

D. F. MOSMAN.

Machine for Producing Rotary Motion.

No. 133,999.

Patented Dec. 17, 1872.

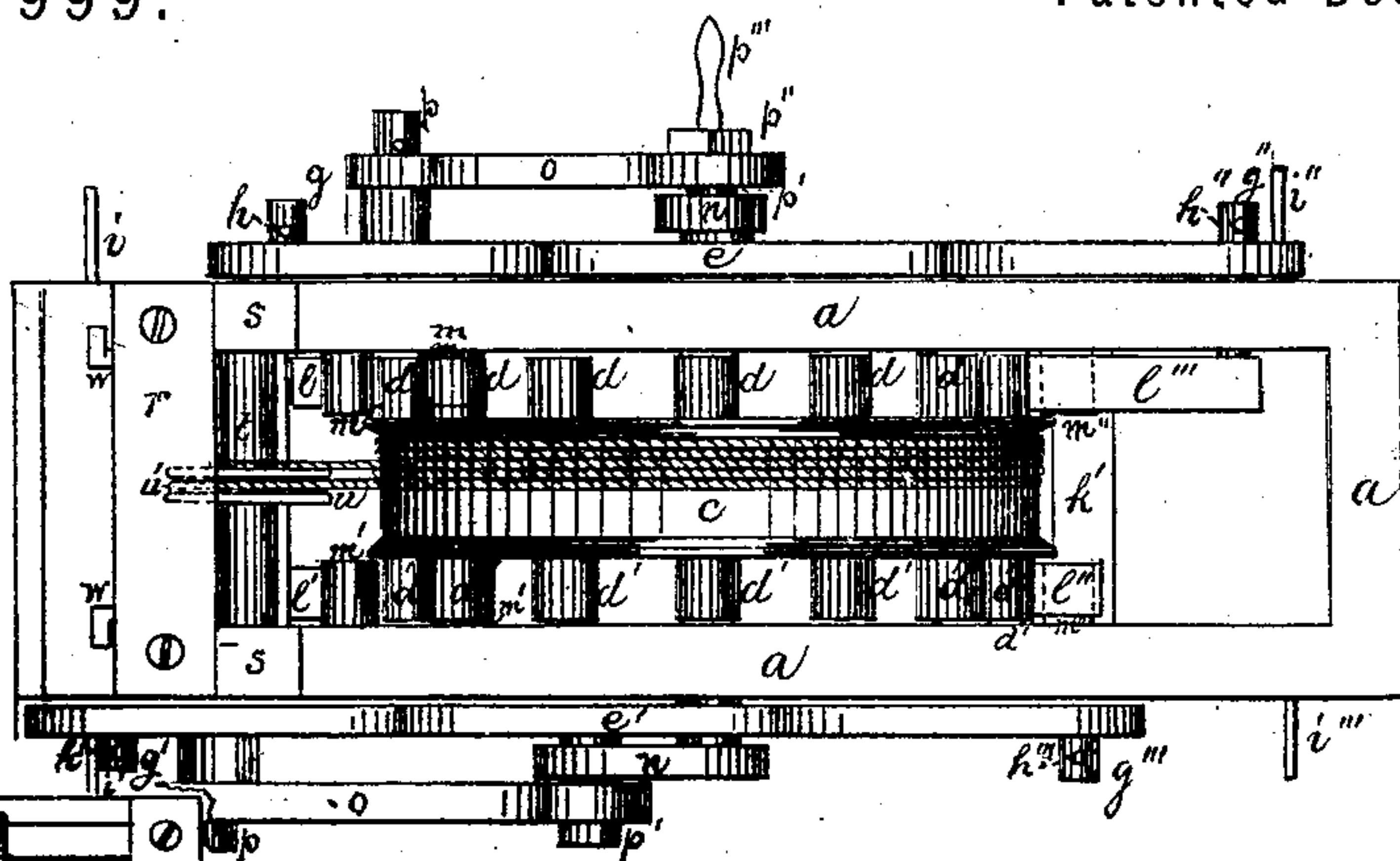


Fig. 1

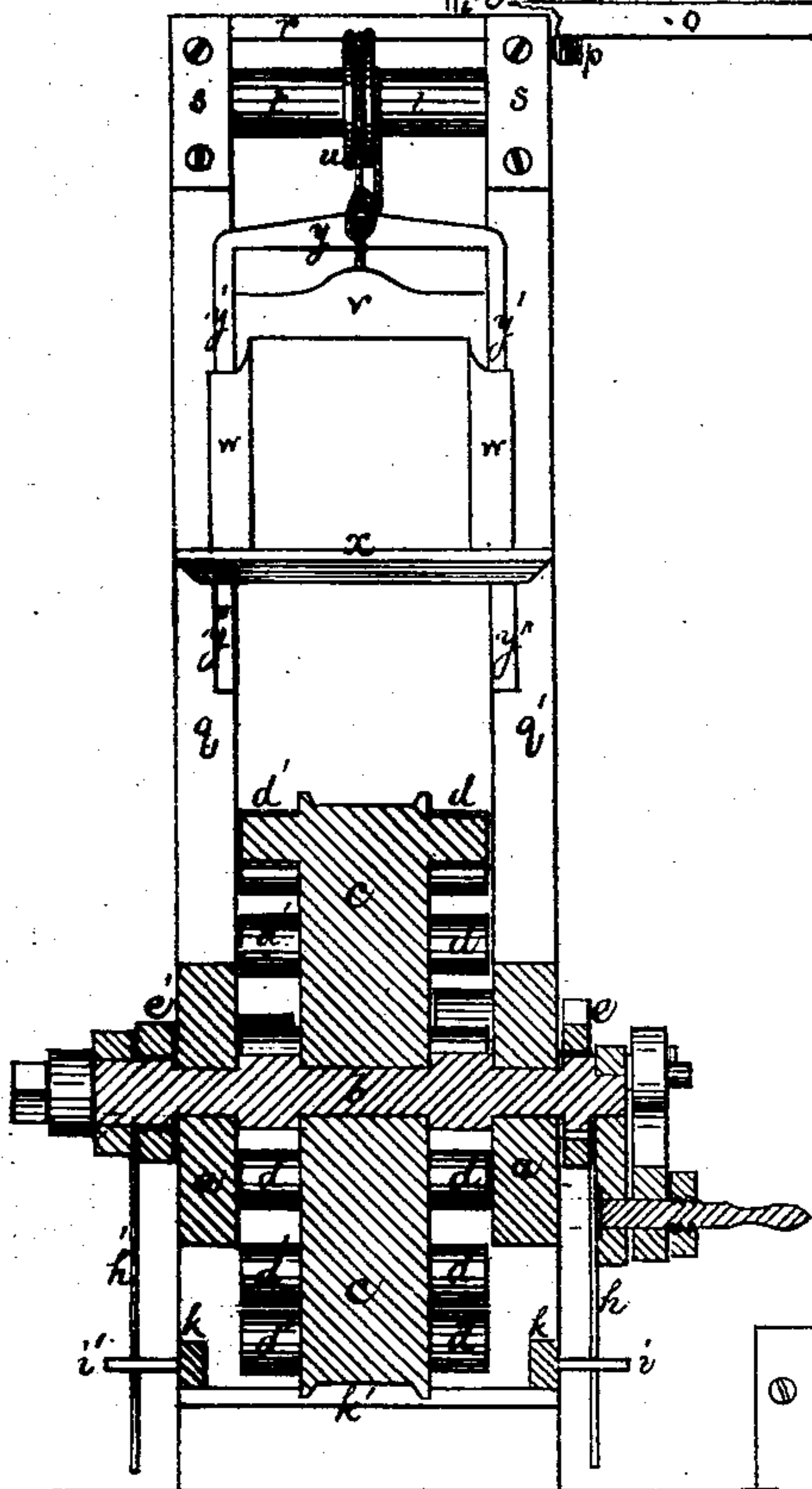
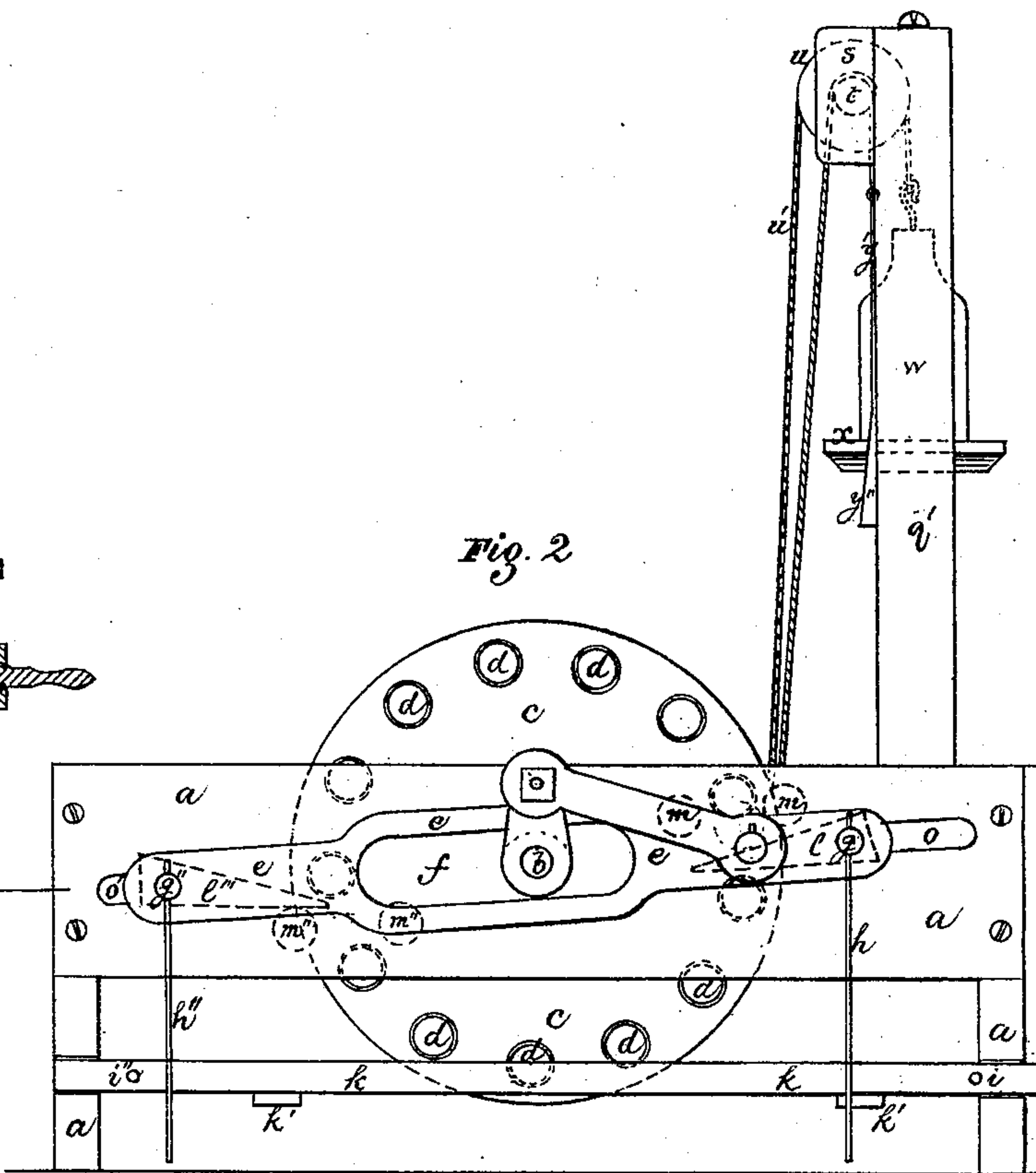


