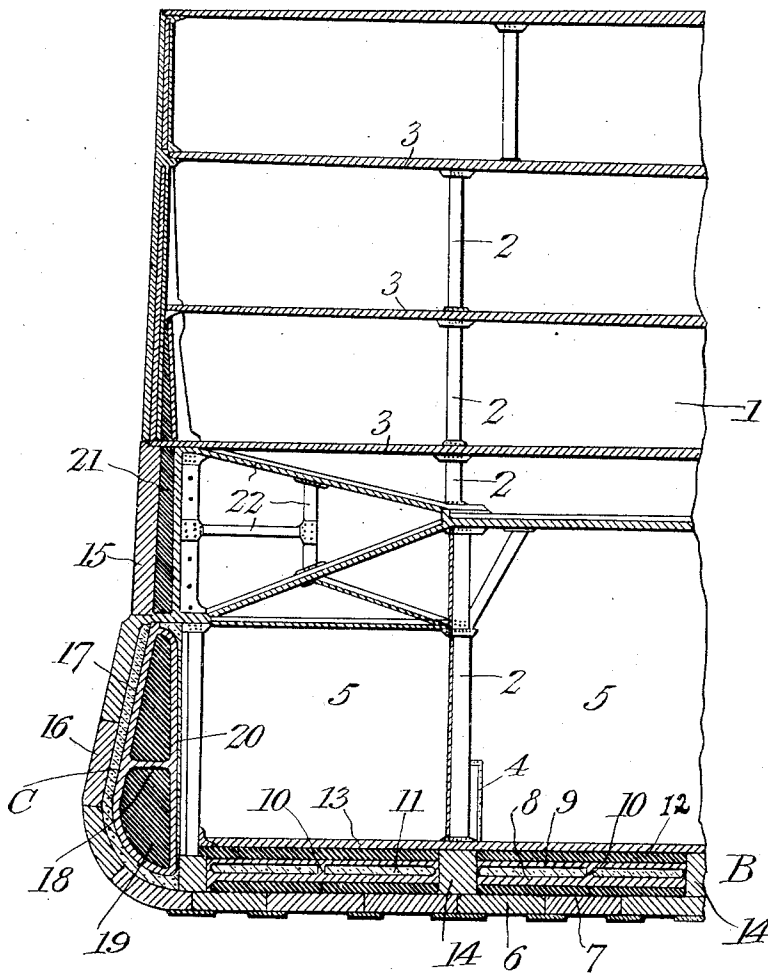


972,042.

Fig. 1.



Wm Bagger.

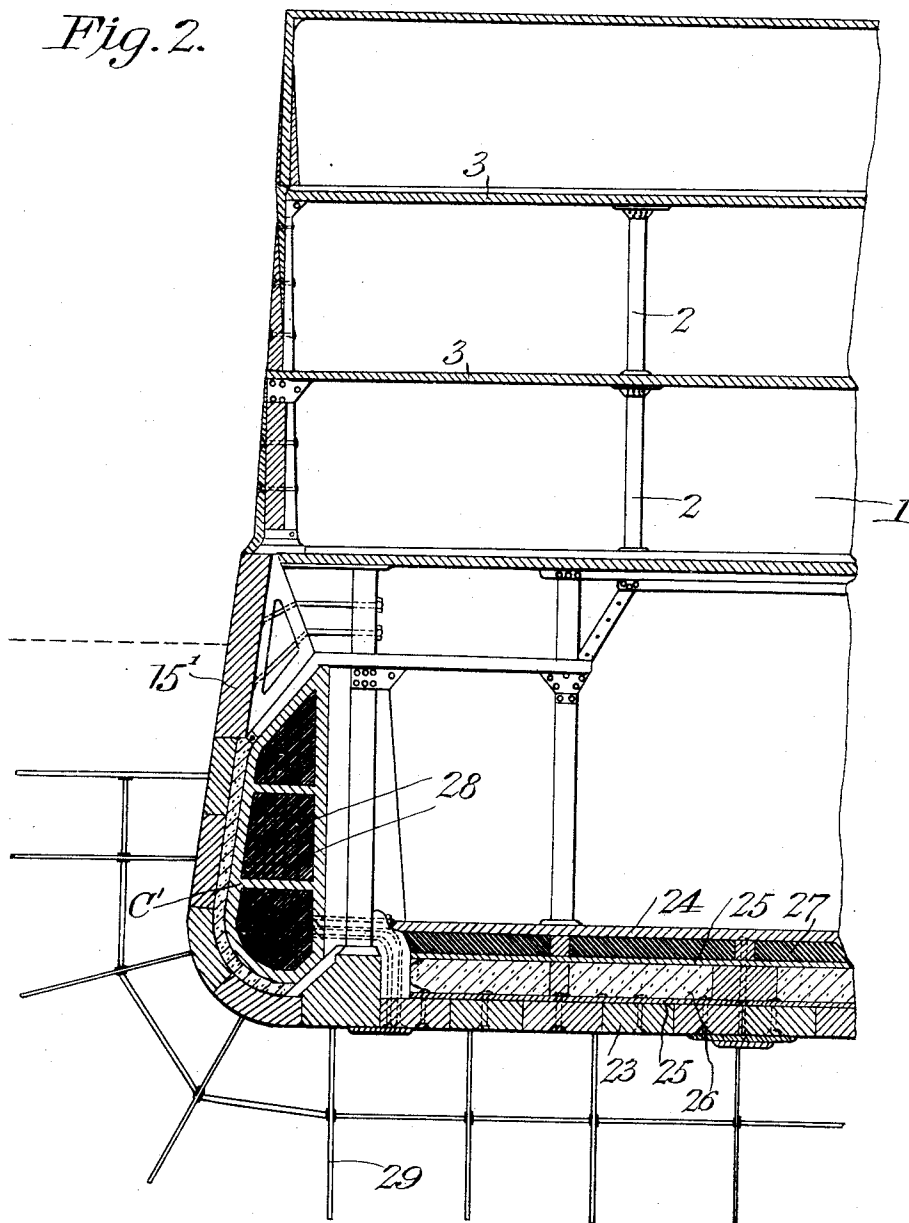
By *Victor J. Evans*
Attorney

972,042.

