

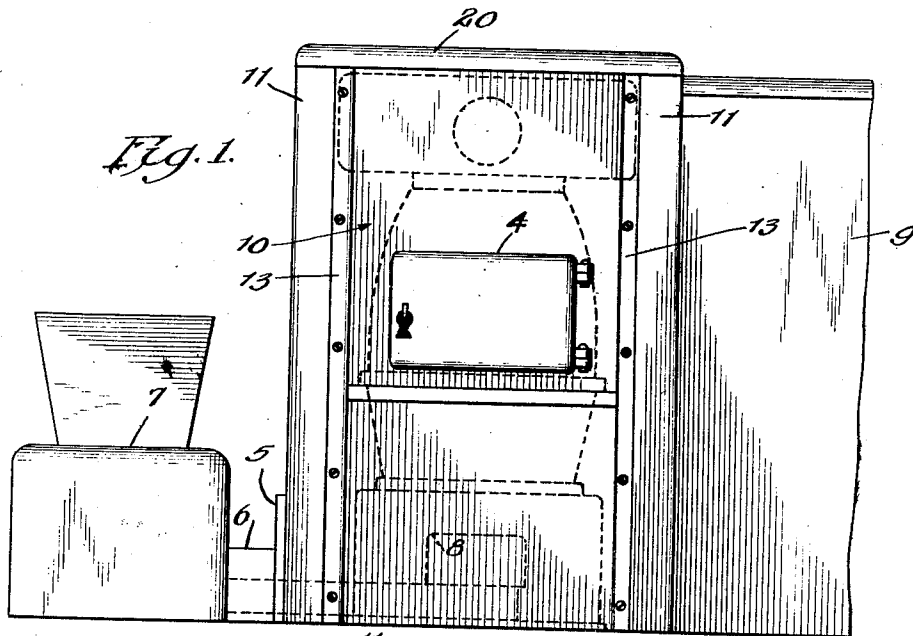
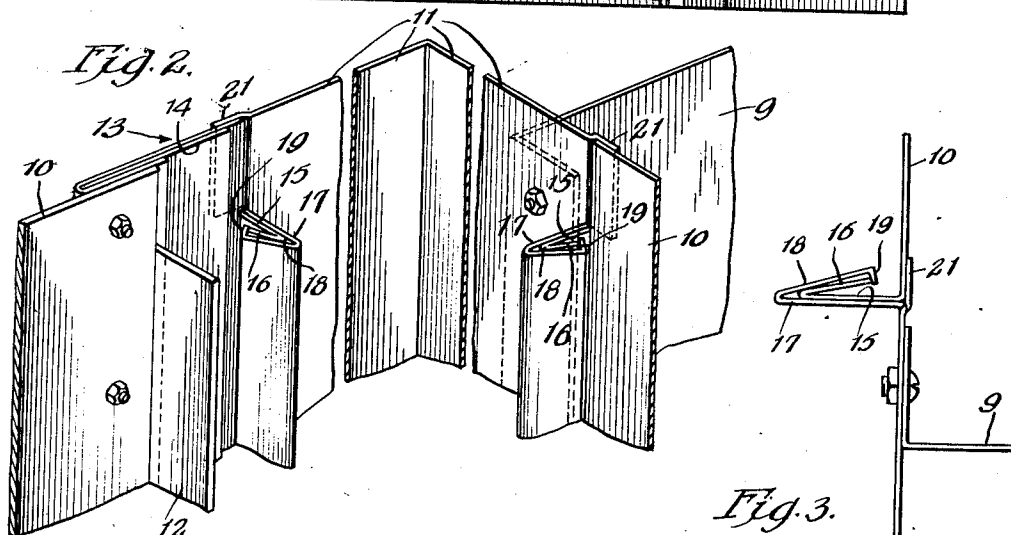
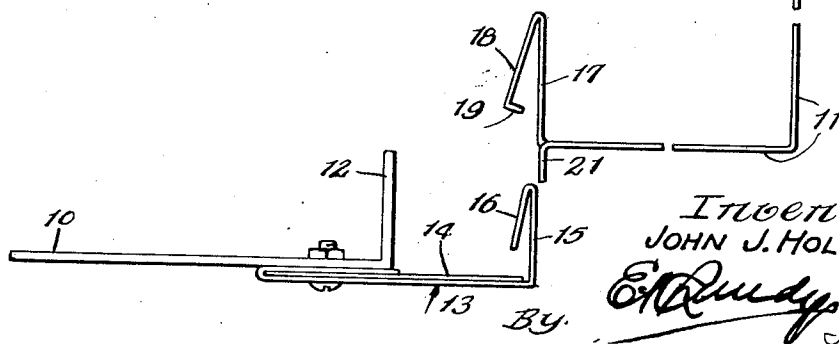
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FURNACE SHELL CONSTRUCTION

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FURNACE SHELL CONSTRUCTION

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2 Claims. (Cl. 189—36)

My invention relates to warm-air furnaces and similar heating apparatus, and more specifically my improvements appertain to the construction and assembly of the outer shell or housing that encloses the body or heater member of a furnace.

