

J. Edson,

Capstan.

N^o 57,302.

Patented Aug. 21, 1866.

Fig. 1.

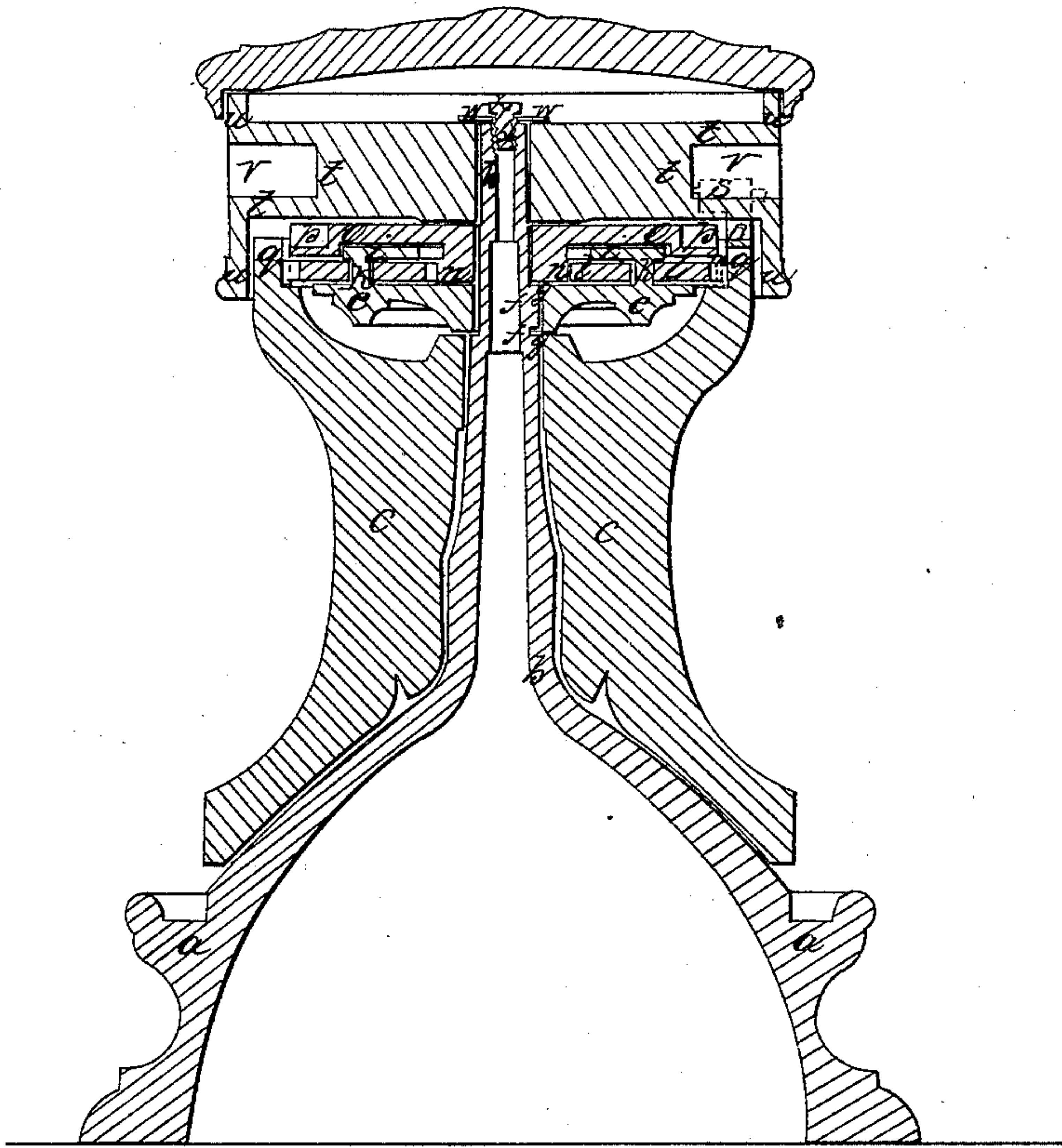


Fig. 2.

