(No Model.)

J. W. WATSON.

Steam Steering Apparatus.

No. 237,423. **Patented Feb. 8, 1881.**

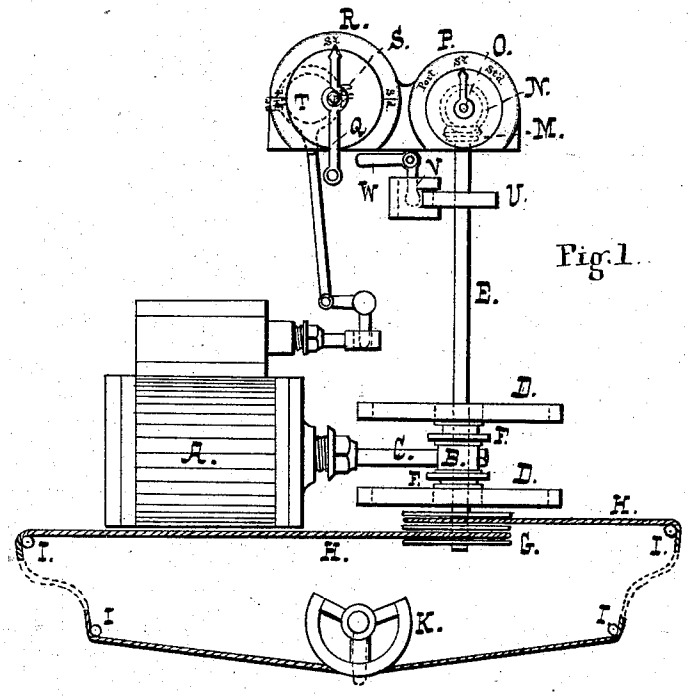


Fig. 1.

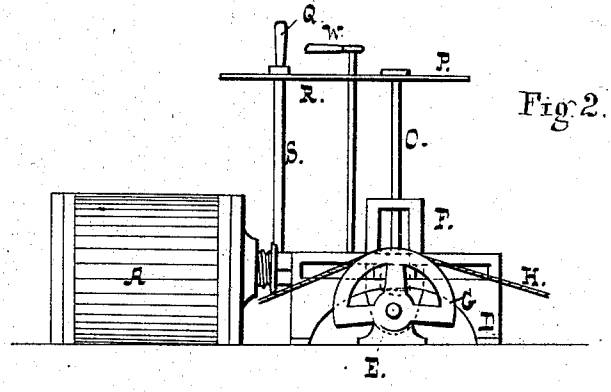


Fig. 2.

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UNITED STATES PATENT OFFICE.

JOSEPH W. WATSON, OF JARROW-ON-TYNE, COUNTY OF DURHAM, ENGLAND.

STEAM-STEERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 237,423, dated February 8, 1881.

Application filed October 5, 1880. (No model.) Patented in England November 16, 1878, in France September 9, 1879, and in Belgium July 15, 1879.

To all whom it may concern:

Be it known that I, JOSEPH WILLIAM WATSON, of Jarrow-on-Tyne, in the county of Durham, Kingdom of England, have invented certain new and useful Improvements in Steam-Steering Apparatus; and I hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a plan, and Fig. 2 an elevation, of the device.

The object of my invention is to produce, by suitable mechanical means, an almost instantaneous action upon the rudder of a vessel—a point of the highest importance in averting collisions in navigation.

In the accompanying drawings, A is a steam-cylinder, preferably fixed in a horizontal position beneath the bridge of the vessel. A cross-head, B, is fitted on the piston-rod C, and slides to and fro in the guides D. Underneath the guides is a shaft, E, on which is keyed a double crank, F, having suitable slots for the cross-head B to work in. The cross-head is provided with bearings in the slots in order to prevent its wearing oval. On the end of the shaft E is keyed a double-grooved segmental wheel, G, in which a chain or wire rope, H, works. This rope is carried through pulleys I, fitted inside the bulwarks, and is secured to a second segmental wheel, K, keyed to the rudder-post, the rope or chain being fitted with movable pins, and with a screw-coupling to tighten or slacken it, as required. If preferred, rods may be used in lieu of the chain, and also, in place of the double crank P, a single one may be applied by fixing on the free end of the piston-rod a clutch having straps for the attachment of the cross-head, so that the single crank works within the clutch. On the other end of the shaft E is a bevel-wheel, M, gearing with another wheel, N, on the end of the spindle O, which passes up through the dial-plate P, fixed in a convenient part of the bridge.

The dial R is lettered "Port," "Starboard," and "Steady," and the spindle S is furnished with a hand-lever and pointer, Q, so that by bringing the pointer over the required word the rudder is instantly placed in the desired position. This is effected by means of an eccentric, T, on the lower end of the spindle S, connected to the slide-valve of the cylinder, as shown.

I prefer to use an eccentric rather than a crank, as I have found it to work easier. Nevertheless a crank may be used to attain the same end. The parts are so arranged that when the pointer marks "starboard" or "port" the steam is turned on, and when at "steady" it is shut off, so that the rudder, if the vessel is under way, comes of its own accord into line with the keel.

It is obvious that the rudder may be brought to any desired intermediate position between amidships and hard a-port or starboard.

The dial-plate P serves as an indicator, automatically showing the exact position of the rudder. Its pointer is carried on a vertical spindle turned, as shown, by the wheels M N.

On the shaft E is a wheel, U, having notches in which a brake, V, works, the actuating-lever W of which is carried up through the bridge. Thus when the vessel is to be moved astern the rudder may be secured in any desired position.

When it is necessary to steer the ship without the aid of steam, as in the event of accident to the engine, the chain or rope is detached from the wheel G and is connected to an ordinary wheel by shackle or similar contrivance.

The minor details may be varied in many ways without departing from the spirit of the invention.

What I claim is—

1. In combination with the cylinder A, cross-head B, guides D, and double-slotted crank F, the revolving shaft E, segmental wheel G, and ropes H, arranged and operating substantially as set forth.

2. In combination with the cylinder, cross-head, guides, and double-slotted crank, the revolving shaft E, gear-wheels M and N, and dial P, as set forth.

3. In combination with the cylinder, cross-

head, guides, and double-slotted crank, the revolving shaft E, gear-wheels M N, and locking or brake mechanism U V, as set forth.

4. In combination with the shaft S, having eccentric T, the cylinder A, revolving shaft E, and intermediate mechanism for rotating the same, and the dials P R, substantially as set forth.

Witness my hand this 12th day of August, 1880.

JOS. WM. WATSON.

Witnesses:
THOS. WATSON,
GEORGE PEARSON.