(No Model.)

J. CHRISTENSEN.

STEERING MECHANISM.

No. 495,622. Patented Apr. 18, 1893.

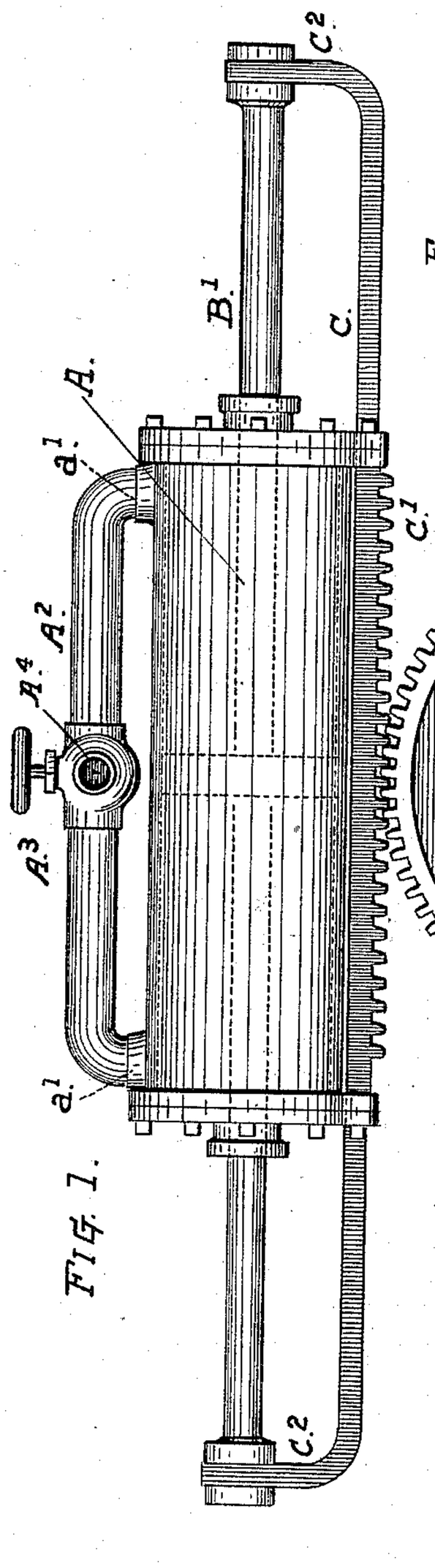


FIG. 1.

