

March 9, 1948.

A. J. DAWSON

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INSULATED WALL CONSTRUCTION FOR HULLS, DECK HOUSES, AND THE LIKE

Filed Feb. 3, 1945

2 Sheets-Sheet 1

Fig. 2.

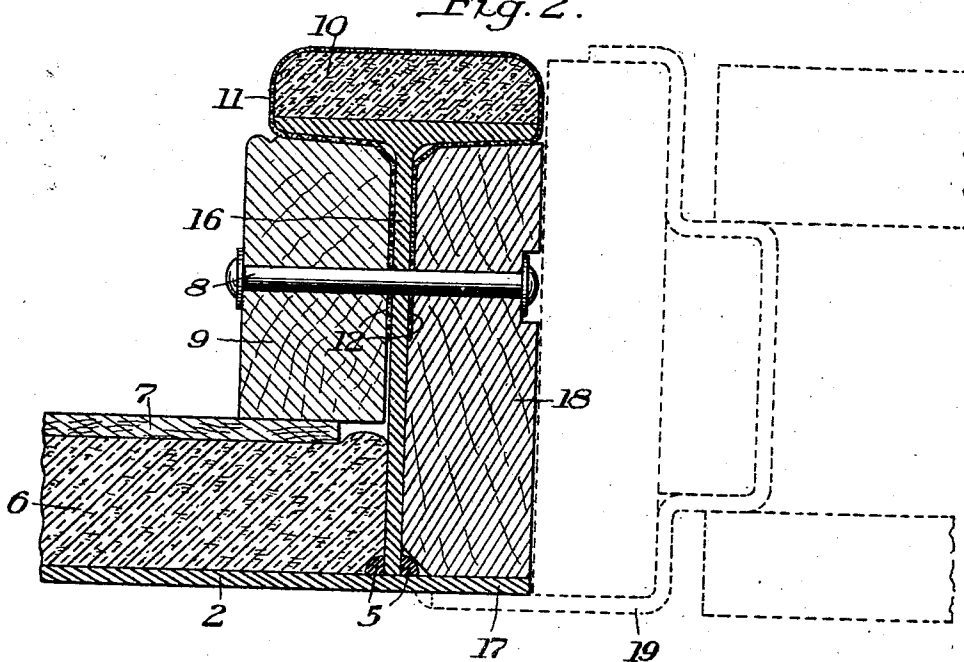
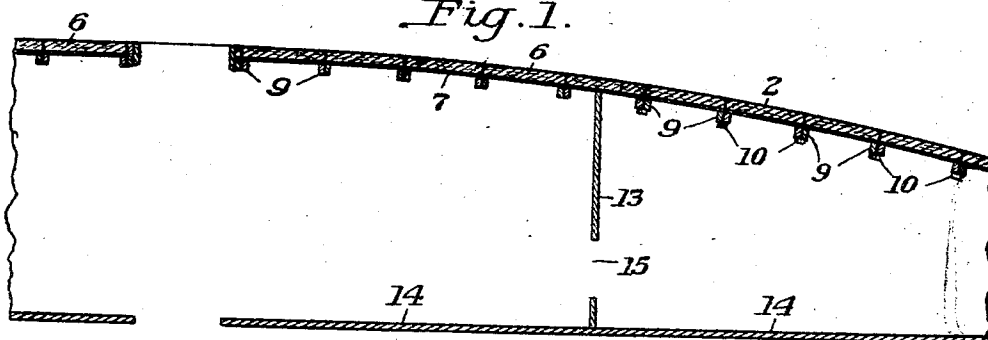


Fig. 1.



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Fig. 3.

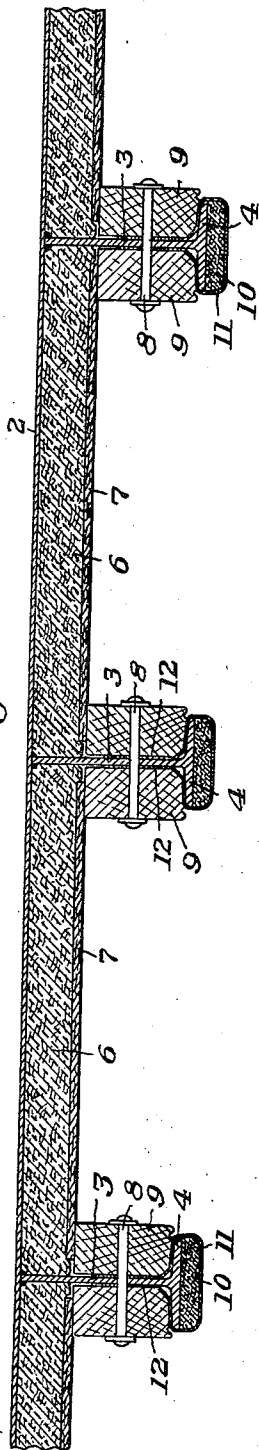


Fig. 4.

