T. W. HYDE.

REVERSE-POWER CAPSTAN.

No. 187,282. Patented Feb. 13, 1877.

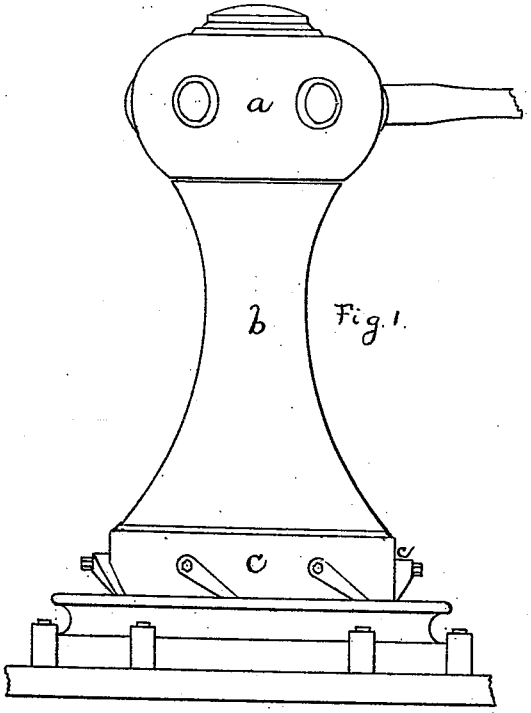

Fig. 1.

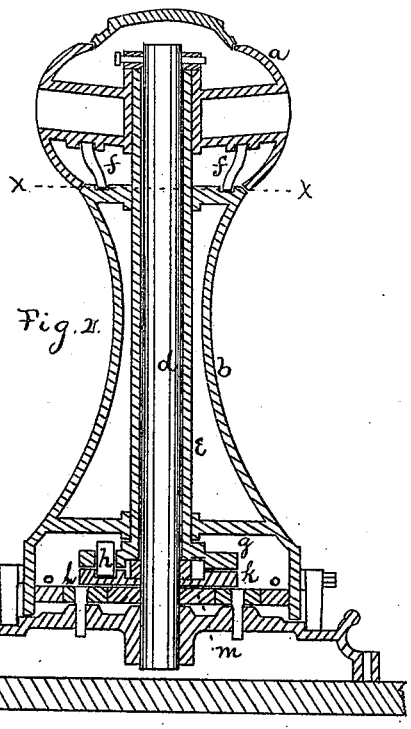

Fig. 2.

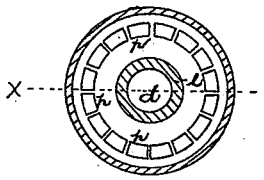

Fig. 6.

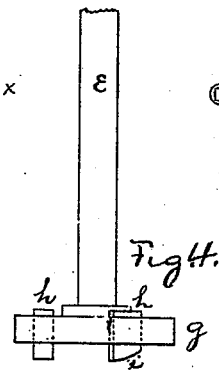

Fig. 4.

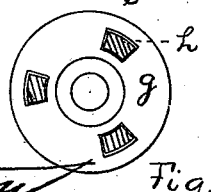

Fig. 5.

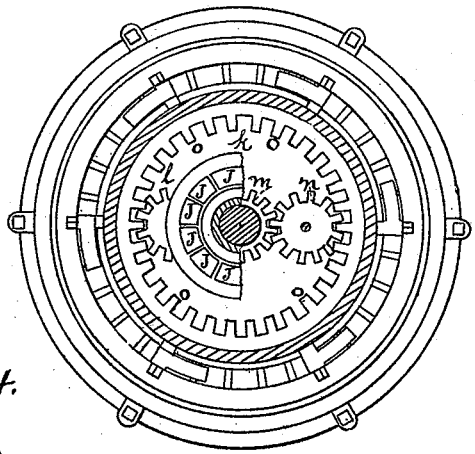

Fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS W. HYDE, OF BATH, MAINE.

IMPROVEMENT IN REVERSE-POWER CAPSTANS.

