

R. Sparks.
Steering.

N^o 69,276.

Patented Dec. 4, 1866

FIG. I.

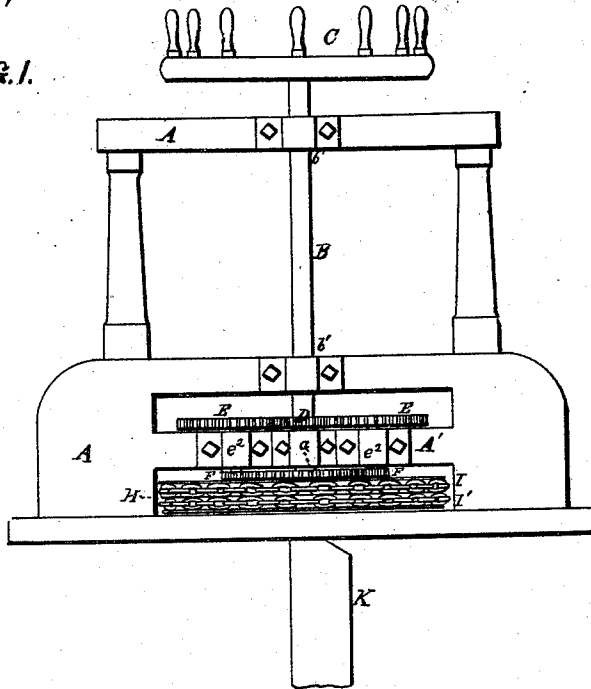
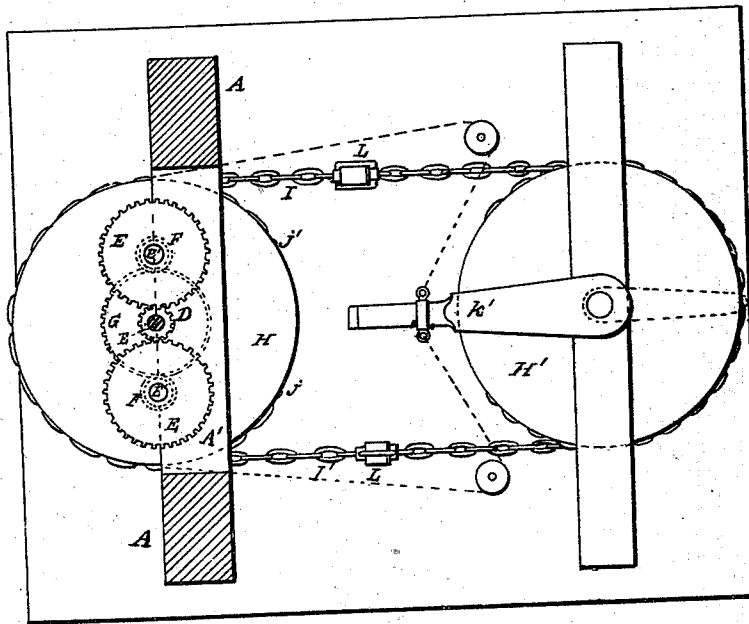


FIG. II.



Witnesses:

B. Hugo Muchley
Geo. Wallace

Inventor:

Ruben Sparks

United States Patent Office.

IMPROVED STEERING APPARATUS.

REUBEN SPARKS, OF BUFFALO, NEW YORK.

Letters Patent No. 60,276, dated December 4, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, REUBEN SPARKS, of the city of Buffalo, county of Erie, and State of New York, have invented a new and improved Steering Apparatus; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is a front elevation; and

Figure II is a plan view of my improvement.

The nature of this invention consists in the combination and arrangement of a series of spur-wheels and pinions, with a vertical shaft carrying the hand-wheel, and a horizontal chain-wheel or drum, to which the rudder chains are connected; the said gearing being constructed in such relative proportions that a considerably less number of revolutions of the hand-wheel is sufficient to move the tiller of the rudder through the requisite distance without a material increase of power or exertion on the part of the steersman.

Letters of like name and kind refer to like parts in each of the figures.

A A represent a portion of the framework of vessel, which supports the steering apparatus. B represents a vertical shaft, revolving in journal bearings, *b'*. C represents the hand-wheel for operating the apparatus; it is keyed to the top of the shaft, B, and when set in motion imparts its horizontally rotatory movement to the shaft, B. A pinion, D, is keyed to the lower end of the shaft, B, which gears with spur-wheels, E, upon counter-shafts, E'. Journal bearings, *e'*, are formed on the bridge-tree, A', which constitutes a part of the framework. The counter-shafts, E', carry upon their lower ends pinions, F, which gear with the spur-wheel, G, attached to the horizontal chain-wheel or drum, H. This spur-wheel G, when an external one, is located between the pinions, F, as shown in the drawings. It may also be made an internal spur-wheel, and in that case the pinions, F, revolve upon its inner side. It will be observed that one spur-wheel E, one pinion F, and one counter-shaft E', are sufficient to transmit motion from the shaft, B, to the chain-wheel, H, but in order to prevent undue strain upon the shafts, I prefer to employ two sets, one upon each side of the shaft, B, as shown in the drawings. The shaft to which both the spur-wheel, G, and chain-wheel, H, are connected, is below and in line with the main shaft, B, and has bearings in both the bridge-tree, A', and the deck of the vessel. The chain-wheel, H, has two grooves cut in its outer rim, or edge, one above the other. A chain, I I', lies in each groove, and one end thereof is connected to the rim of the wheel as shown at *j j'*; the other end of each chain is attached to a chain-wheel, H', in a similar manner. This chain-wheel, H', is made fast to the stem of the rudder, and is of the same general construction as the chain-wheel, H. The rudder is shown at K. The tiller of the rudder is represented at *k'*, and as a modification of my improvement, and especially when old vessels are to be provided with this improved steering apparatus, it may in some cases be desirable, and at the same time less expensive, to pass the chains, I I', over snatch-blocks and attach them to the end of the tiller as shown in red lines, in Fig. II, and in that case the chain-wheel, H', is not required. An elastic link is interposed in the chains as shown at L, Fig. II, for the purpose of keeping the chains from breaking in case of sudden jars to the rudder in high seas, or when the movement of the chains should be suddenly arrested by obstructions upon the deck of the vessel.

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

The arrangement of the vertical shaft B, having a pinion D on the lower end thereof, with the pinions F and E, and spur-wheel G, connected with the drum H, and chain I I', connecting with the drum H, and wheel H', substantially as described.

REUBEN SPARKS.

Witnesses:

GEO. W. WALLACE,

B. H. MUEHLE.