

C. M. Hayden,

Steering Apparatus.

No. 104,955.

Patented July 5, 1870.

Fig. 1.

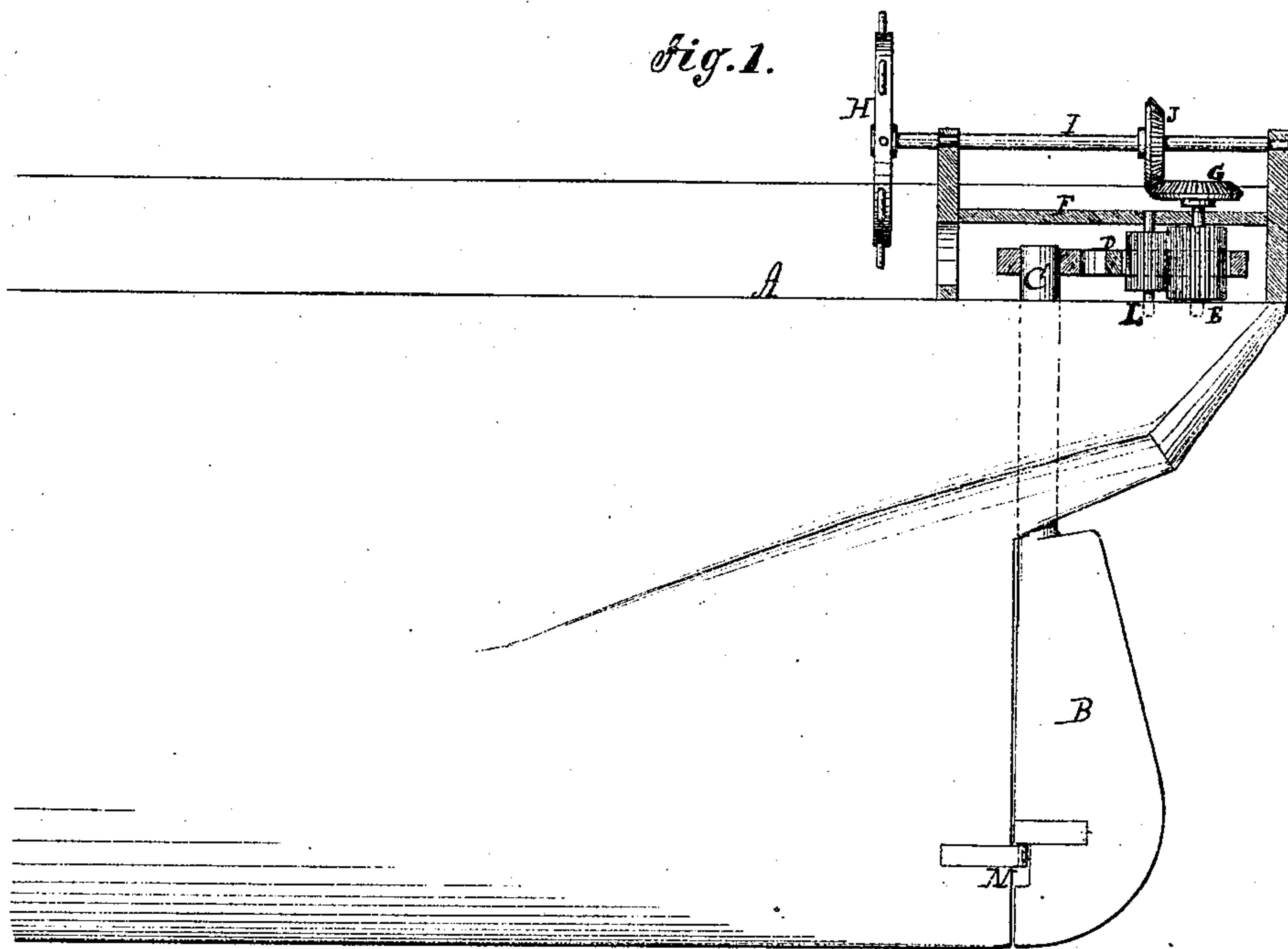
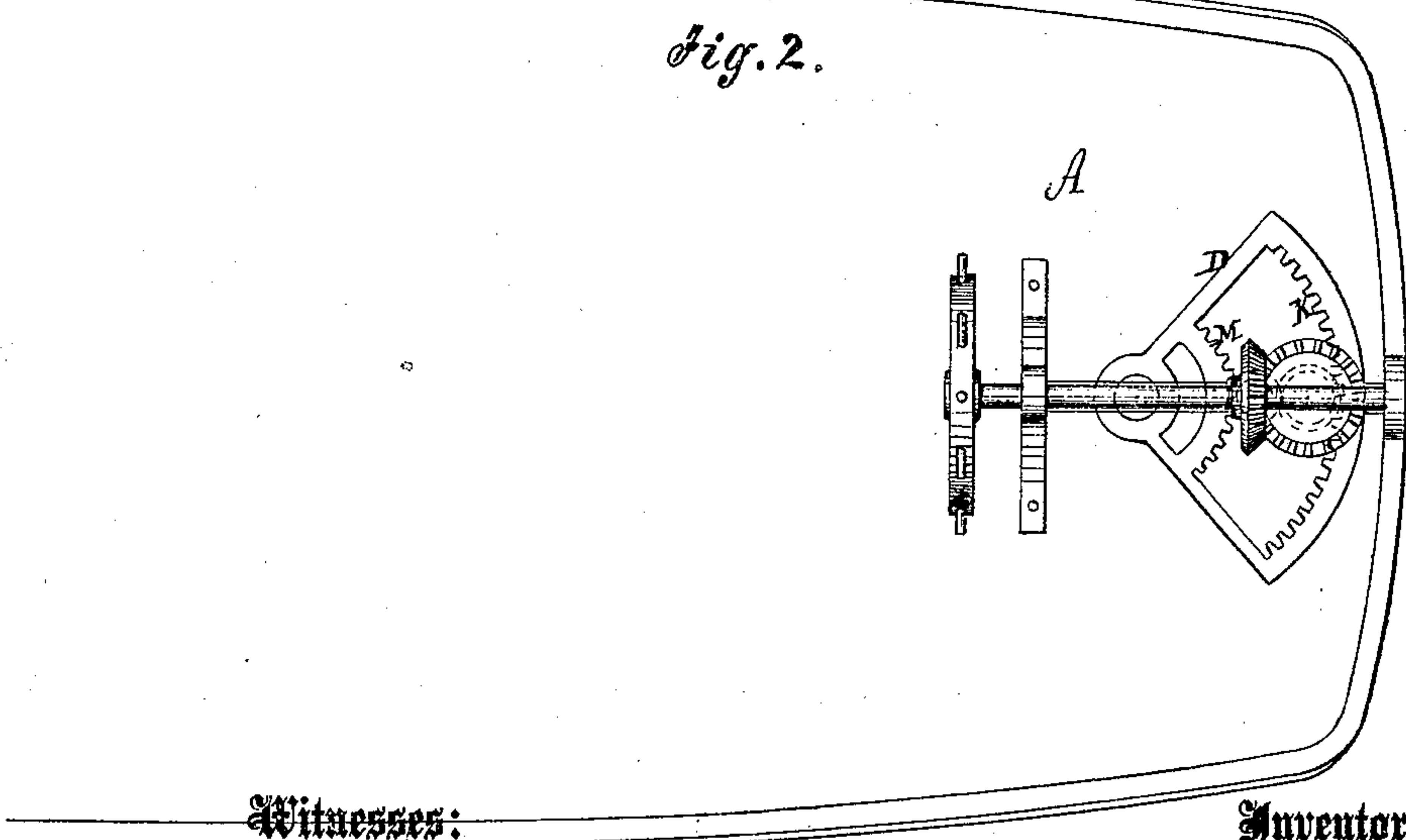


