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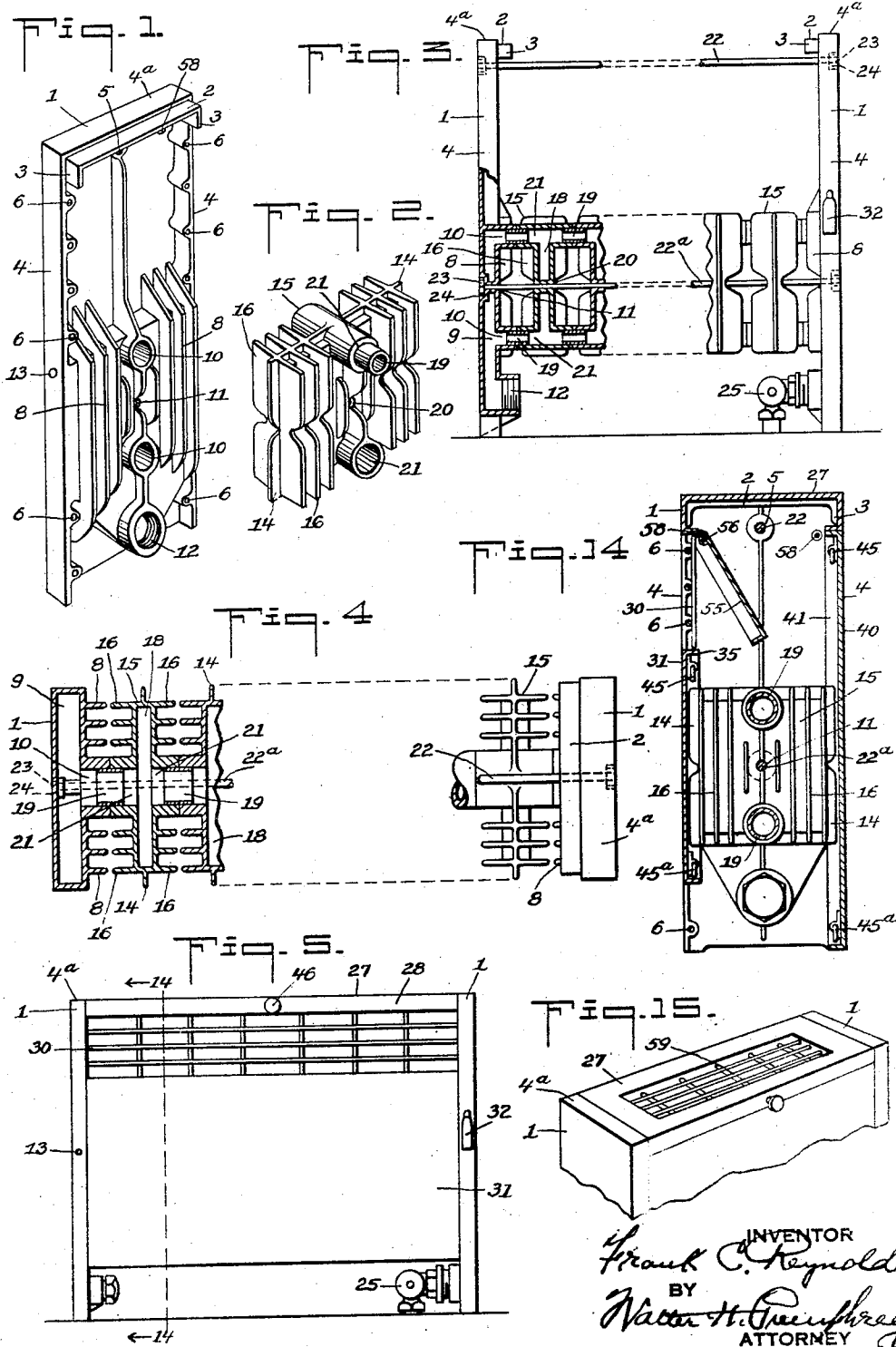
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CABINET RADIATOR

