

C. ROGERS.
CAPSTAN.

No. 190,623.

Patented May 8, 1877.

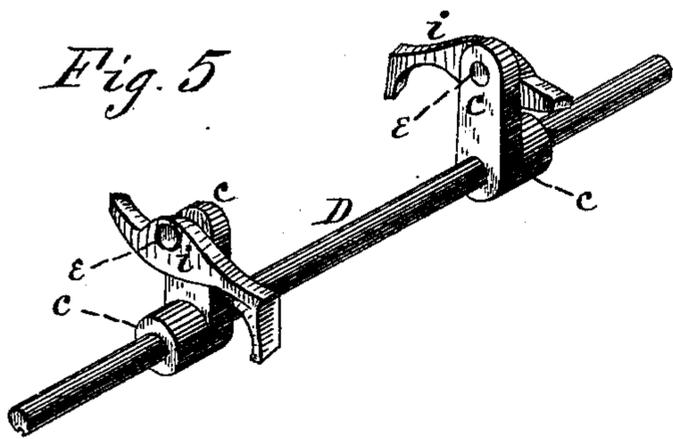
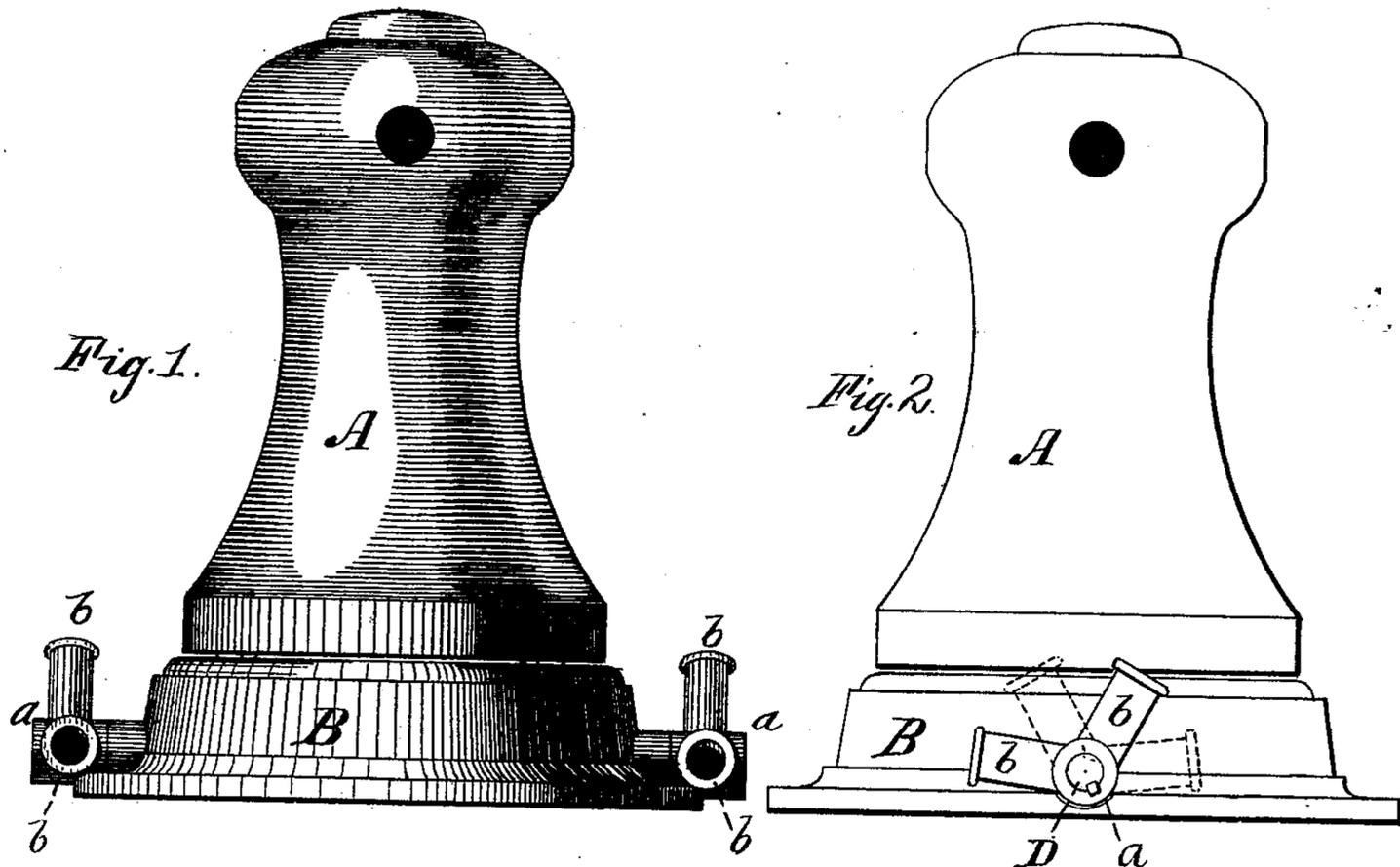


