No. 627,585. Patented June 27, 1899.

J. P. MANTON.

STEAM STEERING APPARATUS.

(Application filed Feb. 8, 1897.)

(No Model.) 2 Sheets—Sheet 1.

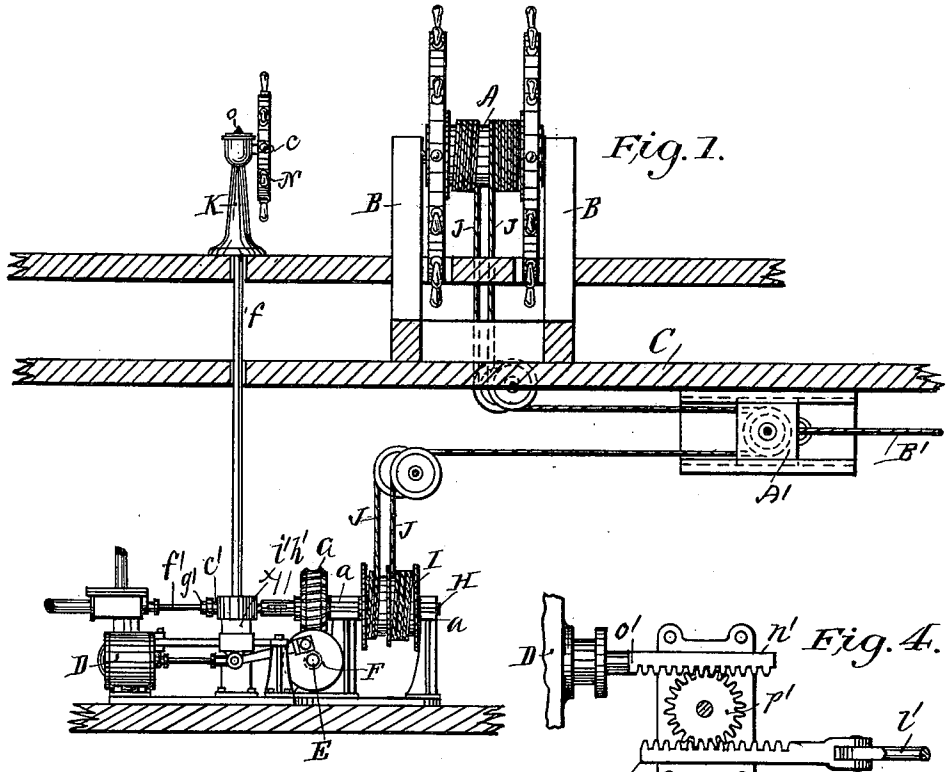


Fig. 1.



Fig. 4.

Fig. 2.

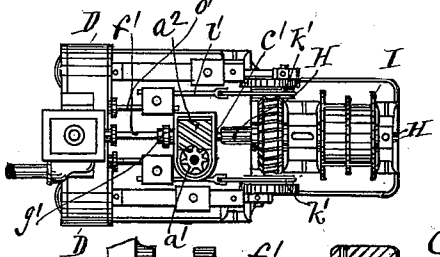


Fig. 3.



Witnesses:

Henry E Reynolds

Francis B Reynolds

Inventor.

Joseph P. Manton

per S. Schofield

Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 627,585. Patented June 27, 1899.

J. P. MANTON.

STEAM STEERING APPARATUS.

(Application filed Feb. 8, 1897.)

(No Model.) 2 Sheets—Sheet 2.