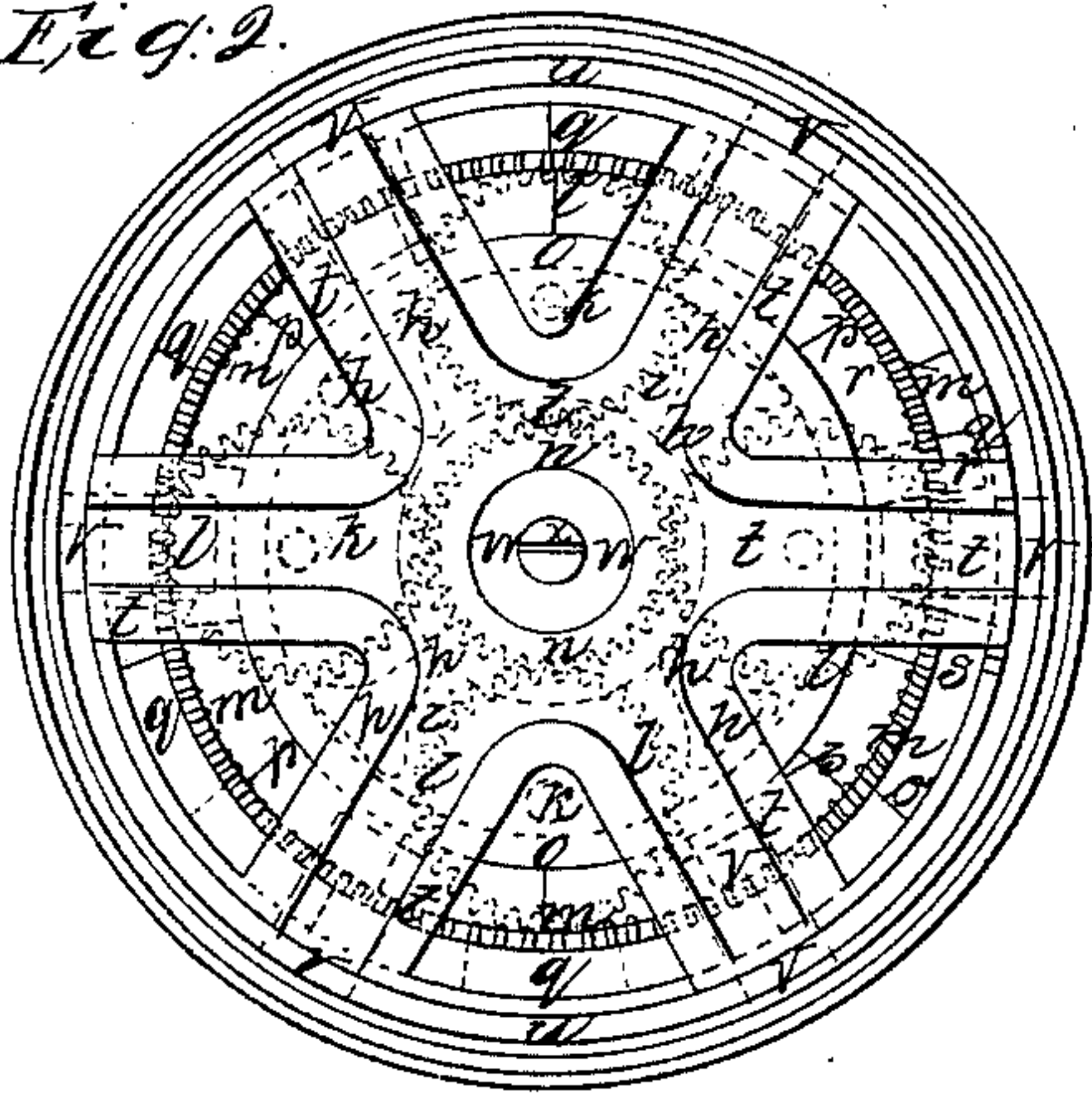
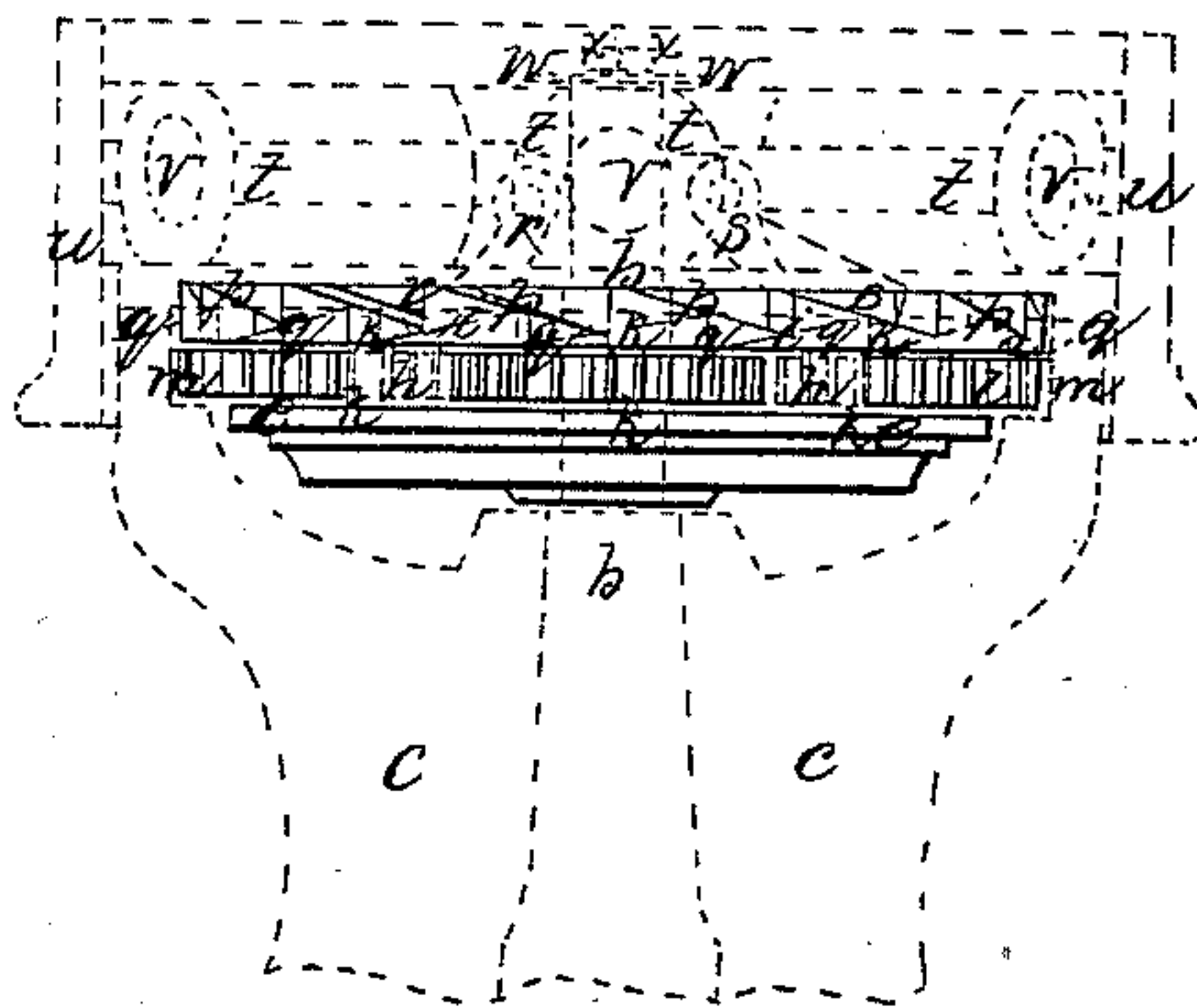