The present invention embodies a shell formed of a plurality of sectional units that are made in a manner that permits interchangeability thereof. These sectional units are in the form of relatively wide panels and connector members interposed between such panels, that permit a shell to be quickly assembled by interlocking or interengaging proximate edges or margins of the respective units. The connector members preferably are of a right-angle shape in cross-section so that they may provide the corners of a rectangular shell, and the panels are of a generally flat and straight shape to provide the upright walls of the shell. The margins or edge portions of the panels have specially shaped lateral extensions or flanges that are engaged with substantially counter-part lateral extensions or flanges on the edges of the connector members. This novel construction and arrangement provides a shell having knockdown characteristics and permits panels having certain appurtenances to be placed in a manner most convenient for a particular installation.

One of the objects of my invention is to provide a shell or housing of novel construction. Another object is to provide a shell or housing that is convenient to assemble when being installed, and which, when knocked-down may be transported or stored in a minimum of space. An advantage of this invention may be interlocked with each other without the use of tools, and the assembly may be done by unskilled persons. This structure is sturdy; it is capable of withstanding severe usage; and the interlocking elements are disposed in a manner relative to the finished shell that permits such elements to perform the function of reinforcing the shell wall. Numerous other objects and advantages of my invention will be apparent to persons skilled in the art after the same is understood from the within disclosure. I prefer to accomplish the foregoing objects and advantages, and to practice my invention in substantially the manner hereinafter described and as particularly pointed out in the appended claims, and reference is made to the accompanying drawing that forms a part of this specification.

In the drawing:

Figure 1 is a vertical elevation of a furnace shell made in accordance with my invention.

Figure 2 is a fragmental view in perspective showing a corner of the shell and looking at the inside thereof.

Figure 3 is a view looking down upon the structure shown in Figure 2, the panel at the bottom of the view being shown as detached from the corner member.

The drawing is to be understood as being more or less schematic and is merely for the purpose of disclosing a typical or preferred embodiment of my invention, and in the drawing like reference characters identify like parts wherever such parts appear in the different views.

In the shell disclosed in Figure 1, I have shown several appurtenances installed upon several of the faces thereof for the purpose of illustrating the flexibility of the members thereof. The left side panel is provided with a bottom doorway into which the feed channel 6 of a stoker structure 7 is inserted so that the burner head 8 of the stoker is properly positioned in the bottom of the central body of the furnace. An air-conditioner cabinet 9 is shown assembled with the panel or side of the shell opposite the stoker. The panel 10, which is shown in elevation has a central opening that is closed by a hinged door 4 whereby access is afforded to the interior of the heater body above the burner head 8 to permit a person to conveniently remove the usual accumulation of clinkers, and other solid residue of combustion, from the burner head or around the same.

A shell of cubical shape preferably consists of four rectangular panels all of substantially the same dimensions as to height and width, but these panels, as just above described, may have openings in different locations and may support appurtenances of different kinds so that such panels may be arranged in any desirable successive order. The co-acting connectors provide the corners of the shell and are of right-angle shape in cross-section. For convenience the panels are designated as 10 and each connector as a whole is designated as 11.

A panel comprises a rectangular metal sheet of heavier gauge than the metal of the connectors, and the vertical margins of the sheet are provided with inturned flanges 12 to stiffen the panel. This heavy gauge sheet forms the body of the panel and its upright margins have longitudinal extensions 13 secured to them in any suitable manner, preferably by bolts as shown. An extension comprises an elongated metal strip

that is folded upon itself, along its margin adjacent the panel body, with a narrow metal strip 14 between the folded portion as shown at the bottom of Figure 3. At the other margin of the extension the metal sheet is bent inwardly, in the same manner as flange 12, to provide one wall 15 of a channeled or V-shaped lock-flange, the other wall 16 of such flange being formed by a reversely bent longitudinal lip that is in a plane oblique to wall 15 and inclines towards the inner free edge of the latter to provide the apex of the V.

