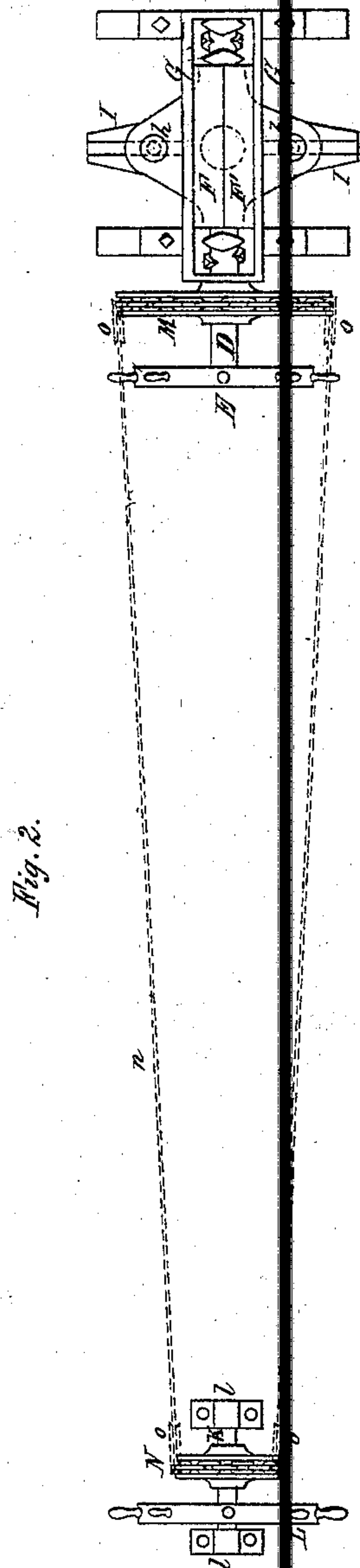
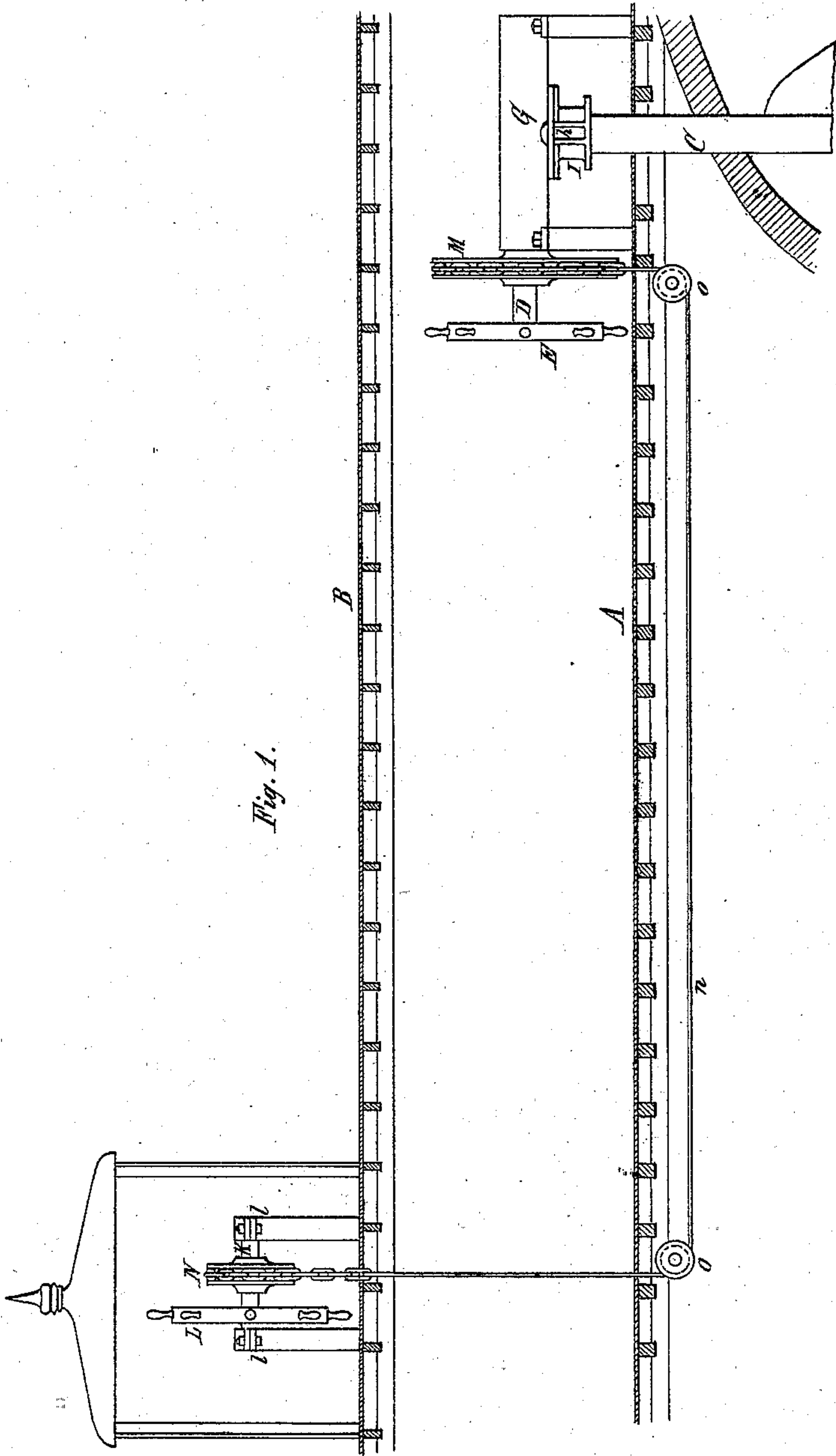


