

J. Rich. Spinning Throstle.

N^o 61,104.

Patented Jan. 8, 1867.

Fig. 1.

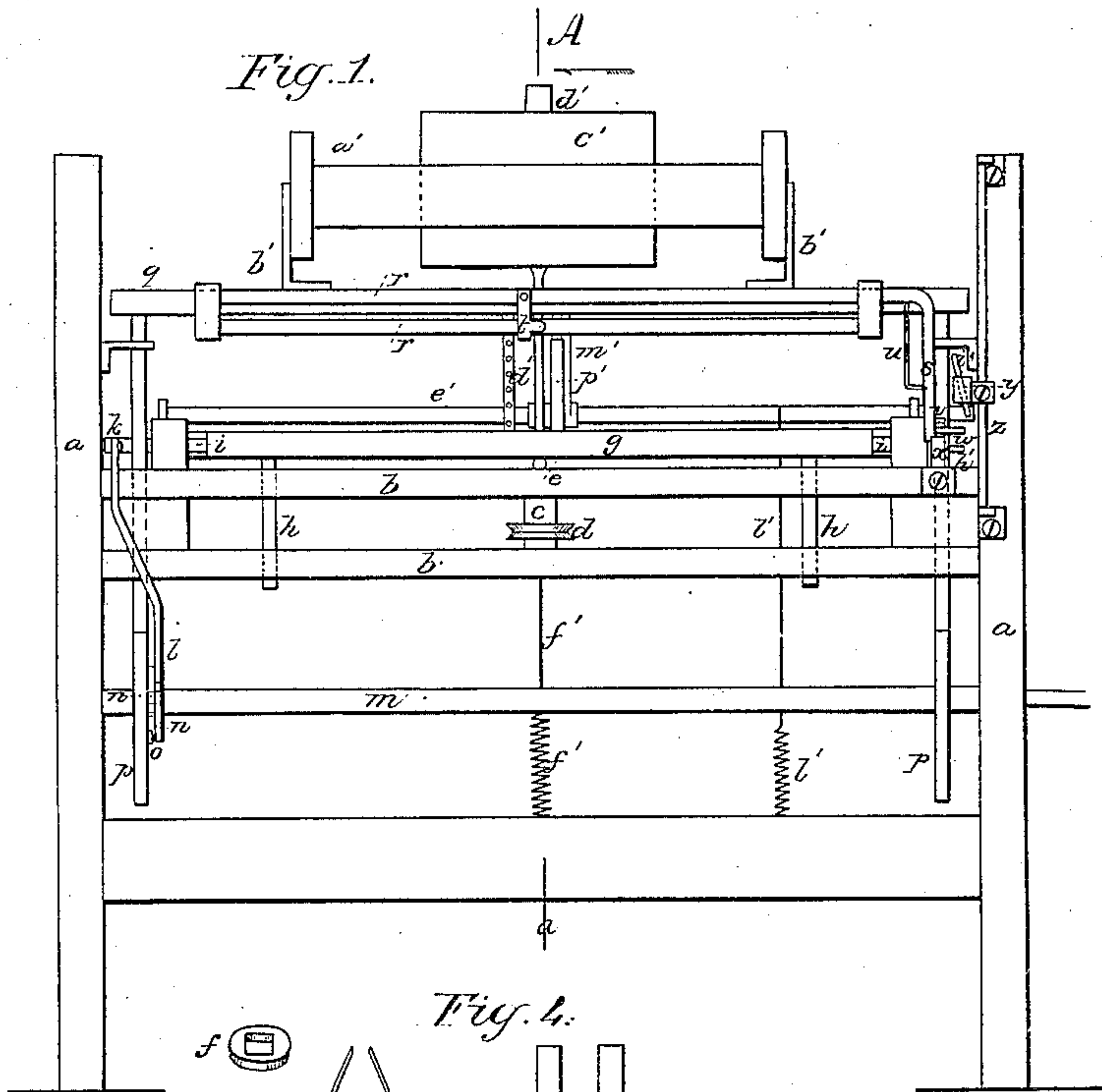


Fig. 4.

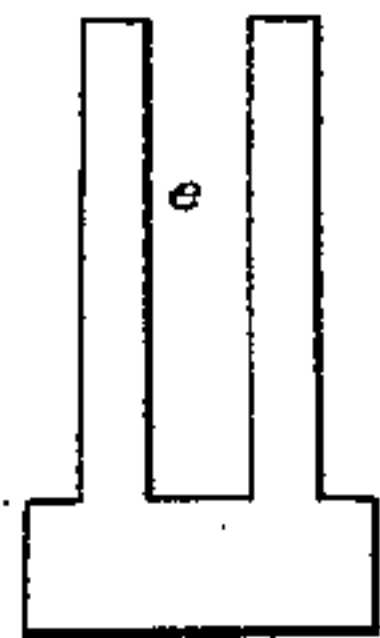


Fig. 5.



