2 Sheets--Sheet 1.

P. H. JACKSON.

Steering-Apparatus.

No. 159,826. Patented Feb. 16, 1875.

Fig: 1.

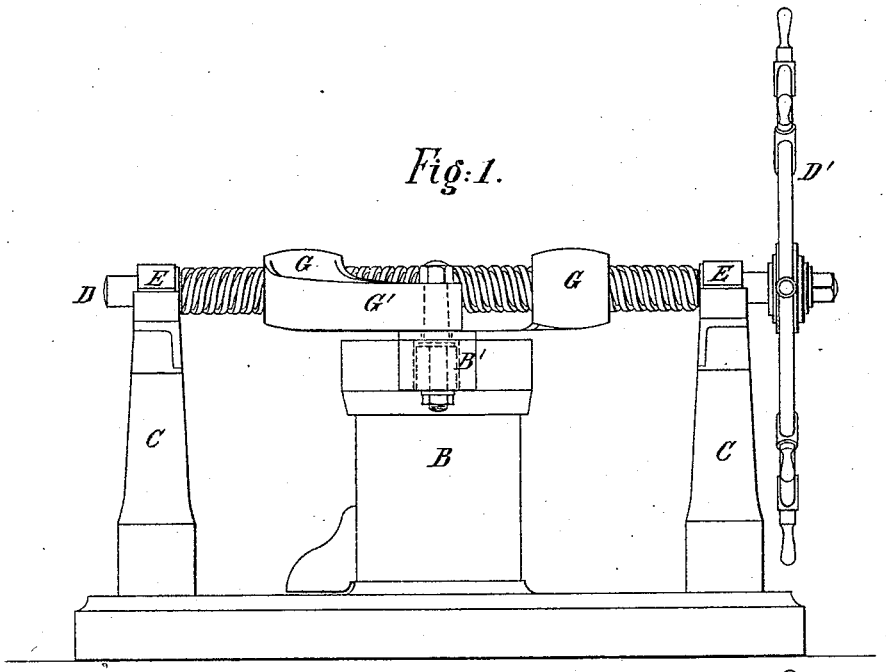


Fig: 2.

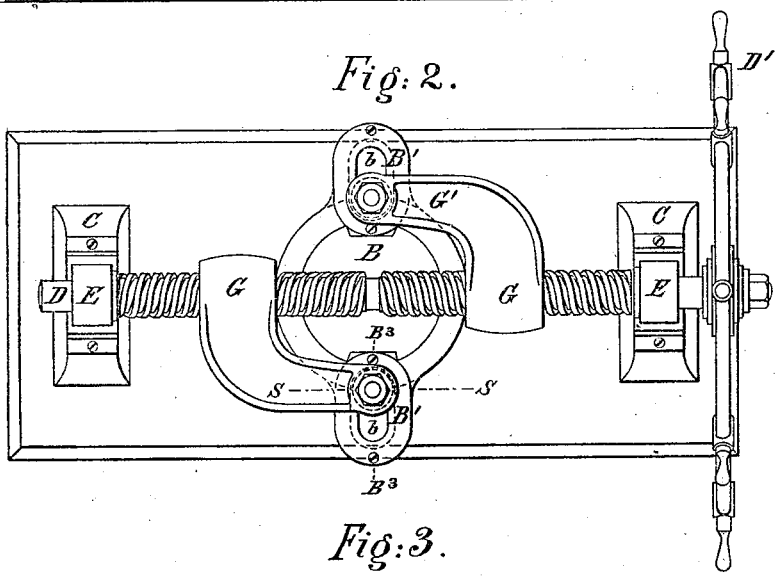
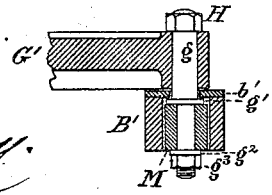


Fig: 3.



Witnesses:

Wm. C. Dey.

E. Volkmann.

Inventor:

Peter H. Jackson

by his attorney

T. D. Stetson

2 Sheets--Sheet 2.

P. H. JACKSON.

Steering-Apparatus.

No. 159,826. Patented Feb. 16, 1875.

Fig: 4.