Filed March 27, 1940

2 Sheets-Sheet 1



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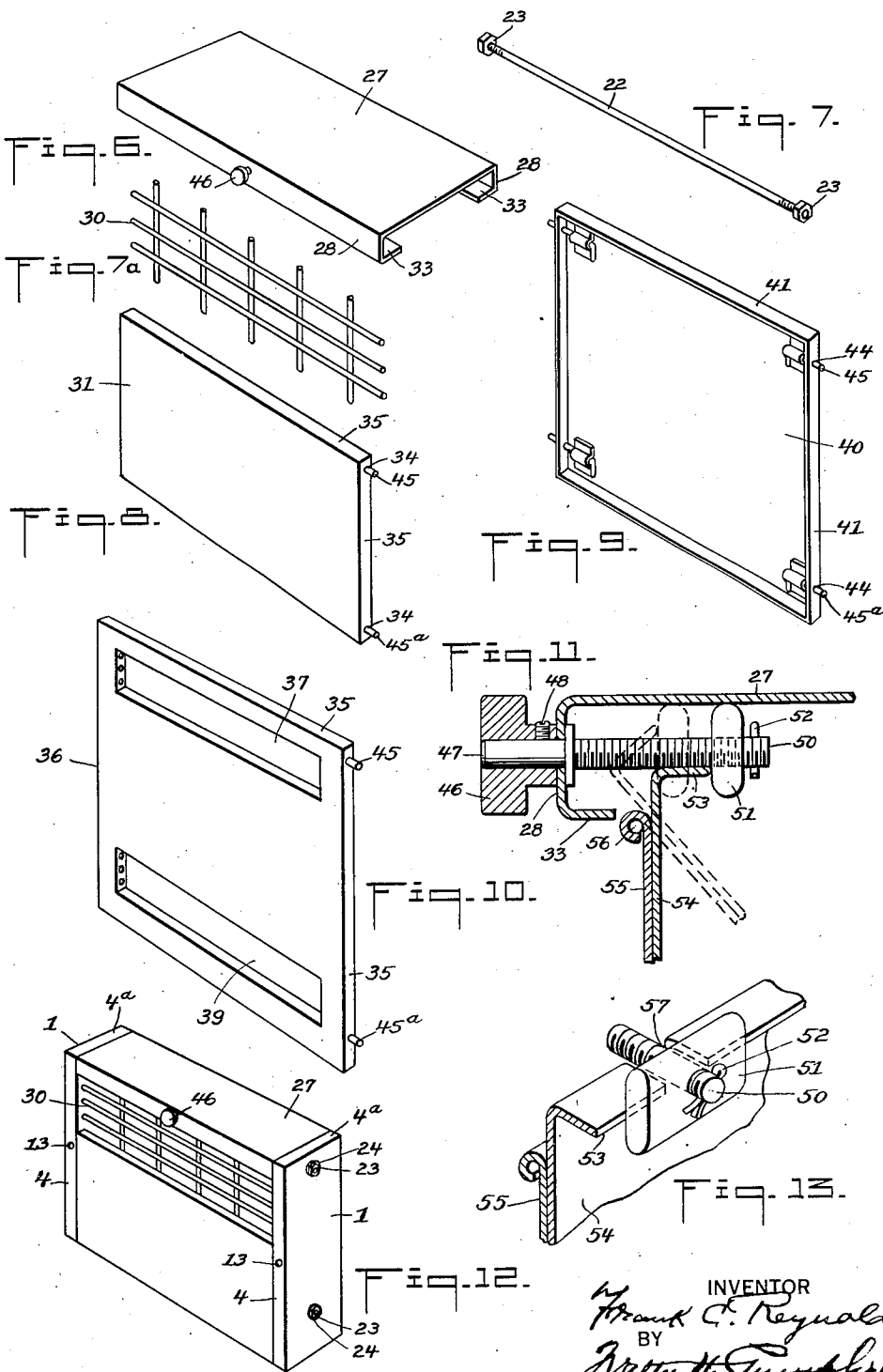
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Filed March 27, 1940

2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE

2,229,128

## CABINET RADIATOR

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Application March 27, 1940, Serial No. 326,155

4 Claims. (Cl. 257-136)

This invention relates generally to radiators and more particularly to the cabinet type, in which the heating units are concealed from view by an enclosing casing.

