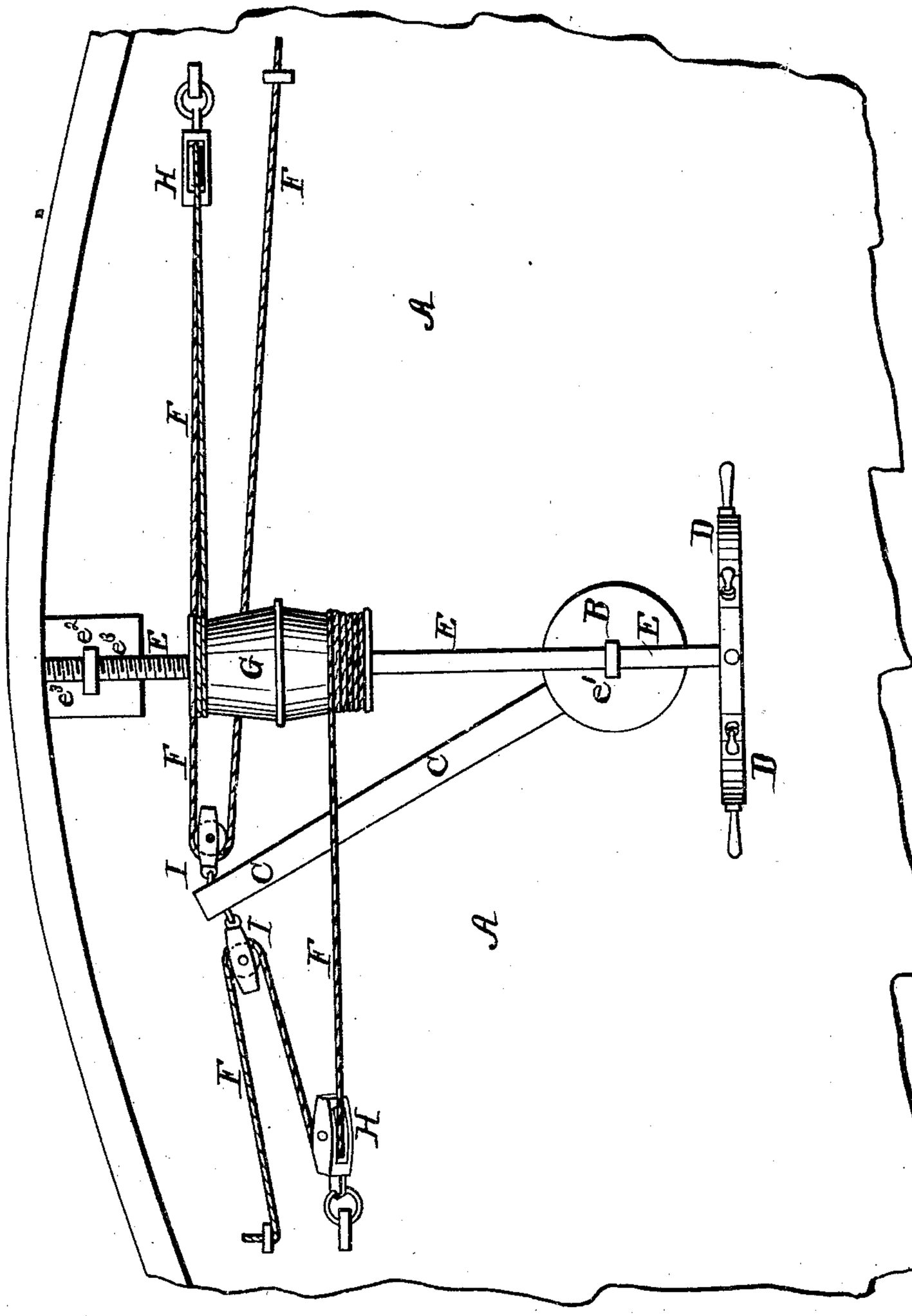
E. S. COFFIN

STEERING APPARATUS.

No. 61,052. Patented Jan. 8, 1867.