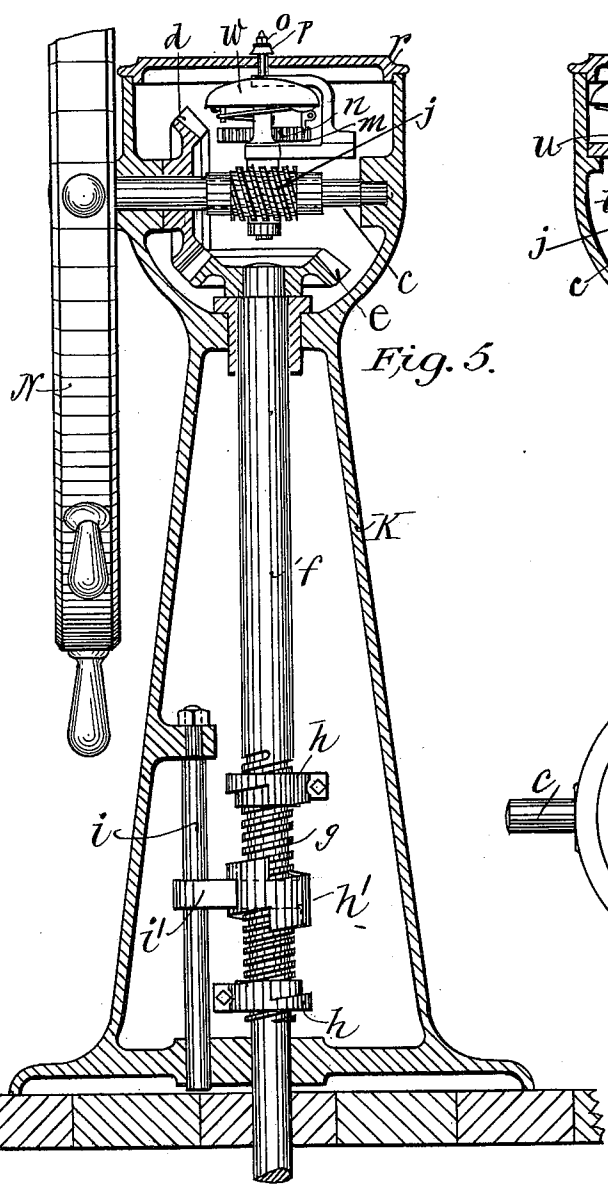



Fig. 5.

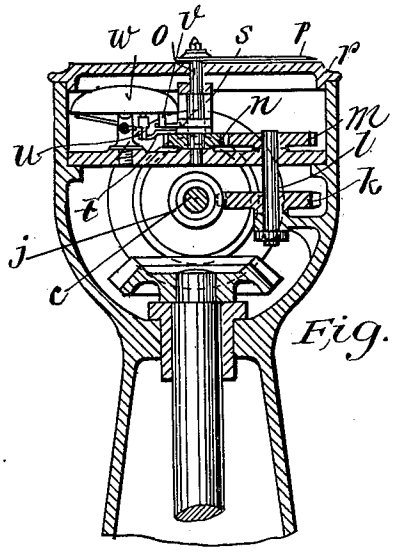
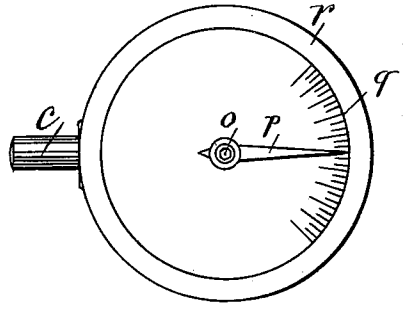



Fig. 6.

Fig. 7.




Witnesses:

Henry E Reynolds

Francis B Reynolds

Inventor.

Joseph P. Manton

per S. Scholfield

Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

JOSEPH P. MANTON, OF PROVIDENCE, RHODE ISLAND.

## STEAM STEERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 627,585, dated June 27, 1899.

Application filed February 8, 1897. Serial No. 622,570. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH P. MANTON, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Steam Steering Apparatus, of which the following is a specification.

My invention consists in the improved construction and arrangement of the mechanism for controlling the action of the reversing-valve of the engine and in the improved arrangement of stops to prevent damage to the rudder-head and in the combination of a bell with the dial which indicates the position of the rudder, as hereinafter set forth.

In the accompanying drawings, Figure 1 is a sectional view showing the arrangement of the several parts of the apparatus. Fig. 2 represents a top view of the engine. Fig. 3 represents an enlarged detail sectional view of the screw and nut for changing the relative position of the reversing-valve. Fig. 4 represents an enlarged detail view of the connection between the eccentrics and the main valves of the engine-cylinders. Fig. 5 represents an enlarged vertical section of the standard which supports the "trick-wheel." Fig. 6 represents a detail section taken at right angles to that of Fig. 5. Fig. 7 represents a top view of the trick-wheel standard, showing the dial which indicates the position of the rudder.

