W. H. NELSON.

STEERING APPARATUS.

No. 192,274. Patented June 19, 1877.

Fig. 1.

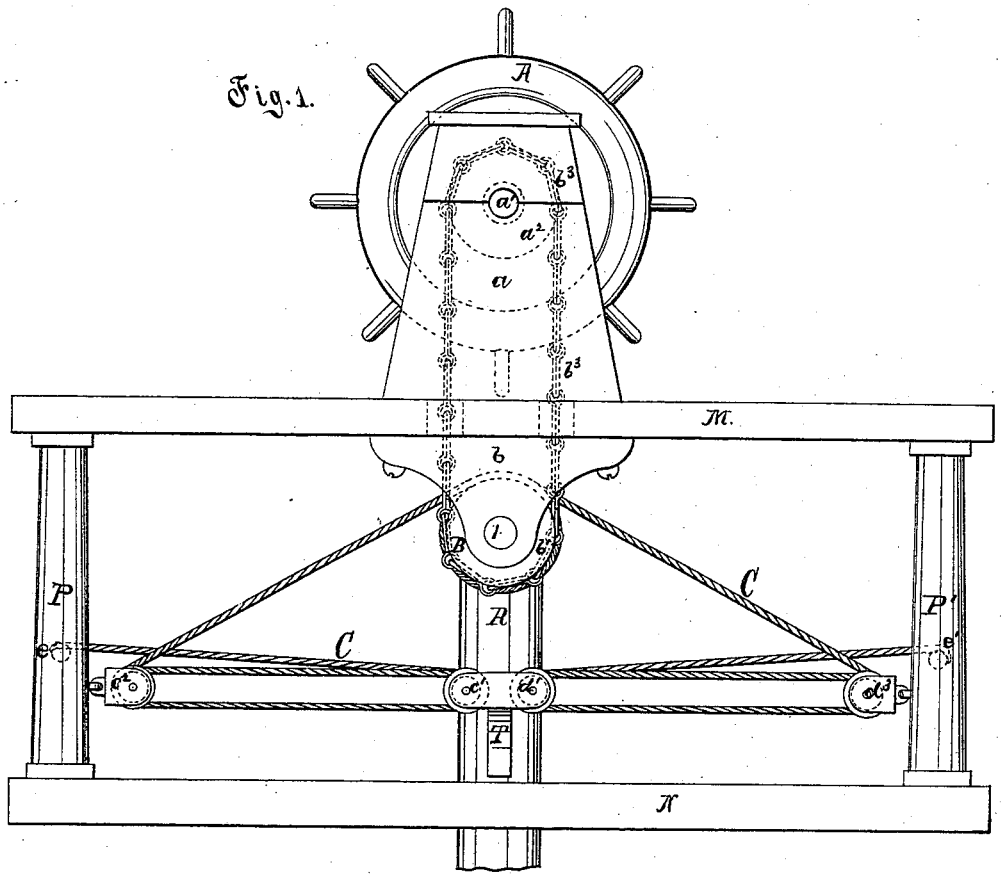
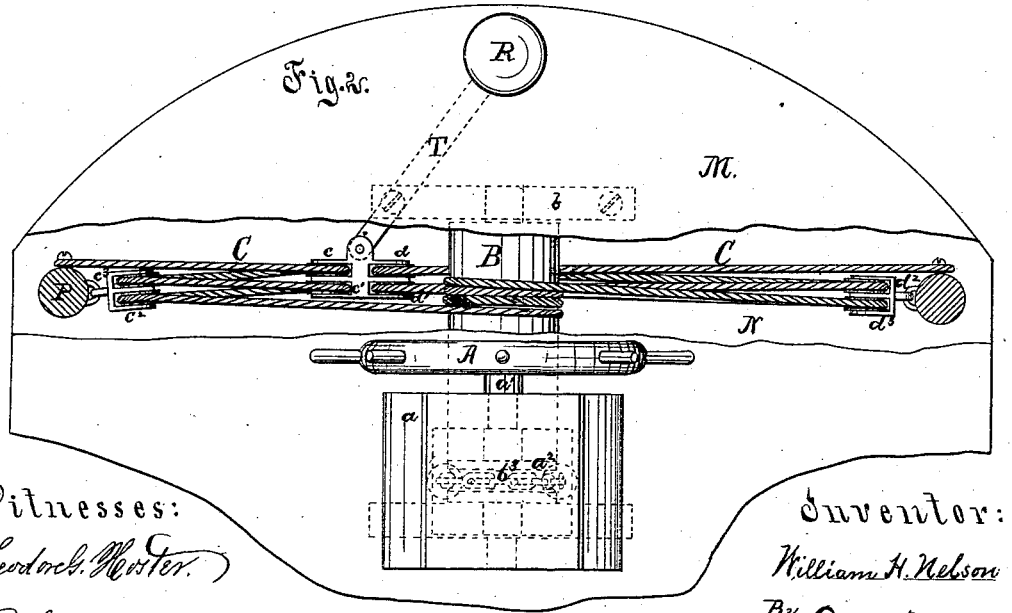


Fig. 2.