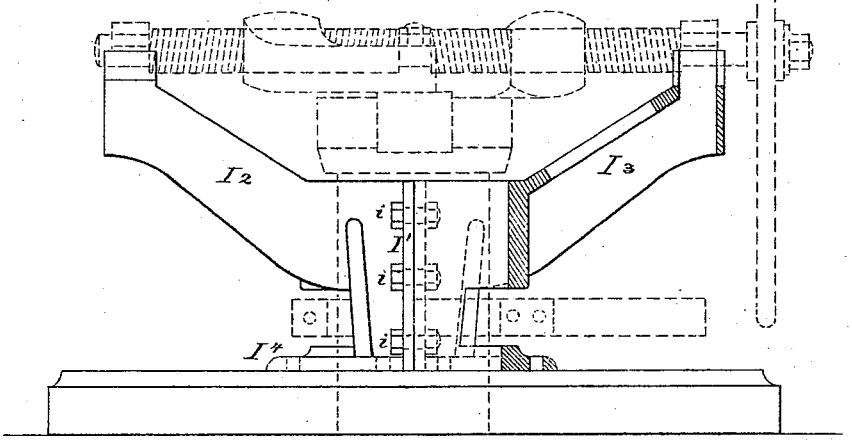
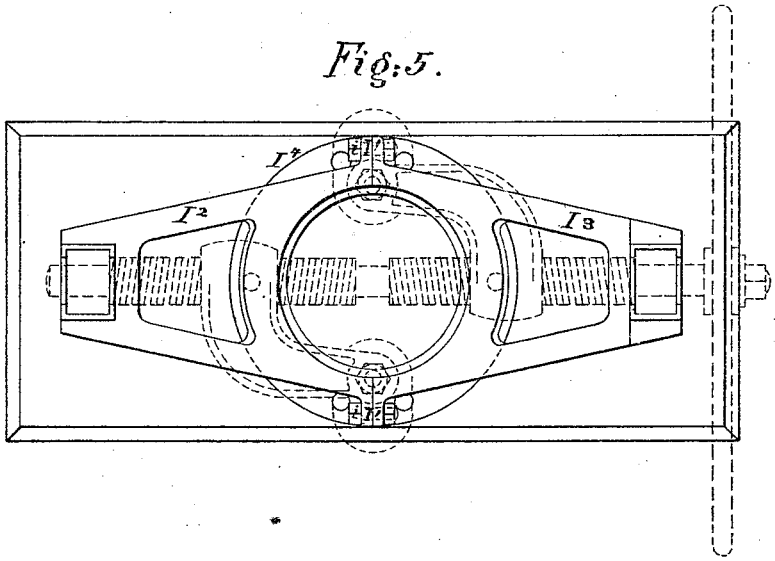


Fig: 5.



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UNITED STATES PATENT OFFICE.

PETER H. JACKSON, OF NEW YORK, N. Y.

IMPROVEMENT IN STEERING APPARATUS.

Specification forming part of Letters Patent No. **159,826**, dated February 16, 1875; application filed December 8, 1874.

To all whom it may concern:

Be it known that I, PETER H. JACKSON, of New York city, in the State of New York, have invented certain Improvements Relating to Steering Mechanism for Vessels, of which the following is a specification:

The mechanism for which Letters Patent have been granted to me dated respectively April 28, 1868, March 23, 1869, and October 22, 1872, require a guide extending parallel to the wheel-shaft to support the nuts G against being revolved. My present invention dispenses therewith. I engage the arms which extend from the nuts with the slots in the rudder-head, so that while the pins are free to perform their proper motions in the slots as the rudder turns, any tendency of the nuts to turn with the shaft is resisted by the rudder-head itself. I have devised peculiar means for effecting this.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figures 1, 2, and 3 show one of the most desirable forms for carrying out a portion of the invention.

Fig. 1 is a side elevation. Fig. 2 is a plan view, and Fig. 3 is a vertical section through a portion.

The remaining figures show a stout framing of iron, which I have devised for use therewith, which gives a very desirable support for the shaft-bearings. In these latter figures the positions of the arms and screw are shown in dotted lines. I consider this frame an important part of the invention.

Fig. 4 is a side elevation, and Fig. 5 a plan view.

Similar letters of reference indicate corresponding parts in all the figures.