Fig. 3

Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MACHINES FOR PRODUCING ROTARY MOTION.

Specification forming part of Letters Patent No. 133,999, dated December 17, 1872.

To all whom it may concern:

Be it known that I, DANIEL F. MOSMAN, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Machines for producing Rotary Motion, of which the following is a specification:

Figure 1 of the accompanying drawing is a top view; Fig. 2 is a side view; and Fig. 3 is a central vertical transverse section of my improved machine.

The present invention relates to certain new and useful improvements in machines for producing rotary motion; its object being principally to obviate the friction generally occasioned by the action of worm-gear to prevent overhauling the engine when backing down, thus dispensing with brakes or other expensive devices for holding the load when in a stationary position; economy and durability in construction, and the ease by which lost motion may be taken up; also, in a marine engine, to prevent, in a great measure, the chopping or cutting up of the water, and the jarring of the vessel occasioned thereby, while the engine is on live-centers, thereby diminishing the slip and preventing the engine hanging on dead-centers. My invention consists mainly of rotating a winder wheel or drum by means of wedges operated by parallel rods traveling on reversed inclines, and acting over and under stationary pins connected with the frame of a machine, and in and out between pins formed around the circumference on either side of the winder-wheel, &c., so as to produce, in connection with a series of mechanical devices, to be hereinafter more fully described a steady continuous rotary motion to the winder or wheel, &c., by which any load may be raised and lowered without danger of slipping.