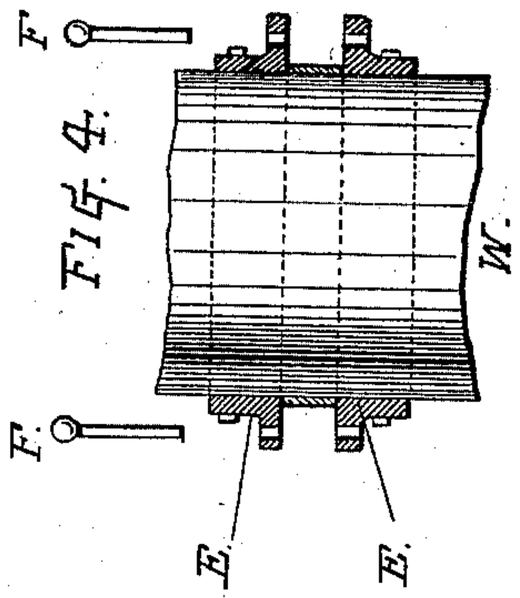
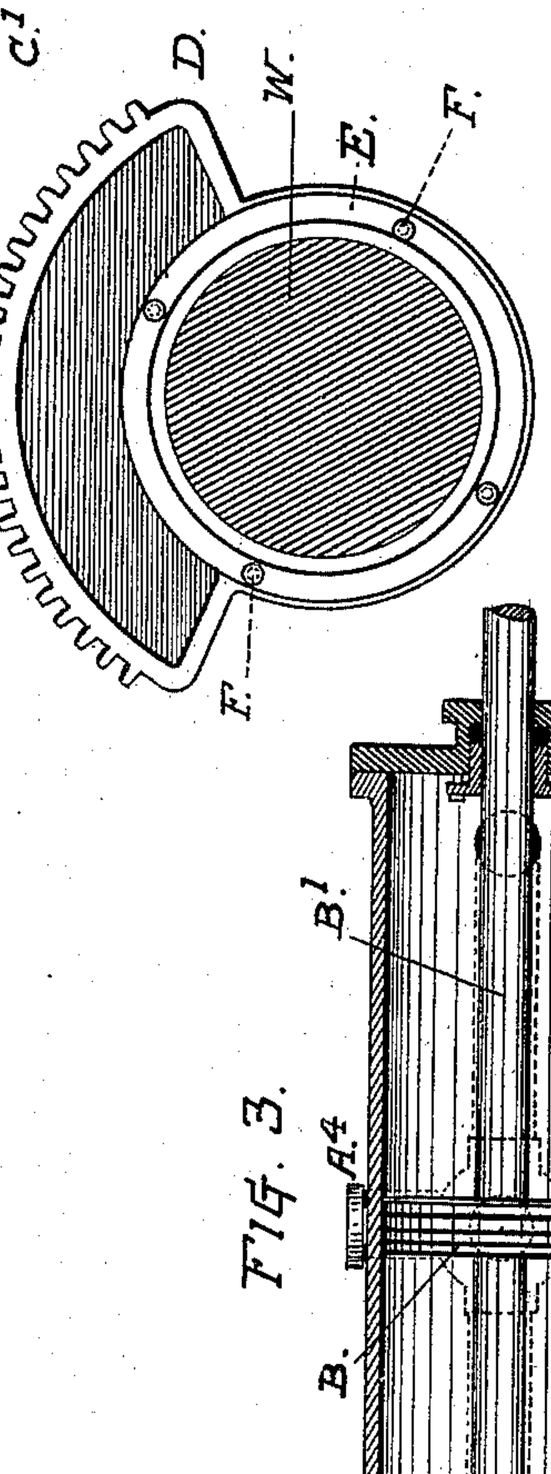


FIG. 4.