Fig. 3.



Witnesses.

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IMPROVED CAPSTAN.

Specification forming part of Letters Patent No. 57,302, dated August 21, 1866.

To all whom it may concern:

Be it known that I, JACOB EDSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Capstans; and I do hereby declare that the following description, taken in connection with the accompanying plate of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The present invention relates to certain new and useful improvements in capstans, and has for its object the arrangement of its several devices in such a manner as to produce a capstan more perfect in its operation, more economical in its wear and cost, and more satisfactory in its general use than those heretofore employed.

My improvements consist—

First, in forming the head in which the running-gears are placed and held in two disks, united by sustaining-bridges, the two disks being cast and united so as to form one piece.

Second, constructing the ratchet and gear plate and the gear that engages with the other gears in one piece—that is, so that they do not have to run independently of each other, and so as to make the communication direct. This can be done by bolting, casting, or otherwise.

Third, casting the base and shaft or spindle of the capstan hollow and in one piece, by which means all liability of the shrinking and cracking of the shaft or spindle when cooling, after being cast, is prevented. Moreover, a wrought-iron spindle requires a very heavy base of cast-iron to receive it, is cumbersome and expensive, and the base, containing such a weight of metal, is liable to the same objection of shrinking and cracking.

I will now proceed to describe in detail the arrangement and operation of my improved capstan.

The accompanying plate of drawings represents my improvements.

Figure 1 is a central vertical section of my improved capstan. Fig. 2 is a top view of the

same with the cap removed; and Fig. 3 is a detail view, showing the gears, &c.

a a a in the drawings represent a base, and *b b* the shaft or spindle, of a capstan, cast in one piece, and formed hollow and of the shape shown in Fig. 1. Over the shaft or spindle *b b* is placed an outer case or body, *c c*, of a capstan, the inside of the lower portion of which is formed of a conical shape to correspond with the bottom of the spindle *b b*, over which it revolves. Through the center or hollow portion of the case *c c* the shaft or spindle *b b* passes. The upper portion of the body or case *c c* is so formed as to receive a disk or plate, *e e*, which passes over the shaft or spindle *b b*, and is prevented from turning thereon by means of a stop-piece, *f f*, formed on the shaft *b b*, fitting into a slot, *g g*, formed in the inner periphery of the disk or plate *e e*.