In the drawing, *a* represents the frame of my improved machine, the sides of which form bearings for a shaft, *b*, on which revolves a winder wheel or drum, &c. Arranged on each side, around the circumference, at equal intervals, are pins *d d'*, provided with sleeves. Traveling back and forth longitudinally, and at a reverse incline with each other, upon the shaft *b*, on either side of the frame *a*, are parallel rods *e e'*, formed with central slots *f*, and having stems or pivots *g g' g'' g'''* at each end, provided with rods or springs *h h' h'' h'''* that en-

gage with or disengage themselves from stems *i i' i'' i'''*, connected with traveling bars or frame *k*, operating back and forth in the ends of the frame *a*, and connected by cross-bars *k'*. The stems or pivots *g g' g'' g'''* are attached to the ends of wedges *l l' l'' l'''* that turn in the ends of the parallel rods, so as to be lifted by the action of the springs *h h' h'' h'''*, or by any other suitable method, or fall by their own weight either up against the bottom or down upon the tops of the pins *d d'*, with which they are engaged or disengaged by the back-and-forth action given to them by the alternate longitudinal travel of the parallel rods *e e'*. The pivots *g g' g'' g'''* travel in slots *o o'* on either side of the frame *a*, the slots *o o'* on one side being on a reverse incline with those on the other side; or the parallel rods *e e'* may be arranged to operate on the inside instead of the outside of the frame *a*, in which case the slots *o o'* may be dispensed with. Attached to the inside of the frame *a*, at each end, are stationary pins *m m' m'' m'''*, arranged in pairs, so as to admit between them of the passage of the winder-pins *d d'*, the pins *m m' m'' m'''* being on a line corresponding to the incline of the parallel rods *e e'*, those on the forward portion of the frame *a* being above the slot *o*, and those on the rear being below the slot *o'*; the forward pins *m* and the rear pins *m'''* are a little above their opposite pins *m'* *m''*, so as to allow of a half motion of the wedges *l l' l'' l'''* between them and winder-pins *d d'*. The shaft *b* is provided on each side with toggle-jointed levers *n o n' o'* turning on pivots *p*, attached to one end of the parallel rods *e e'* and by screw-pivots *p'* supplied with screw-nuts *p''*, and on one side with crank-handle *p'''*. Attached to the forward portion of the frame *a* are posts *q q* connected at the top by a cross-bar, *r*, and provided with standards *s s* that support a shaft, *t*, provided with a pulley, *u*, over which passes a chain, rope, &c., *u'*, one end of which winds around the winder or wheel, &c., *c*, and the other end is attached to a cross-bar, *v*, of a sliding frame, *w*, of an elevator-platform, *x*, arranged to fit over the posts *q q* and to slide up and down on the same. Connecting with the shaft *t* and the winder *c* by a rope, &c., so as to operate with and yet independently of the elevator-platform *x*, is a supplementary frame, consisting

of a top bar, y , and vertical arms y' y'' , formed with wedge-shaped terminations y'' y''' , which engage in or disengage from jaws attached either to the cross-bar or frame of the elevator, so that in case of the breaking of the rope or chain holding the car it shall be arrested in its downward course and held by the wedge-shape terminations y'' y''' .

The operation of my improved machine is as follows: Power being communicated to the parallel rods e e' , either directly or by the operation of the shaft b , one of the rods e is propelled forward and upward, while the other rod e' is carried backward and downward, thus causing the base of the wedge l''' to bear as it advances on the top of the stationary pins m'' , and to travel forward under one of the pins d of the winder c , so as to lift and partly rotate the winder or wheel, &c., c . By the time the first wedge l''' is advanced half its length between the pins d the opposite wedge l'' is started forward and passes over the stationary pins m''' , which are half of a space or pin higher than those on the other side of the frame and under the opposite end d' of the winder-pin d , thus lifting and continuing the rotation of the wheel or winder c , and relieving the first wedge l''' of its labor, which begins to recede when the wedge l'' is half-way advanced by the reverse action of the parallel rod e , which causes the wedge l , on the forward portion of the right side of the frame a , to enter under the stationary pins m , said wedge being inverted and over the winder-pin d , thereby pushing down on the front of the winder-wheel, &c., c , continuing its rotary movement and relieving the wedge l''' . When the wedge l has advanced one-half of its length the wedge l' on the opposite side of the forward part of the frame a starts under the stationary pins m' and over the winder-pin d' , thus assisting in the further revolution of the wheel.