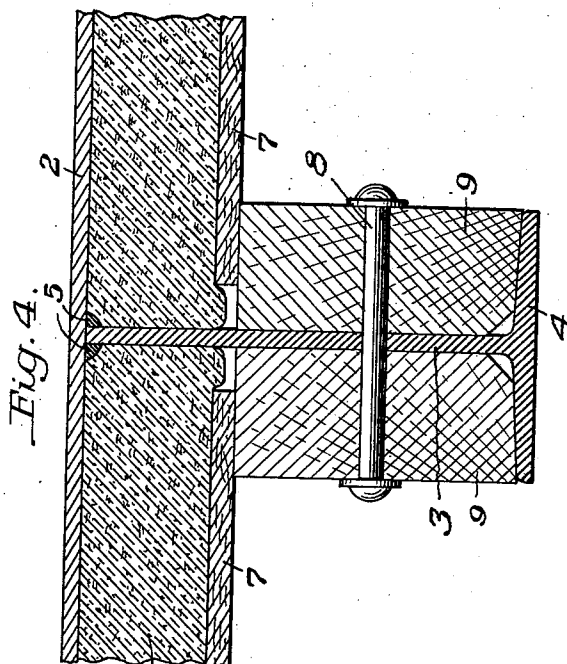
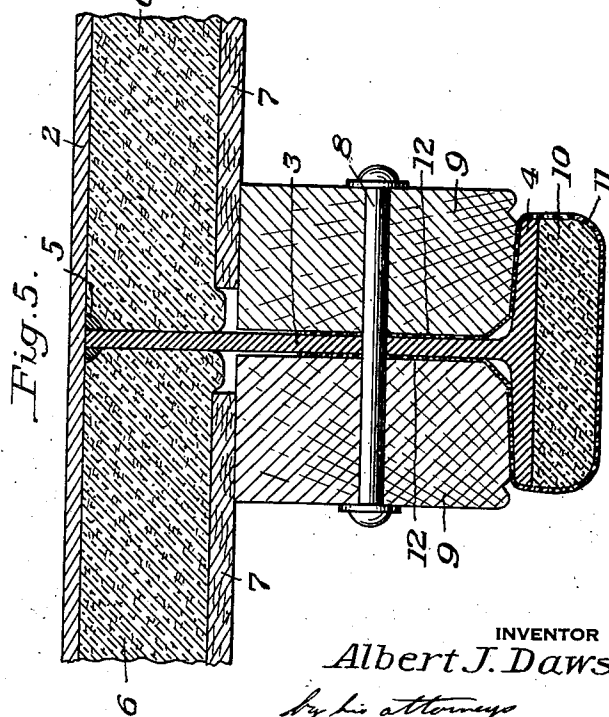


Fig. 5.



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INSULATED WALL CONSTRUCTION FOR
HULLS, DECK HOUSES, AND THE LIKEAlbert J. Dawson, Sewickley, Pa., assignor to
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tion of Pennsylvania

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5 Claims. (Cl. 20-4)

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This invention relates to a metal wall construction and is for an insulated metal wall for structures such as ship hulls, deck house of a boat, and the like.

While the invention is especially applicable to hulls and deck houses for boats, and will be specifically described in that connection, it is to be understood that the term "deck house" is used in a broad sense to include similar structures. Metal housing of this kind is formed with vertical stiffeners or reinforcements to which is secured a metal sheathing. This sheathing is entirely weatherproof, but affords no insulation against external temperatures, and the present invention provides a neat, economical and efficient insulated wall structure.

According to my invention, the insulation is confined between the steel sheathing and plywood or like panels. The panels in turn are held immovably in place by strips or battens which are bolted to the webs of the upright metal studs or supports, the entire insulated structure being provided without any other metallic fastenings between the insulation and the metal wall.

