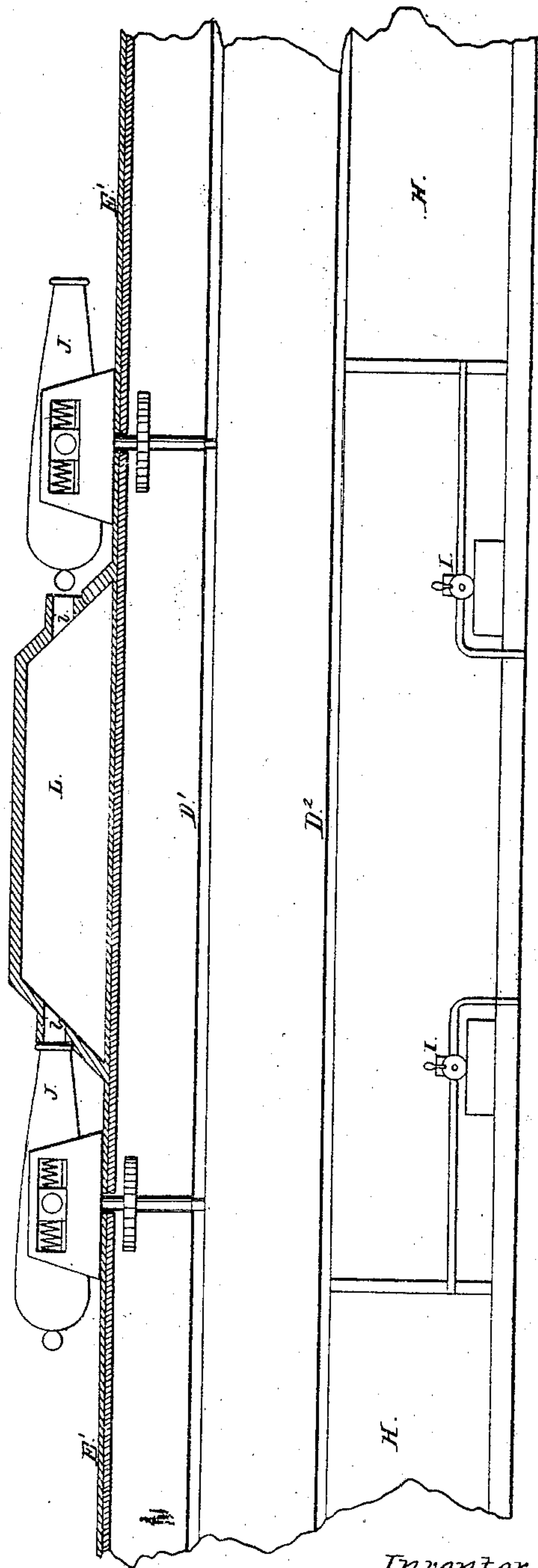


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IMPROVEMENT IN CONSTRUCTING AND ARMING VESSELS OF WAR.

Specification forming part of Letters Patent No. 36,869, dated November 4, 1862.

To all whom it may concern:

Be it known that I, EDWIN A. STEVENS, of Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Constructing and Arming Vessels of War; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a transverse section of a vessel illustrating my invention. Fig. 2 is a longitudinal section of a part of the same.

Similar letters of reference indicate corresponding parts in both views.

I propose to protect vessels for war purposes from injury by an enemy's shot and shells by inclined metallic armor, to be placed inside of the upper part of the vessel, and to extend inward from a point near the water-line at the sides of the vessel or from a lower deck of the vessel. This armor may occupy the whole length of the vessel in either of the ways described; or it may be confined to one or more parts. Projectiles will glance off from this inclined armor instead of penetrating it, as they would if it were placed at a right angle with the line of fire. It will be seen that in cases where the sides of the vessel extend upward in the usual manner they will give the usual buoyancy and stability, the armor being within the sides, as described. While the armor thus incloses, covers, and protects the inhabited parts of the vessel, it leaves triangular spaces outside of the armor, and between it and the sides of the vessel, and therefore unprotected from shot. In order to give these triangular spaces the greatest degree of buoyancy, I divide them into water-tight cells or compartments, so that if one is penetrated the buoyancy of the remainder will not be affected. To still further add to the buoyancy of these spaces, they may be filled with air-tight bags or boxes, so that a cannon-shot entering will only destroy the buoyancy of the narrow line of bags or boxes which it hits. In case the armor should not occupy the whole of the upper part of the vessel, but should be confined to one or more parts, the intervening spaces might be filled with cells or with air-tight bags or boxes, in the manner and for the purposes above described.

In order to protect the vessel still farther below the water-line than the lowest point

protected by the armor I have described, I propose in some cases to extend the armor upon the sides of the vessel from this point downward, either perpendicularly or inclining inward.

To give that part of the vessel near the water-line additional security, I propose to place, when necessary, an additional structure outside of and attached to the vessel at this point. For this purpose the armor first described may run outward beyond the side of the ship to a point at or below the water-line, and thence it may run downward and inward until it joins the side of the vessel. The intermediate space between the armor and the sides of the vessel may be filled with solid timber. Projectiles striking this structure will be likely to glance upward or downward, instead of penetrating, and if they penetrate it are still outside the body of the vessel itself.

