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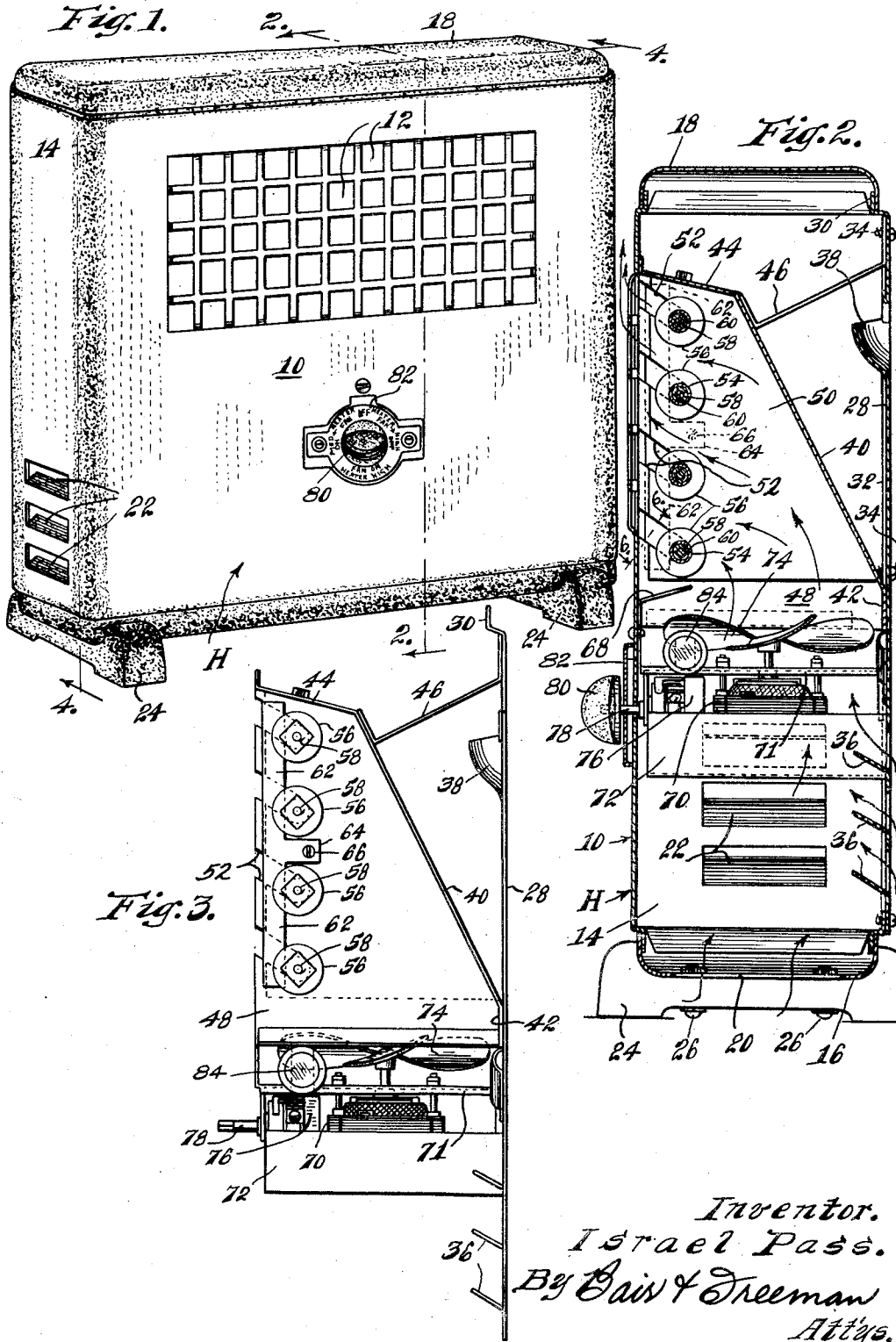
I. PASS