Specification forming part of Letters Patent No. **187,282**, dated February 13, 1877; application filed June 19, 1876.

To all whom it may concern:

Be it known that I, THOMAS W. HYDE, of Bath, in the county of Sagadahoc and State of Maine, have invented certain new and useful Improvements in Reverse-Power Capstans; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and on the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation. Fig. 2 is a vertical transverse section. Fig. 3 is a plan of the base, showing the arrangement of the gears. Fig. 4 is a side view of the sleeve with its bottom and keys. Fig. 5 is a top plan of the bottom part of Fig. 4. Fig. 6 is a cross-section taken on the line *x x* of Fig. 2.

Same letters show like parts.

a shows the head. *b* is the barrel. *c* is the base. *d* is the spindle. *e* is the sleeve.

My capstan has two motions. In one the head and barrel revolve in the same direction with the same velocity. In the other in opposite directions and with different velocities. In this last motion an increase of power is obtained with the loss of speed in the revolution of the barrel.

I will first explain how the motion of the head and barrel is produced when rotating in the same direction. From the interior of the head *a* are suspended pawls *f*. The lower ends of these match into a rack or teeth on the top of the barrel. Thus, when the head is turned in one direction it carries the barrel with it at the same speed. When the head is revolved in the opposite direction these pawls *f* slide over the teeth on the top end of the barrel, and have no effect upon its motion. The pawls are pivoted at their upper ends to the head *a*, as indicated in Fig. 2. When this motion is taking place the sleeve *e* is revolved by means of a small projection on the inside of the hole in the head, fitting into a slot in the sleeve. This rotation of the sleeve carries with it the bottom part *g*, which is rigid on the sleeve. But this motion is in such direction that the keys *h*, having the inclined bottom surface *i*, slide up over the inclined surfaces of the teeth *j* on the disk *k*, thus imparting no motion to said disk or to the internal gears *l m n*.

When the head *a* is revolved in a direction opposite to the one above described, the barrel *b* then rotates in a direction contrary to the head. This is effected as follows: This rotation, like the former one, causes the rotation of the spindle *e*, and its base or bottom part *g*. The direction of the revolution, however, is such that the straight edges of the keys *h* strike the vertical edges of the teeth *j* on the disk *k*, thus imparting rotation to the disk and to the gear *m*, which revolves with it. This gear matches with the gear *l* and *n*, and they in turn with the gear *o* on the interior of the barrel *b*. Thus a motion is imparted to the barrel which is the reverse of the one given to the head, and also a slower motion, but with a given weight to be moved. The head *a* is revolved with much less expenditure of power that when the head and barrel are turned in the same direction. Gear *o* is, of course, rigidly connected with the barrel *b*. When the head and barrel revolve in the same direction the keys *h* rise through the holes in the base *g*, Fig. 5, as they pass over the teeth on *k*. *d* is the central spindle, around which the devices revolve. *p* shows the teeth to receive the pawls *f* on the top of the barrel *b*.

It will be seen from this description that the capstan is automatic in its operations. When the head *a* is turned one way the simple and same motion of *a* and *b* is produced. When *a* is turned in the other direction the gain of power and difference in velocity and revolution are produced.

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

The combination of the head *a*, having the pivoted pawls *f*, with the barrel *b*, slotted sleeve *e*, disk *g*, keys *h*, and tooth-plate *k*, the said keys, when the head is revolved in one direction, and when the barrel *b* and sleeve *e* are in revolution, sliding up over the teeth *j*, as herein

described, so that the barrel *b* may revolve in the same direction with the head *a*, the said keys being so arranged as also to be capable, when the head is revolved in the other direction, of coming in contact with the vertical edges of the teeth *j*, and producing revolution of the gears *l m n o*, placed in the bottom of the capstan, and the revolution of the barrel, as described.

In testimony that I claim the foregoing as my own I affix my signature in the presence of two witnesses.

THOMAS W. HYDE.

Witnesses:
G. T. LEMONT,
F. J. HAMILTON.