A. RUSSELL.

Capstan.

No. 167,693. Patented Sept. 14, 1875.

Fig. 1.

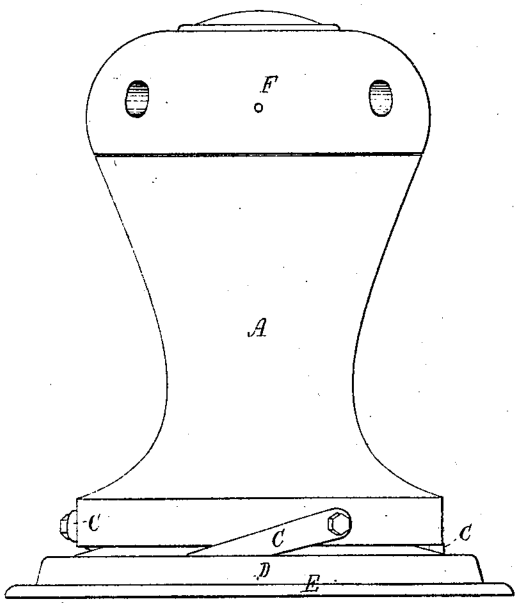


Fig. 2.

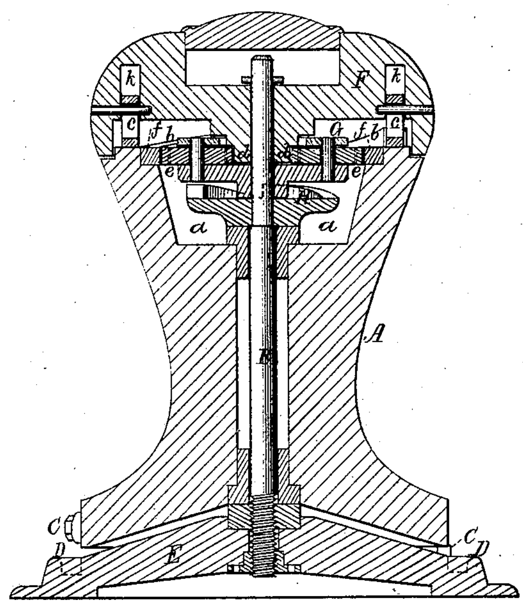


Fig. 3.

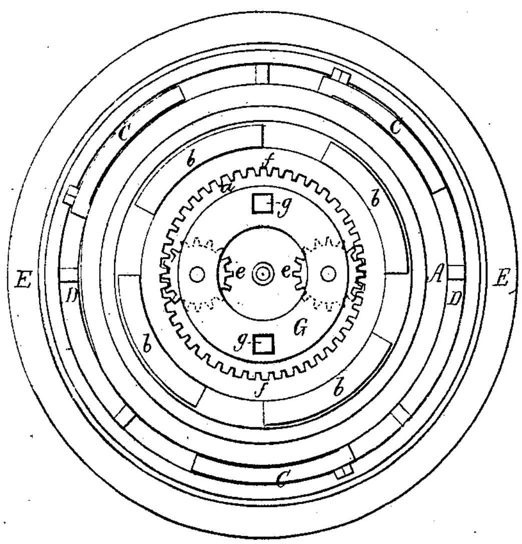


Fig. 5

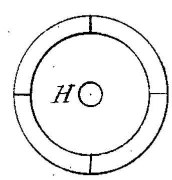


Fig. 6.

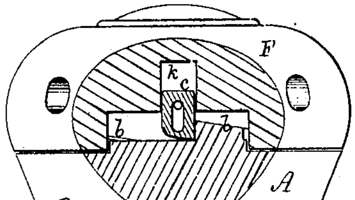
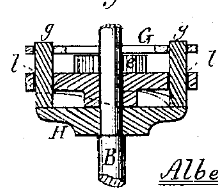


Fig. 7.

Fig. 4



Witnesses.

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UNITED STATES PATENT OFFICE.

ALBERT RUSSELL, OF NEWBURYPORT, MASSACHUSETTS.

IMPROVEMENT IN CAPSTANS.

Specification forming part of Letters Patent No. **167,693**, dated September 14, 1875; application filed June 1, 1875.

