J. P. MANTON.

Steering-Gear for Vessels.

No. 197,874 Patented Dec. 4, 1877.

Fig. 1.

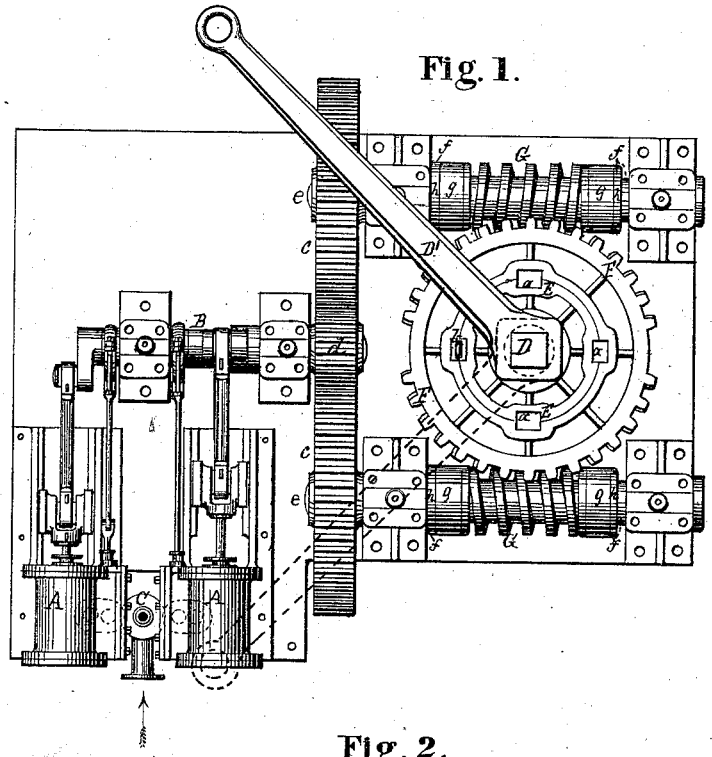


Fig. 2.

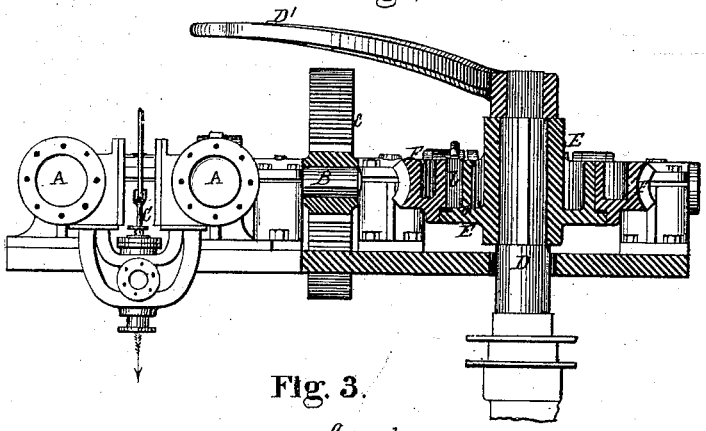
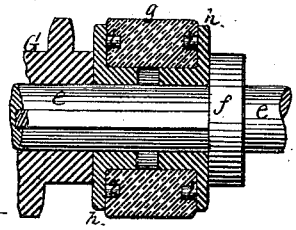


Fig. 3.



WITNESSES.

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IMPROVEMENT IN STEERING-GEAR FOR VESSELS.

Specification forming part of Letters Patent No. **197,874**, dated December 4, 1877; application filed April 30, 1877.

To all whom it may concern:

Be it known that I, JOSEPH P. MANTON, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Steam-Steering Gear; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description thereof.

My said improvements are applicable, in whole or in part, to steam-steering apparatus as heretofore constructed.

Briefly stated, the object thereof is to provide for the steering of a vessel either by hand or by the employment of steam-power, and also to provide for the relief of the operative mechanism from the injurious effect of shocks incident to the strokes of waves against the rudder; and to these ends my invention consists, first, in the combination of the rudder-post, having a circular plate mounted thereon, of an annular worm-gear surrounding said plate, and connected therewith by a detachable key or keys, and right and left handscrews operated by suitable steam-driven gearing, whereby the rudder may be readily connected or disconnected from the steam mechanism by the insertion or removal of a key or keys.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 represents, in plan view, a complete steam-steering apparatus embodying the several features of my invention. Fig. 2 represents the same, partly in end view and partly in central vertical section, on a line with the center of the rudder-post. Fig. 3 represents, in section, a portion of one of the screws, its shaft, and cushion.

The steam apparatus here shown consists of two double-acting cylinders, A, which are coupled, in a manner well known, to a crank-shaft, B. The steam-pipe, which communicates with both cylinders, is provided with a valve at C, constructed in a manner also well known, so as to control the induction and eduction of steam to and from both cylinders, for stopping, starting, and reversing the engine by a simple movement of the valve-rod, which is manipulated by the wheel-man in steering the vessel.

From the various well-known styles of valve-gear suited to locomotive and similar service, many selections of valve-gear may be made for attaining good results in this connection.

The rudder-post is shown at D, provided with a tiller, D′, which may be directly employed for steering by hand, or connected with the well-known tiller ropes and wheel. The rudder-post is provided with a circular plate, as at E, which is axially mounted on the post and secured thereto. In the drawings it is shown to be skeletonized, after the manner of a wheel having a hub, spokes, arms, and a rim. This latter is provided at its periphery with vertical square-sided slots or scores, as at *a*, which serve in each instance as one-half of a key-seat.

F denotes an annular worm-gear, which is concentrically mounted on the plate E. The eye of this worm-gear is key-slotted, to correspond with the key-slots in the plate, already described, so that when a key, as at *b*, is inserted, the gear and the plate will be rotatively connected.

G denotes in each instance one of two screws which engage with the worm-gear F at opposite sides thereof. One screw has a right and the other a left hand thread. These screws are revolved by gears *c*, which mesh with a smaller gear, at *d*, on the crank-shaft.

As thus constructed, it will be seen that the rudder-post will be firmly held in any desired position, while the engines are not in motion, by the oppositely-located screws and the worm-gear, and also that, on removing the key or keys *b*, the rudder may be operated by hand wholly independent of the steam-gearing.

Each of the screws is so mounted on its shaft *e* that it is rotatively connected therewith, but free to move longitudinally thereon. Each shaft *e* is provided with two collars, *f*, which are keyed or otherwise secured to the shaft, one near each of its journal-boxes. Between each collar and the adjacent end of the screw is an elastic cushion or buffer. In this instance it is shown to be composed of elastic material, preferably of vulcanized rubber, although other forms of spring may be employed,

as heretofore, for relieving the screws and gearing from shock incident to the striking of the rudder by waves.

The rubber spring is shown at *g*, and it is embraced within two flanged collars, *h*, so mounted on the shaft as to be longitudinally free thereon within the space between the fixed collar *f* and the end of the screw.

Each collar *h* may be provided with short dowels, as at *i*, which occupy holes in the rubber spring, all of which is shown in detail in Fig. 3.

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

The combination, with a rudder-post provided with a circular plate, of an annular worm-gear surrounding said plate, and connected therewith by a detachable key or keys, and screws which mesh with the worm-gear, and are operated by suitable steam-driven gearing, substantially as described.

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Witnesses:

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