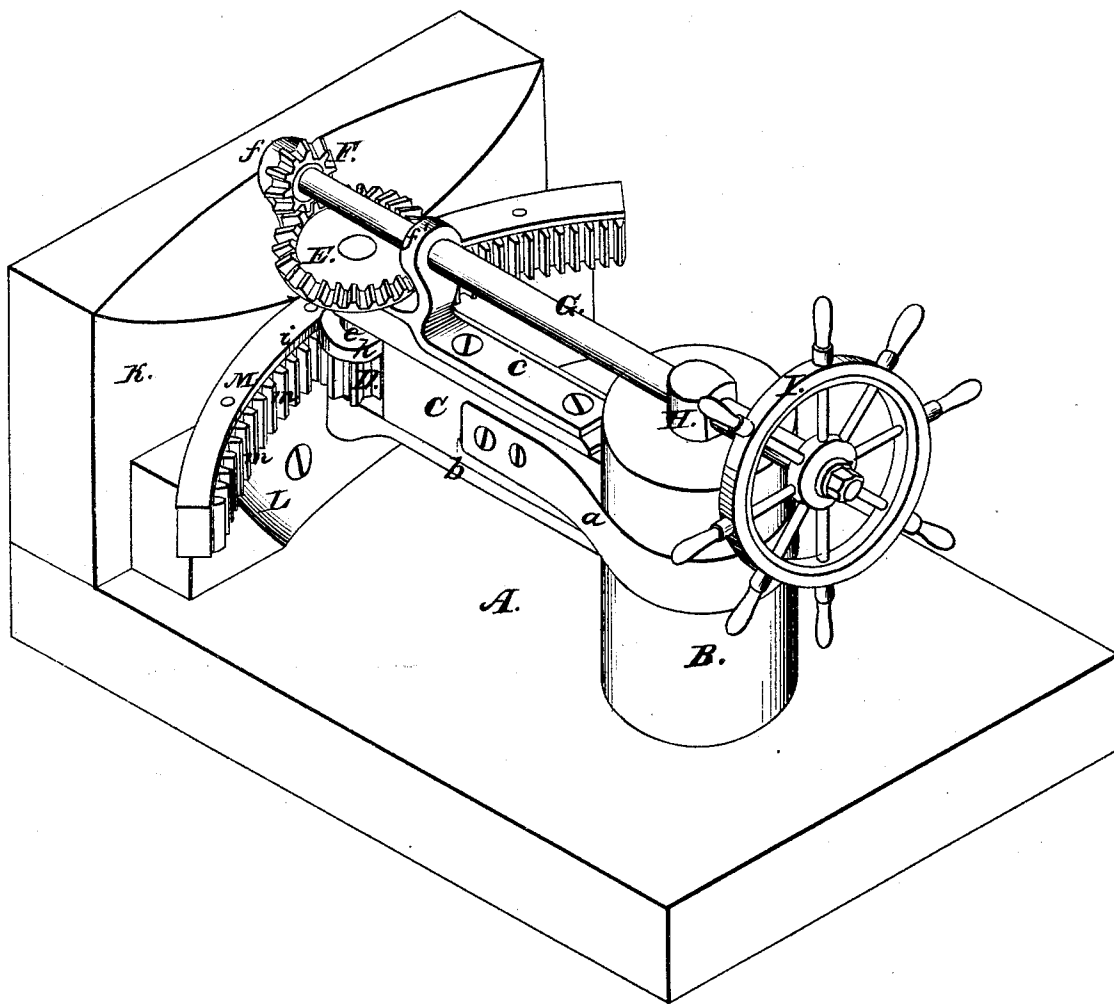


G. W. Robinson.

Steering

N^o 23,265.

Patented Mar 15, 1859.



Witnesses.

Thos R Rouch
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Inventor.

Geo W Robinson

UNITED STATES PATENT OFFICE.

GEO. W. ROBINSON, OF BOSTON, MASSACHUSETTS.

STEERING APPARATUS.

Specification of Letters Patent No. 23,265, dated March 15, 1859.

To all whom it may concern:

Be it known that I, G. W. ROBINSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and
5 Improved Mechanical Steerer for Vessels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making part of this specification, in which is shown a view of
10 my improved steering apparatus.

Mechanical steerers have been constructed in which a pinion upon the shaft of the steering wheel which was carried by the rudder post or a tiller attached thereto, engaged
15 with a segmental rack upon the upper surface of a curved beam secured to the deck. Such arrangement has however been found to be objectionable in practice. If the rudder post be raised but slightly by any accident, as often occurs, the teeth of the pinion are disengaged from the rack and the whole apparatus is disarranged. It was also found that the helmsman had not sufficient power over his rudder to keep it steady in rough
25 weather.

To remedy these objections is the object of my present invention which consists in a peculiar arrangement of gears in connection with a tiller and steering wheel, and operating in combination with a segmental rack having its teeth upon the vertical face of its interior curve.

That others skilled in the art may understand and use my invention I will proceed to describe the manner in which I have carried out the same.

In the said drawings A represents the deck of a vessel. B the rudder head from which a tiller C projects aft; for additional
40 strength a metal band *a* is passed around the rudder head and is secured to each side of the tiller. To the under side of the tiller C is attached a stout piece of metal *b* and to the top of the tiller another piece *c*. These
45 pieces are screwed or bolted firmly to the tiller, and project a short distance beyond the end of it, where they serve as bearings for a short vertical shaft *e* which carries a pinion D and a beveled cog wheel E. From
50 the piece *c* rise two lugs *f*, *f'* one at the ex-

treme end of the piece *c* and one nearer the middle of it; these lugs serve as bearings for a horizontal shaft G which carries a beveled pinion F, that engages with the wheel E. This shaft also has another bearing in a stud H rising from the top of the rudder head, through which the shaft passes and has attached to its end the steering wheel I.

K represents the stern of the vessel, to which is bolted a heavy block or timber L on the top of which is secured a cogged segment M with which the pinion D engages. The teeth of this segment are upon its inner face or curve and in a vertical position, and thus any slight vertical movement of the tiller C, caused by the rise of the rudder head will not disengage the pinion D from the teeth of the segment M. Above the pinion D and cast in one piece with it, is a smooth roller *h* which runs on the inside curve of the segment M in contact with the smooth portion *i* of it above the vertical teeth *m*. This receives any endwise thrust of the tiller C, and saves the wear of the rack and pinion.

The following is the operation of this steering apparatus: As the wheel I is turned it gives motion through the shaft G and pinion F to the wheel E on the vertical shaft *e*. This shaft carries the pinion D which is thus revolved and traverses the cogged face of the segment M moving the tiller C toward one side or the other of the vessel as required.

If the rudder head is at too great a distance from the stern K the timber L may be secured to the deck of the vessel.

What I claim as my invention and desire to secure by Letters Patent is—

The segment M having teeth on the interior vertical face of the curve, in combination with the gears D, E and F and shaft G connected with the tiller, and moving therewith, and arranged and operating in the manner substantially as above set forth.

GEO. W. ROBINSON.

Witnesses:

THOS. R. ROACH,
P. E. TESCHEMACHER.