

[54] **METHOD OF OUTFITTING AN ENGINE ROOM OF A SHIP**

3,429,288 2/1969 Suit ..... 114/77 R  
2,368,441 1/1945 Bedford ..... 114/65 R

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[51] **Int. Cl.** ..... **B63b 3/02**

[58] **Field of Search** ..... 114/77 R, 77 A, 65 R;  
61/65

[56] **References Cited**

**UNITED STATES PATENTS**

3,363,597 1/1968 Zeien ..... 114/65 R

[57] **ABSTRACT**

A method of outfitting an engine room of framework section in the course of shipbuilding which comprises the sequential steps of assembling an inner structure of the engine room as a framework section on the ground, installing necessary equipment for the engine room, other than the main engine and boilers, in the framework section, craning up the framework section incorporating the equipment onto a building berth, and joining the same to the adjoining hull section already erected on the berth.

**5 Claims, 3 Drawing Figures**

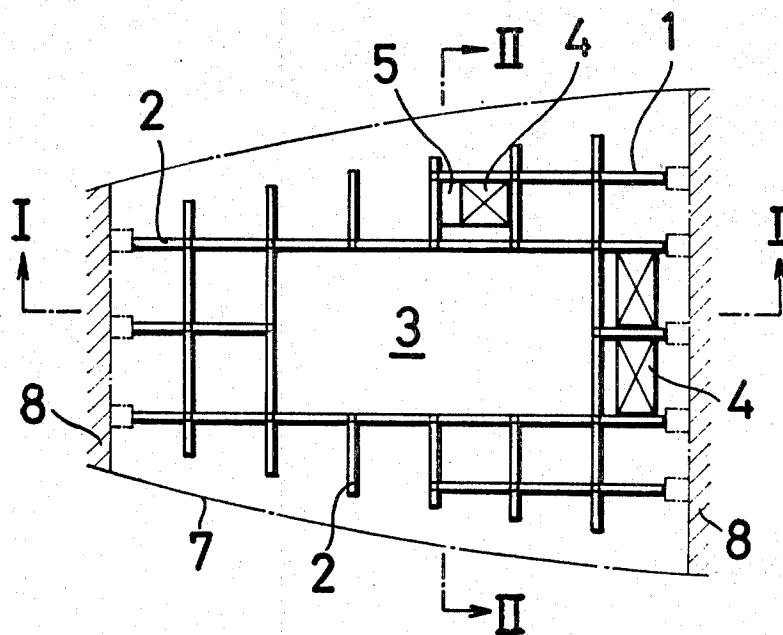


FIG. 1

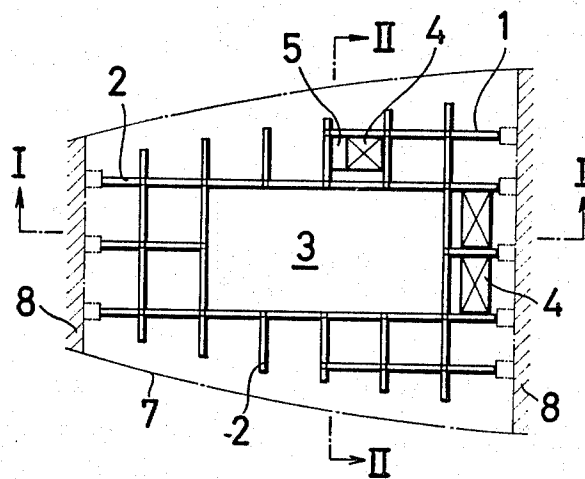


FIG. 2

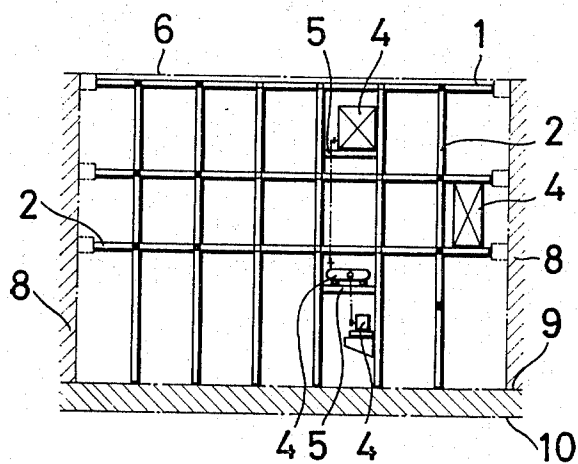
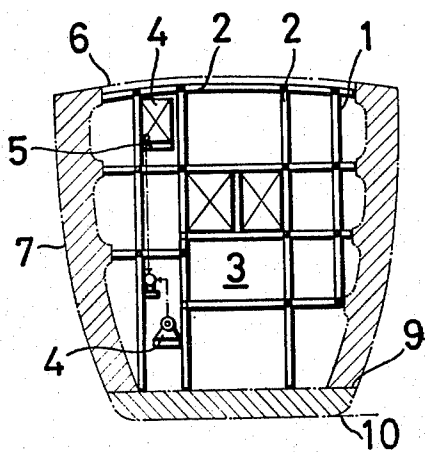


FIG. 3



# METHOD OF OUTFITTING AN ENGINE ROOM OF A SHIP

This invention relates to a method of outfitting an engine room in a hull framework section of a ship under construction, which facilitates the introduction and installation of equipment in the engine room.