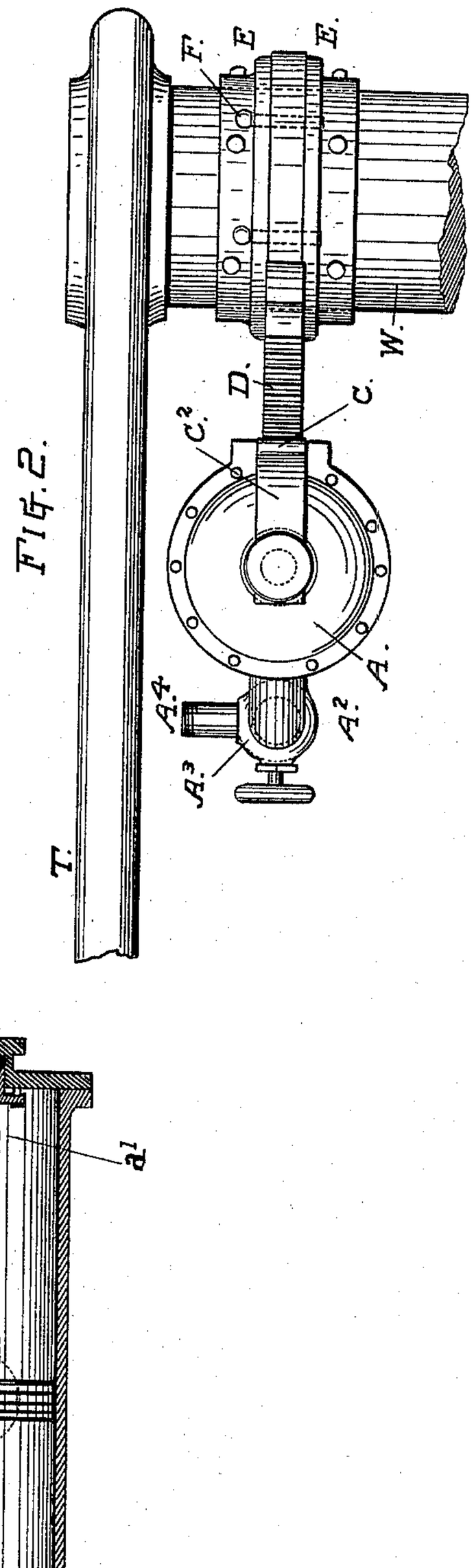


FIG. 2.

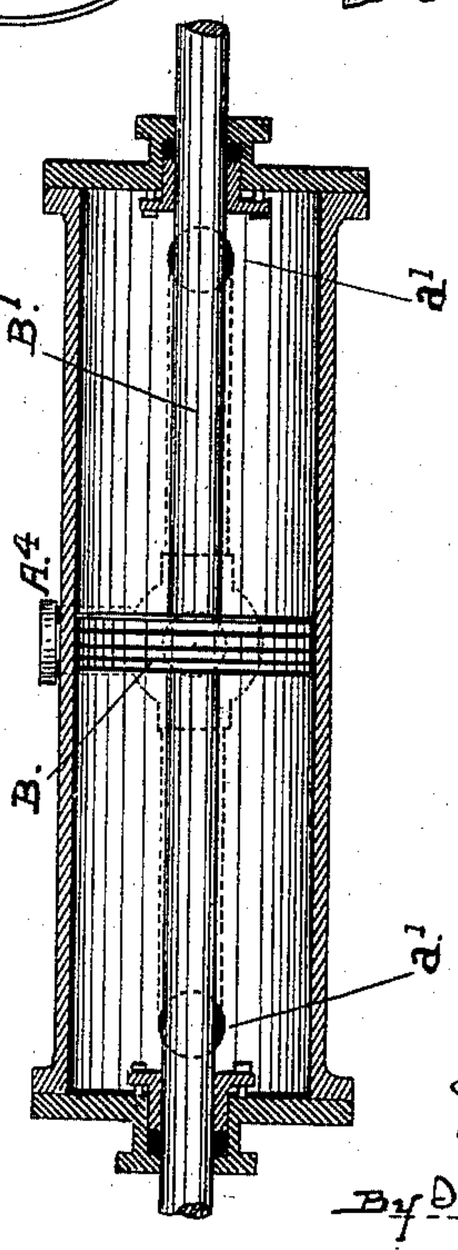


FIG. 3.

Witnesses:
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William Franklin

Inventor:
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his Attys.

UNITED STATES PATENT OFFICE.

JORGEN CHRISTENSEN, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO HANS HANSEN HJUL, OF SAME PLACE.

STEERING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 495,622, dated April 18, 1893.

Application filed April 9, 1892. Serial No. 428,430. (No model.)

To all whom it may concern:

Be it known that I, JORGEN CHRISTENSEN, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Mechanism for Controlling the Movements of Ships' Rudders, of which the following is a specification.

My invention has for its object, mainly to relieve the ship's rudder and its steering gear from the shocks and strains produced by abrupt movements of the rudder under the blows of the waves or the action of rough water, and thereby to lighten the labors of the men at the wheel as well as to reduce the risks of accidents that usually attend the work of holding the ship to its course in rough weather.

To such end and object my invention consists of mechanism or apparatus geared or connected to the tiller or rudder post to control the movements of the rudder as hereinafter fully described and pointed out in the claim.

The following description explains the nature of my said improvement and the manner in which I construct apply and carry out the same to accomplish the desired purpose the accompanying drawings that form part of this specification being referred to by letters.