2,562,436

FINNED TYPE HEATER

Filed May 21, 1949

2 Sheets-Sheet 1



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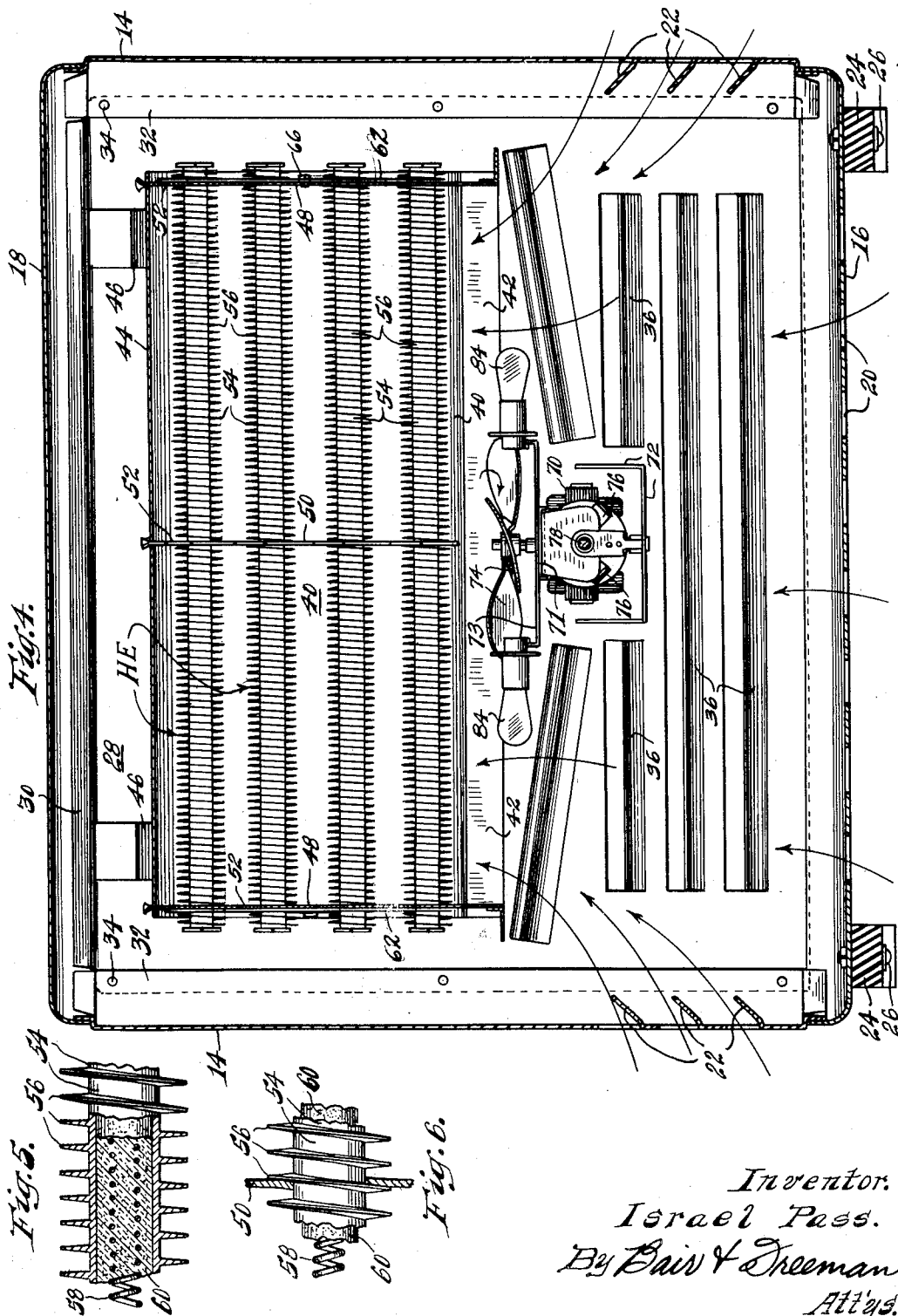
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UNITED STATES PATENT OFFICE

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FINNED TYPE HEATER

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9 Claims. (Cl. 219—39)

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This invention relates to a heater of the finned type, that is, one in which the heating elements are sheathed in a tube provided with fins so that air passing through the fins will be heated by the heating elements in the sheaths with maximum efficiency.

