J. MORGAN.

Device for Working the Rudders of Vessels.

No. 206,401. Patented July 30, 1878.

Fig 1

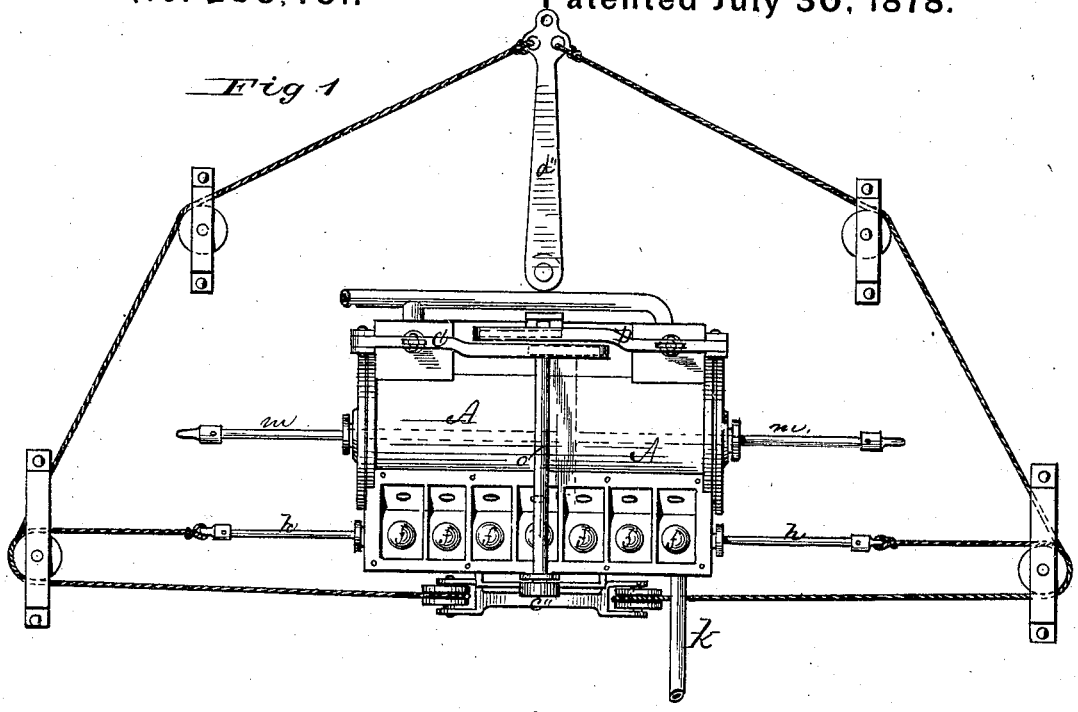


Fig. 2.

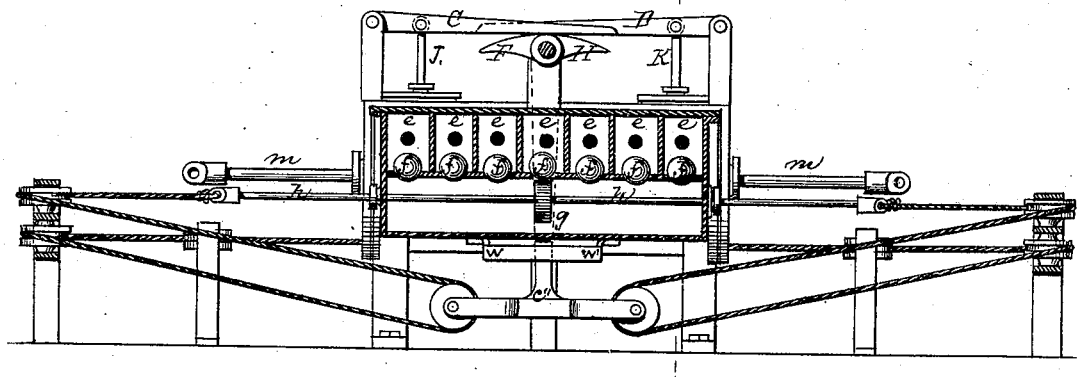
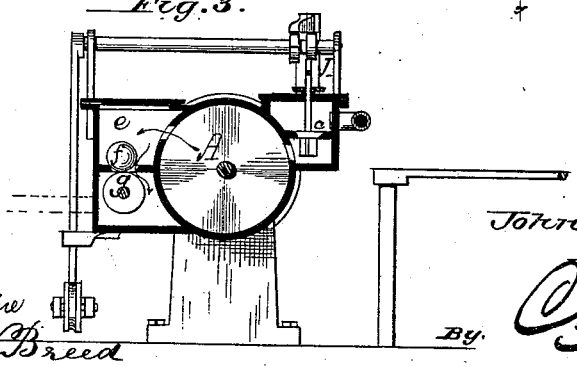


Fig. 3.



