

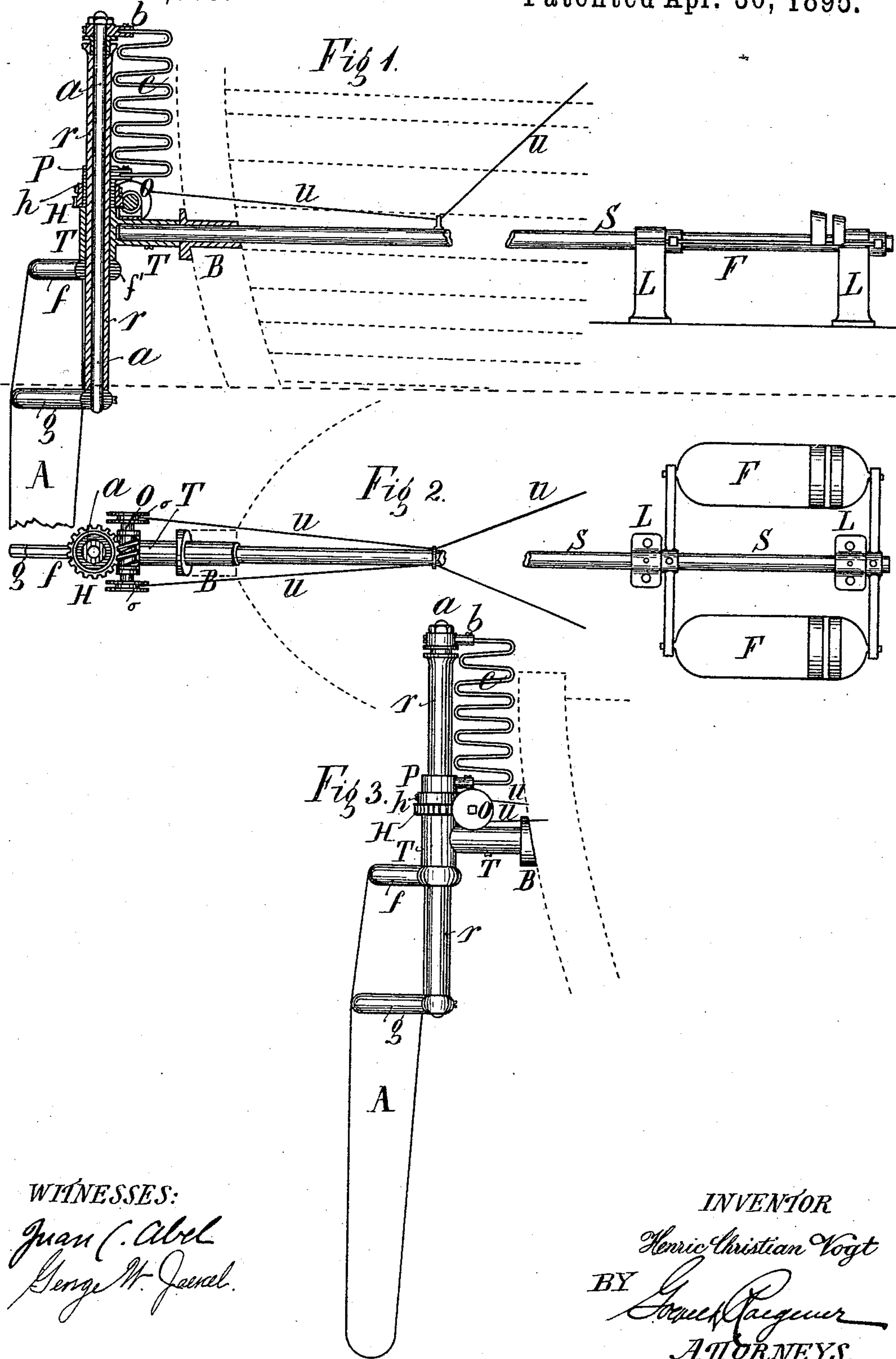
(No Model.)

H. C. VOGT.

STEERING AND PROPELLING APPARATUS FOR VESSELS.

No. 538,303.

Patented Apr. 30, 1895.



WITNESSES:

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STEERING AND PROPELLING APPARATUS FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 538,303, dated April 30, 1895.

Application filed October 2, 1894. Serial No. 524,721. (No model.)

To all whom it may concern:

Be it known that I, HENRIC CHRISTIAN VOGT, a citizen of Denmark, residing at Copenhagen, in the Kingdom of Denmark, have
5 invented certain new and useful Improvements in Steering and Propelling Apparatus for Vessels, of which the following is a specification.

The present invention relates to an arrangement of mechanism for enabling the functions of a propeller and of a rudder to be performed by a single mechanical part. This arrangement also enables the engine to work always in the same direction, so that it need
15 not be so constructed as to be capable of being reversed.

In the accompanying drawings, Figure 1 shows a vertical section partly in elevation, Fig. 2 a plan partly in section, and Fig. 3 a
20 side elevation, of apparatus constructed according to this invention.