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Letters Patent No. 61,052, *dated January* 8, 1867.

IMPROVED STEERING APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, EBEN S. COFFIN, of Boston, in the county of Suffolk, and State of Massachusetts, have invented a new and useful improvement in Steering-Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enabl others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which the figure is a top view of a portion of a vessel's deck illustrating my invention.

When steering-wheels as ordinarily constructed hold the tiller amidships, each rope leading from the end of the tiller to the quarter-blocks may be considered as the chord of the segment of a circle, the two ropes making an obtuse angle with each other. Now, when, by turning the wheel, the tiller is moved to either side of the deck, one of said chords is somewhat lengthened and the other much more shortened, so that the combined length of the two chords in the latter case is much less than their combined length when the tiller was amidships. The effect of this is to slacken the tiller ropes, allowing so much uncontrollable play to the tiller. This has always been found to be a great annoyance, especially in a rough sea, the tendency of the tiller at such times, by its sudden thrusting motion, being to take the tiller out of the helmsman's control and making his labor exceedingly toilsome and dangerous. My invention consists, first, in so constructing the barrel of the wheel that those portions of said barrel upon which the ropes are wound when moving the tiller from amidships may have an increasing diameter, and those portions from which the ropes are unwound, a decreasing diameter, so as to keep the tiller ropes at all times equally taut; second, in giving a longitudinal movement to the barrel, so that it shall move forward or aft with each revolution a distance equal to the diameter of the wheel rope, causing the said rope to always enter upon and leave the said barrel at the same distance from the bearings of the barrel-shaft; and third, in securing the quarter-blocks which lead the ropes to the wheel at such different distances abaft the rudder-post, that each block may always lead its rope to that portion of the barrel upon which it is to be wound, in a direction at right angles to the axis of said barrel. The whole being constructed and arranged as hereinafter more fully set forth.

A represents the deck of a vessel; B, the rudder-post; and C, the tiller, about the construction of which parts there is nothing new. D is the steering-wheel, which is attached to the end of the shaft E, or about three-eighths of its length forward of its after end, which latter position I prefer. The said shaft works in bearings e^1 and e^2, and has a screw-thread formed upon its end e^3, as shown in the drawing. The distance between the threads of the screw e^3 is equal to the diameter of the wheel rope F, so that at each revolution of the wheel D, the shaft E may be moved forward or aft a distance equal to the diameter of said rope F. G is the barrel, attached to or formed upon the shaft E, upon which the ropes F are wound, and from which they are unwound in steering the vessel. The barrel G is made in the form shown in the drawing, that is to say, with a gradually increasing diameter from its ends towards its middle part. This taper or gradually increasing diameter of the barrel G should be exactly graduated to the tendency of the ropes F to slacken in moving the tiller from amidships towards either side of the vessel, so that the said ropes may be at all times equally taut. One end of each of the ropes F is secured to the barrel G at its opposite ends; then winding the necessary number of turns around the barrel, they pass thence around the pulleys in the quarter-blocks H, thence around the pulleys in the tiller-blocks I, and their ends are secured to some fixed support conveniently placed. Or the ends of the ropes may be attached directly to the end of the tiller C; the number of pulleys and blocks employed being entirely immaterial, and depending upon the character of the vessel and of the navigation in which she is to be used. The quarter-blocks H must be secured at such different distances abaft the rudder-post B, that the ropes will always pass from said blocks H to the barrel G in a direction at right angles to the axis of said barrel, while being wound thereon. And the movement of the barrel G and shaft E at the same time forward or aft, according to the direction in which the rope is being wound, effectually guards against any tendency of the turns of said rope to ride upon each other.

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

1. The combination and arrangement of the screw-shaft E, barrel G, ropes F, quarter-blocks H, tiller C, and rudder-post B, in the manner as and for the purpose specified.

2. Giving a longitudinal movement to the barrel G, and shaft E, so that the said barrel may move forward or aft at each turn of the wheel D, a distance equal to the diameter of the wheel rope F, substantially as herein shown and described and for the purpose set forth.

EBEN S. COFFIN.