April 15, 1952 W. G. BARTENFELD 2,592,999

SHIP TANK TOP AND HOPPER CONSTRUCTION

Filed Nov. 10, 1949

FIG. 1

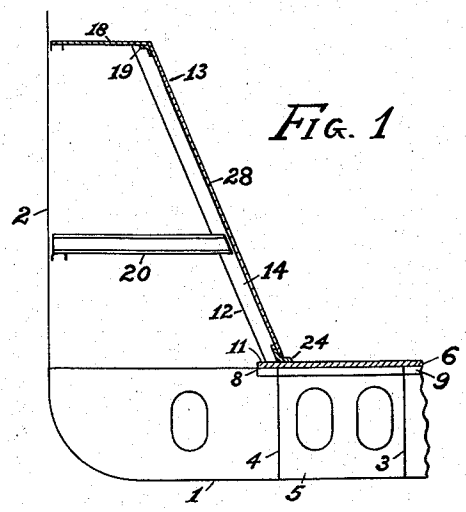


FIG. 2

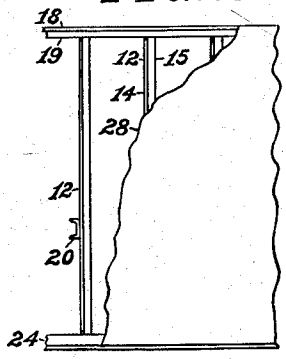


FIG. 3

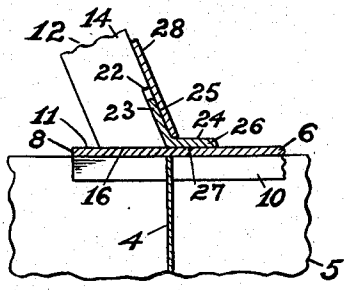


FIG. 4

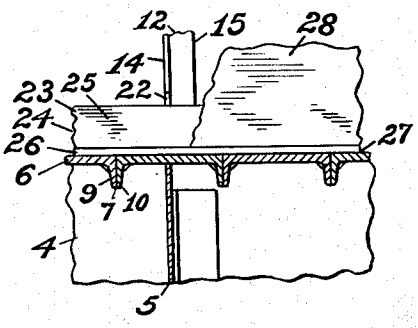
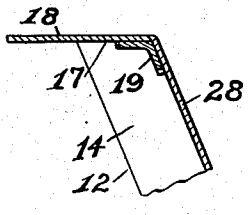


FIG. 5



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SHIP TANK TOP AND HOPPER CONSTRUCTION

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3 Claims. (Cl. 114—79)

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This invention relates to tank top construction for ships and the support thereby and the connection therewith of the inclined sides of the hopper.

The main object of the invention is to provide for the supporting of the bases of the inclined frame angles of the hopper upon the tank top and the angle connection between same for obtaining a rigid corner construction to withstand the abuse of the clamshell bucket in the loading and unloading of the ship.

Another object of the invention is to provide said construction in order to make it possible to eliminate the need, as heretofor, for using brackets for supporting the bases of the frame angles and thereby also the welding of such brackets to the bilge floor plates, and thus reduce the weight of materials used and the cost of the labor.

With the above and other objects in view, the invention will be hereinafter fully described with reference to the accompanying drawings, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a diagrammatic transverse section of one side of the hull of a ship with my invention applied thereto,

Fig. 2 is an elevation of a segment of Fig. 1,

Fig. 3 illustrates in cross section, on an enlarged scale, the angle construction shown in Fig. 1,

Fig. 4 is a similar view to Fig. 3 looking towards the inner side of the hopper, and

Fig. 5 is a similar view to Fig. 3 of the connection of the frame angles to the deck.

Referring to the drawings, 1 represents the hull of a ship and 2 a side thereof. The hull having the usual keelsons indicated by 3 and 4, and the floor plates 5. The top of the tank is constructed of inverted channels 6, which are arranged transversely flange to flange and welded at the joints 7 and supported upon the keelsons 3 and 4.

In carrying out my invention, the ends of the inverted channels 6 forming the top of the tank extend as at 8 beyond the side keelsons 4. The side keelsons 4 are notched as at 9 to receive the adjacent flanges 10 of the channels 6. The end extensions 8 of the inverted channels 6 provide a horizontal ledge 11 extending longitudinally of the ship for supporting the bases of the frame angles 12 of the hopper 13.