Patented Oct. 4, 1910.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses
T. Fitzhugh Knox.
J. M. Baggett.

Inventor
Mathias Wailgum Jr.
By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

MATHIAS WAILGUM, JR., OF HOLYOKE, MASSACHUSETTS.

SHIP CONSTRUCTION.

972,042.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Application filed January 28, 1910. Serial No. 540,726.

To all whom it may concern:

Be it known that I, MATHIAS WAILGUM, JR., citizen of the United States of America, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Ship Construction, of which the following is a specification.

This invention relates to ship construction, and it has particular reference to the construction of armored vessels.

As is well known, it is practically impossible to build up the entire outer skin of a vessel with heavy armor plate, or at least with armor plate of sufficient thickness to resist attack by submarines, torpedoes and the like. Heavy armor plate has been used along and above the water line to shield vessels against attack by heavy ordnance, and satisfactory results on these lines have been attained, but owing to the weight of armor necessary to afford sufficient protection, the bottom of the hull has heretofore been left relatively unprotected.

The object of the present invention is to provide a simple and efficient construction, whereby sufficient protection may be afforded the bottoms of vessels in such a manner as not to encumber the vessel with excessive weight.

Further objects of the invention are to simplify and improve the construction of the protecting armor used below the water line of vessels or below the line of the heavy armor plating usually employed.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawings,—Figure 1 is a transverse sectional view of a vessel protected in accordance with the invention. Fig. 2 is a similar view illustrating certain modifications.

Corresponding parts in both figures are denoted by like characters of reference.

In accordance with the present invention, the hull of the vessel 1 is constructed with props or supports 2 between the different decks 3—3, and water-tight compartments are employed throughout, but such being of well known construction, it has not been deemed necessary to illustrate the same in detail, except at 4 in Fig. 1, where a door or closure between two adjacent water-tight compartments 5—5 has been shown.

Referring now more particularly to Fig. 1 of the drawings, and where B designates the bottom of the vessel, said bottom is constructed of an outer skin 6 of heavy armor plate which is superposed upon a backing 7 of india rubber. The rubber backing 7 rests against an armor section comprising two plates 8 and 9 which are connected and spaced apart by webs or ribs 10, the intermediate space between the plates 8 and 9 being filled with compressed sponge 11. The inner armor plate 9 is backed by a layer 12 of india rubber, and the inner skin 13 of light armor plate is supported upon the rubber backing 12. The outer and the inner skins 6 and 13 are spaced at intervals by blocks or struts 14, and the entire bottom may thus be regarded as being made up of sections intermediate or spaced apart by the said struts; by this construction the bottom armor plate may be made in sections of suitable dimensions which may afterward be placed in position and reinforced and connected by the inner and outer skins. The sides of the hull below the belt 15, which is constructed in the usual manner, are bulged outwardly, as shown, and are composed of an outer skin 16 backed by a layer of compressed sponge 17 which is reinforced by a bulk head C which consists of a hollow casing reinforced by struts 18 and containing a heavy cushion 19 of india rubber, said bulk head being placed between the inner skin 20 and the sponge packing 17. The armor belt 15 is reinforced by a backing 21 of india rubber and by a truss construction generally indicated at 22.

In the construction illustrated in Fig. 2, the protective armor has been slightly varied in that the outer and inner skins 23 and 24 of the bottom are separated by various layers of plating 25, sponge 26 and rubber 27. The bulk head, here designated C' used below

the protective armor here designated 15' is constructed substantially in the same manner as shown in Fig. 1, with the exception that the rubber is reinforced by rods or wires 28
5 extending longitudinally and transversely therethrough. In Fig. 2 of the drawings the vessel has also been shown as provided with outwardly extending guards or creepers
10 rines or torpedoes, will cause the missile to explode before actually contacting with the body of the hull, thus gradually diminishing the effect of the blow struck.

From the foregoing description, taken in
15 connection with the drawings hereto annexed, the operation and advantages of the invention will be readily understood by those skilled in the art to which it appertains.

It is believed that by the construction
20 herein described a more effective protection is afforded than could be had by ordinary armor plating, however heavy, since injury to the outer skin will not necessarily result in a fatal wound to the vessel which is thor-
25 oughly protected by the various layers of

rubber and sponge, the former of which will yield to the impact of blows without necessarily becoming broken or ruptured, while the sponge in the event of the actual formation of an opening will expand and effectively plug such opening to obstruct the admission of water.

Having thus described the invention, what is claimed as new, is:—

1. A protective armor for vessels including inner and outer skins, layers of india rubber, sponge and armor plating interposed therebetween, and struts or blocks abutting upon the layers of plating.

2. A protective armor for vessels including a bulk head consisting of a casing having interior struts and containing a filling of india rubber reinforced by longitudinal and transverse rods or wires.

In testimony whereof I affix my signature
in presence of two witnesses.

MATHIAS WAILGUM, JR.

Witnesses:

DINAH E. SELLERS
LUDWIG WAILGUM