F. GOULD.

STEERING APPARATUS.

No. 177,935. Patented May 30, 1876.

FIG. 1.

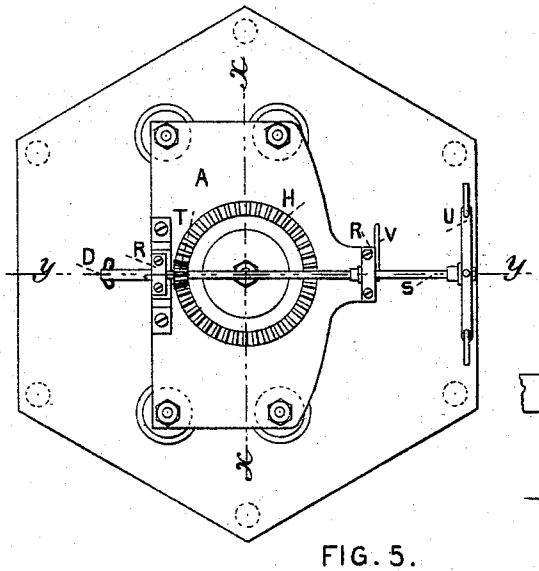


FIG. 2.

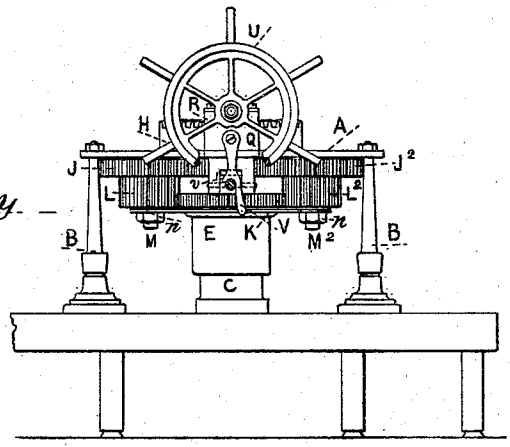


FIG. 5.

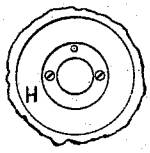


FIG. 6

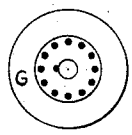


FIG. 3.

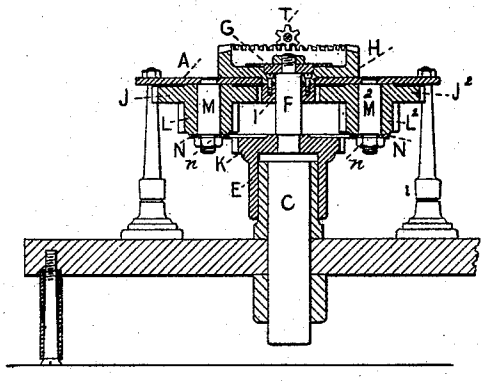
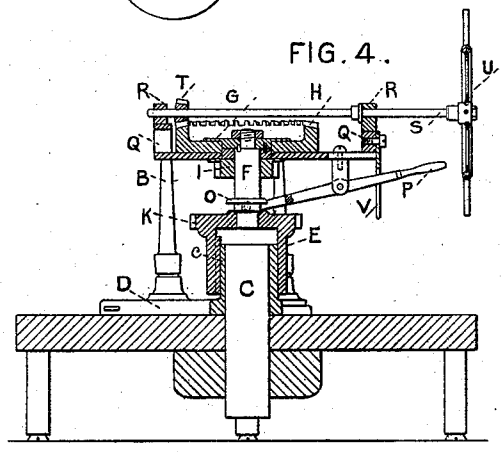


FIG. 4.



WITNESSES

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FAYETTE GOULD, OF HUNTINGTON, NEW YORK.

IMPROVEMENT IN STEERING APPARATUS.

Specification forming part of Letters Patent No. **177,935**, dated May 30, 1876; application filed May 11, 1876.

To all whom it may concern:

Be it known that I, FAYETTE GOULD, of Huntington, Suffolk county, New York, have invented, made, and applied to use Improvements in the Construction of Steering Apparatus for Vessels; and that the following is a full, clear, and correct description of my invention, reference being had to the accompanying drawing, making part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a top view of my improved steering apparatus. Fig. 2 is a front view of the same. Fig. 3 is a sectional view of Fig. 1 at the line *x x*. Fig. 4 is a sectional view of Fig. 1 at the line *y y*. Fig. 5 is an enlarged view of a portion of the intermediate wheel. Fig. 6 is an enlarged view of the clutch.

In the drawing like parts of the invention are designated by the same letters of reference.

The nature of the present invention consists in improvements, as more fully hereinafter set forth, in the construction of steering apparatus for vessels, the object of the invention being the production of steering apparatus for vessels, by which the steering of the vessel is facilitated, and by the employment of which advantages, more fully hereinafter described, result.

To enable those skilled in the arts to make and use my invention, I will describe its construction and operation.

