

(No Model.)

S. T. RICHARDSON.

CAPSTAN.

No. 311,372.

Patented Jan. 27, 1885.

Fig. 1.

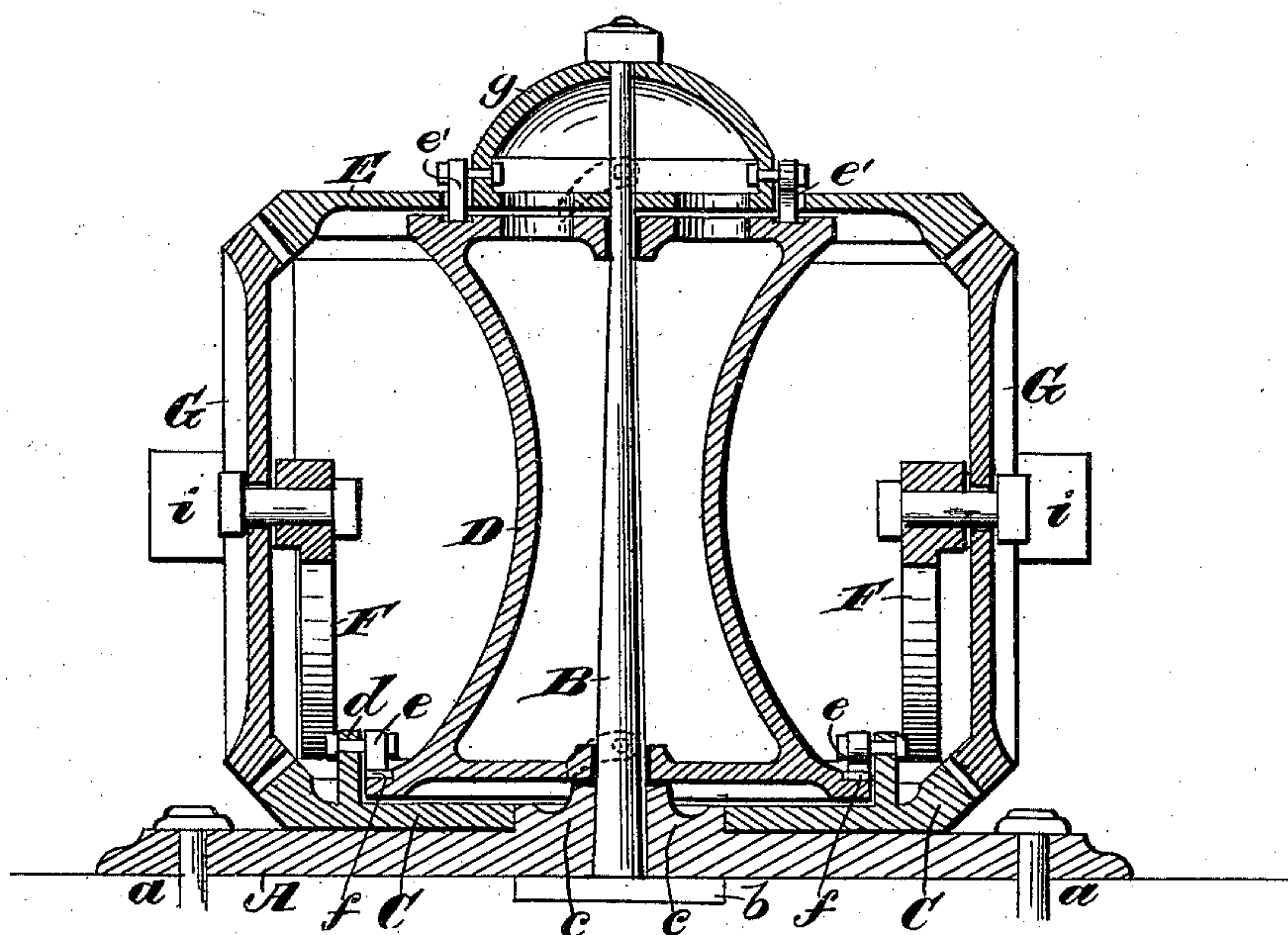
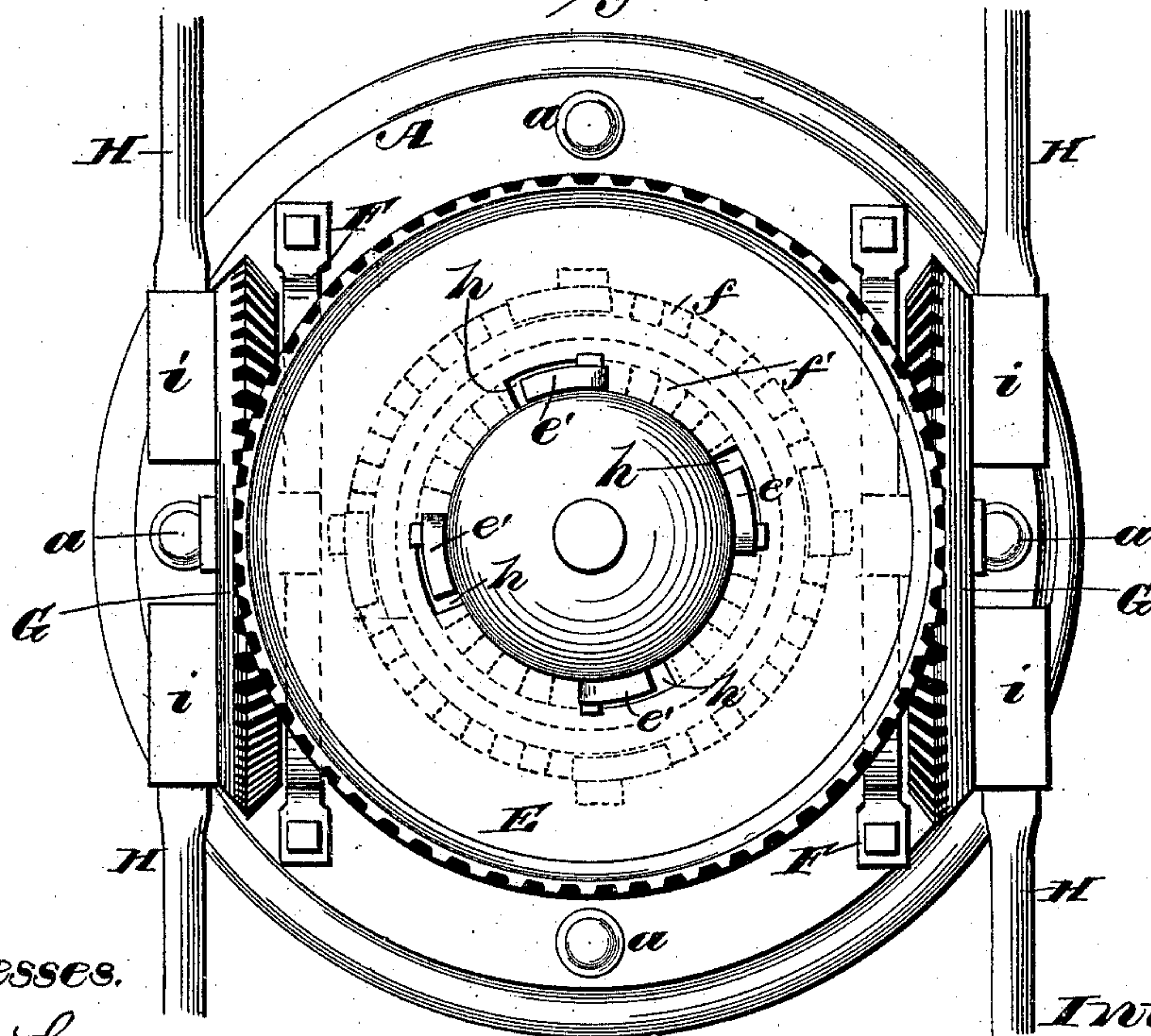


