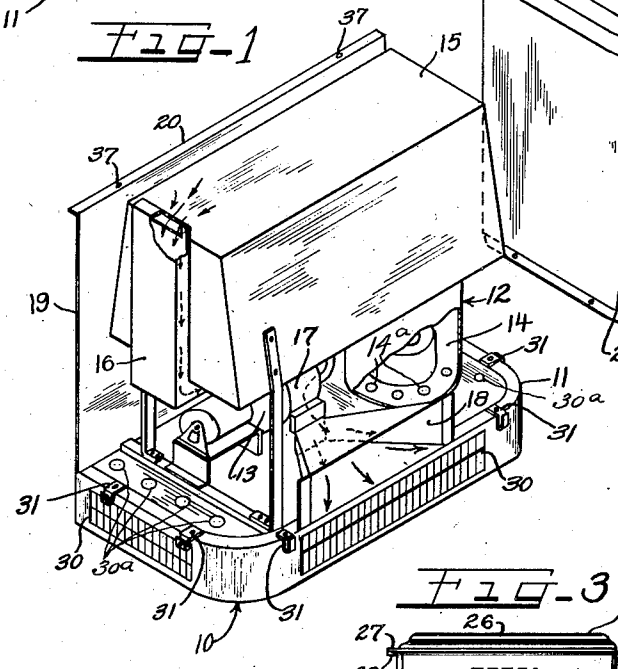


FIG. 5

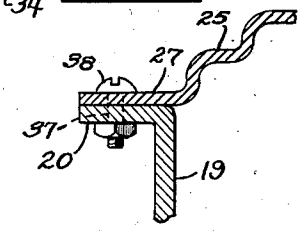


FIG. 3

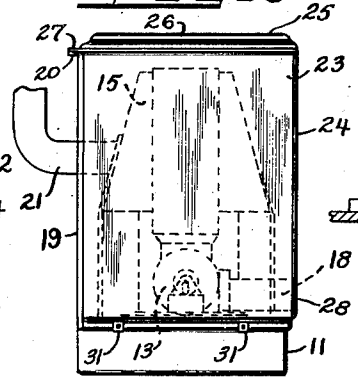


FIG. 4

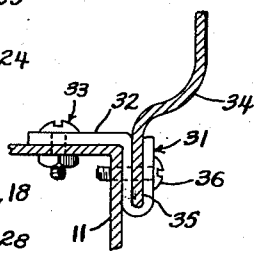
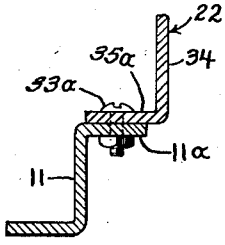


FIG. 6



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by Atty

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UNITED STATES PATENT OFFICE

2,241,025

HEATER

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Application February 9, 1940, Serial No. 318,056

5 Claims. (Cl. 126—67)

The present invention relates to heating devices, and more particularly to a novel casing for a heating stove which is easily, quickly and completely removable from the stove base.

On heater units burning gas, wood, coal or oil and which are used particularly for heating apartments, offices or dwellings, the modern style has been to "dress" them with colored, grilled cabinet casings which not only enclose the working elements from view but which are styled in contrasting hardware to completely harmonize with the furnished surroundings.

In so doing, however, the manufacturer has in many instances sacrified the utility of accessibility of working elements within the casing for styling and beauty. Such units as fuel tanks, constant level valves, blowers, thermostatic controls, filters, and humidifiers, which formerly were attached either adjacent to or on the outside of the heaters, are now encased within the cabinets. Small doors or removable panels are usually provided in the cabinet casings so that the enclosed units are made available for cleaning, adjusting or repairing.

By so limiting the accessibility of encased units, objections and difficulties arise in the assembling, sale and use of the heating units.

This invention is directed to the elimination of these objectionable features by providing a completely removable heater casing adapted to be opened or removed by merely unscrewing two or more bolts so that the casing may be swung or lifted to an out of the way place. According to this invention, these results are achieved by assembling all of the working elements of a heater on a base and to a back wall. The base and back wall are so shaped as to allow a one-piece casing enclosing the front, both sides and top thereof, to be secured thereon by several fasteners in the final assembly step. In so doing, economies are effected to the benefit of the manufacturer, dealer and user.

The present and usual method of assembling an enclosed heater is to first integrally attach the cabinet casing to the base, thereafter assembling each separate unit to the base within the casing through the open portion either at the back or in the top of the heater. This method of assembly is objectionable in that the various operations must be performed within a limited or cramped space.

On the other hand, by providing a removable casing, all of the finally enclosed units can be assembled to the base entirely in the open with the assembly of the casing to the base and back wall being the final assembly step. Not only does this increase the assembly speed, but it allows the handling of the light casing separately from the base during assembly so that the hazard of chipping the casing finish is greatly diminished.