Figure 1 represents the mechanism constructed and applied according to my invention to the rudder-post, the view being a plan of the mechanism with the tiller removed from the head of the rudder-post. Fig. 2 is an elevation taken from the left-hand of Fig. 1 showing the pillar on the rudder-post. Fig. 3 is a longitudinal section through the center of the cylinder. Fig. 4 is a view showing the collars on the rudder-post in section.

The principal points or features of my invention comprise a cylinder to contain a body of liquid, such as oil, a piston having a piston-rod extending through the heads of the cylinder to the outside, and suitable mechanism connecting both ends of the rod to the rudder-post or to the tiller in such manner that the piston is moved in its cylinder, by the movements of the tiller. Ports and passages connect the cylinder space on one side of the piston with the corresponding space on the opposite side of the piston, and by means of a valve or other suitable device this communication between the two sides of the cylinder is capable of being reduced or increased in area or of being entirely closed at will for the purpose of regulating the flow or passage of the fluid from one side to the other side of the piston, or of shutting it off altogether. When properly constructed and applied the piston will act to check and control sudden or abrupt movements of the rudder and take the strain thereof to a considerable degree from the steering gear, as the piston can move in its cylinder in either direction only as rapidly as the confined liquid is allowed to pass from the cylinder space in front of the piston into the space behind.

In the accompanying drawings A indicates the cylinder, B its piston and B′ the piston-rod. C is a bar having a central toothed portion or rack C′ and bent ends C^2 which connect it with the heads of the piston-rod. D is a toothed segment secured on the rudder-post W and taking in the rack C′. These parts give a positive connection of the piston with the rudder-post.

On the outside of the cylinder a pipe A^2 connects a port A′ in the side of the cylinder near one head with a corresponding port A′ near the other head and mid-way in the length of this pipe a valve A^3 is placed. This valve has a rotary plug with ways or passages and an opening in the top of the body from which a short stand pipe A^4 extends upward to about the top of the cylinder body. One passage of the plug is arranged to regulate the flow of liquid through the pipe A^2 from one side of the valve to the other, while the remaining passage or opening of the plug brings the stand pipe and the pipe A^4 into connection so that the cylinder can be filled and liquid introduced from time to time to replace whatever is lost by leakage. The stand-pipe is closed by a screw-cap, and the valve is furnished with a hand-wheel or a lever for setting it.

The segment D is secured to the rudder-post by a ring or hub D′ which is part of the segment, and two flanged collars E E which are set on and bolted to the post. The hub of the

segment is fitted on the post to turn between the collars E E, but is locked by bolts or pins F inserted through holes in the collars and in the segment. By drawing out these pins the segment is detached from the rudder-post and the whole mechanism is thereby unshipped or thrown out of action or by replacing the pins the segment is locked to the post. This construction furnishes a simple means of throwing the mechanism into and out of action without disconnecting any of its working parts.

The tiller T is fixed on the head of the rudder-post to swing over the cylinder where there is sufficient room beneath it, or the mechanism is set and applied as the space and other conditions may best allow.

The length of the segment D, the size of the piston and the length of stroke are governed by the size of the rudder and the power which it will require to control its movements, and therefore no exact dimensions are given herein to be followed in applying and operating my said invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a device for controlling ships' rudders a cylinder containing a body of liquid a piston movable in said cylinder and separating the liquid into separate bodies, ports and passages connecting one end of the cylinder space with the other end around the piston, a valve in said passage adapted to regulate the flow of the liquid through the same, a piston-rod extending through both ends of the cylinder and connected by a bar having a rack or toothed portion, and a toothed segment fixed to the rudder-post and engaging said rack, combined for operation as set forth.

2. In combination with a ship's rudder, the toothed segment having a hub or ring fitted loosely over the rudder-post, the flanged collars fixed to the post, above and below the ring and the holes and pins as a means of locking the segment to the post, in combination with the rack the piston rod connected to said rack, the piston-cylinder piston and passage connecting one end of the cylinder space with the other end around the piston substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

JORGEN CHRISTENSEN. [L. S.]

Witnesses:
C. W. M. SMITH,
CHAS. E. KELLY.