To all whom it may concern:

Be it known that I, ALBERT RUSSELL, of Newburyport, of the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Capstans; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side elevation, and Fig. 2 a transverse section, of a capstan having my invention. Fig. 3 is a top view with the head removed. Fig. 4 is a transverse section of the pawl case or wheel, it being taken through the pawls thereof. Fig. 5 is a top view, and Fig. 6 a side view, of the stationary ratchet-wheel with which the pawls or lugs of the pawl-wheel operate. Fig. 7 is a section of the head, taken through one of its pawls or lugs.

My invention relates to or consists in a special combination of mechanical devices to cause the barrel of the capstan to revolve in one direction, whether the capstan-head be revolved in one way or the opposite.

In the said drawings, A represents the body or barrel of the capstan, as arranged concentrically on an upright shaft, B, and provided at its lower part with a series of pawls, C C, to engage with a horizontal ratchet, D, of a base, E, from whose center the shaft B extends perpendicularly. The barrel of the capstan is chambered in its upper part, as shown at *a*, and has upon its top a series of ratchet-teeth, *b b b b*, arranged, as shown, to-co-operate with two vertically-sliding lugs or pawls, *c c*, arranged in the capstan-head F, so as to freely play or move up and down thereon. The said head is free to revolve on the shaft B, and is provided with a pinion or gear, *d*, fixed to it, so as to revolve with it. This pinion extends into a wheel or rotary pawl-case, G, arranged concentrically with the said pinion, and applied to the shaft B, so as to be capable of freely revolving thereon. The pinion engages with one or two gears, *e e*, carried by and projecting from the rotary case or wheel G, and made to engage with an internal gear, *f*, fixed on the upper part of the capstan-barrel. Two pawls, *g g*, beveled at their lower ends, slide freely and vertically within the case G, and engage with a stationary ratchet-wheel, H, which is fixed on the shaft B, and arranged as represented.

On revolving the head F, so as to carry its pawls *c c* against the vertical ends of two of the teeth, *b*, the capstan-barrel will be revolved directly by the head, and in the same way with it; but, by revolving the head in the opposite direction, the pawl case or wheel G, by its pawls *g g* and the ratchet-wheel H, will be stopped from revolving. As a consequence the capstan-barrel, by the train of gears, will be revolved in a direction opposite to that of the head, or in the same direction the said barrel was previously revolved by the head, its pawls, and ratchet-wheel.

By having the pawls of the wheel G, or the capstan-head, slide or play vertically therein, there is no necessity of pivoting them thereto, and thus we avoid the danger of pivots being cut off or broken under great strain of the capstan-barrel, the pawls being supported in and by vertical chambers *k l* made in the capstan-head and in the pawl-case.

Each of the said pawls *c* is slotted vertically, and held from dropping out of its chamber by the slot and a pin going through the slot and into the head F, the same being shown in Fig. 7.

In my capstan it will be seen that there is a ratchet-wheel, H, fixed directly to the shaft B and under the frame G, to which latter pawls *g g* are applied to operate with the ratchet, all of which differs from anything shown in either of the United States Patents Nos. 58,069, 51,107, and 98,032, and is productive of new and useful results. Furthermore, I have the vertically-sliding pawls, slotted, and held in their chambers by pins going through the slots, which is not shown in either of said patents. The pawls are always connected with the head, even when it may be off the barrel.

I am aware that in the head of a capstan locking-bolts furnished with inclined lifters have been used, such being to engage the head with the barrel, notched or recessed on its upper end to receive such bolts, all of which differs from the pawls *c* and ratchet-teeth *b*, which automatically operate to engage the head and barrel, and disengage the two, for

when the head is turned one way engagement of it with the barrel takes place, and when such head is revolved the other way a disengagement of it and the barrel follows. Thus my combination of parts presents a feature or features not found described or shown in the United States Patent No. 139,872, wherein a capstan is represented as having its head provided with locking-bolts, to be operated by lifters moved by hand.

I claim—

For effecting rotary motions of the barrel, as described, the combination applied to the capstan-head F, barrel A, and shaft B, and consisting of the gear *d* and one or more pawls, *c*, applied to the head, the wheel G, its gear or gears *e*, and one or more pawls, *g*, the stationary ratchet-wheel H, fixed to the shaft B, and the internal gear *f* and the range of ratchet-teeth *b* applied to the barrel, all being arranged substantially as specified.

ALBERT RUSSELL.

Witnesses:
R. H. EDDY,
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