5 The object of the invention is to produce a highly efficient radiator that is readily adaptable to meet all ordinary installation and other requirements, prominent among which may be mentioned first, the limitation of overall dimensions to the floor or wall space available for the installation; second, the positioning of the radiator as required, for effective and efficient operation, in any designated location in a room; third, the concealment of the radiator from view by giving it an outward appearance that harmonizes with the surrounding panorama and avoids undue prominence in the room in which the radiator is installed; fourth, the avoidance of the disadvantages of "rights and lefts" by the use of interchangeable and reversible parts and fifth, the reduction in cost of manufacture by producing such interchangeable and reversible part from a minimum number of patterns.

Other objects, not specially mentioned above, will appear from the detail description of the invention that follows:

A construction suitable for carrying the invention into effect, is illustrated in the accompanying drawings but I do not wish to be understood as intending to limit myself to the exact form or details shown, as various changes may be made therein without departing from the scope of the invention as outlined in the appended claims.

In the drawings:

25 Fig. 1 is a perspective view looking at the inner side of one of the end radiator sections.

Fig. 2 is a perspective view of an intermediate radiator section.

40 Fig. 3 is a view in front elevation, partly in section, of an assembly of the end and intermediate sections with the casing removed.

Fig. 4 is a top plan view, partly in section, of the same.

45 Fig. 5 is a front elevation of the assembly shown in Fig. 3 with the casing applied thereto.

50 Figs. 6 to 9 are perspective views of the parts or members of the enclosing casing. Fig. 6 shows the top or cover, Fig. 7 a tie-rod, Fig. 7a a grill, Fig. 8 the front member and Fig. 9 the rear or back member.

Fig. 10 is a perspective view of a modified form of front casing member showing the same provided with upper and lower openings for grills.

55 Fig. 11 is a detail sectional view showing the damper and its operating means.

Fig. 12 is a perspective view of a wall type assembly of the casing members.

Fig. 13 is a detail perspective view of part of the damper and its operating means,

Fig. 14 is a vertical section on the line 14-14 of Fig. 5, and

Fig. 15 shows the casing provided with a top grill.

Referring to the drawings, the radiator shown is made up in the usual manner of two end sections 1, 1, and a number of intermediate sections 15, secured in assembled relation by upper and lower tie-rods 22, 22a. Nuts 23, threaded on the ends of the rods, seat in depressions 24, formed in the outer faces of the end sections.

Each end section is a single casting, chambered at 9, throughout the lower portion thereof intermediate its ends, as shown in Figs. 3 and 4, the chamber extending from about the midpoint of the length of the section downward, to near the floor level or bottom of the radiator, where a threaded opening 12 is provided for a steam or water valve 25 or return connection. Above the opening 12, upper and lower nipple openings 10, 10, are provided for connecting an intermediate section 15, with the end section chamber. On the inner side of the chambered portion of the end section, fins or ribs 8 are formed and combine with similar fins or ribs 16 of the adjoining intermediate section to provide vertical passage for the upward flow of air between the heating units.

Side flanges 4, 4, formed on the end section are thickened at suitably spaced points and drilled or cored to provide sockets 6, to receive dowels, studs or pins 45 and 45a of the casing members, as hereinafter described. The top flange 4a of the end section is shouldered at 2, and has turned-down ends 3, to conform to the inner cross sectional form of the top or stool member 27 of the casing, which is snugly fitted to the same, in telescoping relation, as best shown in Fig. 14. Front and back openings 13 are provided for an air valve or a hot water relief valve indicated at 32, in Figs. 3 and 5, such openings leading into the chambered portion of the end section. A screw plug is used as a temporary closure for one of the openings. The upper and lower openings 5 and 11, indicated in Figs. 1 and 14, are for the passage of the tie rods 22, 22a, above referred to.

