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R. G. BIRKHOLZ

2,014,644

HEATER

Filed Sept. 14, 1932

FIG. 1

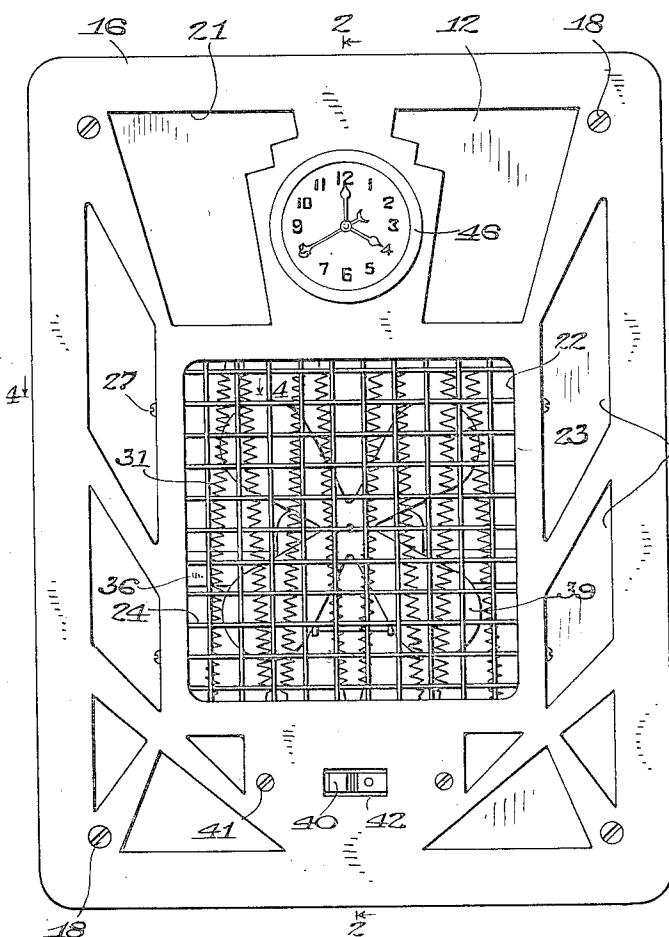


FIG. 2

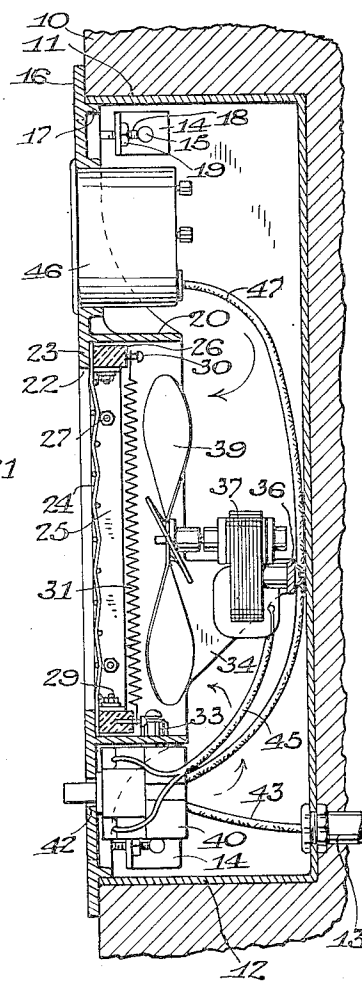


FIG. 3

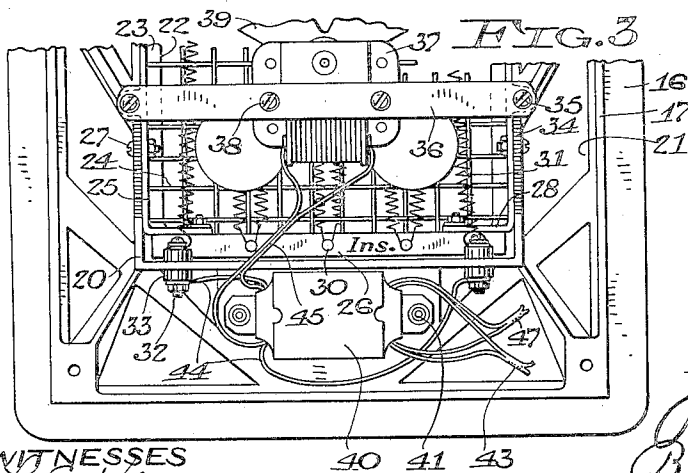
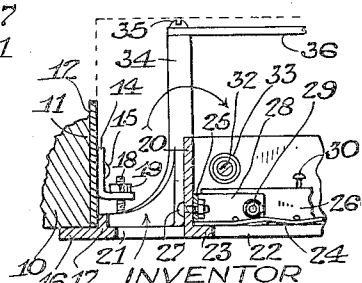


FIG. 4



WITNESSES
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HEATER

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3 Claims. (Cl. 219—39)

The invention relates to electric heaters for air heating purposes, and of the type embodying fan means for moving the heated air.

An object of the invention is to provide an electric heater of this character arranged within a recess in a building wall for room heating purposes, the heater having an apertured front plate which carries a heating element and fan and which is detachably secured to the wall to form air passages with the wall recess.

The invention further consists in the several features hereinafter described and claimed.

