No. 763,701. PATENTED JUNE 28, 1904.

E. E. TAYLOR.

STEERING APPARATUS.

APPLICATION FILED OCT. 12, 1903.

NO MODEL.

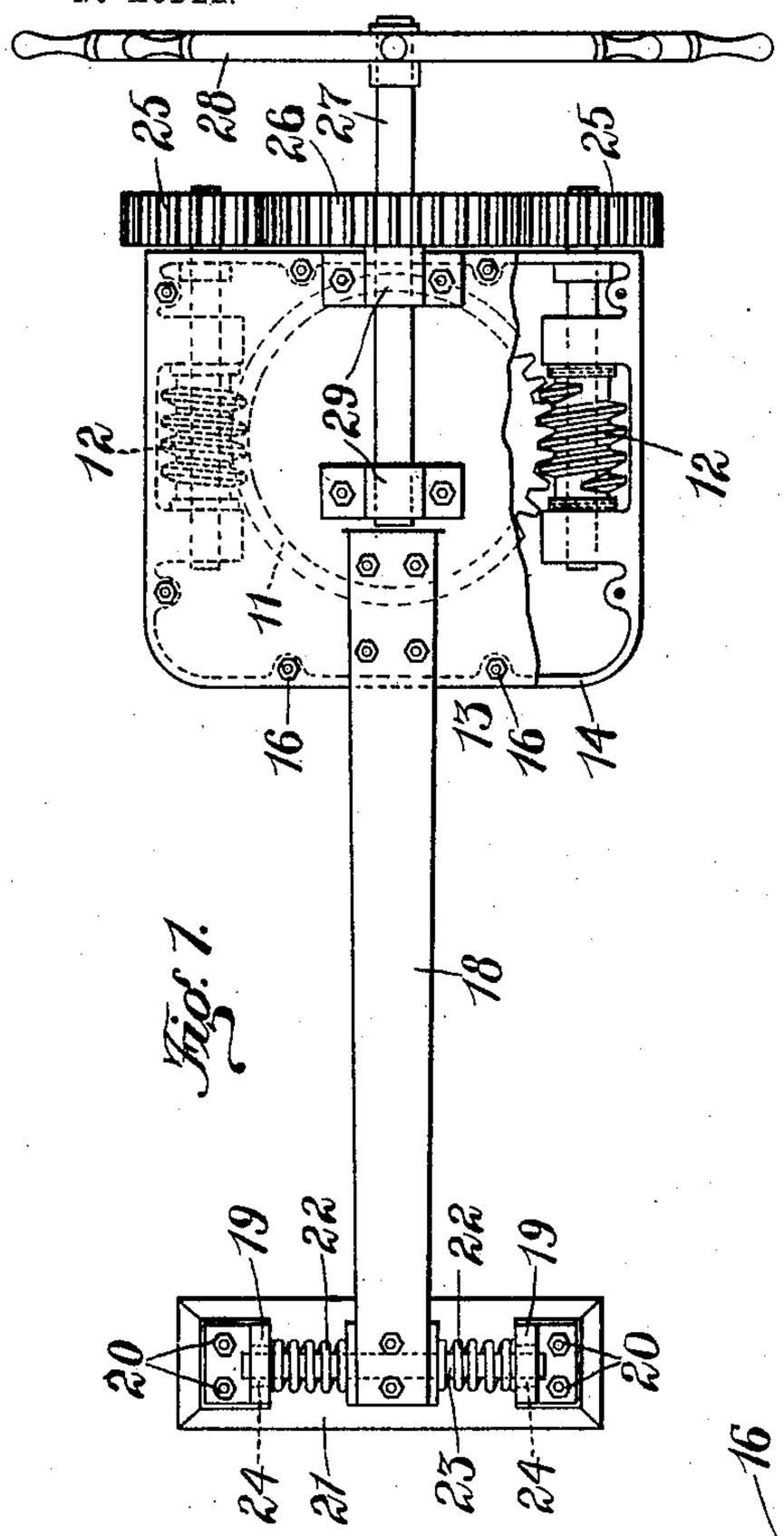

Fig. 1.

