N. W. Wheeler.

Ship Building.

No. 52,100. Patented Jan. 16, 1866.

Fig. 1.

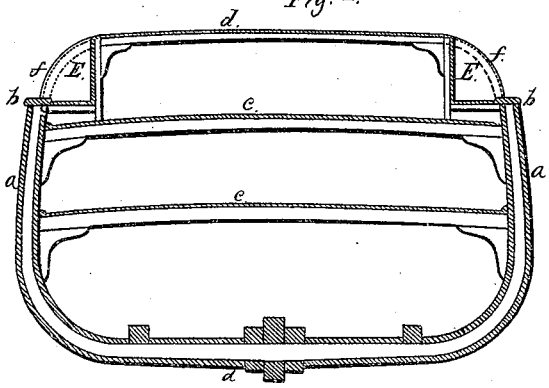


Fig. 2.

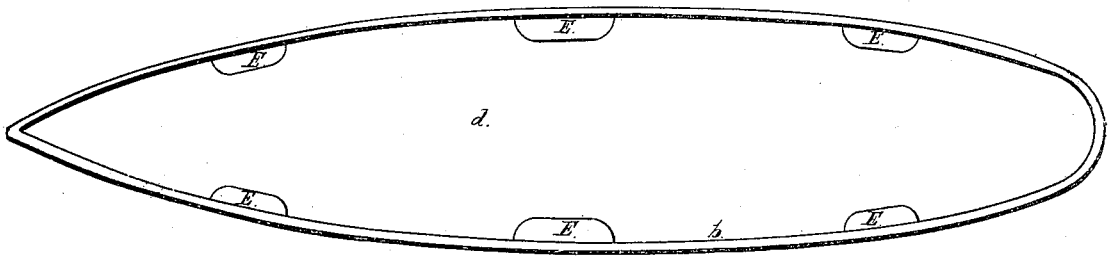


Fig. 3.

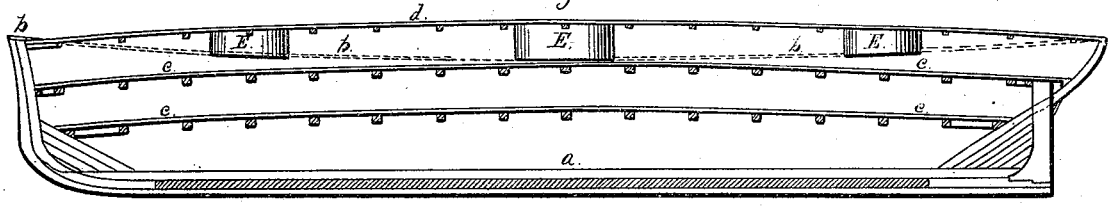
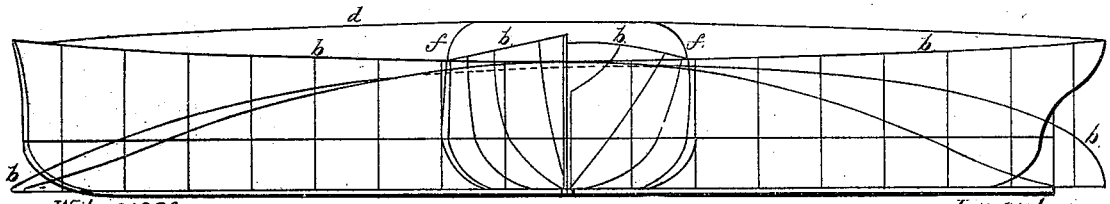


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

NORMAN W. WHEELER, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN SHIP-BUILDING.

Specification forming part of Letters Patent No. **52,100**, dated January 16, 1866.

To all whom it may concern:

Be it known that I, NORMAN W. WHEELER, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Navigable Vessels; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure I is a cross section, Fig. II a deck-plan, Fig. III a longitudinal section, and Fig. IV a general plan, of a vessel constructed in my improved mode.

Like letters refer to the same parts in the different drawings.

I construct the hull of the vessel of any known materials used for the purpose, as wood and iron, with frames, planking, and ceiling *a a*, and one or more main decks, *c c*, and sometimes with a whole or partial upper deck, *d d*, with the beams curved downward at the ends and resting upon rail *b b*, or upon the uppermost of the main decks *c c*.

