Schrader & Mathiesen,

Steering Appts.

No. 110,793. Patented Jan. 3. 1871.

Fig. 1.

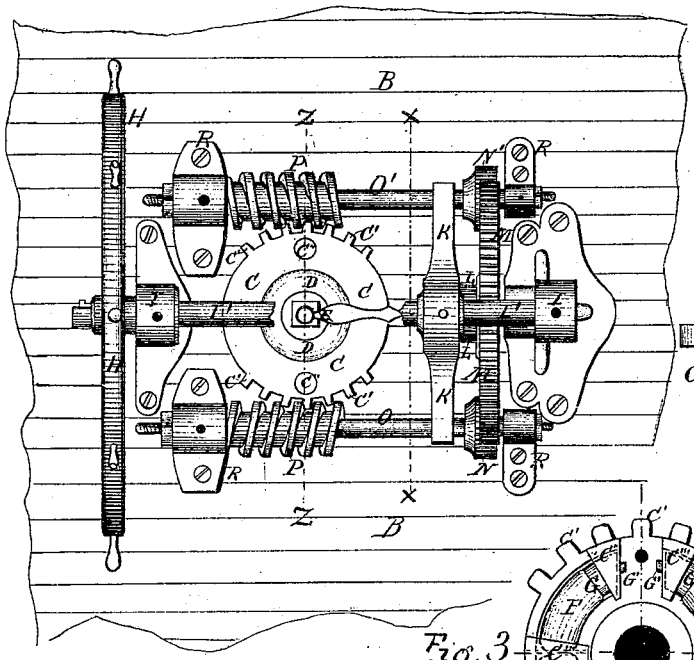


Fig. 4

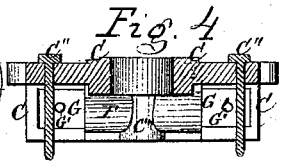


Fig. 3

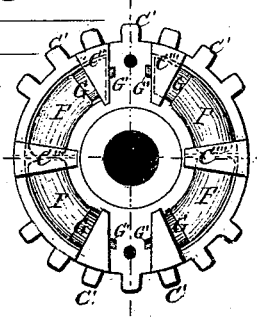


Fig. 5

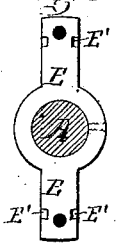


Fig. 2

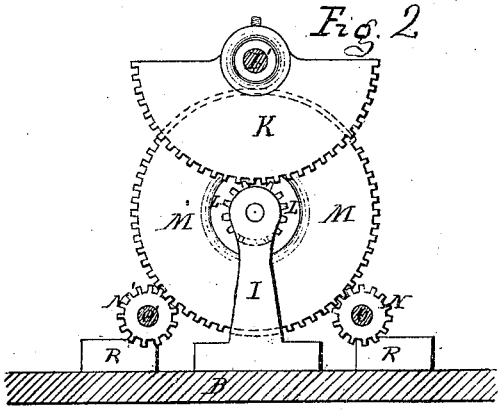
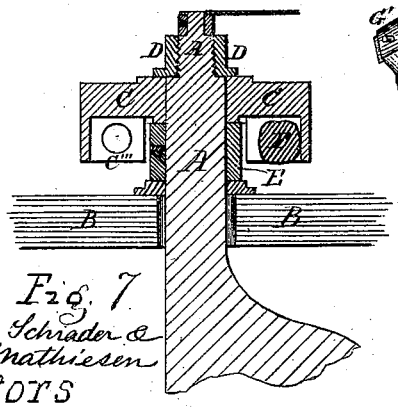


Fig. 6

Fig. 7



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JOHN C. SCHRADER AND CARL A. MATHIESEN, OF NEW YORK, N. Y.

Letters Patent No. 110,793, dated January 3, 1871.

IMPROVEMENT IN STEERING-APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JOHN C. SCHRADER and CARL A. MATHIESEN, of New York, county of New York and in the State of New York, have invented a new and useful Improvement in Steering-Apparatus for Vessels; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a plan view of the apparatus, with part of the steering-wheel shaft removed.