Fig. 3. A, a.

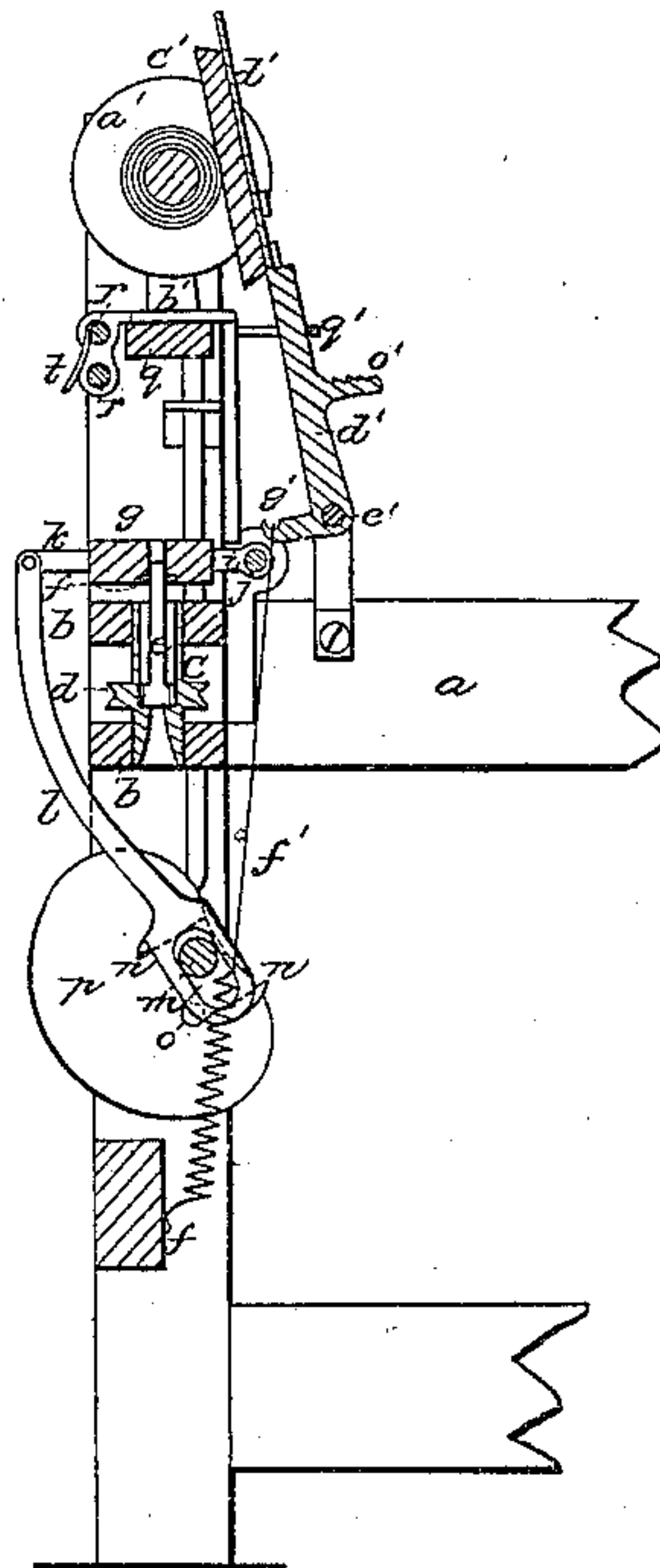
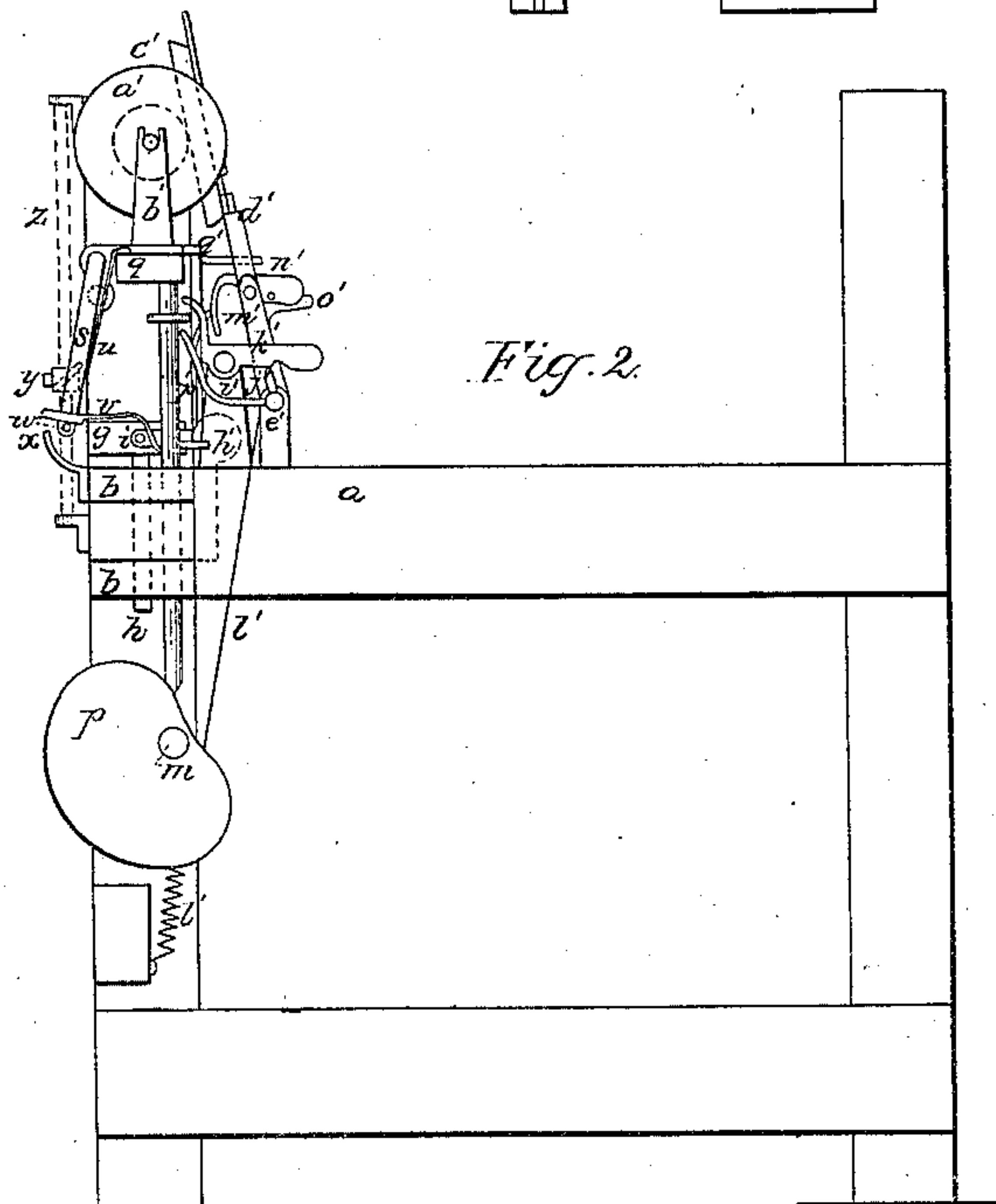