So far I have described a vessel differing in no essential particular from those in common use, in which the upper part of the main frames and the sides are bounded by a curved rail, *b b*, Figs. III and IV, which rail is higher at either end than at or near the mid-length of the vessel. This curve of the rail, usually denominated "sheer," obtains in common practice, and also in my improvement, for the reason that the well-known exigencies of service in rough water require the heavy and strong sides of the vessel to be built up to a greater height above the water at the ends than at the mid-length. If the vessel were built without sheer to the rail the ends would be either too low to prevent water coming on board in great quantity, or else the sides near the mid-length would be higher than would be necessary to prevent water coming on board in great quantity at that place, an increased surface be exposed to the action of the wind, and a greater weight of "top sides" carried than is found to be necessary.

Heretofore the decks of vessels have been sheered in the same way as the rail, more or less, so as to make the upper deck nearly flush with the rail, or at a nearly uniform distance below it from end to end, or, at most, the decks have been laid without sheer, so that, considering the hull as a beam, the least depth has been at or near the mid-length, and consequently the least strength to resist the vertical strains to which these structures are exposed chances to fall where the effect of such strains is greatest.

In my improvement I make one or more of the decks, or, by preference, all of them, with sheer opposite to that of the rail, thus obtaining, obviously, a greater amount of strength derived from the deck than is now the case where the decks are sheered lowest in the mid-length, and a greater amount of space within the hull, for the greatest height corresponds in location with the greatest width. Another advantage of sheering the decks in the improved way is that if water comes aboard at either end it will easily escape through scuppers near the same end, instead of running down amidships and slowly finding its way through scuppers placed at that part of the deck which chances to be, for the time being, nearly level.

It is presumed that instances have occurred wherein vessels have been built in so slight a manner, or in which they have been changed from their original form by strains so much greater than they could bear, that the ends have drooped so much as to give an apparent sheer to the deck, similar to the improved sheer before described, and if the sheer were originally greater in the rail than in the deck, it might happen that there would be some vestige remaining of the original rail-sheer, while the deck-sheer would be reversed; but in such case the keel and whole bottom would have become also distorted, and the hull would not have possessed the qualities of a beam deepest in the mid-length. Hence, in the foregoing description of the decks and rail sheered in opposite ways, the construction must be such as will convey the idea of sheer in relation to the straight keel or right base-line.

In cases where it is desirable to have more inclosed space than is included in the hull proper, I construct a quadrant-deck, which is a deck having the greater part of its surface fair, or nearly so, with the deck below, but at

the sides the beams are curved downward and rest upon the rail or some part of the hull, and with the deck-planking continued around the curve, as seen at *f f*. A deck of this kind may be safely carried to greater height above the water than can the nearly vertical top sides, or the usual deck-houses, for the reason that the action of the wind is less upon the rounded sides of a quadrant-deck than upon the straight top sides or deck-houses of equal height, and the quadrant-deck is a light though stronger structure than the deck-houses. With the improved sheering of the deck and the rail the quadrant-deck will naturally fall to or below the level of the rail at the ends, and afford fair and nearly level spaces of considerable extent near the ends, upon which men may stand while working the mooring and anchor gear. If the quadrant-deck be continued intact the whole length of the vessel, as above described, it would be difficult and sometimes dangerous for men to approach the extreme side of the vessel, except near the ends where the curve *f f* has disappeared; still it is necessary that the men have a secure foothold at the sides upon the upper deck, for the purpose of making the vessel fast to wharves, &c., and it is also necessary that bitts or timber-heads be placed in convenient position along each side of the vessel. In response to these requirements, I construct recesses *e e e*, &c., at the proper places, with their floors near or below the level of the rail, the inboard sides vertical or nearly so, and extended so far inboard as does the curve *f f*, or farther, and in these recess I place the bitts or timber-heads, and sometimes coal-chutes and ventilators. These recesses may be covered, when the vessel is at sea or the recesses not in use, by shutters fitting the curve and sliding fore and aft, thus, when the shutters are closed, presenting a fair curved surface to the action of the wind and sea.

The quadrant-roof may be built over any part of the hull and omitted over others, also forecastle and poop decks may be built in at the ends, terminating where the sheer of these decks meet the sheer of the rail, or continued, as quadrant or other decks, farther amidships, thus leaving a waist. Vessels for smooth-water navigation have heretofore been built with the deck-sheer highest at the mid-length; but it is obvious that they did not have the sea-going qualities of the kind of vessels hereinbefore described, from the fact that the ends were too low or the mid-length too high to secure the best results, as they have all lacked the bulwarks and rail sheered highest at the ends.

Having described my invention, I will proceed to state what I consider new and useful, and for which I desire to secure Letters Patent, viz:

1. Constructing navigable vesssels with one or more decks, *c c d d*, sheered in a way opposite to the sheer of the rail *b b*, substantially as and for the purpose described.

2. The quadrant-deck *d d*, in combination with the recesses *e e*, substantially as and for the purposes described.

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