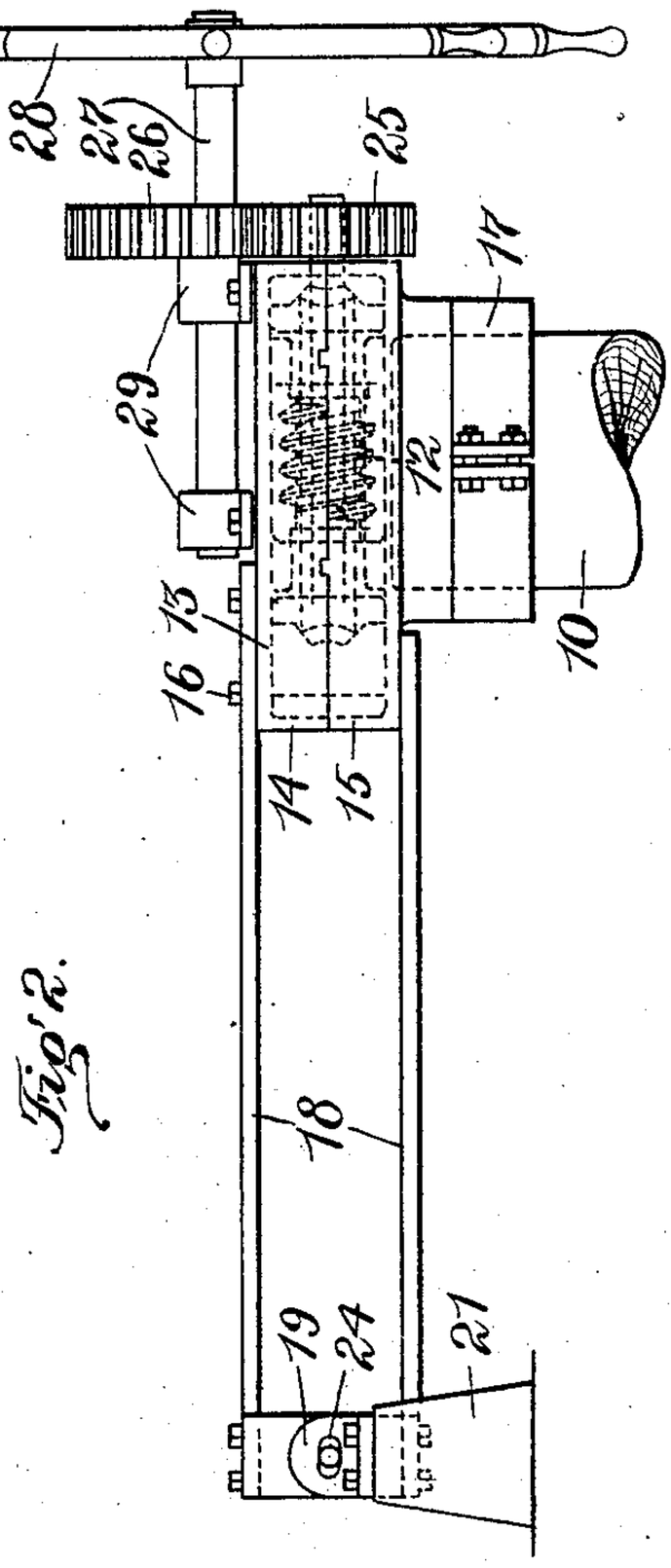

Fig. 2.