Fig. 2.



Witnesses:

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CHARLES M. HAYDEN, OF SOUTH THOMASTON, MAINE.

Letters Patent No. 104,955, dated July 5, 1870.

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 I, CHARLES M. HAYDEN, of South Thomaston, in the county of Knox and State of Maine, have invented a new and useful Improvement in Steering Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to a new and useful improvement in apparatus or gearing for steering marine vessels, whereby the power applied to the hand-wheel is greatly increased by means of gearing; and

The invention consists in the use of bevel-wheels, pinion-wheels, and sector-gears, as will be hereinafter more fully described.

In the accompanying drawing—

Figure 1 represents a sectional side elevation of the apparatus.

Figure 2 is a top or plan view.

Similar letters of reference indicate corresponding parts.

A is the deck of the vessel.

B is the rudder.

C is the rudder-post.

To the top end of the rudder-post I secure the sector-wheel D, with two arcs or segments of circles provided with cogs, as seen in the drawing. The center of these circles is the center of the rudder-post.

E is a pinion placed vertically, the shaft of which is supported by the deck at its lower end, and by the bridge-piece F at its upper end.

On the upper end of this shaft, above the bridge F, there is a bevel-wheel, G.

H is the steering or hand-wheel.

I is the hand-wheel shaft.

J is a bevel-wheel, on the shaft I, which meshes into the wheel G.

The pinion E meshes into the outer cogged sector K, and also into the upright pinion L.

This pinion is supported in the same manner as E, and it meshes into the inner cogged sector M.

The pinions E and L are made long, so as to provide for the rise and fall of the rudder, the pintle of the rudder-hinge N being made long for the same purpose.

By this arrangement of double gearing with the sector-wheel D, the danger of breaking and getting out of order is greatly lessened.

Should either of the sectors K, or M, fail by breaking a cog, the one left will take the strain, but, by distributing the strain, as represented in the drawing, the danger of failure is reduced to such an extent that the safety and durability of the apparatus may be relied upon under all circumstances.

The leverage or power gained by this arrangement enables one man at the wheel to perfectly control the rudder at all times, rendering assistance unnecessary, and adding thereby to the safety of the vessel.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

The combination, in a vessel, of the double sector-wheel D, the pinions E L, and the bevel-wheels G and J, and shaft I, arranged and operating substantially as and for the purposes herein shown and described.

CHARLES M. HAYDEN.

Witnesses:

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