A connector member 11 is an elongated metal sheet bent at its center of width to preferably a right-angular cross-section and provides a corner of a rectangular shell. At each longitudinal edge of the connector member the metal sheet is bent at a 90-degree angle to provide one of the longitudinal walls 17 of the interlocking flanges, which walls, when assembled with the edges of adjacent panels, will lie alongside the intumed flanges 15 of the panel extensions. At their free edges the walls 17 are bent acutely in reverse bends to provide outwardly disposed lips 18 that are oblique to walls 17. Stops or shoulders 19 are formed at the free edges of the lips 18 and extend at right-angles to the respective lips in an inward direction towards the walls or flanges 17 thereby providing constricted or reduced entrance openings or longitudinal slots through which the V-shaped interlocking members 15 and 16 of the panel may be inserted as suggested at the lower portion of Figure 3. When the flange members of a panel and a connector member have been engaged with each other the free edge of the lip 16 of the panel will be disposed back of the stop a shoulder 19 of the connector member as shown in Figure 2 and at the upper portion of Figure 3. Thus assembled, accidental or unintentional movement or dislodgement of one of the interlocking members with respect to its proximate member is definitely prevented; but, in order to separate these parts, the panel as a whole may be raised vertically relative to the connector (the interlocking members acting as guides) until the bottom ends of the flange and lip 15 and 16 have passed above the top ends of the counter-part elements on the adjacent edge of the connector member.

The arrangement described permits a particular panel to be erected upon the side of the furnace shell that may be most desirable to the user. For example, in the assembly illustrated in Figure 1, the stoker enters the left panel which is opposite the panel to which the air-conditioning cabinet is connected, and the panel shown in elevation contains a doorway opening about midway its height that permits convenient access to the interior, or combustion chamber of the furnace body. A person may stand in front of this latter panel and remove clinkers or other accumulation of the residue of combustion without having to reach over the stoker as is at present the case when the stokers are installed so that they enter the front of an ordinary furnace shell through an ash-pit opening located below the fuel feed opening.

As shown in Figure 2 the flanges 12 of the bodies of the panels, and the interlocking lateral members 15—16 and 17—18 do not extend to the top of the casing but terminate a proper distance below the upper edge thereof so that a suitable cover 20 may be mounted upon and close the top of the housing. If desired, in order to insure against accidental disengagement of the interlocked flanges, relatively small tabs 21 may be made on the upper side edges of the connector member above the top edges of the interlocking flanges. These tabs are bent outward from the faces of the connector members prior to the assembly of the flanges as shown in the lower portion of Figure 3, and, after the flanges have been interlocked, these tabs are bent flat against the adjacent surface or face of the panel as shown in Figure 2 and at the upper part of Figure 3. It will be understood the panels need not be provided with the side extensions 13 as shown herein, and in such event the interlocking flange 15—16 is formed integrally at the vertical edges of the panel. Owing to the thickness of the panel herein disclosed it is found desirable to provide the locking flanges in metal of thinner gauge because of its greater elasticity and its adaptability to being bent in the desired shape. For all intents and purposes of the present invention the extensions 13 and the locking flanges 15—16 are to be considered as a part (integral or otherwise) of the panel sheet.

What I claim is:

1. A sheet metal structure comprising two metal edges joined together both edges bent laterally to the respective body portions alongside said edges, said edges beyond the respective bends each having a reverse bend whereby counterpart flanges of V-shape cross-section are provided, the apex of one V-shaped structure inserted through the open base of the other V-shaped structure, a stop on the free margin of the outer V-shaped structure that is engaged by the free margin of the inner V-shaped structure, and a tab on the body portion of one metal edge that is engaged with the adjacent body portion of the other metal edge, said tab adapted to prevent separation of said V-shaped structures by movement in lateral directions.

2. A sheet metal structure comprising two metal edges joined together both edges bent laterally to the respective body portions alongside said edges, said edges beyond the respective bends each having a reverse bend whereby counterpart flanges of V-shape cross-section are provided, the apex of one V-shaped structure inserted through the open base of the other V-shaped structure, a lateral intumed lip on the free margin of the outer V-shaped structure disposed across the free margin of the inner V-shaped structure, and a tab on the body portion of the metal edge that forms the outer V-shaped structure, said tab engaged with the body portion of the other metal edge, whereby to prevent separation of said V-shaped structures by relative movement in lateral directions.

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