Figure 2 is a vertical transverse section on line *x x*, fig. 1.

Figure 3 is a bottom view of the cap or rudder-head.

Figure 4 is a vertical section on line *y y*, fig. 1.

Figure 5 is a plan view of the tiller or cross-head.

Figure 6 is a perspective view of elastic cushions, against which the tiller or cross-head rests.

Figure 7 is a vertical section on line *z z*, fig. 1, showing the manner in which the cap is fastened to the rudder.

The same letters of reference, where employed in the several figures, denote identical parts.

This invention relates to an improvement in steering-apparatus for vessels; and

It has for its object the protection of the gearing from damage by the violence of the waves upon the rudder during a hurricane, or in a heavy sea; to this end,

We construct the cogged cap, placed over the tiller or cross-head of the rudder, and by which it is operated from the steering-wheel, through intermediate gearing, with elastic cushions, bearing against the ends of the cross-head of the rudder, to take up any sudden shock or strain upon the latter, as will be more specifically pointed out in the following description and claim.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

The part A of the rudder which projects above the deck B of the vessel, is provided with a tiller or cross-head, E, firmly secured upon it.

The arms of the latter extend into suitable recesses or openings formed in the chambered under side of the cap C, which is placed over it, seated upon the hub of the cross-head; said cap being held in place upon the shank of the rudder, which can turn in its hub by a nut, D, or in any other preferred manner.

A downwardly-projecting flange is formed around the rim of the cap, interrupted at the points where the arms of the tiller enter it, and from this flange ribs or partitions C‴ extend inward to within close proximity of the hub of the tiller.

In this manner the cap is constructed in its under side, with two cells or chambers upon each side of the tiller, as clearly indicated in fig. 3.

Two series of cogs C′ are formed upon the periphery of the cap opposite to each other, by which it is moved through worms, hereafter to be alluded to.

F F represent stout cushions of India rubber, which are disposed one in each chamber of the cap C, with one end resting in recesses upon opposite sides of the radial partitions C‴, forming suitable abutments, while their other ends, which are armed with metallic caps G, extend into slots cut through the partitions C‴ upon the sides of the tiller against which they bear, being held in proper position by pins G′ upon their ends, entering vertical grooves E′ in the said tiller.

Any sudden strain upon the rudder will be taken up by these elastic cushions, and thus the danger of injury to the operative parts of the steering-apparatus, or to the rudder during heavy weather, largely diminished.

The metallic caps of the cushion should be shouldered, as shown in fig. 6, to abut against the inner side of the partitions, so that their ends may not project too far through them.

The cushions should, in practice, be made sufficiently stout, so as not to cause any serious interference with the operation of the apparatus, and in lieu of rubber springs, metallic springs may be employed, if preferred.

Suitable holes are bored through the cap and tiller, so that a rigid connection of the two may be obtained at any time by inserting stout bolts C″, as shown in fig. 4.

The other parts of the apparatus, for which no special novelty is claimed, may be constructed and arranged in the manner shown in the drawing, where H is the steering-wheel, mounted upon a horizontal shaft, I′, which rests in bearings in standards I.

The shaft I′ carries a sectoral spur-wheel, K, which transmits motion through the intermediate pinions L and M, which are arranged upon a countershaft below it to the pinions N N′ and O O′.

The latter are placed in bearings R upon opposite sides of the cap C and parallel to each other, and they are constructed one with a left-handed, and the other with a right-handed worm, P, which gear into the cogs upon the periphery of the cap C to oscillate it.

Having thus described our invention,

What we claim, and desire to secure by Letters Patent, is—

The cap C, constructed substantially as set forth, and the tiller or cross-head E, in combination with the springs or elastic cushions F, which are arranged in the former to bear against the latter, substantially as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN C. SCHRADER.
CARL A. MATHIESEN.

Witnesses:
A. A. SCHERR,
G. WEHRMANN.