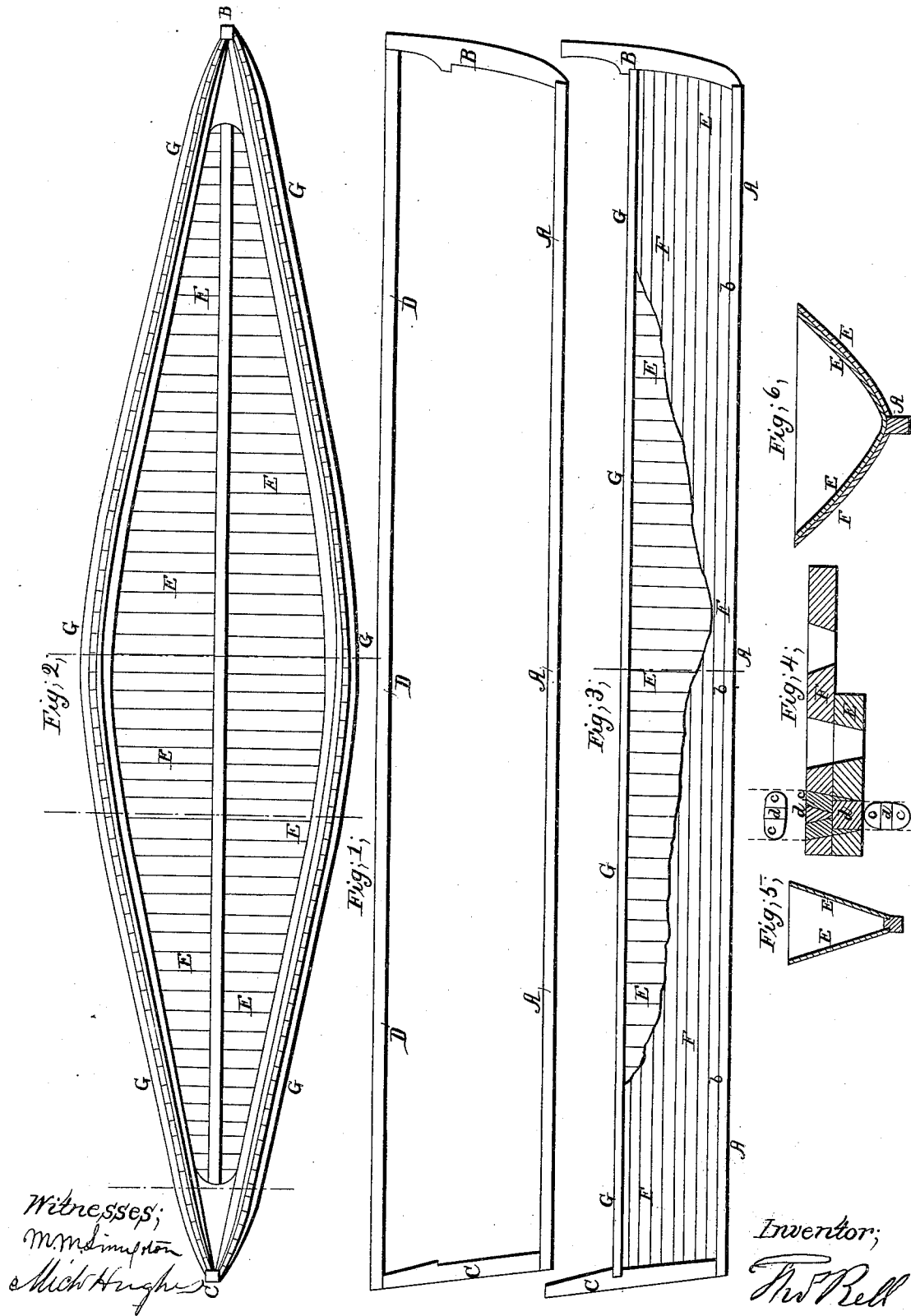


T. Bell.
Ship Building.

N^o 27,328.

Patented Feb. 28, 1860.



UNITED STATES PATENT OFFICE.

THOMAS BELL, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND C. GODFREY GUNTHER,
OF SAME PLACE.

CONSTRUCTION OF VESSELS.

Specification of Letters Patent No. 27,328, dated February 28, 1860.

To all whom it may concern:

Be it known that I, THOMAS BELL, of the city, county, and State of New York, have invented certain new and useful Improvements in the Construction of Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1, represents the keel, fore and aft, with the stem and stern posts attached, and held in proper place by a brace or gage timber extending from one to the other parallel with the keel, which serves as the central guide for laying out the plan of the vessel, represented by Fig. 2, with this brace removed. Fig. 3, is a side view of the vessel showing clearly the construction of its hull, a portion of the outer planking is removed to show the opposite skin or inboard planking forming the hull. Fig. 4, is a section showing the manner of securing the inner and outer skins to each other. Figs. 5 and 6, are sections of the vessel taken through Figs. 2 and 3, as indicated by red lines.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to certain improvements in constructing vessels whereby they are made cheaper, stronger, faster, safer, more durable and more convenient than vessels of the present build. The parts can be bound together by locust tree-nails in such way that they will be secured rigidly against the straining vessels are frequently subjected to; and while less timber will be required, and less weight given to my vessels, in comparison with others of the same size, they will be much stronger. A neater and more perfect floating model can be made upon my plan of constructing vessels, and I obtain increased speed. My vessels have two skins, or an inboard and outboard planking, which are put together and secured in such a way that oakum cannot be driven through between the boards; and in the event of a leak, or break through both skins, the leak may be readily found on the inboard side and repaired, or a bulkhead applied would be perfect security, nearly all the fastenings below decks will be locust tree-nails which are countersunk in a peculiar manner in each plank and in such manner that there will be no possibility of

their loosening and these will never decay themselves nor cause the timber with which they come in contact to decay.