It will readily be seen that the wedges l l''' , being connected by the parallel rod e , their action being equal, as fast as one is performing its work the other is receding, preparatory to begin its work, when said rod e reverses its motion; and that the wedges l' l'' , being similarly connected to the rod e' , act exactly in the same manner, except that they are one half motion behind the others, or as dead and live centers if operated by crank.

By continuing the longitudinal backward and forward motion to the parallel rods e e' the wedges l l' l'' l''' are brought in contact alternately with the winder-pins d d' , thus rotating the winder or wheel, &c., c and winding the rope or chain, &c., w , thereby raising the elevator or other load, or otherwise operating any desired object. By means of the springs h h' h'' h''' engaging with the stems or pins i i' i'' i''' of the traveling-rails e e' , or by any other suitable method, the wedges l l' are pressed up against the stationary pins m m' so as to go over the winder-pins d d' and thereby work the winder c when advancing, and release the rear wedges l'' l''' which fall

by their own gravitation on their stationary pins m'' m''' , and thus produce the motion for lifting the load, in the manner desired. The downward or reverse motion required is produced by the rear rods or springs h'' h''' coming in contact with the stems i'' i''' of the traveling-rails e e' and lifting the wedges l'' l''' so that they shall advance over the winder-pins d d' , and the other wedges l' l , being released, drop by their own gravitation alternately under the winder-pins d d' ; and the weight of the load drawing the winder c back and pressing the wedges l l' up against its stationary pins, said wedges receding on the reverse motion, now ease the load down, their action being the same as in the lifting process. Where the load is to work both ways, as in a marine engine, it is necessary to have three or more wedges on each side—one set being in action while the other set is at rest and clear of the pins—both sets in such a case operating on the top of the stationary pins and under the winder-pins, or vice versa, as may be desired.

By applying this invention to a marine engine a large amount of space and heavy weight required by the ordinary engine may be dispensed with by the use of a smaller engine, the nature of my improved machine requiring a quicker motion to get the same rotation of wheel or screw.

No saving of steam is claimed by my invention, except it shall be by diminishing the slip of the wheels by the equal and continuous action of the floats produced by the steady rotation of the winder or wheel c , operated as hereinabove described.

By this invention the fly-wheel of a stationary engine is dispensed with, as, the rotary motion being continuous, there are no dead-centers to be cared for.

My invention may be operated by steam or any other motive power.

Having thus fully described my improvement, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. Rotating a winder-wheel or drum, &c., c , by means of wedges l l' l'' l''' , operated by parallel rods e e' , traveling on reversed inclines and acting over and under stationary pins m m' m'' m''' and in and out between pins d d' formed around the circumference on either side a winder, &c., c , so as to produce a steady continuous rotary motion by which an elevator or other load may be raised and lowered, substantially as specified.

2. The parallel rods e e' , traveling on reversed inclines longitudinally back and forth, and operating pivoted wedges l l' l'' l''' and springs h h' h'' h''' , or their equivalents, substantially as described.

3. The wedges l l' l'' l''' operated by traveling rods e e' , springs h h' h'' h''' , pins or stems i i' i'' i''' , and traveling bars or frame k , or their equivalents, so as to be carried over and under stationary pins m m' m'' m''' and be-

tween winder-pins $d d'$, and rotate a winder-wheel or drum, &c., c , substantially as specified.

4. A winder-wheel or drum, c , provided with pegs $d d'$, arranged and operated substantially as hereinabove described.

5. A supplementary frame having arms $y' y''$ with wedge-shaped terminations $y'' y'''$ operating in connection with an elevator so as to check and hold the latter in case of accident, substantially as specified.

6. An elevator sliding up and down on posts $q q'$ and operated by a chain or rope, u' , connecting with pulley u and winder c , arranged and operated substantially as specified.

7. The traveling bars or frame k arranged with stems $i i' i'' i'''$ to engage with or disengage from rods or springs $h h' h'' h'''$, or with other suitable appliances, for operating the wedges $l l' l'' l'''$, substantially as specified.

8. The combination of the parallel rods $e e'$, wedges $l l' l'' l'''$, winder c , frame a , and traveling bars or frame k , all arranged and operating substantially as described.

9. A machine for producing rotary motion, consisting of a frame, a , stationary pins $m m' m'' m'''$, shaft b , winder-wheel or drum c provided with pins $d d'$, wedges $l l' l'' l'''$, parallel rods $e e'$, levers $n o n' o'$, rods or springs $h h' h'' h'''$, and traveling bar or frame k , all arranged and operating substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL F. MOSMAN.

Witnesses:

CARROLL D. WRIGHT,
SAML. M. BARTON.