As the greater proportion of heaters are sold on a time or credit basis, the dealer is required to bear the expense of servicing such units up to the time of final payment. Practically any repair can be made with the heater in place when the casing is removable. This is not possible with present heaters, for on practically any repairs necessary it is required that the heating unit be shut down so that the entire unit can be taken apart and the repairs made. This is very objectionable to a housewife, not only because the heat is turned off for a considerable period of time, but because of the fact that dirt such as soot and ash immediately cover the surrounding furnishings. This objection is usually overcome by removing the heater unit entirely from the premises but this method only serves to increase the time in which the heat is turned off.

The device of the present invention eliminates these objectionable features by providing a casing that is either completely removable from the base or hinged to it in such a manner that the casing may be swung to an out of the way place to completely expose the units requiring attention.

The heater unit of the invention provides a further advantage to the dealer by eliminating expensive cut-out displays. The heater can be displayed either fully assembled or with the casing removed.

Furthermore, the dealer can teach the owner to take care of his heating unit because of the fact that the working parts are in the open and can be seen when the casing is removed, whereas if the heater were entirely closed and not easily seen or accessible, the owner would rely entirely on the dealer to handle all service work.

A further advantage resulting from the invention is the inter-changeability of cabinet cases whereby an owner may change the color or design of the casing without having to by a complete new unit. For a nominal cost, a housewife would be able to modernize her stove and change the heater casing to blend with new or different house furnishings.

An important object of the present invention, then, is to provide a heater for apartments

or dwellings with a cabinet casing which is quickly and easily removed from the heater base and back wall thereby making repairs, adjustments or cleaning more convenient.

Another object of this invention is to provide a heater having a base and back wall with a cabinet casing completely enclosing the units assembled on the base and which is removably held in place by means capable of being quickly unlocked.

A further object of this invention is the provision of a removable casing for a heater which may be swung to an out of the way position.

Another still further object of the present invention is to provide a light, replaceable and decorative casing for heaters which can be so constructed and finished as to harmonize with its surroundings.

A further object of the present invention is the provision of a heater casing that is hinged to the heater base and which is bodily swingable to a position exposing the units normally encased thereby.

A still further object of this invention is the provision of a heater having a base upon which is assembled a back wall and all the working units and having a casing shell that is constructed as to be locked in a position on the base, as a final assembly step, thereby enclosing the entire unit.

The novel features believed to be characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and manner of construction, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawing, in which:

Figure 1 is an isometric view of an unencased heating unit illustrating the assembled heater on a base and with the cabinet casing removed.

Figure 2 is an isometric view of a cabinet heater casing illustrated in a removed position from the assembly of Figure 1 and which embodies the principles of the present invention.

Figure 3 is a side elevational view of a heating device of the character embodying the principles of this invention illustrating, in full lines, the removable cabinet casing in locked position on the heater base and, in dotted lines, the enclosed working units thereof.

Figure 4 is an enlarged fragmental cross-sectional view taken along a vertical plane adjacent one of the locking elements illustrated on the heater base of Figure 1.

Figure 5 is an enlarged fragmental cross-sectional view illustrating the connection between portions of the heater backing plate and the removable casing, the section being taken along a transverse vertical plane adjacent one of the connecting bolts.

Figure 6 is an enlarged fragmental vertical cross-sectional view, similar to Figure 4, of another embodiment of the present invention, illustrating another type of connection between the heater base and the removable casing.

Figure 7 is an enlarged fragmental elevational view, with parts in vertical section, of an additional embodiment of this invention illustrating a hinged connection between the heater base and the casing.

As shown on the drawing:

In Figure 1, there is illustrated an unencased stove or heater structure, generally designated by the reference character **10**, and comprising a base **11** on which is assembled a heating structure **12** and an air circulating structure **13**.

The heating structure is made up of the usual combustion chamber **14** and a heat distributor or radiating member **15** which is an extension of the combustion chamber. Combustion air for the chamber **14** is supplied through the openings **14a** from the inside of the base **11**. The air circulating structure includes a direction chamber or flue **16** which directs the movement of a small volume of heated air from the heat distributor **13** into a blower **17** which blows the heated air through a flared type discharging duct **18** into the space which is to be heated. Movement of the air through the air circulating structure is diagrammatically illustrated by the direction arrows.

The air circulating structure includes a direction chamber **16** which directs the movement of cold air around the heat distributor **15** into a blower **17** which blows the heated air through a flared type discharging duct **18** into the space which is to be heated. Movement of the air through the air circulating structure is diagrammatically illustrated by directional arrows, the cold air inlet being at the top of the heat distributor and the hot air discharge being at the flared duct, which is positioned directly above the base so that the heated air is discharged near the floor.