The frame angles 12 of the hopper 13 consists of a web 14 and a flange 15 and are cut off at their bases 16 on an angle so as to rest upon and contact the ledge 11 of the end extensions 8

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of the channels 6 over and beyond the side keelsons 4, when said frame angles are placed in the desired inclined positions. The upper ends of the frame angles 12 are cut off on a horizontal line parallel to their bases 16 as at 17 for connection to the deck 18 of the ship by a suitable angle bar 19 preferably by welding. A strut 20 extends from the side of the ship to each of the inclined frame angles 12 for supporting same. For the purpose of connecting the bases 16 of the frame angles 12 to the ledge 11 of the end extensions 8 of the channels 6 when said bases are in full and complete contact with said ledge, the webs 14 of said frame angles are notched at 22 a sufficient depth to receive the upper portion 23 of an angle bar 24, the inner face 25 of which is in alinement with said webs. The other horizontal portion 26 of the angle bar 24 rests upon the channels 6 and is welded thereto at its longitudinal edges 27. Plates 28 forming the sides of the hopper 13 are supported by the frame angles 12 and extend from the lower angle bar 24 to the upper angle bar 19, and all parts are connected together by suitable welding and the necessary joints made water tight.

From the drawings and description, it is seen that by extending the ends of the inverted transverse channels forming the tank top beyond the supporting side keelsons provides longitudinally extending ledges for supporting the bases of the inclined frame angles of the hopper and thereby eliminates the need for brackets as heretofore used, and by notching said frame angles for receiving the upper portions of the connecting angle bars and overlapping same with the side plate of the hopper, said corner constructions are strong and afford little exposed or upstanding construction to be damaged by the clamshell.

Having fully described my invention, what I claim is:

1. In a tank top construction for ships and the support and connection therewith of the sides of the hopper, the combination of a tank top, the tank top being supported by a central keelson and side keelsons, the tank top having longitudinally extending side ledges beyond the side keelsons, frame angles consisting of a web and a flange, the webs and the flanges of the frame angles extending inwardly relative to the center keelson and resting endwise upon said side ledges of the tank top, the webs of the frame angles adjacent to the tank top ledges being notched, an angle bar having one of its flanges in the notches of the frame angles and its other flange

resting upon its ledge, and plates supported by the webs of the frame angles and overlapping the flange of the angle bar in the notches of said frame angles.

2. In a tank top construction for ships and the support and connection therewith of the sides of the hopper, the combination of a tank top consisting of inverted channels extending transversely, the channels being supported by a center keelson and side keelsons and their ends extending beyond the side keelsons and forming longitudinally extending ledges, frame angles consisting of a web and a flange, the webs of the frame angles extending inwardly towards the center keelson and being cut off on an angle and engaging said ledges and inclining outwardly therefrom, the webs of the frame angles adjacent to the ledges being notched, an angle bar having one of its flanges in the notches of the frame angles engaging each of said ledges and its other flange extending inwardly towards the center keelson and resting upon its ledge, said frame angles and said angle bars being welded to said ledges, plates welded to the webs of the frame angles, and said plates overlapping the flange in the notches of said angle bars and being welded thereto.

3. In a tank top construction for ships and the support thereby of the frame angles for supporting the sides of the hopper, the combination of a center keelson and side keelsons, a tank top consisting of inverted channels extending transversely of said keelsons and supported thereby, the channels having their ends extending beyond and overhanging said side keelsons and forming longitudinally extending horizontal ledges, frame angles consisting of a web and a flange, the webs of the frame angles extending towards the longitudinal center of the ship, the frame angles having their bases cut off on an angle and resting upon said ledges and their upper ends inclining away from the longitudinal of the ship, the webs of the frame angles being notched upwardly from their bases, an angle bar having one flange in the notches of the frame angles and its other flange resting upon said tank top and extending towards the longitudinal center of the ship, said frame angles being welded to said ledges and said angle bars being welded to said tank top, plates forming the sides of the hopper welded to the webs of said frame angles, and said plates overlapping the flanges of said angle bars in said notches of said frame angles and being welded thereto.

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