Connected with the plate *e e*, by means of bridges *h h*, is a ring or plate, *i i*, the plates *e e* and *i i* and the bridges *h h* being cast in one piece. Between the two plates *e e* and *i i*, revolving on pivots *k k*, attached to the said plates, is a series of gear-wheels, *l l*, which engage with a rack, *m m*, formed on the inner circumference of the upper part of the case or body *c c*, and also with a gear-wheel, *n n*, which passes through the opening formed by the ring or plate *i i*, and is formed onto the bottom of a disk or plate, *o o*, on the upper portion of whose circumference ratchets *p p* are formed. On the top of the outer rim of the case or body *c c* ratchets *q q* are also formed. Engaging with the ratchets *p p* and *q q*, which operate in opposite directions to each other, are pawls *r r* and *s s*, pivoted to each side of an arm, *t t*, which forms one of a series of arms, *t t*, connected with a circular band, *u u*, that extends over and revolves round the top of the case or body *c c*. Apertures *v v* are formed through the circumference of the band *u u* and in the ends of the arms *t t*, for the admission of levers for operating the capstan. The shaft *b b* extends up through the several plates to the top of the arms *t t*, where it is held by a washer, *w w*, and screw *x x*, or by any other suitable devices, the arms *t t* and ratchet-plate *o o* and gear *n n*, as well as the case or body *c c*, being allowed to revolve freely upon the said shaft or spindle *b b*.

The pawl-seats formed in the under side of the arm *t t*, on each side of the apertures *v v*, are so arranged that long bearings are given to the pawls *r r* and *s s*, thus increasing their strength, keeping them in correct position, and at the same time allowing them to play freely in the said seats.

By the foregoing description, reference being made to the drawings, it will be seen that when power is applied to the arms *t t* the pawls *r r* and *s s* engage with or are disengaged from the ratchets *p p* and *q q*, according to the direction in which the arms *t t* are turned. For example, by turning the arms *t t* to the right the pawl *r r* engages with the ratchets *p p* of the plate *o o*, and the pawl *s s* is consequently freed from the ratchets *q q*, which are formed at an opposite angle with the ratchets *p p*, thereby revolving the plate *o o* and the gear-wheel *n n*, which revolves the gear-wheels *l l*, that engage with the rack *m m*, and rotates the case or body *c c* of the capstan, thus increasing the power of the capstan and lessening the exertion required in its operation.

By turning the arms *t t* in an opposite direction the pawl *s s* engages with the ratchets *q q*, and the pawl *r r* is loosened from the ratchets *p p*, and the power is directly communicated to the case or body *c c* of the capstan, as in ordinary cases, thereby increasing the speed and diminishing the power with which the capstan is operated.

By turning the arms *t t* a little way back and forth in each direction the capstan may be operated by a person standing in one position without the necessity of his traveling around it.

Formerly, in changing the operation of a power-capstan to that of a simple one, it was necessary to disconnect the gears, which, from want of use, were liable to rust or become otherwise inoperative. By my improvements

the gears are used either way the capstan is operated, and are therefore kept in constant working order.

It will be observed that there can be no strain on the bearings of the gears *l l*, because they are wholly independent of the confining-plates *e e* and *i i*, in which they run; whereas, if they were bolted, as usual, between two plates, (the bolts forming the journals of the gears,) the plates would be liable to spring and warp and throw the journals out of position; but at the same time it is evident that an upper and lower bearing are necessary to form bearings to the surface of the gears to keep them in their horizontal position or play, which the above-described arrangement secures.

Having thus described my improvements, I shall state my claims as follows:

What I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. The combination of the pawls *r r* and *s s*, so arranged as to operate in opposite directions with each other, with the ratchet or toothed plate *o o* and ratchets *q q*, as hereinabove described, and for the purpose specified.

2. In a capstan, forming the head in which the running-gears are placed in two disks, united by sustaining-bridges, the two disks being united so as to form substantially one piece, as specified.

3. In a capstan, constructing the ratchet or toothed plate *o o* and gear *n n* in one piece, as described.

4. In a capstan, casting the base *a a* and shaft or spindle *b b* hollow and in one piece, as specified.

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Witnesses:

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