In addition to the parts illustrated, it is the usual practice to assemble to the base such other elements as fuel tanks, constant level valves, thermostatic controls and such other structures that are necessary, depending upon the type of fuel burned.

As best illustrated in Figures 1 and 3, an upstanding back wall **19** having a flanged upper edge **20** is connected to the rear of the base **11**.

The smoke flue **21** is connected to the radiating member **15** adjacent an end opposite the end to which the combustion chamber **14** is connected. It is to be understood that the radiating member **15** is actually a part of the combustion chamber as the so-called combustion chamber **14** and the radiating member **15** together form an L-shaped combustion member. The increased surface area of the member **15** provides the necessary radiation for heating the surrounding air.

While no provision has been illustrated whereby the burner may be lit, a door of any conventional design and construction may be provided in either blind side (Figures 1 and 2) of the chamber **14** or the radiating member **15**.

A smoke flue **21** extends outwardly from the heat distributor **15** through the back wall **19**, and is connected at an adjacent point to a chimney (not shown) in the usual manner.

If a door is provided in the side of the chamber **14** or the end wall of the member **15** for lighting purposes, then a suitable door in registry therewith may be provided in the adjacent side wall **23** of the casing **22**.

A cabinet casing **22**, illustrated in Figure 2, is stamped or otherwise suitably formed from sheet metal to provide side walls **23**, a front wall **24** and a top wall **25**.

The top wall has a grilled portion **26** and a rearwardly extending flange **27** formed on its back free edge.

Near the bottom of the front wall **24**, there is provided a grille portion **28**, its purpose being more fully explained hereinafter.

The cabinet casing **22** of the present invention,

like the casings of other conventional types of circulating heaters, is suitably provided with a decorative paneling design or grilled portions of the type best suited to harmonize with the furnished surroundings. These decorative designs are illustrated as a grille paneling 29 on the casing front wall 24, and a grille 30 illustrated on the front and side walls of the base 11.

Movement of air through the structure will now be described. Cold air inlets are provided by the grilles 30 and the air so admitted flows upwardly through a plurality of apertures 30a provided in the base. The air flow is then in an upwardly direction around the heated radiating member 15 and out through the grille 26 provided in the top the casing. Most of the heated air normally rises upwardly through the top grille 26 while some of the heated air is radiated outwardly through the front grilled portion 29.

The blower 17 is supplied only with a small volume of heated air which it throws outwardly near the floor to stimulate the air circulation in the room or other space to be heated. It is to be understood that the normal rise of the heated air and the provision of radiation is normally sufficient to heat a room or other space. The blower merely stimulates circulation to a greater degree than by convection only.

Figure 3 illustrates the completely assembled heater showing the position of parts when the cabinet casing 22 is removably mounted on the heater base 11.

While there are numerous means for locking the casing to the heater base, the preferred devices of the present invention are illustrated in Figures 4 and 6. As shown in Figures 1 and 4, a plurality of vertical upward opening U-shaped clips 31 are bolted to the base 11 with the U-shaped portion of each clip being positioned against the outer face of the base, and an integral horizontal leg portion 32 of each clip is suitably apertured to receive a bolt and nut assembly 33 which connects the clip to the top surface of the base.

The bottom edge 34 of the removable casing 22 is bent inwardly and downwardly, as best illustrated in Figure 4. The downwardly extending portion 35 of the edge 34 is seatingly received within the U-shaped portions of the clips 31. A threaded aperture is provided through the assembly for receiving a stud 36 for locking the lower edge of the casing to the heater base. If desired, however, the stud 36 may be dispensed with entirely and the U-shaped clips used only for seating and holding the casing edge in place.

A modified means for locking the casing to the base is illustrated in Figure 6 wherein the upper portion of the side wall of the base 11 is turned outwardly as at 11a instead of being turned inwardly as shown in Figure 1. The lower edge 34 of the casing 22 is provided with an inturned leg portion 35a which seats on the leg 11a of the base, the legs being clamped together by a bolt and nut assembly 33a. In this modification, it is preferred that the bolt 33a be affixed to the leg 35a as by welding or other similar connecting means.

With the lower edge 34 of the casing 22 connected to the heater base 11, it is necessary to make locking connection only along the seated flange 20 of the back wall 19 and the flange 27 of the top casing wall 25.

Apertures 37 (Figure 1) are provided in the flange 20 of the back wall 19 for receiving bolts or studs extending through the top wall flange 27. As shown in Figure 5, the flanges 20 and 27 are connected by a bolt and nut assembly 38. Clamping connection between the two flanges may also be accomplished by threading a stud within the apertures 37.