By immersing the vessel to a fighting draft below her ordinary sailing draft, by means of letting in or pumping water into compartments arranged for the purpose, the sides of the vessel may be vertical or nearly vertical up to near this line of greatest draft, at which point the armor may be put on at an acute angle with the horizon.

The objects of this arrangement are as follows: first, to protect a large portion of the vessel by water, when fighting; second, to allow a flatter slope of the inclined part with the same width of vessel, so that the shot will more certainly glance off without any injury.

When all the water necessary to sink the vessel to the fighting level cannot be conveniently let into compartments in the lower part of the ship, I propose to construct water cells or compartments upon any or all parts of the upper deck, or other decks of the vessel that may not be protected by armor. A second and important use of this water on deck will be to stop the dangerous velocity of any shot or shells that might strike the deck at such an angle as to penetrate it, if entirely unprotected. Piercing the tops of any of these cells would cause the escape of but little water, while if the sides of either of them were pierced the protection afforded by the remainder would not be impaired.

The guns are placed on the top of the armor, and, with the exception of two, hereinafter to be mentioned, they are located immediately

over the keel, for the purpose of enabling each of the guns in the ship to fire at the same object at any point all around the horizon, except at points where the other guns would be in their line of fire. This arrangement also prevents the necessity of making port-holes in the armor, as in the case of case-made guns, and admits of loading and turning the guns by steam or other power, situated below the gun-deck, and thus protected by the armor or by water.

In order, first, to protect the gunners, and second, to prevent the cutting of port-holes in the armor, thus weakening it and giving the enemy a place to throw in grape or rifle shot, and, third, to allow the guns to be fired nearly all round the circle, so that all of them can be brought to bear on the same object, I construct shot-proof loading-houses, to the ports of which one or more guns may be pointed, so as to be loaded by men or steam machinery protected within them. If the guns are loaded while in a horizontal position, these loading-houses do not stand in the way of firing them in any direction, except for a few degrees of the circle, and the guns can be elevated so as to fire shells or shot at long range over the loading-houses, so that all of the guns in the ship can fire right ahead or right aft, or in any direction; but if the muzzles of the guns are somewhat depressed, which they may be when loaded by machinery, the loading-houses may be so low that the guns can be fired horizontally over them.

In order to fire at least three guns at any object right ahead or right aft, horizontally, either while chasing or retreating, and for the purpose of sweeping boarders from the decks, and for the purpose of presenting the ends of the vessel, which are not only the smallest mark for the enemy, but which present the most acute angles to his projectiles, I propose to place one gun on the starboard side and another on the port side, so that both of them will fire parallel with the keel or at any object directly ahead without hitting any object on deck. When loading-houses are used, the house from which these two guns are loaded will stand diagonally or athwartships. Either the bow or the stern gun can also fire in the same direction or at the same object.

The methods hereinbefore referred to of protecting vessels of war by settling them by water let or pumped into compartments and by placing a stratum of water on their decks, and of working and loading guns by men and machinery situated below deck, I have made the subject of separate applications for Letters Patent; hence these devices will not require specific description here.

To enable others skilled in the art to more fully understand and construct and use my invention, I will proceed to describe the accompanying illustrative drawings.

A A are the sides of the lower portion of the hull and B B the sides of the upper part. D is the upper and D' and D² lower decks.

E is the upper armor, which extends upward from the level of the deck D', within the sides B, at an oblique angle with the horizon, and may be connected at top by armors E', placed more nearly horizontal. The space between the armor E, sides B, and deck D may be either occupied by cells, as shown at F, or by air-vessels, as shown at F'.

E² is the lower armor, extending downward and inward from the lower and outer extremity of the armor E, and secured to the sides A at a considerable distance below the water-line. The space between the armor E E² and sides A is filled with a solid mass of timber, G, affording strength and additional protection to the sides.

H H represent water-tanks in the lower part of the vessel, and I I steam-pumps, by which they may be filled and emptied to lower and raise the vessel in the water, as before explained.

J J are heavy guns placed over the longitudinal center of the vessel.

L is a shot-proof loading-house, pierced with port-holes l l, to which the guns may be presented and through which they may be swabbed and loaded, either by hand or by suitable machinery.

It is unnecessary to describe more specifically the manner of constructing and working the vessel to which my invention may be applied.

Details not herein laid down may be carried out in any manner known to the art, and which may be found applicable to my invention.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In combination with the means, substantially as described, of depressing and elevating a vessel for the purpose specified, inclined metallic armor so applied as to be rendered more fully effective by such depression of the vessel.
2. Inclined metallic armor, in combination with the air vessels or compartments F or F', substantially in the manner and for the purpose hereinbefore described.
3. The constructing and arranging, substantially as herein described, of air-compartments for the purpose of giving buoyancy and stability to a war-vessel, in combination with the means, substantially as described, of depressing and elevating the vessel.
4. The additional structure G, constructed substantially as described, placed outside the sides of the vessels, at or near the water-line, for the purpose of protecting the vessel.
5. Shot-proof loading-houses on war-vessels so arranged and employed, substantially as herein described, that cannon outside of them may be loaded from within them.

E. A. STEVENS.

Witnesses:

A. L. HOLLEY,
EDM. F. BROWN.