Witnesses:

Theodore G. Hester.

B. S. Clark.

Inventor:

William H. Nelson

By Fitch & Fitch

Attys.

UNITED STATES PATENT OFFICE.

WILLIAM H. NELSON, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN STEERING APPARATUS.

Specification forming part of Letters Patent No. **192,274**, dated June 19, 1877; application filed May 11, 1877.

To all whom it may concern:

Be it known that I, WILLIAM H. NELSON, of Salem, in the county of Essex and State of Massachusetts, am the inventor of an Improved Steering Apparatus for Ships, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to the apparatus or mechanism employed to swing or turn the tiller of a ship's rudder; and it consists in the devices and their combinations hereinafter particularly described, and as more at length recited in the claim.

Figure 1 is a front elevation of a steering mechanism embodying my invention; and Fig. 2 is plan of the same, part of the upper deck being cut away to disclose the parts underneath.

R is the rudder-post of the ship. M is the upper deck, and N is the deck immediately below it. T is the tiller, which is fixed in the rudder-post between the decks, as shown, and just above the point where the said post has its bearing in the lower deck N.

Upon the upper deck, mounted in journals in a housing or box, *a*, is the shaft a^1. This shaft is extended rearwardly beyond the housing *a*, and has fixed upon it, on such projecting end, the hand-wheel A. Upon the shaft a^1 within the housing is fixed the chain-pulley a^2.

The housing is preferably made with its upper portion above the journals of the shaft a^1 detachable, like a lid.

Between the decks, and suspended from the under side of the upper deck M by means of hangers *b*, is the drum B. The hangers *b* may be made adjustable vertically by means of suitable screws, so that the drum may be raised or lowered in its relation to the shaft a^1 on the upper deck.

Upon the forward end of the drum B is formed a chain-pulley, b^1, over which passes a chain-belt, b^3, to and around the pulley a^2 on the shaft a^1. By means of this arrangement the movement of the shaft a^1 is communicated to the drum B.

Upon the end of the tiller T, on either side, are fixed the double blocks c c^1 and d d^1. To posts or stanchions P and P′, fixed between the decks, and in line with the end of the tiller, are fixed, respectively, the double blocks c^2 c^3 and d^2 d^3, the said blocks being arranged at the same height from the deck N as is the tiller end.

A cable or rope, C, secured at one end to the post P at e, is passed first to and over the block c on the tiller; thence to and up over the block c^3 on the post P; thence to and down over the block c^1 on the tiller; thence to and up over the block c^2 on the post P, and thence to and up over and several times around the drum B; thence to and down over the block d^2 on post P′; thence to and upon block d^1 on the tiller; thence to and down over block d^3 on post P′; thence to and up over block d on the tiller, and thence to the post P′, to which it is secured at e'.

In steering devices, as heretofore constructed, the drum B, upon which the cable C is wound, has been fixed directly upon, and been part of, the shaft a^1, being thus situated on the upper deck, while the cable C, as well as the tiller and the rigging-blocks, have been also arranged on the upper deck. Here they have been subjected to the action of the weather, the cable being soon rotted, while the switching of the rudder by the action of the water, being communicated directly to the drum on the wheel-shaft, has caused a continual strain upon the wheel, and the expenditure of power by the pilot in keeping the wheel steady during the continuous shocks of the water upon the rudder, thus causing the strength of the pilot to become rapidly exhausted. By means of my apparatus it is evident that these objections are fully met and avoided. The rudder strain is entirely upon the drum B, which, being distinct from the wheel-shaft, is not felt by the pilot, and the drum, cable, tiller, and rigging, being between decks, are not subjected to the action of the weather, and are wholly out of the way on the upper deck. The housing *a* protects the chain-pulley a^2 and shaft a^1, and also the chain-belt b^3.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

In a steering apparatus for ships, the combination of shaft a^1, carrying wheel A and chain-pulley a^2, together with housing a on the upper deck M, with the tiller T, having blocks $c\,c^1$ and $d\,d^1$, the posts P P′, with blocks $c^2\,c^3$ and $d^2\,d^3$, respectively, and the cable C, together with the suspended drum B below said deck M, as described, and for the purpose specified.

WM. H. NELSON.

Witnesses:
A. S. FITCH,
B. S. CLARK.