In Figs. 1, 2, and 3, B is the rudder-head; C C, stanchions, mounted in front and rear thereof; and D, the wheel-shaft, having a stout right and left screw-thread, as represented. It is supported in movable bearings E E, in the stanchions C C, so that it is free to rise and sink with the jumping motion of the rudder in a sea-way. Stout nuts G, having arms G′, are mounted on the shaft D, as shown, so that the turning of the latter in one direction or the other acts with right and left threads to bring the nuts nearer together or farther apart. A stout casting, firmly fixed on the rudder-head B, is formed with stout arms B^1 to receive the force from the nuts. So far all the parts are of a previously-known and approved construction.

The construction of the radial slots in the arms B^1, and the provisions for engaging the arms G′ therein, are peculiar. A description of one side will suffice for both.

The upper and narrow portion of the slot in the stout arm B^1 is marked *b*, and is considerably narrower than the portion below. The transition from the narrow to the wide portion is made by a sudden shoulder or offset, *b′*. Below this offset the slot is of greater but uniform width, affording a fair bearing for a stout roller, M, to traverse along, bearing firmly against one side or the other as the rudder is turned. The pin *g*, on which the roller M is mounted, is slightly tapered above, and is firmly set in the arm G′ by the aid of a small nut, H. The upper face of the arm B^1 is plane and smooth. The lower face of the arm G′ is correspondingly finished, and applies close to it. The pin *g* extends downward through the narrow portion *b* of the slot. Immediately below this narrow portion it is enlarged, so as to form a stout collar, g^1. This collar bears with its upper face against the shoulder *b′*, and holds the arm G′ and its connections down. The collar g^1 is of only sufficient thickness to afford the proper strength, and is of a little less diameter than the roller M, which applies immediately below it, and relieves it from all lateral bearing. The roller is secured below by a washer, g^2, and a removable nut, g^3.

I prefer to make the roller M of only such depth as will afford a sufficient bearing. Transverse strain on the pin *g* is less in proportion as the bearing is kept up close to the collar g^1.

As the rudder rises and sinks violently with the irregular motion of the vessel and of the sea, the arms G′ and their attachments rise and drop readily with it, as allowed by the loosely-fitted bearings E. When the wheel D′, and, consequently, the shaft D, is turned in either direction, the tendency to turn the nuts G with it presses down with the arm G′ upon

the arm B^1 on one side, and lifts on the other. Both motions are effectually resisted. The pressing down is resisted by fair contact of the arm G′ with the upper plain face of the arm B^1. The lifting up is resisted by the contact of the upper face of the collar *g′* with the shoulder *b′*.

For convenience of manufacture I make the narrow part *b*, and, consequently, the shoulder *b′*, of each slot on a separate piece of metal, bolted upon and forming the upper face of the rudder-head where the arms G′ bear upon it. These covering-plates or separate pieces are firmly secured by screw-bolts B^3 countersunk, or otherwise let in, so that their heads are flush with, or a little below, the upper face.

In Figs. 4 and 5 a stout cast-iron frame is employed, loosely encircling the rudder-head, with arms fore and aft to support the screw-shaft. This casting is formed in two parts with flanges I^1, which allow the parts to be firmly secured together by bolts *i*. The arms are indicated by I^2 I^3, both being stout open-work frames, giving great strength with a moderate amount of material. In the forward side of this frame, under the arm I^2, is a liberal opening, through which a tiller may be inserted. I have represented also a corresponding opening on the after side. The adjacent metal is re-enforced with heavy beads or ribs. The bottom is spread out in a flange, I^4, for bolting to the deck. This flange, or arms therefrom, may be extended farther if desired in any case to receive bolts at a greater distance from the rudder to give additional security against twisting strains.

I claim as my invention—

The nut G, with the arm G′ rigidly joined or in one therewith, in combination with the screw D, and so connected to the arm B^1 on the rudder B that it is directly confined thereto to allow the device to resist the twisting effect of the shaft without the necessity for a guide-rod, all substantially as herein specified.

In testimony whereof I have hereunto set my hand this 7th day of December, 1874, in the presence of two subscribing witnesses.

PETER H. JACKSON.

Witnesses:

THOMAS D. STETSON,

WM. C. DEY.