In the drawings, A represents the hand-operated barrel or drum of the steerer, said barrel being mounted in suitable bearings at the top of the standards B B, which are secured to the deck C. The pair of engines D D are arranged to operate upon the shaft E, upon which is secured a worm F, (shown by dotted line in Fig. 1,) the said worm engaging with the teeth of the worm-gear $g$, secured upon the drum-shaft H, mounted in the bearings $a$ $a$. The drum I is secured to the shaft H, and the ropes or chains J J pass from the drum I to the hand-operated barrel A, the said ropes or chains passing around the sheaves of the sliding pulley-blocks A′, from which connection is made by chains or ropes B′ to the rudder, as usual in steam steering apparatus. The trick-wheel N is attached to the shaft $c$, which is mounted in suitable bearings at the top of the hollow standard K, and to the shaft $c$ is secured the bevel-gear $d$, which engages with the corresponding bevel-gear $e$ at the end of the upright shaft $f$, the said shaft being provided with a screw-thread $g$, upon which are placed the clamped screw-threaded stops $h$ $h$, which in conjunction with the nut $h'$ upon the shaft $f$ will serve as a stop for the movement of the trick-wheel by hand when the proper limit of movement in either direction has been reached, the said nut $h'$ being guided in its up-and-down movement by means of the fixed guide-rod $i$, which passes loosely through a perforation in the arm $i''$ of the nut.

Upon the shaft $c$ is placed the worm $j$, which engages with the worm-gear $k$, secured upon the upright shaft $l$, at the upper end of which is secured the spur-gear $m$, engaging with the pinion $n$ upon the shaft $o$, to the upper end of which is secured the pointer $p$, which in conjunction with the graduations $q$ upon the covering-plate $r$ will serve to indicate the angular position of the rudder relatively to the axis of the ship, and upon the shaft $o$ above the pinion $n$ are secured the arms $s$ and $t$, which by engagement with the pins $u$ and $v$ serve to ring the bell $w$ to attract the attention of the helmsman when the extreme point of steering movement in either direction is being reached, and thus preventing damage to the rudder-head.

The shaft $f$ extends downward to the standard $x$, attached to the engine-bed, and upon the said shaft is secured the spiral gear $a'$, engaging with the spiral gear $a^2$, which is provided with a screw-thread $b'$, fitting the thread of the screw $c'$, which at its rearward end is held in the bore $d'$ of the shaft H of the drum I and is held in the bearings $e'$ $e'$ of the standard $x$, and to the forward end of the screw $c'$ is secured the valve-rod $f'$ by means of the swivel-joint $g'$, whereby the screw $c'$ will be allowed to revolve without imparting rotary movement to the valve-rod $f'$. The screw $c'$ is secured to the shaft H for rotation therewith and for endwise movement by means of the pin $h'$ in the side of the screw and the slot $i'$ in the side of the shaft H. The spiral-gear nut $a^2$, which serves to transmit the opening movement to the steam-valve of the engine D, is prevented from endwise movement by means of the bearing sides $j'$ $j'$

of the standard $x$. Upon the movement of the trick-wheel in either direction the steam-port will be opened and the valve be immediately brought back to its closed position by the resulting movement of the drum-shaft H. The preferable form of connection between the eccentric $k'$ and the main valve of the steam-cylinder D is shown in Fig. 4, in which the eccentric-rod $l'$ is jointed to the sliding rack $m'$, and connection is made with the rack $n'$ upon the valve-rod $o'$ by means of the intermediate gear $p'$.

I claim as my invention—

1. In a steam steering apparatus, the combination of the drum I, and shaft H, with the screw $c'$, having a sliding connection with the shaft H, the valve-rod $f$, connected with the screw, the spiral-gear nut $a^2$, held against endwise movement upon the screw, and the spiral gear $a^2$, for operating the spiral-gear nut to cause the movement of the valve-rod, substantially as described.

2. In a steam steering apparatus, the combination of the "trick-wheel" N, and bevel-gears $d$ and $e$, with the upright shaft $f$ provided with the screw-thread $g$, the nut $h'$ provided with the perforated arm $i'$, the fixed guide-rod $i$ for the perforated arm of the nut, and the clamped screw-threaded stops $h$, $h$, arranged upon the screw-thread of the shaft $f$ at opposite sides of the nut, substantially as described.

JOSEPH P. MANTON.

Witnesses:
SOCRATES SCHOLFIELD,
HENRY E. REYNOLDS.