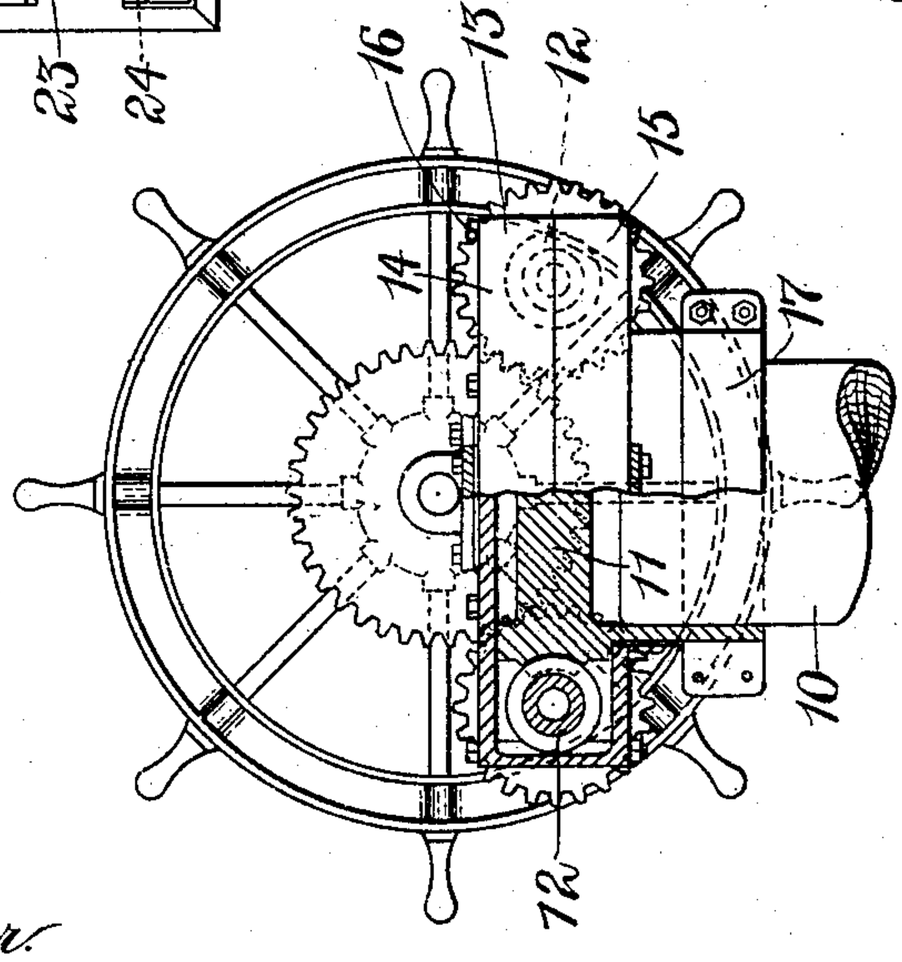

Fig. 3.

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No. 763,701. Patented June 28, 1904.

UNITED STATES PATENT OFFICE.

ELWOOD E. TAYLOR, OF BOSTON, MASSACHUSETTS.

STEERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 763,701, dated June 28, 1904.

Application filed October 12, 1903. Serial No. 176,592. (No model.)

To all whom it may concern:

Be it known that I, ELWOOD E. TAYLOR, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Steering Apparatus for Vessels and Vehicles, of which the following is a specification.

This invention has for its object to provide a steering apparatus of the locked or irreversible type for vessels or vehicles, in which provision is made for yieldingly resisting the impact of waves on the rudder of the vessel or of road irregularities on the guiding-wheels of the vehicle, the apparatus being so constructed that in case of disablement of the wheel or gearing, whereby the rudder-post or the member connected with the wheels is turned the latter said post or member may be operated by performing a simple adjustment or disconnection of the yielding buffer device and employing the beam or arm thereof as a tiller for rotating the post or member.

Of the accompanying drawings, Figure 1 represents a plan view, partly in section, showing a steering apparatus embodying the present invention. Fig. 2 represents a side elevation thereof. Fig. 3 represents a rear elevation, partly in section.

The same reference characters indicate the same parts in all the figures.