Attest,
H. L. Perrine
Daniel Breed

John Morgan.
Inventor.
By. Chas. Parks
Atty.

UNITED STATES PATENT OFFICE.

JOHN MORGAN, OF WHEELING, ASSIGNOR OF ONE-HALF HIS RIGHT TO S. BRADY MORGAN, OF OHIO COUNTY, WEST VIRGINIA.

IMPROVEMENT IN DEVICES FOR WORKING THE RUDDERS OF VESSELS.

Specification forming part of Letters Patent No. **206,401**, dated July 30, 1878; application filed January 22, 1878.

To all whom it may concern:

Be it known that I, JOHN MORGAN, of Wheeling, West Virginia, have invented a new and useful Device for Working Rudders of Vessels by Steam or Compressed Air, which invention is fully set forth in the following specification, in which—

Figure 1 is a plan view. Fig. 2 is a vertical view, partly in section. Fig. 3 is a transverse section on the line *x x*, Fig. 2.

The object of my invention is to furnish a device by which the rudders of vessels can be worked by steam or compressed air, and thus relieve the pilot of the severe manual labor.

My invention consists in operating the rudder of a vessel by a cylinder and piston, and the steam or compressed air admitted to said cylinder is regulated by the pilot-wheel by means of a series of valves, which will hereinafter be more fully described.

In the drawings, A represents the cylinder, in which is the piston. *c* is a puppet-valve, by which steam is admitted into the cylinder A. J and K are the stems of said valves, which are attached to levers C and D. F and H are arms, which raise the levers C and D, and raise the puppet-valves and admit steam to the cylinder. The arms F and H are operated by a rock-shaft, *o*, which is operated by the pendulum-like device *c''*, under direct control of the pilot-wheel or tiller *d''*.

Attached to the side of the cylinder A is a series of chambers, *e*, communicating into the cylinder, and also communicating with a lower chamber by means of the ball-valves *f*. Within the lower chamber is another piston and rod, *g* and *h*, the office of which piston is to raise the balls *f* in succession, and thus open a valve into the upper chamber. An exit-pipe, *k*, allows the steam from the lower chamber to escape.

A system of cords attached to the tiller *d''* passes over pulleys and operates the pendulum-like device *c''*, and thus the puppet-valves *c*, and likewise the rod *h* and piston or projection *g*, and thus the ball-valves *f*.

With this device the pilot may use the wheel the same as at present, if desired; but instead of working the rudder direct the pilot-wheel, on being turned, pulls lever *d''* either to stop *w* or *w'*, which limits the movement of the lever *c''*, thus admitting steam through the puppet-valves *c* into the cylinder either by the stems J or K. After lever *d''* has reached the stops *w* or *w'* the tiller-rope then commences to pull the rod *h* through the lower exhaust-chamber, raising whichever one of the ball-valves *f* that may be necessary.

To illustrate my invention, let me say if steam should be let into the cylinder at the left-hand end, by drawing the lever *d''* to the left the piston-head carrying the piston-rod to which the rudder-chains are attached would move until it had just passed the opening in the chamber, when the ball-valve *f* would be raised. The steam or compressed air would then escape from the chamber through the valve into the chamber below and relieve the pressure in the cylinder, and the piston would stop and hold the rudder. Should the rudder not be far enough, a farther movement of the pilot-wheel would draw the rod *h* along until it closed the ball-valve then open and open the next one. The pressure being thus restored upon the piston, it would move until it was again relieved by the next open ball-valve, carrying the rudder along just that distance. The point of relief being thus transferred one hole farther, the piston-head, and by it the rudder, follows. To change the position of the rudder, the pilot-wheel should be turned in an opposite direction, and the same effect will be produced. When power is released from the pilot-wheel the lever *d''* will assume its normal position, and shut off the steam and relieve the piston from pressure and save waste.

Exhaust-valves may be placed at the ends of the cylinder, to relieve any back-pressure, if necessary.

The projection *g* upon the rod *h* never allows more than one valve to be open at a time.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A steam-cylinder and piston operating the rudder of a vessel, in combination with a series of chambers containing valves to relieve the pressure in the cylinder, substantially as described.

2. The combination of the cylinder A, chambers *e*, provided with ball-valves *f*, and the lower exhaust-chamber provided with means for operating said valves, substantially as described.

3. The combination of the reciprocating projection *g* under the control of the pilot, by means of a system of ropes and pulleys, substantially as described, with a series of exhaust-chambers, *e*, provided with ball-valves *f*, substantially as set forth.

4. The combination of the lever *c''*, stops *w* *w'*, rod *h*, and a projection, *g*, with a series of ropes and pulleys and the lever *d''*, substantially as described.

JNO. MORGAN.

Witnesses:
HARRY YOUNG,
F. M. INGRAM.