Fig. 6.

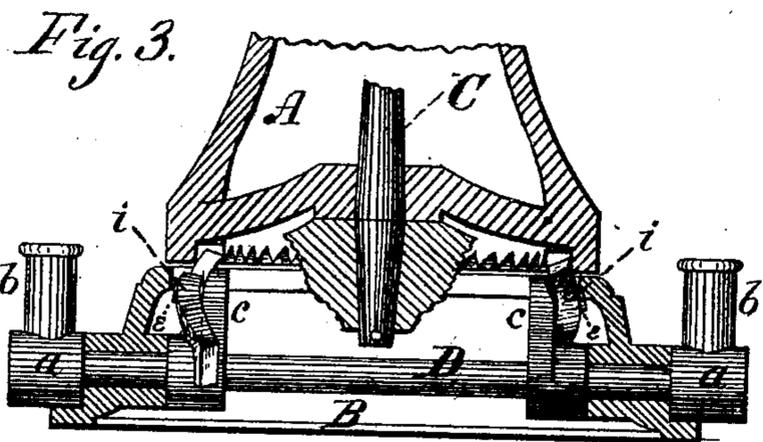
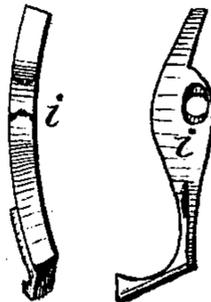
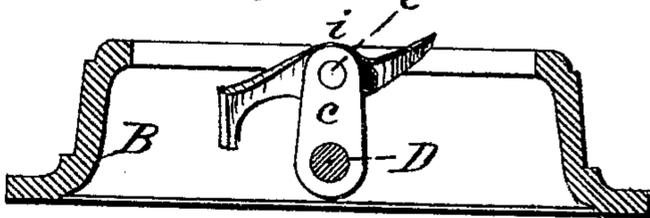


Fig. 4.



Witnesses

F. A. Pollock,
G. Smith

Charles Rogers, Inventor.

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UNITED STATES PATENT OFFICE

CHARLES ROGERS, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN CAPSTANS.

Specification forming part of Letters-Patent No. 190,623, dated May 8, 1877; application filed March 24, 1877.

To all whom it may concern:

Be it known that I, CHARLES ROGERS, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Capstans; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is an elevation; Fig. 2, another elevation. Fig. 3 is a vertical section of working parts from same point of view as Fig. 1. Fig. 4 is a vertical transverse section of base, at right angles to Fig. 3. Fig. 5 is a view of the shaft, cranks, and pawls. Fig. 6 is a detail.

This invention relates to improvements in capstans; and consists in the combination, with the winding-drum, of a horizontal shaft connected to the drum by pawls or other equivalent devices, whereby the motion of handspikes placed in sockets at right angles to axis of the shaft effects the winding of the upright drum; and it further consists in the construction and combination of parts, as hereinafter fully described and claimed.