A shows a frame supported by the legs or posts B, properly secured upon the deck of the vessel directly in the vicinity of the rudder-post C for supporting the operative parts of my apparatus. C shows the rudder-post, to which is attached the tiller D. This rudder-post C is slotted, as at *c*, above the point at which the tiller D is attached to it, and its upper portion is received within a cap-piece, E, and is free to rise and fall within the same, a bolt passed through this cap-piece E, and having its bearing in the slotted portion of the rudder-post C, retaining it in position within the cap-piece E, and yet allowing it to rise and fall to the extent of the slot in it. E shows a circular cap-piece attached to the lower end of a spindle, F, within which cap-piece E the upper end of the rudder-post C is received. The upper end of the spindle F is passed through the center of the frame A, and after having been passed through the same a disk of metal, G, is secured upon it, and has its bearing upon the interior of the geared wheel H, and thus keeps the spindle F in position. H shows a geared wheel, secured about centrally upon the spindle F. The teeth are cut upon the upper side of the rim of this wheel H, and project upward, so that the wheel forms virtually a circular rack. Upon the spindle F directly beneath the frame A is positioned an intermediate gear-wheel, I, engaging with the gear-wheel J and J^2; and upon the spindle F directly above the cap-piece E is positioned a second intermediate gear-wheel, K, engaging, when so desired, with the gear-wheels L and L^2. The gear-wheels J and L are secured upon a spindle, M, one end of which has its bearing in the frame A, and the gear-wheel J^2 and L^2 are secured upon a spindle, M^2, one end of which also bears in the frame A. The lower or opposite ends of the spindles M and M^2 are passed through a girt, N, and over their lower ends are passed nuts *n*, to hold them in position. The girt N is provided with an opening sufficiently large to allow the intermediate gear-wheel K to be thrown into gear with the gear-wheels L and L^2, when desired. Upon the spindle F, directly above the intermediate wheel K, is secured a collar, O, and upon the under side of this collar the forked ends of the lever P have their bearing. Upon the frame A at its forward and rear ends are secured the standards Q, supporting boxes R, in which are received the rider S.

Upon the rear end of this rider S is the pinion T, engaging with the circular rack H, and upon its forward end is secured the hand-wheel U, by which the apparatus is manipulated. Swiveled to the forward standard Q is a lever, V, having a portion of its surface cut away, so that a hook, *v*, is formed upon the same, which hook has its bearing upon the forward end of the forked lever P, for the purposes fully described hereinafter.

My steering apparatus being thus constructed, and the rudder having been attached to the rudder-post C, the operation may be thus set forth: By turning the wheel U secured upon

one end of the rider S, upon the opposite end of which is secured the pinion T, engaging with the circular rack H, the circular rack H, secured upon the spindle F, is caused to revolve, and, as the same is revolved, the cap-piece E, in which is received the rudder-post C, is revolved with it, and the rudder is thus turned in any desired direction or position relative to the vessel. The intermediate wheel I, positioned upon the spindle F, engages with the gear-wheels J and J^2, thus governing the extent of revolution the spindle I shall make, and giving the operator control over the rudder through the rudder-post and spindle.

I will now proceed to describe the particular use of the intermediate wheel K. In case of a storm at sea, or should the vessel be exposed to a heavy sea, in order that the rudder may be, under such circumstances, easily managed by the party steering, the lever P, the forked ends of which have their bearing upon the under side of the collar O, has its rear end depressed, by which the intermediate wheel K is raised and brought into gear with the gear-wheels L and L^2, and, having been so brought into gear, is secured into position by bringing the hook *v* of the lever V to bear upon the lever P, and hold the same stationary. Thus an auxiliary means of managing the rudder, or of retaining the same in any desired position, is provided for; and this I deem the important feature of my present invention. In addition, the rudder-post C is free to rise and fall within the cap-piece E, and thus provision is made for the rise and fall of the rudder, which will prove advantageous should it be necessary to run the vessel ashore, or should she be grounded, in which case the rudder would rise, and the chance of its being damaged or destroyed lessened.

If desired, the intermediate wheel I upon the spindle F may be so constructed that it may be used as an auxiliary wheel instead of the wheel K, and may be depressed by means of a clutch, as in the case of the wheel K, in which case the wheel K would be held in gear with the wheels L and L^2 by means of the girt M, the opening being made smaller, so as to form a bearing, on which it would be supported, the spindle F being secured to the circular wheel H, and the wheel I, with the collar O, made to slide upon the spindle F, so that it could be thrown in or out of gear with the wheels J and J^2 by means of the lever P.

I am well aware that the use of multiple gearing in steering apparatus is not new with me. Many instances of its use could be cited, if necessary. I am also aware that a rudder-post free to rise and fall has been constructed. I make no claim to the use of multiple gear, or a rising and falling rudder-post. The use of an auxiliary gear, in connection with multiple gear, however, I believe to be new, and of great value.

Having now set forth my invention, what I claim as new is—

1. In a steering apparatus for vessels, the combination of the following elements, namely: A frame, A, properly positioned to support the steering mechanism, a rudder-post, C, provided with a tiller, D, a spindle, F, provided with a cap-piece, E, circular rack H, disk G, intermediate gear-wheel I, and intermediate gear-wheel K.

2. A rider, S, provided with a pinion, T, and hand-wheel U, the gear-wheels J J^2 and L L^2, held upon the spindles M M^2, and the forked lever P and hooked lever V, when the same shall be constructed and operate substantially as and for the purposes set forth.

FAYETTE GOULD.

Witnesses:

J. B. PLACE,

PHILIP PEARSALL.