The invention may be more fully understood by reference to the accompanying drawings, in which:

Fig. 1 is a sectional plan view through a portion of a ship having a hull or deck house wall embodying the present invention;

Fig. 2 is a detail horizontal section through a portion of the wall where a doorway is formed;

Fig. 3 is a horizontal section on a larger scale than Fig. 1 showing several panels of the wall;

Fig. 4 is a fragmentary horizontal section on a larger scale than Fig. 3, showing a part of the wall adjacent one of the supporting structures as constructed throughout certain parts when framing flange is not insulated; and

Fig. 5 is a similar view for parts requiring insulation of framing flanges as generally is desirable for the living quarters of a boat.

Referring first to Figs. 1 and 3, the deck house wall is comprised to a metal sheathing formed of light gauge metal plate, this metal sheathing being designated 2. At intervals along the wall are upright structural metal sections preferably of a T section, these having a web portion 3 and a flange portion 4. The metal sheathing is welded to the vertical edge of these T sections as more plainly shown at 5 in Figs. 4 and 5.

According to the present invention, battens or layers of soft insulating material designated 6 are laid against the sheathing on the inner face of the wall, the insulation being of appropriate

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thickness. It may be any suitable insulating material, preferably a fireproof material such as mineral wool which may be prepared into battens of uniform thickness. The insulation extends across the full width of the space from one upright structural member to the next. Laid against the inner face of the insulation are panels 7 which are preferably formed of insulating material or plywood, but which may be formed of any appropriate fiber or composition material, or which may even be metal. The panels 7 are of a width such that they may be inserted into the space between two structural sections, the edges of the panels 7 preferably being spaced a slight distance from the webs 3 of the structural stiffeners.

Secured to the webs 3 of the metal sections by means of transversely extending bolts or rivets 8 are timbers or battens 9 which fit under the flanges 4 of the structural sections and which bear against the vertical margins of the panels 7, overlying these margins. The strips or timbers 9 are of a dimension such as to press the panels inwardly against the resistance of the insulation material, thereby squeezing the insulation material between the sheathing 2 and the panels 7 to firmly hold the insulation material in place. At the same time the outward pressure of the insulation pressing the panels against the wooden strips or battens 9 firmly holds the panels 7 in place.

Thus it will be seen that an insulated wall of neat appearance is very economically provided without any need for any extra welding. The structural sections 3 may be pre-fabricated with holes at appropriate locations to receive the through pins or bolts 8. The wooden strips or battens 9 can be pre-cut to length before being taken aboard the ship, and the panels 7 may be fabricated or cut before they are brought aboard, to the necessary size. The only operations that need be performed after the deck house is erected, to complete the insulation of the walls, is laying the insulation in place, and the application of the panels 7, and the securing of the strips 9 to the structural sections. This can be done rapidly by unskilled labor, and does not even require the services of a carpenter.

In the ship's offices, or living quarters, it may be desirable to provide more complete insulation, and at the same time conceal and provide a padding over the flanges 4 of the metal sections. This may be easily accomplished as shown in Fig. 5 by also laying a pre-formed strip of insulating material 10 on the outer face of the flange

4 of the metal sections over which is laid a strip of canvas or other fabric 11. The strip of canvas is made wide enough so that the sides of the strip may be folded under the flanges 4 and brought in against the webs 3 of the sections. The wooden strips 9, as they are clamped into place, stretch this canvas or fabric tight, and clamp the edges of the fabric to the two faces of the web 3. In Fig. 5 these edges of the strip of canvas are designated 12. This provides effective insulation and padding over the flanges of the sections with very nominal additional expense and labor.

Fig. 1 illustrates a portion of a ship structure in which there is a transverse bulkhead 13 and longitudinally-extending bulkheads 14, with a doorway at 15 establishing communication between the area on one side of the transverse bulkhead and the other. The portion of the deck house forwardly of the bulkhead 13 may be living quarters, in which the metal sections are completely insulated, as shown in Fig. 5, whereas the portions of the wall rearwardly of the bulkhead 13 may be constructed without the insulation over the flanges, this part of the wall being constructed as shown in Fig. 4. It will be seen that whether the flanges are insulated or not, the basic construction is the same, and the fact that in some portions of the wall the flanges of the sections are to be covered, whereas in others they are not, does not require any difference in the general construction or assembly.