With the parts positioned as illustrated in Figure 3, cold air is drawn through the top grille 26 against the heat distributor 15 and passes through the direction chamber 16 into the blower 17 which blows it out through the bottom grille portion 28.

Another means for locking the lower edge 34 of the casing 22 to the heater base 11 is illustrated in Figure 7. A hinge member 39 of flat metal is provided with a leg 41 which is bolted to the top edge of the base 11 and has a hook portion 40 positioned against the front wall of the base and slightly below its top edge. The lower edge 34 of the casing 22 is bent inwardly and downwardly, with its downwardly extending leg 35b bent in an eye portion which slidingly engages within the hook portion 40. The engagement between the eye and hook portions forms a hinge whereby the casing may be swung from its closed position, illustrated in Figure 3, to a fully open position (not shown) in which the front wall 24 rests on the floor.

In this modification, the only provision for locking bolt means is the bolt and nut assembly 38 for clamping the flanges 20 and 27 together.

It is to be noted that the locking means illustrated effects a quickly detachable mounting between the casing and heater base, allowing the casing to be locked in a completely enclosing position or unlocked and moved to a position in which the heating and air circulating structures are completely exposed.

The hinge member 39 may be formed either as a single flat metal plate coextensively arranged with the straight portion at the front of the heater base, or if desired, as several narrow hinges which may be spaced therealong in much the same manner as the spacing of the U-shaped members 31, shown in Figure 1.

While several embodiments of the present invention have been shown herein, it will of course be understood that the invention is not to be limited thereto since many modifications may be made.

I claim as my invention:

1. In a heater having a base, heating and air circulating structures mounted on said base, an upstanding back wall on said base having a flange at its upper edge, and a smoke outlet extending from the heating structure through said back wall, the improvements which comprise a one-piece stamped casing of rectangular prismatic form having side walls, a front wall and a top wall, said top wall having a flange and a grilled portion for exhausting heated air, said front wall having a grilled hot air radiation outlet, U-shaped clips carried by said base and arranged to seatingly receive the bottom edges of said casing, said flanges on the back wall and top wall being arranged for abutment when said casing is in seated relation with said clips, and means for locking said flanges together, said casing being arranged for connection to and complete removal from said base and back wall without disturbing the heater during its operation.

2. In a heater having a base with an apertured flanged portion, heating and air circulating structures mounted on said base, an upstanding back wall on said base having a flange at its up-

per edge, and a smoke outlet extending from the heating structure through said back wall, the improvements which comprise a stamped metal casing having side walls, a front wall and a top wall, said top wall being provided with a flange and a grilled hot air outlet, said front wall being provided with a grilled hot air radiation outlet, a flange on the bottom edges of said side walls and front wall, spaced bolts carried by said last flange for extending through the apertures in the flanged portion of said base, means for threadingly engaging said spaced bolts for clamping said last flanges together, and additional bolting means for clamping together the flanges on said back wall and said top wall, said casing, base and back wall when so connected completely enclosing the heating and air circulating structures mounted on said base, said casing being arranged for removal from said base and back wall independently of the connected smoke outlet and heating and air circulating structures.

3. In a heater having a base, heating and air circulating structures mounted on said base, and an upstanding back wall on said base having a flange at its upper edge, the improvements which comprise a one-piece stamped metal casing of generally rectangular prismatic form having side walls, a front wall and a top wall, said top wall being provided with a flange for seating against the flange on said back wall, means for clamping said flanges together, hook means extending from said base, the lower edge of said front wall having eye means provided thereon for hingedly engaging within said hook means, said casing being capable of swinging on said hook and eye hinge means to a closed position relative to said base and back wall whereby said heating and air structures are entirely surrounded and enclosed, and locking means for securing the flanges of said back wall and top wall together for maintaining said casing in its closed position, said casing when swung on said hook and eye hinge means to an open position exposing said heating and air circulating structures.

4. In a heater having a base, heating and air circulating structures, and a back wall mounted on said base, the improvements which comprise a casing unit of rectangular prismatic form having an open back and an open bottom, hinge means connecting an edge of said casing and said base, said casing being arranged to be swung about said hinge means to a normal closed position with respect to said base and back wall whereby said heating and air circulating structures are entirely enclosed, said casing being further arranged to be swung about said hinge means away from said structures whereby said structures are exposed.

5. In a heater having a base, heating and air circulating structures mounted on said base, and an upstanding backwall on said base, the improvements which comprise a casing hingedly connected along an edge to said base, and means for connecting another edge of said casing to said back wall, said casing being arranged to be swung on its hinged connection into connected engagement with and to be disconnected and swung away from said back wall for, together with said base and back wall, completely enclosing and exposing said heating and air circulating structures.

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