The capstan is composed of three principal parts—the drum A, base B, and spindle C. These are the characteristics of all capstans. The spindle is double cone-shaped, and stepped in the center of a spider converging from the sides of base B; and the drum A is also provided with top and bottom bearings for the spindle, and turns upon it. The drum is also provided with the usual handspike-sockets in its head, in order that it may be used in the common way to take up slack in the cables, in such case speed rather than power being desired. At the bottom, inside the edge, the drum is constructed with an annular ratchet or crown face for the engagement of the pawls, which constitute the most preferable means of converting the revolution or rocking of the shaft into the winding of the drum. All the balance of the mechanism I locate in the base B, and is as follows: Passing through the base horizontally on a diametric line (massive bearings being

constructed for it) is a rock-shaft, D, which projects, at each end, beyond the periphery of the base. On this shaft, at each end outside base B, is firmly keyed a sleeve, *a*, carrying one or more handspike-sockets, *b*, set at right angles to the shaft's axis, but relatively to each other at any suitable angle.

To the shaft D, just inside the base B, are keyed two cranks, *c*, one at each side, and respectively at equal distances from the center of the base. At their upper ends the cranks *c* are each provided with an outwardly-projecting pin, *e*, which, instead of being exactly horizontal, inclines upwardly at its outer end, so that its axis dips downwardly, pointing toward the center of shaft D, or thereabout. On these pins are loosely fitted gravity-pawls *i*, which are of peculiar form. As they are retained in place by the wall of base B, it is obvious that, to insure an even and regular motion, they must conform to a circular line. On a plan view, therefore, the pawl presents a curved appearance, so that the point of the pawl in its path shall always follow the curvature of the ratchet on the bottom of the drum. The pawls are longer at the opposite end, so as to gravitate on that side, thus causing the other end to automatically follow the rise and fall of the ratchet-teeth on the drum. The cranks *c* are rounded off to allow the pawls to freely move in a circular path. To increase this freedom of motion the pin-hole in the pawl is reamed out to an ellipse at the sides, but converging to a circle at the middle. The two pawls are pointed in relatively opposite directions, and hence they exert their force in one single circular path. They are rounded on their upper edge, also. The base spider may be made so as to stop the cranks at the proper point, to prevent their going too far.

The operation is as follows: Handspikes being inserted in the sockets *b*, they are given a vertical rocking or pump-handle motion. This causes shaft D to rock and move cranks *c* from side to side. The effect on the gravitating-pawls is, that while one is pushing the drum around, the other is retreating for a fresh start; and when the rocking is reversed, the latter pushes the drum while the first pawl is recovering, and so on, giving an almost continuous movement to the drum. Con-

sidering the advantage of a vertical application of man-power, I have in this alone achieved a much more powerful effect than is possible by a horizontal push on the hand-spike, at the expense, however, of some speed.

By my invention I do away with the necessity of having the deck-hands tire themselves walking around the capstan, stumbling over cables, and slipping on the deck; more than this, the advantage obtained by the application of power in the vertical direction, for it is well known that a man can pull down four times the weight which he can push horizontally.

Having the horizontal shaft, it is obvious that the precise means of conveying its motion to the drum may be varied—as, for instance, the drum-ratchet might be a beveled crown, and beveled wheels be fitted to the shaft, and provided with clutches or cramps; or the ratchet mechanism might be on the socket-sleeves, and the pawls on the hand-spike or their sockets. I wish it distinctly understood that while I prefer the specific construction first above described, I do not limit myself to the single means of communicating motion from the horizontal shaft to the upright drum.

Having thus fully described my invention, I claim as new—

1. In a capstan, the combination of an upright drum and a single horizontal shaft passing through the base, and provided on each side of the capstan-center with devices, substantially as described, whereby every motion of the shaft effects the rotation of the drum in the same continuous direction.

2. The combination of base B and horizontal shaft D, provided with means, substantially as described, for converting the motion from reciprocating to rotary, with the drum A, having its bottom formed with an annular ratchet, all constructed and operating substantially as described.

3. The combination, specifically, of the horizontal shaft D, cranks *c*, pawls *i*, and drum A, substantially as set forth.

4. The combination, substantially as described, of the cranks *c*, inclined pins *e*, and curved pawls *i*, having the described bearings, whereby the pawls, throughout their path, will lie at right angles to a diameter and follow a circular path.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of March, 1877.

CHAS. ROGERS.

Witnesses:

A. V. D. WATERSON,
A. HANAUER.