The above described end sections are symmetrically formed throughout for interchangeable use at either end of the radiator, which avoids the disadvantages of the so-called "rights and lefts" commonly employed in the art.

The intermediate radiator sections 15 (Figs. 2 55

to 4 inclusive) are exact duplicates of each other and a description of one will serve for all of them. As shown in Fig. 4, the intermediate sections are chambered at 13, in parallel relation with the chambers of the end sections, and exteriorly, the chambered portion is provided on opposite sides with a fin or rib formation 16, substantially the same as that of the end sections, opposing ribs of adjoining sections combining to form vertical passages for the upward flow of air between the heating units. In addition to the fin or rib formation on the sides, the intermediate sections are provided with ribs 14, 14, at opposite ends, against which the front and back casing members rest, forming additional vertical channels for the upward passage of air.

Upper and lower openings 21, 21, are provided on both sides of the intermediate sections leading into the chamber 13 thereof, such openings being in line with the openings 16, 16, of the end sections, for connection in the usual manner, by means of double tapered push nipples 18. Connected as described, upper and lower horizontally disposed fluid passages are formed through the assembled sections.

As shown in Figs. 2 and 3, an opening 20 is formed in the intermediate sections in line with openings 11, in the end sections, for passage of the lower tie-rod 22a.

In Fig. 14, the above described radiator assembly is shown enclosed by a casing formation that utilizes the end radiator sections as the ends of the casing and combines with such ends, front, back and top stool members 31, 40 and 27, to complete the casing.

The members 31, 40 and 27, are ordinarily formed of sheet metal but other material may be employed if preferred.

The front and back members have their edges bent up, forming continuous flanges 35 and 41 around the four sides thereof, and openings 36 and 44 are formed in opposite side flanges, through which slidable pins 45 and 45a are projected to engage the sockets 6, of the end sections, with which they become aligned when the casing members are placed in position at the front and back thereof.

The height of the front member is made less than that of the back member, to leave an open space between the upper edge thereof and the top casing member 27, in which a grill 30 is secured by having the ends of certain of the rods forming the grill enter sockets 6 of the end radiator sections.

As shown in Fig. 14, the member 40 is dimensioned to make a complete closure extending downward to the floor at the back of the radiator but the front member 31 terminates above the floor, leaving an opening the full width of the radiator, for the inflow of air. Both front and back can terminate above the floor.

In the modification shown in Fig. 10, the member 36 is similarly dimensioned to make a complete closure at the front of the radiator, reaching from the stool or top member 27, to the floor or bottom of the radiator. To provide the required air inlet and outlet, the member has two grilled openings 37 and 39 formed therein, one near the top and the other near the bottom.

In Fig. 12 a wall type of radiator is shown in which the front and back casing members extend downward the full length of the radiator, leaving the bottom open for the inflow of air.

In Fig. 15, the grilled opening with which the

damper cooperates, is shown in the top or stool member of the casing, as indicated at 59.

The difference in size of the front and back members, shown in Figs. 8 and 9, and the different spacing of the slide bolts or pins in each, requires a double set of sockets 6, in the side flanges of each end radiator section, in order that the casing members and/or the end radiator sections may be interchangeably used in assembling the parts.

The stool or top member 27 has its longer edges first bent downward at right angles to the body portion and the downwardly bent edges then bent inwardly at about their mid point parallel with the body portion, as indicated at 33 forming the member, in effect, into a flat slotted tube, the open ends of which are fitted snugly in telescoped relation on the shouldered top flanges of the end radiator sections, as previously stated.