My vessels will be pleasant and healthy because there will be no receptacle for rats or mice, or for filthy bilge water to accumulate, the parts will therefore be less liable to decay.

To enable those skilled in the art to fully understand my invention I will proceed to describe its construction.

The keel A, is first laid, it being the lowest timber in the ship and upon it the whole fabric is raised. This keel is allowed to drop midway between the two ends, one inch to every ten feet of its length, or more or less as may be desirable; the stem and stern posts B, C, are then set up and united with the keel in the usual manner; these with the keel form the central timbers and frame of the ship. A gage timber D, is next secured temporarily to the heads of the stem and stern posts, and also to the keel at uniformly intermediate points so that its position will be rigidly established. This piece of timber D, is kept in a vertical plane with the keel and from it the model of the vessel is determined with convenience and accuracy. A heavy clamp G, G, is then run on each side, supporting them uniformly to the desired width for the decks, these are secured permanently at their ends to the stem and stern posts at the height for the decks, these clamps are then secured temporarily to the shear it is desired to give the vessel. The laying of the inboard planking E, is then commenced athwart ships, (these planks are all laid and secured at right angles to the keel, from stem to stern) about midway between stem and stern, by planing and securing the planks on top of the keel, having them of sufficient length to reach the top of the clamp G, G, and sufficiently far apart to introduce a clamp screw between them for the purpose of rigidly securing the inboard E, and outboard skins F, together previous to boring and driving the tree-nails. The ends of the inboard planks are then bent or curved up and secured loosely between the clamps G, G. The spaces left between these planks for the introduction of screw clamps, are closed with "shutters" when the outboard planking is put on up to the clamps. If it is desired to give additional strength to the floor the first course of the inboard

plank is reduced to the length it is desired for the floor; and reduced in thickness uniformly to the ends. The floor thus being set becomes a solid body between the two skins, 5 or in-and outboard planks. When the course of inboard planking is completed, the lowest outboard plank is then secured to the inboards by the clamp-screw. The planks, in-and out board, are now bored for the tree- 10 nails and the holes countersunk or tapered out so that the longest diameter of each hole will be in a line with the grain of the wood of each plank as represented by Fig. 4, of the drawings; the locust tree-nails *c*, are 15 then driven and wedged so that the nail ends will be spread out at opposite angles to each other as shown by Fig. 4, *d*, being the wedges; as many holes are bored and as many tree-nails are driven as will be necessary to secure against the planks springing 20 apart. In this manner the outer planks are laid and secured one above the other as represented by Fig. 3, and when the planking is completed the inboard planks are then 25 well calked over the keel and the keelson secured in place, side keelsons may be added and bilge streaks, &c., &c., if found necessary. There should be heavy wales opposite the heavy clamps *G*, *G*, well secured together with a light deck-frame, dovetailed 30 into said clamps. The ends of the ribs or inboard planking are not secured between the clamps *G*, *G*, until the outer planks or skin, are all secured; the ends of the inboards are then sawed off flush with the top 35 face of the clamps and the whole are secured together by tree-nails which are countersunk and wedged as described for the skins.

40 In order to calk a vessel of this construction it will be necessary to work from the inboard side and outboard side respectively as the calking cannot be driven through both planks.

45 In building a very sharp vessel the keelson should be secured permanently to the keel as a dead wood, previous to putting on the inboard planking.

When the ship is modeled and the proper 50 curves determined, planking secured together, and the clamps secured to the inboard

planks, the gage timber *D*, is removed and the vessel fitted and finished up in the usual manner.

The above description will serve to illustrate the essential features of my improvement in the construction of vessels and it will be seen that the gage timber *D*, serves an important object in giving uniformity to every part of the hull at the same time it 60 serves as a brace to keep the parts securely in place during the construction of the hull. The construction of the hull with an inboard and outboard planking and each plank forming the hull being at right angles with 65 the other and secured together by wedged tree-nails, forms a solid and substantial hull possessing many advantages over those of the present construction being more solid, uniform, and less liable to be "stove-in," in 70 case of collision, and in the event of their springing a leak the parts may be readily reached and repaired. The manner of securing the planks together is another improvement over the present method as the 75 tree-nails are countersunk and have each of their ends wedged out in a direction with the grain of the planks so that they will have a much stronger hold and be less liable to draw out than the present tree-nail or the 80 copper nail fastenings.

These vessels being light in their bottoms must necessarily have little weight aloft and in order to compensate for the light bottom a peculiar rig will be necessary which being 85 a separate and distinct device, will form the subject of a separate application.

Having thus described my invention what I claim and desire to secure by Letters Patent, is— 90

The combination of the locust tree-nails (*c*) and wedges (*d*) with the inboard planking or frame *E* and outboard planking *F*, when the apertures which receive the tree nails are made tapering in form, and the 95 ends of the nails split and counter-sunk as herein shown and described, for the purpose set forth.

THOS. BELL.

Witnesses:

M. M. LIVINGSTON,
MICH. HUGHES.