The hull structure of a ship generally consists of decks, plating, pillars, frames, etc. and it has been widely in practice to assemble those structural members into sub-assemblies or blocks on the ground, crane up each such block onto a building berth and weld the same to the adjoining hull structure already erected, and then carry auxiliaries and other equipment into the hull thus completed, arranging them suitably in place utilizing the existing structural members.

The conventional process of hull erection, however, has much to be required from the standpoint of outfitting, for example, in that the layout of auxiliaries depends upon the hull design and therefore tends to provide much dead space. Moreover, craning up the equipment into the hull is rendered difficult by the upper deck and outside plating already covering the framework of the hull. Thus coordination of equipment layout and assembling of structural members into hull sections has been a knotty problem to be solved. Further, by reason of its overall weight, a hull has to be constructed first in the form of several blocks and hence the equipment has to be separated, too. This has presented another problem in the construction of an engine room section because proper arrangement of equipment in the room is important from the viewpoint of ship operation and, in fact, it is in the engine room that many components of the equipment have to be installed. For these reasons an improvement of the method of craning up equipment into the engine room section has been considered necessary.

It is therefore an object of the present invention to provide a method whereby an engine room is assembled in the form of a skeletal structure or framework while, at the same time, interior equipping of the room is carried out, both on the ground, so as to facilitate installation of the equipment, enable the components to be properly arranged, save much of man hours normally needed for outfitting, and thereby shorten the period of shipbuilding required.

Other objects, advantages, and features of the present invention will become apparent from the following description taken in conjunction with the accompanying drawings showing a preferred embodiment thereof. In the drawing:

FIG. 1 is a top plan view of a framework section of an engine room incorporating equipment therein, with the outside plating to be applied indicated by alternate long and short dash lines;

FIG. 2 is a sectional view taken along the line I-I of FIG. 1; and

FIG. 3 is a sectional view taken along the line II-II of FIG. 1.

Referring to the figures, a framework section defining an engine room of a hull is generally indicated at 1. The numeral 2 denotes lateral, longitudinal, and vertical frame members constituting the framework. The section 1 has a vertical opening 3 in the center through which an engine is to be subsequently craned down for installation. Plate brackets 5 required to support equipment 4 are fixed to the frame members 2. Although the

engine room framework section 1 is shown as of a unitary construction, it may be divided, if desired, into a plurality of sub-sections. The framework section 1 is built on the ground, and equipment 4 is installed therein prior to the covering of the structure with an upper deck 6 and outside plating 7. Where necessary, platforms or step plates as passages for the workers may be suitably supported by the members 2. With the exception of the main engine and boilers which are, in principle, not installed in this stage, the equipment 4 for the engine room is carried into the framework section 1 on the ground and the components connected altogether as a plant in the engine room. The adjustment and trial running of the resulting plant as installed in the framework section 1 are performed on the site in the section 1 where the plant box is erected. Next, the engine room framework section 1 accommodating the equipment 4 is craned up onto the building berth and joined to the main hull block 8, and then the upper deck 6 and outside plating 7 are welded to the framework section 1. Throughout these figures, the reference numeral 9 designates a tank top and 10, a baseline.

According to the present invention, as above described, the inner structure of engine room consists of a framework adapted for the introduction and installation of equipment and having sufficient rigidity and strength, the engine room can be outfitted in the structure not yet covered with the upper deck or outside plating, and the outfitting of the room can be carried out independently of the hull construction work. Therefore, the equipment may be installed by transporting it through not only the top opening of the framework but through either side or the front or rear side of the section without the need of taking into account any obstruction, as by the upper deck or outside plating, as is the case with the conventional erection process. This is helpful for the mechanization of shipbuilding and saving of labor, and permits reduction of the man hours required for outfitting and adequate assignment of workers. In addition, the fact that the adjustment and trial operation of the plant inside the engine room can be accomplished on the ground results in substantial savings of the operation cost and labor for those purposes. This in turn contributes to curtailment of the time normally required for the shipbuilding.

What is claimed is:

1. A method of outfitting an engine room of framework section in the course of building a ship where the hull of the ship is constructed on a building berth or ways, comprising the steps of assembling a framework structure for forming the engine room at a location separate from the building berth or ways, installing the required engine room equipment with the exception of the main engine and boilers in the framework structure at the separate location, connecting the installed engine room equipment together and test running the installed connected engine room equipment at the separate location, transporting the assembled engine room framework structure and equipment from the separate location and placing it in the hull on the building berth or ways, and joining the engine room framework structure to the hull.

2. A method as defined in claim 1 wherein the framework section consists of pluralities of longitudinal, vertical, and lateral frame members interconnected together.

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3. A method as defined in claim 1 wherein the framework section is provided with plate brackets to support equipment thereon.

4. A method as defined in claim 1 wherein the framework section is formed with a longitudinal opening in the center through which an engine is to be subsequently craned down for installation.

5. A method of outfitting an engine room of framework section in the course of building a ship where the hull of the ship is constructed on a building berth or ways, comprising the steps of assembling a framework structure for forming the engine room at a location separate from the building berth or ways, installing the re-

4

quired engine room equipment with the exception of the main engine and boilers in the framework structure at the separate location, connecting the installed engine room equipment together and test running the installed connected engine room equipment at the separate location, transporting the assembled engine room framework structure and equipment from the separate location and placing it in the hull on the building berth or ways, joining the engine room framework structure to the hull, and securing an upper deck and outside plating to the engine room framework structure.

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