Mounted within the casing, in the rear of the grill 30, and covering the grilled opening, there is a plate damper 55, pivoted on a sectional rod 52, fitted in sockets 58 of the end radiator sections. The damper plate has its lower edge and ends bent up, forming a flange around the three sides, as shown in Fig. 14. When free, the damper by its own weight, assumes a vertical position, closing the grilled opening. The damper centrally of its length, is extended upward above its pivot, by means of an attached extension plate 54, the upper edge 53 of which is bent over at right angles and notched at 57 to straddle a screw-shaft 50. The screw shaft is swiveled in an opening in the downwardly bent edge 29, of the stool member 27, and has a nut 51 threaded thereon, which engages the bent over edge 53 of the extension plate 54.

A knob 46 is secured by set screw 48 on the outer end 47 of the screw shaft that projects through an opening in the stool or top member 27. By rotating the knob, the nut is caused to travel back and forth on the shaft. In its travel to the left, as viewed in Fig. 11, the nut engaging the bent over edge of the damper extension plate, forces the damper to turn about its pivot, in a counterclockwise direction and move clear of the grilled front opening, as indicated in dotted lines in the figure referred to and continued movement will bring the damper upward to a horizontal position, to completely close the opening between the in-turned edges of the stool or top member 27, thus providing the required regulation when the grilled outlet opening is formed in the stool member, as shown in Fig. 15. On reversing rotation of the knob, to move the nut in the opposite direction, the weight of the damper causes the turned over edge of the extension plate to continue in engagement and follow the nut as the damper returns to vertical position, as shown in full lines in Fig. 11. The nut is given an elongated form and as its upper rounded edge rides in contact with the inner surface of the stool member, it is held from rotating, as the screw shaft is turned by the knob. To prevent the nut from being run off the shaft, a cotter pin 52 is inserted in an opening near the end of the shaft to serve as a positive stop for the nut.

As the many important advantages of the invention will be apparent from the foregoing, it will not be necessary to describe the same at greater length.

Having described my invention, I claim:

1. A cabinet radiator comprising end sections chambered throughout the lower portion of their

length, a plurality of intermediate chambered unit sections disposed between and separably connected with the chambered portions of the end sections, the said intermediate sections being reduced to the approximate height of the end section chambers to provide space above for the expansion of heated air within the radiator cabinet, the chamber of each intermediate section extending from front to back of the radiator in parallel relation with and dimensioned in substantial duplication of the end section chambers into which they open through upper and lower horizontally disposed fluid passages common to the several intermediate sections and formed by nipple-connected tubular portions of the same, an enclosing casing formation utilizing the end radiator sections as the ends of the casing and having front, back and top members fitted to the end sections to complete the casing, the said casing being open at the bottom for the inlet of air and provided with an upper dampered opening for the outlet of air, and a damper-operating device mounted in the top member of the casing.

2. A cabinet radiator comprising end sections chambered only in the lower portion of their length and a plurality of intermediate sections chambered to the same height as the end sections, the said intermediate sections being disposed between and connected with the end sections and with each other through upper and lower horizontally disposed fluid passages formed by nipple-connected tubular portions of the sec-

tions, an enclosing casing formation utilizing the end radiator sections as the ends of the casing and having front, back and top members closely fitted to and removably clamped between the end sections by tie-rods connecting the sections, the casing formation being open at the bottom for the inlet of air and provided with an upper dampered opening for the outlet of air.

3. A cabinet radiator, as defined in claim 2, in which the damper is pivotally mounted in bearings formed in the end radiator sections, the associated radiator, casing and damper parts being secured in assembled relation by tie-rods connecting the sections.

4. A cabinet radiator comprising interchangeable end sections, and a plurality of interchangeable unit sections disposed between and connected with the end sections through horizontally disposed fluid passages, an enclosing casing formation, open at the bottom for the inlet of air and provided with an upper dampered opening for the outlet of air, the said formation utilizing the end radiator sections as interchangeable ends of the casing and having front, back and top members closely fitted by telescoping portions to the end sections and clamped between the same by tie-rods connecting the sections, the front and back casing members being interchangeable and the top member reversible, and a reversible damper-operating device projecting from a mid-point of the top casing member.

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