In the accompanying drawing, Fig. 1 is a front view of the heater;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1 and showing the heater embodied in a building wall;

Fig. 3 is fragmentary rear view of the heater, and

Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 1.

In this drawing, the numeral 10 designates a building wall having a recess 11 within which is mounted a rectangular metal box or casing 12 open at the front. The casing 12 is preferably embedded in place during the erection of the wall and has its front edges substantially flush with the face of the wall. An electric conduit 13 is secured to a wall of the casing, here indicated to be the rear wall. Angle clips 14 are secured, as by rivets 15, to the opposite side walls of the casing near its front edge.

A rectangular front plate 16, preferably of cast metal, has marginal portions resting on the wall 10 about the recess 11 and has a flange or rib 17 fitting within the front edge of the casing 12. The front plate is secured in place by screws 18 passing through the plate and the angle clips 14 and threaded into nuts 19 engaging the rear faces of the clips.

The flange 17 surrounds a deeper flange 20 which projects rearwardly from the front plate to form a rectangular partition or baffle. Air inlet openings 21 are formed in the front plate around the flange 20, and a rectangular air outlet opening 22 is formed in the front plate within the flange 20. The front plate has a flange 23 which defines the edges of the air outlet opening.

A wire grille 24 covers the air outlet opening 22 and bears against the inner face of the flange 23 where it is held by metal bars 25 and insulating bars 26. The metal bars 25 are secured by screws 27 to the inner side walls of the partition flange 20, and have bent end por-

tions 28 to which the insulating bars 26 are secured by screws 29 to extend horizontally adjacent the upper and lower walls of the partition flange. Headed pins 30 are driven into the rear faces of the insulating bars 26 to support thereon a heating element 31 arranged in zig-zag relation and having its ends connected to terminal screws 32 carried in insulating bushings 33 mounted in the lower wall of the partition flange 20.

A pair of rearwardly projecting arms 34 are formed on the opposite side walls of the partition flange 20 and have secured thereto by screws 35 the end portions of a horizontally extending cross bar 36. An electric motor 37 is disposed in front of the cross bar 36 and is secured thereto by screws 38. The motor shaft is perpendicular to the front plate 16 and carries a fan 39 arranged centrally within the partition flange 20 and behind the heating element 31, the flange 20 surrounding the heating element and fan.

A switch 40, here indicated to be of the toggle type, is disposed below the air outlet opening 22 and is secured to the rear face of the front plate by screws 41, the lever for the switch extending through a slot 42 in the front plate. Line conductors 43 extend through the conduit 13 and are connected to the switch, sufficient slack being left in the conductors to permit their connection when the front plate is detached from the wall. Conductors 44 connect the switch with the terminal screws 32 of the heating element 31, and conductors 45 connect the switch with the electric motor 37. An electric clock 46 is mounted in the front plate above the air outlet opening, and is connected to the line terminals of the switch by conductors 47.

In use, the closing of the switch 40 causes current to flow through the heating element 31 and the fan motor 37. The fan draws air from the room through the inlet openings 21 in the front plate and discharges the air against the heating element 31 and through the outlet opening 22, the air being heated as it sweeps past the heating element.

The front plate, heating element, fan motor, and switch form a unitary assembly distinct from the wall casing, making it unnecessary to separately attach any of the heater parts to the wall casing. When the front plate is attached to the wall, the casing forms therewith the air passages for the heater. The construction of the heater is such that it can be installed in a

building wall of ordinary thickness without projecting materially from the face of the wall. The fan preferably draws air from the top, bottom, and sides of the casing cavity, so as to insure full fan capacity even though a comparatively shallow casing is used.

What I claim as new and desire to secure by Letters Patent is:

1. A heater comprising a front plate adapted to be secured to a building wall to cover a recess in said wall and to form an air chamber with said recess, there being an air inlet communicating with said chamber, said front plate having an air discharge opening and having an inwardly projecting flange surrounding said opening and spaced from the rear wall of said recess, a heating element carried by said front plate behind and in register with said air discharge opening and within said flange, an electric motor carried by said front plate behind said heating element and adjacent the rear wall of said recess, and a propeller fan drivingly supported by the motor at the front of the motor and disposed within said flange for moving a current of air forwardly against said heating element and through said discharge opening.

2. An air circulating device comprising a front plate adapted to be secured to a building wall to cover a recess in said wall and to form

an air chamber with said recess, there being an air inlet communicating with said chamber, said front plate having a discharge opening and an inwardly projecting flange surrounding said discharge opening and spaced from the walls of said recess, a pair of spaced arms carried by and projecting rearwardly from said front plate and into said chamber, a cross bar supported by said arms, an electric motor carried by said cross bar, and a propeller fan in front of and driven by said motor and disposed in front of said cross bar and within said flange for moving a current of air through said discharge opening.

3. An air circulating device comprising a front plate adapted to be secured to a building wall to cover a recess in said wall and to form an air chamber with said recess, there being an air inlet opening communicating with said chamber, said front plate having a discharge opening and an inwardly projecting flange surrounding said discharge opening and spaced from the walls of said recess, an electric motor carried by said front plate and disposed adjacent the rear wall of said recess, and a propeller fan drivingly supported by the motor at the front of the motor and disposed within said flange for moving a current of air forwardly through said discharge opening.

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