The invention relates to improvements in casing construction, particularly in casings for enclosing boilers, heaters and air conditioning units. More specifically the invention relates to casings for enclosing automatically fired boilers, heaters, and air conditioning units.

In the recent development of the heating and ventilating art, the use of automatically fired apparatus has promoted the use of the room or the space, in which the heating or air conditioning device is located, for recreational, living or other purposes and an object of the present invention is to provide a suitable casing to enclose the device in such a way as to conceal unsightly, irregular forms and to present an attractive, decorative and comparatively symmetrical appearance.

Casings of this type are generally bulky and awkward, and are expensive to ship and to handle, if assembled before shipping, so that another object of the invention is to provide a finished casing such that it can be assembled at the place where it is to be used, without the use of special tools or special skill.

As it is necessary in heating and air conditioning unit installations that all of the operating parts shall be readily and quickly accessible for purposes of service and repair, a further object of the invention is to provide a casing comprising panels without hinges or catches, supported in a framework of suitable strength and rigidity, of which the wall panels may be separately, quickly and easily detached from their position in the framework without the need of any tools and of which panels, any one or more may be removed from its position without displacing or disturbing other panels.

As it is frequently desirable to heat insulate heating or air conditioning units, more or less fully, still another object is to provide a casing of panelled form in which the panels are demountable and adapted to receive heat insulation material in such a way that in case of damage or accident, the insulation material may be readily renewed or repaired.

These and other objects and novel features will be apparent from the following specification and accompanying drawings in which the invention is shown embodied in a casing for a boiler or heater unit and also for an air conditioning unit.

Fig. 1 is a perspective view showing front, top and one side of the casing adapted for a boiler or heating unit.

Fig. 2 is a fragmentary perspective view of part of the casing with parts cut away showing the panel construction and the manner in which the panels are set up in the framework.

Fig. 3 is a fragmentary perspective view showing the casing framework from the outside at one corner, the parts being disassembled and separated from each other and some broken away so as to show construction of various framework members.

Fig. 4 is a fragmentary perspective view of the casing framework from inside at one corner with the various parts assembled, some being broken away to show construction.

Figs. 5, 6, 7 and 8 are reduced elevational views of the four sides; namely, end, front, rear and other end, respectively, of the casing paneling showing the disposition of the panels and the openings for smoke pipe and boiler connections.

Fig. 9 is a perspective view showing front, top and one end of a casing adapted for use with an air conditioning unit showing air inlet and outlet ducts.

In the drawings like reference characters indicate like parts throughout.

The invention may be described as comprising an enclosing casing open at the bottom, having a top and side walls and a rigid, adequately strong framework of shaped metal parts held together by screws or bolts, the framework having a rectangular box-like contour and having its parts adapted to receive removable, abutting, top and side wall panels.

The casing comprises a framework having top and bottom rail members 22 and 21 on each of the four sides and corner posts members 22 at the four corners. The top and bottom members are joined by suitable top and bottom gusset members 23 and 24, respectively, (Figs. 3 and 4) which serve not only to join the respective members but also as spacer members so as to facilitate assembly with the corner posts 22 and the top and bottom corner pieces 25 and 26, respectively.

The corner posts are set up in the space provided between the rail ends when joined by the gusset members and are held in place by means of the top and bottom corner pieces, the parts being joined together by screws.

It will be noted that each of the various parts, top and bottom rails, corner posts, top and bottom corner pieces and gussets are all standardized for the particular casing and that the parts, in their proper places, may be used without selection so that a minimum of difficulty is experienced in putting the framework together. This interchangeability of parts permits the framework to be shipped in knock-down condition and
erected on the site where used, around the boiler or heater, and as there are no other fastening members except small screws or bolts, the whole may be set up with a small screw driver and wrench so as to provide a strong and rigid structure.

The framework in disassembled state is taken to the place of use and is conveniently set up around the heater, the bottom rails resting directly upon the floor upon which the heater stands.

The lower rail member 21 of the framework comprises a Z shaped portion 30 and an L shaped portion 31. One leg of the L shaped portion forms the bottom of the lower member upon which the casing rests, the other leg extends vertically upward and forms the outwardly disposed portion 32 of the lower member; one leg of the Z shaped portion is fixed by spot welding or by other fastening means to the inner face of the L shaped portion at its angle so that the web 35 of the Z shaped portion extends horizontally, inwardly and its other leg 36 extending vertically, upwardly, form, with the remainder of the upwardly extending part of the L shaped portion, a channel 38 with which the lower ends of the panels, to be described later, interfit freely.

The upper rail framework member 20, comprises a channel shaped portion 40 with the channel disposed so as to extend vertically downward and an L shaped portion 41 with one leg spot welded to the channel shaped portion so that the other leg 42 of the L shaped portion extends horizontally, inwardly and forms an inwardly extending shelf upon which the cover panels are supported.

The lower rail members are joined at the corners in spaced relation, so as to permit the corner posts to be fitted into place, by means of gusset members 24 which are held in position by screws; the upper rail members are likewise joined at the corners by the gusset members 23.

The vertical corner posts comprise formed metal molding members 22, with outwardly concaved round corners 45 and flanges 47 extending outwardly on either side of the corner so as to present outwardly disposed faces in planes perpendicular to each other and in the plane of the outwardly disposed wall panel faces when in place. These flanges on either side are bent again inwardly at right angles 48, to the previously mentioned flange faces. The flange faces 48 provide a smooth surface abutment at either side of the corner posts which abutment lies adjacent to the vertical end panel edges when in place in the casing. The corner posts made up as described form a rigid, strong corner of the framework.

