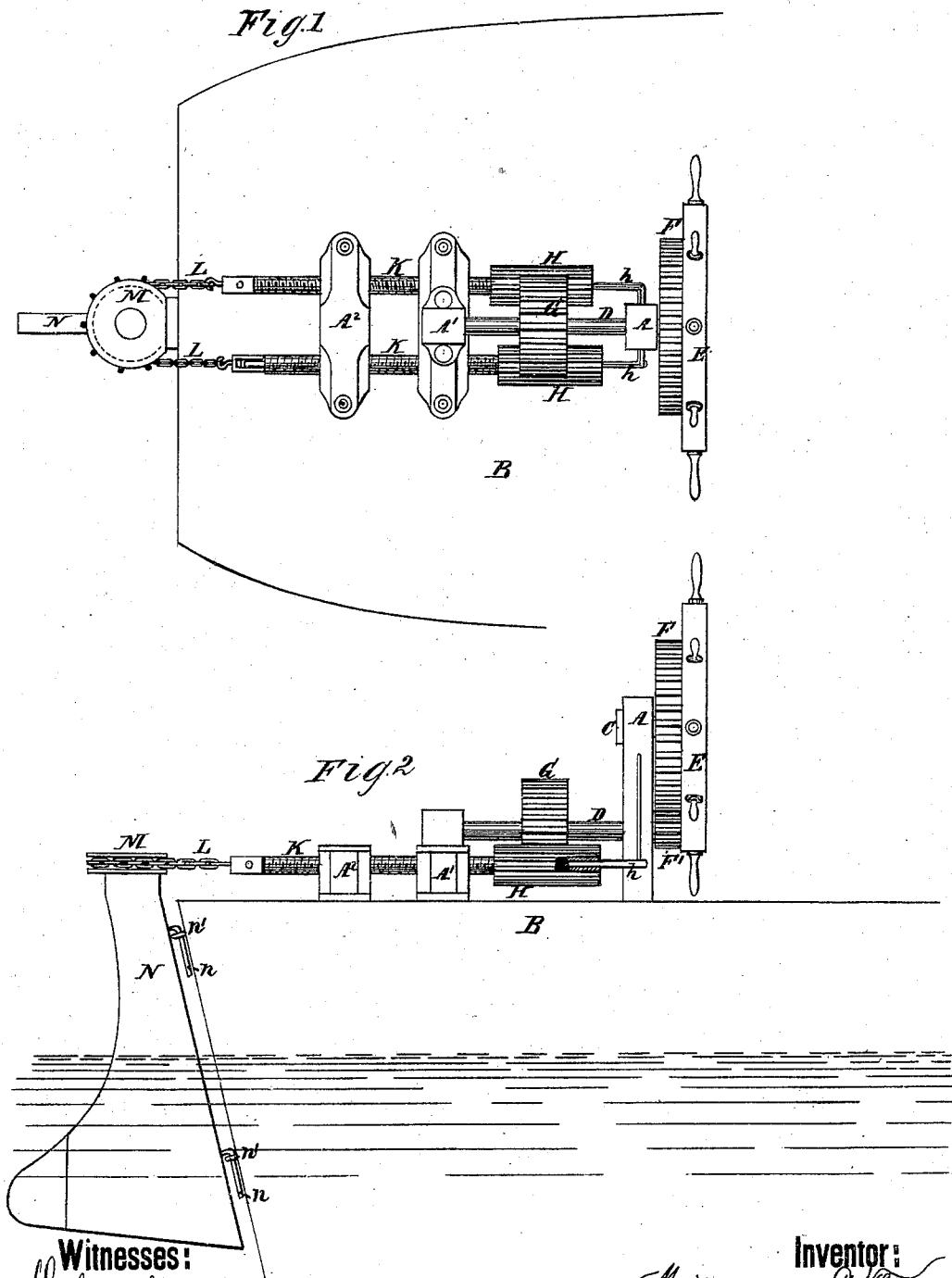


W. E. THOMAS.
Steering Apparatus.

No. 143,200.

Patented September 23, 1873.



Witnesses:
Chas. Martiney
John Chemon

Inventor:
William E. Thomas
Per *[Signature]*
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM E. THOMAS, OF QUEENSTOWN, ASSIGNOR TO HIMSELF AND JOHN
T. LOWE, OF ST. MICHAEL'S, MARYLAND.

IMPROVEMENT IN STEERING APPARATUS.

Specification forming part of Letters Patent No. **142,200**, dated September 23, 1873; application filed
August 22, 1873.

To all whom it may concern:

Be it known that I, WILLIAM E. THOMAS, of Queenstown, in the county of Queen Anne and State of Maryland, have invented a new and Improved Steering Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a plan view, and Fig. 2 a side elevation, showing the peculiar features of my invention.

The invention relates to the means by which boats, ships, or vessels are steered, and will be first fully described and then clearly pointed out in the claims.

A represents an upright rising from the platform B, and receiving in suitable bearings the shafts C D. On the revolving drive-shafts C are made fast the ordinary hand-wheel E and the large spur-wheel F, the latter gearing with a pinion, F', on the other shaft D, which is journaled in a second post, A¹. On this shaft D, and between the posts A A¹, is placed a spur-wheel, G, which gears with two subadjacent wide pinions, H H. The latter turn on guide-rods h h at one end, while they are made fast to reversely-threaded screws K K at the other. These screws work in nuts formed in posts A¹ A², and are connected by a chain, L, which passes around a sprocket-wheel, M, made fast on the top of rudder N. Where the screws

are not on a level with the sprocket-wheel, the chain is made longer and passed over suitable intermediate friction-pulleys. The rudder N is subadjacently inclined upward toward the front, and provided with long hooks or hinge-pintles n n, which work in eyes n' n' on the frame of the boat, so that the rudder will not only turn horizontally, but when it strikes an obstacle will rise over it.

The operation is as follows: When the helmsman wishes to turn the boat in its course he rotates the hand-wheel, which, with the intermediate mechanism, causes one screw to advance toward, and the other to withdraw from, the rudder, thus turning the same with great ease, quickness, and screw-power.

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

1. The combination, with a rudder, N, of the sprocket-wheel, chain, and reversely-threaded screws rotated in opposite directions, as and for the purpose set forth.

2. The combination, with the reversely-threaded screws of a steering mechanism, of the wide pinions H H made fast to their ends, rotating as well as sliding on guide-rods h h, and operated by a spur-wheel, G, as and for the purpose specified.

WILLIAM E. THOMAS.

Witnesses:

SOLON C. KEMON,
CHAS. A. PETTIT.