In the drawings, 10 is the post connected with the rudder or wheels, as the case may be, on the upper end of which is fixed a worm-gear 11, meshing with two worms 12 12, located symmetrically on opposite sides of said gear and having their shafts journaled in a hollow box or frame 13. The latter is made with upper and lower halves 14 15, clamped together by bolts 16.

17 is a split clamping-collar surrounding the sleeve-hub of the worm-gear 11 and on which the lower flange or sleeve of the box 13 rests.

Projecting rearwardly from the box 13 is a beam or arm 18, whose rear end resides between two ears or lugs 19, clamped by bolts 20 to a fixed pillar or bed 21. Between the arm and the lugs are interposed two helical springs 22, surrounding the ends of a rod or pin 23, which is affixed to the arm 18 and projects into slots 24 in the lugs 19, these slots being elongated horizontally to compensate for the curved path of movement of the ends of the rod 23.

To the shafts of the worms 12 are fixed spur-gears 25 of equal size meshing with a spur-gear 26, which is fixed to the shaft 27 of the steering-wheel 28, journaled in bearings 29 on top of the box 13.

In the operation of this apparatus the rotation of the steering-wheel 28 rotates the worms 12 through the gearing 25 26, and since these worms are prevented from revolving any great distance around the steering-post 10 by means of the arm 18, residing between the fixed lugs 19, the post 10 will be rotated to steer the vessel or vehicle. This form of gearing balances the turning effort and reduces friction and also gives a fixed ratio of movement between the steering-wheel and the post in all positions of the rudder or ground-wheel. As the gearing is of the locked or irreversible type, all movements received from the post 10 are resisted by the box or frame 14, and should these movements be of a violent nature, caused by the impact of the seas upon the rudder or of road irregularities on the ground-wheel, one or the other of the springs 22 will yield sufficiently to cushion the blow. Should the steering-wheel or gearing become disabled, the lugs 19 may be removed by unscrewing the bolts 20, and the rudder may then be turned by employing the beam or arm 18 as a tiller, for so long as the gearing is not sufficiently disabled to destroy the locking action between one or both of the worms 12 and the worm-gear 11 the arm 18 will be locked to and will rotate with the post 10.

I claim—

1. In a steering apparatus for vessels or vehicles, a post for connection with the rudder or ground-wheel, a frame thereon adapted for slight oscillations, means yieldingly resisting the oscillation of said frame, a steersman-operated shaft journaled on said frame, and self-locking or irreversible gearing connecting said shaft with the post.

2. In a steering apparatus for vessels or vehicles, a post for connection with the rudder or ground-wheel, a frame on said post adapt-

ed for slight oscillations, a fixed support, yielding impact-receiving means interposed between said frame and support, a steersman-operated shaft journaled on said frame, and self-locking or irreversible gearing connecting said shaft and post.

3. In a steering apparatus for vessels or vehicles, a post for connection with the rudder or ground-wheel, a worm-gear thereon, a frame adapted for slight oscillations on said post, a worm journaled on said frame and meshing with said worm-gear, a steersman-operated device journaled on said frame and connected to rotate said worm, a fixed support, and yielding impact-resisting means interposed between said frame and support.

4. In a steering apparatus for vessels or vehicles, a post for connection with the rudder or ground-wheel, a frame on which said post turns, a locking connection between said frame and post, an arm on said frame, a fixed support yieldingly connected with said arm, and adjustable means for freeing said arm from the support.

5. In a steering apparatus for vessels or vehicles, a post for connection with the rudder or ground-wheel, a frame thereon adapted for slight oscillations, a locking connection between said frame and post, an arm on said frame, abutments flanking the outer end of said arm and movable into inoperative position to permit the free movement of the arm, and oppositely-acting springs interposed between said arm and abutment.

In testimony whereof I have affixed my signature in presence of two witnesses.

ELWOOD E. TAYLOR.

Witnesses:

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