The corner posts and bottom rails are joined together by means of the bottom corner members 25 which are all provided with holes for the insertion of screws or bolts by which the parts are held together. The corner posts and top rails are joined together in a similar way by means of suitably shaped top corner members 28 and are also fastened together by means of screws. The corner members are made so as to provide a somewhat ornamental finish to the framework.

The wall panel members for the four sides 51, 52, 53, 54, 55, 56, 57 and 58 are made of sheet metal of suitable gauge and are provided with inwardly extending flanges 61 on the lower edge and on the two vertical edges, the flanges being at right angles to the panel faces. These flanges are bent inwardly once more at right angles at 52 to the flanges 61, the flanges 62 forming a retaining flange for sheet-form heat insulation material 63. The flanges being omitted from the top edge of the panel permit the insulation material to be slid into place from the upper end from which the flanges are omitted and to be retained in place by the flanges around the other three sides of the panel previously described. This arrangement of parts permits ready renewal or replacement of the insulation material and the flanges also serve to stiffen and to strengthen the panel.

The channels in the upper and lower rail members and the flanges 61 of the panel are made to interfit. The panel dimensions and the upper and lower rail members are proportioned so that the channel 46 in the upper rail member is twice the depth of the channel of the lower rail channel member 38. The panel members are of a length which equals the length of the open space between the upper and lower channel members plus slightly less than twice the depth of the lower channel 38. The panel is provided with a lower 6 which also serves as a hand hold. In order to place the panel in its position in the framework of the casing the upper margin of the panel is inserted in the upper rail member channel and raised until it bears the lower rail member and then the lower margin of the panel is brought into registry with the lower rail channel and dropped into the place in the lower channel. The side wall panels are all inserted into position in the same way and in any order desired and any one or all of them may be removed and put into place again at will as required without the use of any tools at all. Fig. 2 shows one of the wall panel members being placed in its position.

The top covering panels 10, 11 and 12 are formed with doubly, inwardly extending flanges 13 on all four sides and are merely supported by the inwardly extending flanges 42 forming the shelf portion extending inwardly from the top rail members. As it is not usually necessary to remove the top panel members for service, they may be fastened in place by removable plates with screws if so desired. Insulation material 74 may also be applied to these panels.

The wall panels may be made of varying width, so that enclosures of various size within the limits of the panel sizes may be made up from a small number of standard sizes of panel members by merely providing various suitable lengths of top and bottom rail members.

The panel members are provided with additional louvers 75 where required and with necessary openings 76, 77, 78, 79 and 80 in certain panels where required for smoke pipe, controls or observation instruments and inlet and outlet connections as shown in Figs. 5, 6, 7 and 8.

The structure fabricated and put together as described herein provides a finished casing for the purpose stated which is shipped in knock-down condition and is assembled when and where used and which is possessed of the required rigidity and strength; which may be put together without special tools; and of which the panel members may be removed for inspection of the apparatus encased or for other purposes or which may be replaced at will without any tools and which may be varied in size by means of varied standard sized panels and rail members; in addition the form of the castings, and of the panels and framework, as well as the lack of need to do
any material mechanical work on them while making the installation permits of decorative finish, painting, baked enamelling or plating to be done on the casings in the knock-down form and to be shipped as a complete article ready to be set up, with great economy of storage space, labor and shipping charges.

The casing may be used for air conditioning units, as shown in Fig. 9, by changing the arrangement of the cover panels $8$ to permit connection with the intake $91$ and outlet $92$ for the air to be circulated, similar framework and side wall panels being used, as are shown in Figs. 1 to 8 inclusive, and of a size to suit the installation.

While I have described specific embodiments of the invention which have been shown in the drawings, it is to be understood that the invention may be further modified as to construction and arrangement of the several co-operating parts without departing from the spirit or scope of the invention.

What I claim and what I desire to secure by Letters Patent of the United States is:

1. In a heater casing of box-like contour adapted for knockdown shipment, for ready setting-up and ready disassembly, a framework having upper and lower channelled rail members; corner post members presenting smooth abutting faces to adjacent panel members; corner pieces and gusset pieces, whereby said rails and said posts are joined together and made rigid at their junction by means of screws; a plurality of sheet metal panel wall members, having flanged vertical edges, independent of each other and of said framework, said flanged edges abutting each other and said corner post members, whereby said panels are fixed with respect to lateral movement; means whereby said wall panel members may be quickly set up and maintained in vertical position by said upper and lower channel members and may be quickly removed from said channel members independently of each other without the use of tools; said upper channel members provided with inwardly horizontally extending shelf-like flanges; a plurality of sheet metal panel members with inwardly extending flanges abutting each other and said upper channelled rail members and resting upon said shelf-like flanges whereby a top for said casing is provided said top panel members removable independently and separately from said casing without the use of tools.

2. A casing for a heater as claimed in claim 1 wherein said wall and top panel members are provided with flanges twice intertorn on less than all of their oppositely located boundary edges whereby insulation material in sheet form is readily slidably fixed in place adjacent the inner faces of said panel members and readily removable therefrom in like manner.

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