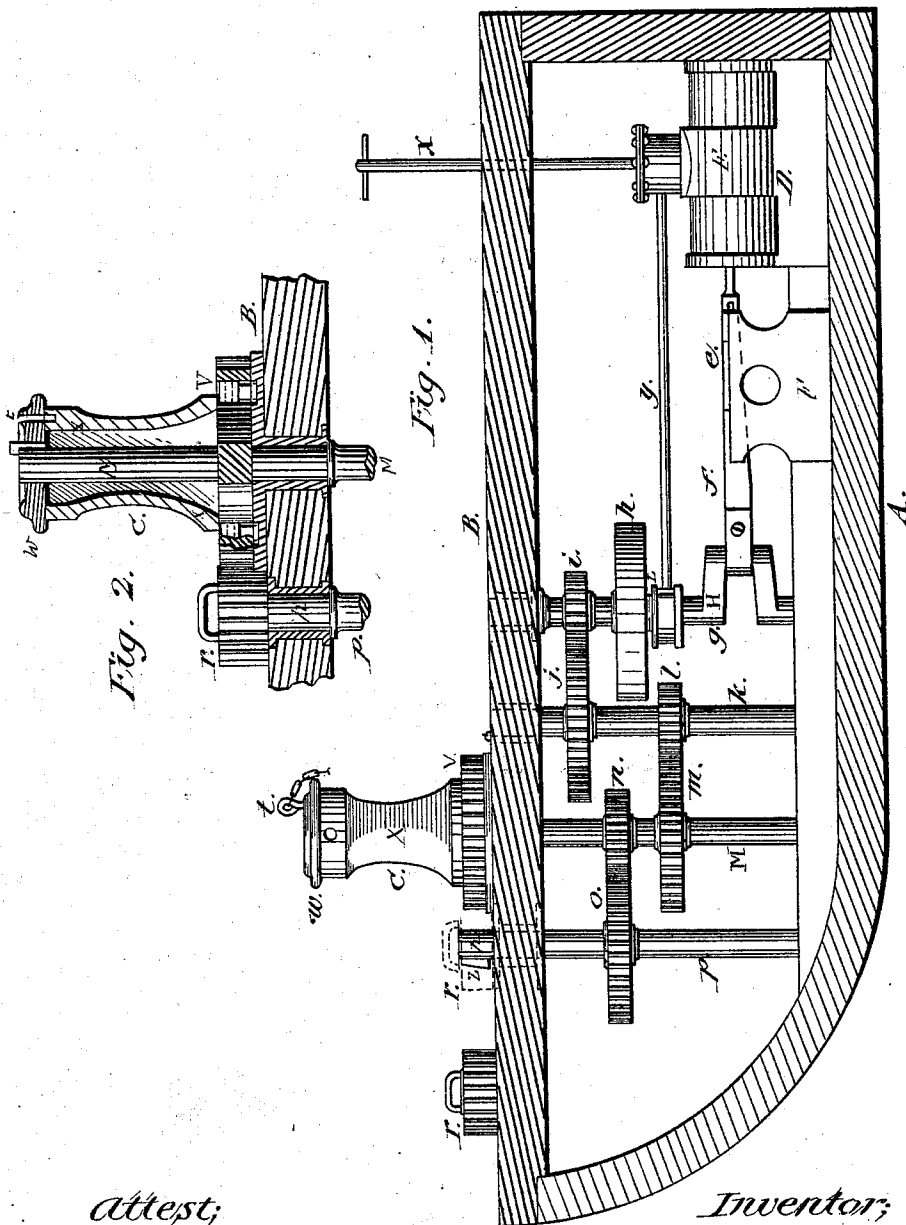


**J. REES.
Capstans.**

No. 150,790.

Patented May 12, 1874.



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UNITED STATES PATENT OFFICE.

JAMES REES, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN CAPSTANS.