One object of the invention is to provide a support or housing arrangement for the heating elements which is designed to provide for a continuous flow of cool air into the housing adjacent the bottom, the air being caused to flow by thermal or fan-forced circulation through an internal flue in the housing and being discharged from grille openings in the front of the heater.

Another object is to provide the assembly of heating elements, a control switch and an air circulating fan on a back plate of the heater whereby this plate may be removed for servicing in a convenient manner and contains all the mechanisms of the heater with the exception of the walls of the housing, which housing has an open back closed by the back plate when returned to installed position on the housing.

Still another object is to provide a simple flue or baffle arrangement which serves also to support the finned heating elements in a novel manner.

With these and other objects in view, my finned type heater consists in the construction, arrangement and combination of the various parts of which it is composed whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings in which:

Figure 1 is a perspective view of a finned type heater showing a three-quarter front view thereof.

Figure 2 is an enlarged vertical sectional view on the line 2—2 of Figure 1.

Figure 3 is an end view of a removable back plate and all elements supported thereby.

Figure 4 is an enlarged vertical sectional view on the line 4—4 of Figure 1.

Figure 5 is an enlarged sectional view on the line 6—6 of Figure 2, and

Figure 6 is a similar view showing a mounting for the finned type heater herein disclosed.

On the accompanying drawings I have used the reference character H to indicate in general a housing for the heater and this housing may consist of a front wall 10 provided with grille openings 12, end walls 14, a bottom member 16 and a top member 18. The bottom member 16 is provided with air entrance openings 20 and the end walls are provided with air entrance louvers 22. A pair of feet 24 formed of insulating material or the like is secured to the bottom member 16 as by screws 26.

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The housing thus far described is open at the back and I provide a closure for the back consisting of a back plate 28 having an offset flange 30 to hook under the rear edge of the top member 18 as shown in Figure 2 and the back plate is secured to in-turned flanges 32 of the end walls 14 by six screws 34 as shown in Figure 4. The back plate 28 is provided with air entrance louvers 36 and a hand-hole 38 is formed adjacent the top for convenience in carrying the heater from one location to another.

A baffle wall 40 is secured to the back plate 28 as by spot welding a flange 42 at its lower end thereto. The baffle plate extends upwardly and forwardly as shown in Figure 2 and terminates in a marginal flange 44 at its upper end bent forwardly. The upper end of the baffle plate 40 is braced by a pair of strap-like braces 46. The ends of the baffle plate 40—44 are closed in by sheet metal plates 48, and midway between these plates a center plate 50 is also provided.

Each plate 48 has four notches 52 extending into its front edge and sloping downwardly, and the plate 50 is similarly formed as shown in Figures 2 and 3. These notches are adapted to receive heating elements which consist of metal sheaths 54 as shown in Figure 5, formed with heat-radiating fins 56 and containing wound resistance elements 58 filled with and embedded in argillous or ceramic material 60. This material is inserted into the tubes 54 when in plastic condition, and the material is then baked to concrete-like hardness.

The heating elements are designated in general HE. They are readily assembled in relation to the plates 48 and 50 by entering them in the slots 52 with the fins on opposite sides of the plates and passing through the slots as shown in Figure 6. The heating elements are slightly longer than the distance between the plates 48 so that they project beyond the plates where suitable electrical connections can be made thereto. The heating elements are then retained in position by two retainer bars 62 shown best in Figure 3 having perforated ears 64 midway their lengths which are then secured by bolts 66 to the plates 48.

The baffle plate 40—44 and the end plates 48 form a heating flue which terminates for discharge of heated air immediately behind the grille openings 12. The cold air enters through the bottom openings 20, the end louvers 22 and back louvers 36 to flow upwardly by thermal circulation into the flue where it is heated by the heating elements HE and is then discharged through the grille front 12 of the heater. A baffle plate 58 may also be provided as shown in Figure 2 to direct the air properly.

In addition to thermal circulation, it is desir-

able to have a slight amount of forced air circulation and this is readily accomplished by mounting a fan motor 70 on a bracket 71 extending from the back plate 28. An air deflector or motor housing 72 is provided for the motor and a fan blade 74 is secured to the motor shaft. The motor 70 is preferably of slow speed type in order to circulate the air slowly so that it has time to be properly heated by the heating elements HE.