The rudder A is rigidly secured, by means of a fork g, on the rudder-post a, which is connected by means of an arm b at its upper end
25 and a torsion spring c or a spring of serpentine form with a worm-wheel H, which is adapted to be rotated by means of a worm O, about a tube r, in which the rudder-post a is adapted to turn as in bearings. The tube r
30 also serves as a guide for the rudder A, a fork f rigidly secured on the rudder A and having a collar f' being arranged to loosely embrace the tube r so that it can turn around the same. A T-coupling T furnished with bearings for
35 the worm O constitutes a rigid connection between the tube r and a horizontal main shaft S, which is provided with bearings L and is inserted through a stuffing-box B. The arrangement as will be seen, is such that upon
40 pulling one or other of the steering lines u the ends of which are wound upon pulleys o, o, of the worm O, the worm O and consequently the worm-wheel H will be partly rotated and by means of the spring c which
45 connects the toothed wheel H with the arm b of the rudder-post a, the rudder will be partly turned. Thus the vessel can be steered by pulling one or the other of the steering-lines u. If, now, the main shaft S be rocked or oscillated, for instance by means of treadles F
50 or by an engine, the rudder A will oscillate

like a pendulum, about the axis of the shaft S, in a plane which is at right-angles to the central vertical longitudinal plane of the vessel. When the whole of the area is at one
55 side or the other of the axis of the rudder-post, the pressure of the water on the rudder will then cause it to oscillate about the axis of the post a, first to one side and then to the other, in such a manner as to produce move-
60 ments of the rudder similar to the strokes of the tail of a fish, and by means of which the vessel will be propelled, only a minimum of labor being required for maintaining the oscillation of the rudder like that of a pendulum.
65

Since the rudder-post a is connected by the spring c to the wheel H which is prevented from rotation by means of the worm O, the amplitude of the oscillations of the rudder A about the axis of the post a will be dependent
70 on the strength of the spring c. In the drawings only one spring c is shown, but it is evident without illustration that any desired number of springs may be employed according to the size of the rudder, the said springs
75 being all arranged between the worm-wheel H and arms b fixed on the top of the rudder-post a. The springs employed for thus connecting the wheel H with the rudder-post a may be of various forms and constructions
80 without departing from the nature of this invention.

By pulling one of the steering-lines u during propulsion, simultaneously with the rudder A being oscillated like a pendulum by
85 means of the shaft S, the said rudder can be caused, while oscillating in one direction about the axis of the shaft S, to make with a plane at right angles to the said axis, an angle greater than that made by the rudder
90 with the same plane when oscillating in the opposite direction, and thus to effect the steering of the vessel while still producing in it a motion "ahead" or "astern" as before.

By pulling one of the steering-lines u until
95 the rudder is turned through an angle of one hundred and eighty degrees, the motion "ahead" can be converted into motion "astern" and vice versa, and by turning the rudder through slightly less or slightly more than
100 this angle the steering of the vessel may be simultaneously effected. Therefore, by the

use of the apparatus hereinbefore described, there is no necessity to reverse the direction of working of the engine because motion "ahead," steering, and motion "astern," can
5 be produced by means of the steering-lines *u* alone. The pressure of the water against the rudder-blade assists in turning the same, when oscillated in one direction, and the worm keeps it in position, when oscillated in the op-
10 posite direction, so very little power is needed on the steering lines.

In order that the particular teeth of the worm-wheel H for the time being in work may be changed from time to time to equalize their
15 wear, the worm-wheel H may be fitted on a sleeve P, loose on the tube *r*, so that the said wheel after being disconnected from the sleeve can be turned on the sleeve P and then fixed thereon by means of screws *h*.

20 What I claim is—

1. In steering and propelling apparatus for vessels, the combination with a rudder-blade, the post thereof, and an oscillatory shaft extending at an angle to the post and support-
25 ing the rudder-blade like a pendulum, of a worm-wheel, means for supporting the same, a worm gearing with the worm-wheel, a spring between the worm-wheel and the post, and means for rotating the worm, said worm being adapted to adjust the rudder-blade during
30 the motion of the vessel toward the axis of the same, the whole area of the rudder being to one side of the axis or post of the rudder blade, in order to produce the steering of the vessel,
35 substantially as set forth.

2. In steering and propelling apparatus for vessels, the combination of the rudder and rudder-post, a tube in which the rudder-post
40 bears, a worm-wheel mounted loosely on the tube, a spring connecting the worm-wheel with the rudder-post, a worm meshing with the worm-wheel, means for supporting said parts

on the vessel, and pull-cords for operating the worm, substantially as set forth.

3. In steering and propelling apparatus for 45 vessels, the combination of the rudder and rudder-post, a tube in which the rudder-post turns, an arm on the rudder-post, a worm-wheel mounted loosely on the tube, a spring connecting the arm with the said worm-wheel, 50 a worm meshing with the worm-wheel and provided with end-pulleys, means for supporting said parts on the vessel, and pull-cords, the ends of which are attached to the pulleys, substantially as set forth. 55

4. In steering and propelling apparatus for vessels, the combination of the rudder and rudder-post, a tube in which the rudder-post turns, an oscillatory shaft rigidly secured to the tube and adapted to be supported in bear- 60 ings on the vessel, and a spring connected to the rudder-post at one end and at the other end to the hub of the worm-wheel revolubly mounted on the tube, substantially as set forth. 65

5. In steering and propelling apparatus for vessels, the combination of the rudder which has the whole of its area to one side of its axis and the rudder-post, a tube in which the rudder-post turns, an oscillatory shaft rigidly se- 70 cured to the tube and adapted to be supported in bearings on the vessel, a worm-wheel mounted loosely on the tube, a spring connecting the rudder-post with the worm-wheel, and pull-cords for operating the worm, substantially as 75 set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HENRIC CHRISTIAN VOGT.

Witnesses:

L. HOFMAN BAUR,
FR. TOIJBER.