Specification forming part of Letters Patent No. **150,790**, dated May 12, 1874; application filed August 2, 1873.

To all whom it may concern:

Be it known that I, JAMES REES, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Steam-Capstan; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

It is well known that the hulls of vessels almost invariably become bowed either athwart the beam or lengthwise. Particularly is this the case with vessels having shallow hulls and great proportionate breadth of beam, such as are employed upon the Mississippi river and its tributaries. Hence, any mechanism secured to the hull of such vessel, and dependent upon nice adjustment for its operation, is liable to be displaced and rendered useless, or endanger the safety of the vessel. To obviate these defects and overcome these difficulties is one of the objects of our present invention.

The invention relates to an arrangement for operating the capstan of a vessel; and consists in a number of vertical shafts properly journaled, and provided with gear-wheels and pinions meshing into each other, and actuated by a gearing on the engine-shaft, and arranged as near together as a proper operation will permit. Thus, if the hull sags, the displacement of the gearing and the bending or breaking of the shafts are practically avoided.

Figure 1 is a side elevation of the capstan C and appurtenances. Fig. 2 is a longitudinal vertical section of the hull of a vessel, showing a side elevation of a device embodying the elements of the invention.

A in the accompanying drawings is the hull of a vessel. B is the deck; E, the cylinder of an auxiliary engine mounted upon the bed-plate D, and provided with the valve-rod *x* for controlling the movement of the piston-rod. *e* is the piston-rod sliding upon the bed-plate F, and having its front end linked about the crank H of the engine-shaft *g*, which works in bearings in the deck and hull. Above the crank H is provided the recessed eccentric L, about which fits the yoke of the valve-rod *y*.

Above the eccentric L is secured the fly-wheel *p*, and above it the pinion *i* meshing into the vertical spur-gear wheel *j* secured near the upper end of the shaft *k* journaled in the hull and deck. Below the wheel *j* is secured the pinion *l* meshing into the spur-gear wheel *m* on the spindle or shaft M, the upper end of which extends through the deck and through a hole at the vertical axis of the spool X of the capstan, its upper extremity being rigidly secured at the center of the top-head *w* of the capstan C, which head is provided with apertures, through which the pins *t* may be passed into coincident apertures in the upper end of the spool X, thus securing the head and spool together, and insuring the movement of the capstan as the spindle M is rotated. Above the gear-wheel *m* is placed the pinion *n*, gearing into the gear-wheel *o*, mounted upon the shaft *p*, journaled into the hull, and working upon a bearing secured in the deck, above which the shaft extends, and is provided with a rigidly-secured vertical feather, Z, in that part of the shaft above the deck.

All the shafts and spindles are vertical, and in the present instance are placed in the same vertical plane; but they may be grouped or otherwise placed, as desired, it being only necessary that they stand vertically and in such position that the gearing mechanism will mesh. When arranged in groups it is expedient to mount the shafts upon bed-plates or heavy timbers. All the wheels gearing in the present instance are vertical.

From the above it is evident that no shrinkage or sagging of the hull or deck will affect the position of the shafts and gearing, which, therefore, obviates the dangers and defects first aforesaid.

Motion being communicated to the capstan-shaft M and the head *w* through the intermediate gearing, the spool X remains stationary until the pin *t* is inserted through the aperture in the head *w*, and into the aperture in the head of the spool, when it revolves with the head and spindle M, which is called the single-gear movement. To "double" the movement the pin *t* is removed and the pinion *r* placed upon the end of the shaft *p* above the deck, the feather Z entering a slot at its cen-

ter, which causes the pinion to rotate, and, meshing into the spur-gear V secured at the base of the spool X rotates it and greatly increases the tractive power of the device.

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

A series or group of vertical-gear shafts, arranged in juxtaposition and actuated by the

shaft of an engine, for the purpose of operating and in combination with the capstan, substantially as shown and described.

JAMES REES.

Witnesses:

A. C. JOHNSTON,

J. D. JONES.