A switch 76 for the heating elements may also be supported by the bracket 71 and the switch has a control shaft 78 adapted to extend through an opening in the front 10 of the heater housing. A removable knob 80 is provided on the shaft for operating the switch, and includes a pointer to indicate on a dial 82 various combinations of circuits for the heating elements and the fan.

A pair of light globes 84 may also be provided to serve as pilot light means to indicate when the heating elements are energized and to give some illumination to the heater, which in conjunction with the elements 40, 44 and 50 being painted red, gives a warm glowing appearance that is desirable. The globes 84 are supported on a bracket 73 secured to the bracket 71.

The assembly of the parts is relatively simple and since all operating parts are mounted on the back plate 28, it is a simple matter to service the structure by removing the six screws 34 and the back plate as in Figure 3 so that access is had to all parts. The flue arrangement consisting of the plates 40, 44 and 48 serves to properly direct the flow of air and also as a support for the heating elements in the manner disclosed.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. In a finned type heater, a housing, a plurality of vertically spaced finned type heating elements located therein adjacent the front thereof, a vertical grille adjacent said heating elements, means for permitting entrance of air into said housing below said heating elements, and a flue having an upwardly and forwardly inclined back wall for directing the course of the rising air in said housing to cause it to flow substantially forwardly past said heating elements and through said grille, the inclination of said back wall effecting a substantially even distribution of the heated air through said grille.

2. In a heater of the character disclosed, a housing having an open back, a back plate for closing said open back, said back plate being removable in relation to said housing, heating elements, a fan, a control switch for the fan and heating elements, said element, fans and switch being supported by said back plate, said housing having air entrance openings below said fan and air-discharge openings in front of said heating elements.

3. In a heater, a housing having an open back, a removable back plate therefor, heating elements, a fan and a control switch for the fan and heating elements supported by said back plate, said housing having air entrance openings below said fan and air-discharge openings in front of said heating elements, and air directing baffle plates carried by said back plate.

4. In a heater, a housing having an open back, a removable back plate therefor, heating ele-

ments, a control switch for the heating elements, supported by said back plate, said housing having air entrance openings below said heating elements and air-discharge openings in front of said heating elements, and air directing baffle plates carried by said back plate.

5. In a room heater of the character disclosed, a housing having an open back, a back plate removable in relation to said housing, and heating elements, a fan and a control switch for the fan and heating elements supported by said back plate.

6. In a room heater, a housing having an open back, a removable back plate therefor, an air-directing flue formed of sheet metal and mounted on said back plate, heating elements supported by said flue, a fan supported on said back plate and below said flue, a control switch for said fan and heating elements also supported on said back plate, said housing having openings for air circulation into the bottom of said flue, over said heating elements and out of said flue and housing.

7. In a room heater, a housing having an open back, a removable back plate therefor, an air-directing flue mounted on and carried by said back plate so as to be removable therewith, and heating elements supported by said flue and thereby removable with said back plate from said housing.

8. In a heater structure, a housing having a back plate, a flue therein comprising a baffle plate extending upwardly and forwardly from said back plate, end plates for said flue each having a plurality of downwardly inclined notches, heating elements received in said notches and thereby supported, a retainer bar attached to each end plate and spanning all the notches all the notches therein for holding said heating elements in said notches, a fan supported on said back plate, a switch for controlling said fan and said heating elements, said switch having a control shaft extending through the front of said housing, and said housing having air entrance openings adjacent the bottom thereof and heated air outlets in front of said heating elements through which the heated air is deflected by said baffle plate.

9. A heater structure comprising a housing, a removable back therefor, a flue in said housing comprising a baffle plate extending upwardly and forwardly from said back, end plates for said flue, heating elements supported by said end plates, a fan supported on said back, a switch also supported on said back for controlling said fan and said heating elements, a control shaft for said switch extending through the front of said housing, and said housing having air entrance openings adjacent the bottom thereof and heated air outlets in front of said heating elements through which the heated air is deflected by said baffle plate.

ISRAEL PASS.

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