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

SAMUEL T. RICHARDSON, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE
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CAPSTAN.

SPECIFICATION forming part of Letters Patent No. 311,372, dated January 27, 1885.

Application filed June 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL T. RICHARDSON, a citizen of the United States, residing at Baltimore, Maryland, have invented new and useful Improvements in Capstans, of which the following is a specification.

This invention relates to mechanism for imparting a continuous rotary movement to ships' capstans by the oscillations of a system of gearing that incloses the capstan at each end and on the sides, whereby a greatly-increased leverage is obtained at top and bottom, so that the capstan can be worked with the expenditure of less power than is ordinarily required.

The invention consists in the combination, with a capstan-barrel loosely mounted on a vertical spindle and having ratchet-teeth at each end, of a pair of beveled gears that are mounted loosely above and below said barrel in horizontal planes and provided with pawls for engaging with the ratchets, and a pair of vertical gears that are also loosely mounted and arranged to mesh with said horizontal gears, the vertical gears being provided with actuating-levers, whereby an oscillating movement of the several gears is converted into a continuous rotary movement of the capstan.

In the annexed drawings illustrating the invention, Figure 1 is a sectional elevation of my improved capstan, and Fig. 2 is a top view of the same.

The letter A designates a base-plate that is firmly secured to the deck by bolts *a a*. Through the center of this plate passes a standard or cylinder, B, that is cast with a foot, *b*, which may be countersunk in the deck beneath the base-plate. The center of this base-plate is formed with a hub, *c*, that serves as an axis for a horizontal bevel-gear, C, having a vertical annular flange, *d*, to the inner side of which are pivoted a number of pawls, *e e*, for engaging an annular series of ratchet-teeth, *f*, that are arranged on a horizontal flange at the base of the capstan-barrel or windlass D. The windlass or capstan-barrel D is journaled on the spindle B, which also serves as a pivot for an upper horizontal gear, E, that is provided with a cap or dome, *g*. To the outer side of this cap or dome, the lower part of which is formed with vertical walls,

are pivoted a number of pawls, *e e'*, that engage through openings *h* in the gear E with ratchet-teeth *f'*, arranged in an annular series on the top of the capstan-barrel. It will be observed that the pawls *e* and *e'* are all arranged to point or work in the same direction.

To the opposite sides of the base-plate A are secured brackets F F, to which are pivoted the vertical intermediate gears, G G, by which an oscillatory motion is imparted to the upper and lower horizontal gears, E C, which, by the alternate engagement of their pawls with the ratchets *f f'*, urge the capstan-barrel or windlass forward with a continuous rotary movement. The vertical gears G G are oscillated by means of levers H H, detachably inserted in sockets *i i* on the outer sides of said gears, each vertical gear being preferably provided with two levers. These levers are worked so as to oscillate their respective gears reciprocally—that is, when one gear G is turned to the right the other gear G is turned to the left, and both vertical gears being meshed with the horizontal gears C E, a corresponding reciprocal movement is communicated to the latter. Now, as the lower horizontal gear, C, for instance, is moved forward its pawls *e* will engage by gravity with the ratchet-teeth *f* in the lower part of the capstan-barrel D, thereby causing said barrel to turn on the spindle or axis B. While this is being accomplished the upper gear, E, will be turning back and its pawls *e'* will be slipping back over the ratchet-teeth *f'* at the top of the barrel for a new hold. Then as the movements of the levers H H are reversed the gears on opposite sides exchange functions, and the upper one, E, goes to work to urge the barrel D forward, while the lower one, C, takes a new hold. A continuous rotary movement in either direction can thus be readily imparted to the capstan-barrel with much less power than is usually required.

Having thus described my invention, what I claim is—

1. The combination, with a capstan-barrel, of mechanism for converting an oscillatory movement into a continuous rotary movement, said mechanism consisting of loosely-pivoted gears arranged to inclose the capstan-barrel on four sides, and two of said gears being pro-

vided with pawls adapted to engage alternately with ratchets on the barrel, substantially as described.

2. The combination, in a capstan, of a rigid
5 base-plate having a vertical spindle and a pair of bracket-bearings, a capstan-barrel mounted loosely on said spindle and provided with an annular ratchet at each end, a pair of horizontal gears loosely mounted on the spindle and carrying pawls adapted to engage with
10 the ratchet, and a pair of vertical gears pivoted in the bracket-bearings and arranged to mesh with the horizontal gears, said vertical gears being provided with actuating-levers,
15 substantially as described.

3. The combination of the base-plate A, having hub *c*, the spindle B, loosely-mounted barrel D, having ratchets *f f'*, horizontal gears C E, provided with pawls *e e'*, and the vertical gears G G, having levers H H, whereby an oscillatory movement of the gears is converted into a continuous rotary movement of the capstan-barrel, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing
witnesses. 25

SAMUEL T. RICHARDSON.

Witnesses:

A. H. NORRIS,
JOS. L. COOMBS.