In Fig. 2 there is shown a construction which is used where there is a door through the deck house. In this instance the upright structural section which is similar to all of the other structural sections, and which in Fig. 2 is designated 16, is welded to the metal sheathing a slight distance back from the opening in the sheathing where the doorway is located, so that there is a projecting ledge of sheathing 17 in Fig. 2 beyond the section 16. The insulated wall is constructed as previously described up to the section 16, and a wooden strip or batten 9 is secured in place on one side of the web of the structural member 16. Fitted under the flange of the structural member 16 and confined by the overhang 17 of the sheathing is another wooden strip 18. This strip 18 is especially desirable where the structural member 16 is to be covered with insulation as described in connection with Fig. 5. The actual door frame is indicated in dotted lines and is marked 19. It forms no part of the present invention, however.

From the foregoing it will be seen that the present invention provides a neat, economical, and easily installed wall construction, which can be rapidly installed and which provides effective and efficient insulation without undue increase of cost or labor. Not only is the insulation desirable from the standpoint of comfort, but also from the standpoint of deadening noise and sound. The invention moreover provides a layer of soft insulation and then, by reason of the insulating qualities of the plywood or other panels, a layer of hard insulation, the first layer being against the steel constituting the outer wall of the deck house, and the second forming the inside finish of the deck house or other structure, the wooden strips or timbers 9 also improving the appearance, as these timbers and the panels may be appropriately finished.

While I have illustrated certain specific embodiments of my invention, it will be understood that this is by way of illustration, and that various modifications and changes may be made

within the contemplation of my invention and under the scope of the following claims.

I claim:

1. A wall construction comprising an exterior metal sheathing, metallic structural sections at spaced intervals inside the sheathing and to which the sheathing is welded, said structural sections having flanged portions at the ends opposite the welds, soft insulation laid against the sheathing between the structural sections, panels overlying the soft insulation for retaining it in place, said flanged portions overlying the edges of said panels, and battens bolted to the structural sections and overlying the edges of the panels for pressing the panels against the insulation and holding the panels in place.

2. A wall construction for use aboard ships and the like comprising an exterior metal sheathing, metallic perpendicular stiffeners at intervals along the inner face of the sheathing and extending outwardly therefrom in a plane normal thereto, and having integral flanged portions in spaced relationship to said sheathing, soft insulation laid against the inner face of the sheathing between the stiffeners, panels laid between the stiffeners over the soft insulation, and timbers secured to the stiffeners extending over the edges of the panels and resting against said flanged portions for pressing the panels against the insulation and holding the panels in place.

3. A wall construction for use aboard ships and the like comprising an exterior metal sheathing, metallic structural T sections at spaced intervals along the inside face of the sheathing and secured to the sheathing and providing stiffeners for the sheathing, soft insulation laid against the inner face of the sheathing between the stiffeners, panels between the stiffeners laid against the soft insulation, and strips bolted to the web of the stiffeners between the panels and the flange of the stiffeners serving to press the panels against the insulation and hold the panels and insulation in place.

4. A wall construction for use aboard ships and the like comprising an exterior metal sheathing, T-shaped metallic structural sections extending vertically against the inner face of the sheathing with the flange of the sections being turned away from the sheathing, said sections constituting stiffeners for the sheathing, soft insulation laid against the interior face of the sheathing, panels between the structural sections overlying the soft insulation for retaining it in place, and timbers secured to the web of the T sections between said flanges and panels of the T sections which project over the edges of the panels and press the panels against the soft insulation and retain and hold them in place.

5. A wall construction for use aboard ships and the like comprising an exterior metal sheathing, T-shaped metallic structural sections extending vertically against the inner face of the sheathing with the flange of the sections being turned away from the sheathing, said sections constituting stiffeners for the sheathing, soft insulation laid against the interior face of the sheathing, panels between the structural sections overlying the soft insulation for retaining it in place, and timbers secured to the web of the T sections between said flanges and panels of the T sections which project over the edges of the panels and press the panels against the soft insulation and retain and hold them in place, soft insulation being also provided along the outside of the flanges of the sections, and a fabric covering enveloping the soft insu-

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lation and confined by the said timbers and the web of the section for holding the soft insulation over the flanges in place.

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