L. HUNT.

Steering Apparatus for Vessels.

No. 138,652.

Patented May 6, 1873.



John J. Donner  
Joseph L. L. L.

Witnesses

Lymaw Hunt, Inventor  
by Jay H. H. H.

# UNITED STATES PATENT OFFICE.

LYMAN HUNT, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF HIS  
RIGHT TO MARCUS M. DRAKE.

## IMPROVEMENT IN STEERING APPARATUS FOR VESSELS.

Specification forming part of Letters Patent No. **138,652**, dated May 6, 1873; application filed  
April 5, 1873.

*To all whom it may concern:*

Be it known that I, LYMAN HUNT, of the city of Buffalo, in the county of Erie and State of New York, have invented certain Improvements in Steering Apparatus for Vessels, of which the following is a specification:

My improvements relate to that class of steering devices in which the rudder is actuated by a horizontal screw-shaft arranged near the upper end of the rudder-post; and the invention consists of an arrangement by which the same screw-shaft that operates the rudder is actuated by a rear steering-wheel, or by a wheel arranged in the forward part of the vessel either, as may be required.

In the accompanying drawing, Figure 1 is an elevation, and Fig. 2 a plan view, of my improved steering apparatus.

Like letters of reference designate like parts in both of the figures.

A represents the main, and B the upper, deck of a vessel. C is the rudder-post, and D the horizontal steering-shaft arranged above the upper end thereof for turning the same. The shaft D is provided with a steering-wheel, E, and connected with the rudder-post by means of any suitable mechanism. As shown in the drawing, the latter consists of a longitudinally-divided screw-box or nut, the two halves, F F', of which are moved in opposite direction between guides G by diamond-shaped projections arranged on the shaft D. The movement of the boxes F F' is transmitted to the rudder-post by means of bolts *h* projecting downwardly from the former and engaging in the slots of a cross-head, I, secured to the upper end of the rudder-post. This apparatus is commonly known as the diamond screw device. The steering-shaft and wheel D E and mechanism connecting the same with the rudder-post compose the aft or stern steering apparatus, all being arranged immediately above and in front of the rudder-post. K represents the forward steering-shaft arranged in a wheel-house near the quarters of the vessel. It is supported in bearings *l*, and provided with a steering-

wheel, L, as usual. M represents a drum, pulley, or chain-wheel mounted on the rear wheel-shaft D, and N a similar pulley secured to the forward wheel-shaft K. *n* is a chain or cable passing over both pulleys, M and N, so as to transmit the motion of the forward steering-shaft K to the rear wheel-shaft D. The chain or cable *n* may be endless, as shown in the drawing, or consist of two parts, the ends of which are wound upon the pulleys M and N from opposite sides. *o o* represent sheaves or rollers, by which the chain or cable *n* is guided between the pulleys M and N.

I am aware that previous to my invention the rudder has been operated from a forward steering-wheel by chains or cables passing over blocks and connecting with a tiller or arm secured to the rudder-post. This device is objectionable, for the reason that in sea-going vessels it necessitates the employment of an additional and independent rear steering apparatus, which can be resorted to when the forward steering apparatus gets out of order.

In my improved steering device the chain *n* connects the forward wheel-shaft K directly with the rear steering mechanism, thereby dispensing with the expense of the tiller and connecting parts.

When great power is required for operating the rudder it can be readily obtained in my improved apparatus by increasing the diameter of the rear chain-pulley M or reducing the size of the forward chain-pulley N, the friction of the operating parts being the same in all cases, while in the ordinary tiller device greater power can only be obtained by increasing the number of pulleys in the blocks, which results in a corresponding increase of friction. The objectionable slack-motion of the tiller is also obviated in my improved device.

The entire steering apparatus is rendered more firm and reliable by supporting the rear steering device, which is used in rough weather and emergencies on the main deck,



while in the tiller device the rear steering apparatus is secured to the lighter timbers of the upper deck, as the tiller and connecting parts occupy the space near the rudder-post above the main deck.

I claim as my invention—

The combination, with the rudder-post, rear steering-shaft D, and hand-wheel E, of

the pulleys M N, forward steering-shaft K, hand-wheel L, and chain or cable n, substantially as and for the purpose hereinbefore set forth.

LYMAN HUNT.

Witnesses:

JOHN J. BONNER,  
WM. H. JENKINS.