Fig. 2.



Witnesses:
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Inventor:
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JOHN RICH, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO HIMSELF, D. RUGGLES, AND J. E. BACON, OF SAME PLACE, AND A. DANIELS, OF FRANKLIN.

Letters Patent No. 61,104, dated January 8, 1867.

IMPROVEMENT IN SPINNING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN RICH, of Worcester, in the State of Massachusetts, have invented certain new and useful improvements in Machinery for Spinning Yarn; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation.

Figure 2, a side elevation, with a part of the frame represented as transparent, that the part beyond may be seen.

Figure 3, a vertical section, taken in the plane of the line A a, fig. 1; and

Figures 4 and 5, sections representing details.

The same letters indicate like parts in all the figures.

My said invention relates to improvements on the machinery for spinning yarn, described in Letters Patent granted to me on the 28th day of February, 1865, and numbered 46,588.

The accompanying drawings represent only the improvements which constitute my present invention, and such parts as are necessary to show the connections thereof with any well-known and suitable spinner, whether ring-groove and traveller or throstle.

In the said drawings, *a* represents a frame, and *b b* two horizontal and parallel rails, in which are mounted the twisting-tubes *c*, one only being represented. These tubes are suitably journaled to rotate freely in the two rails, and they are provided, each, with a whirl, *d*, to receive a band from a driving-drum, as described in Letters Patent granted to me, and hereinabove referred to. The upper end of each tube, *c*, is provided with a pair of spring-fingers, *e*, which I prefer to make of thin sheet steel, cut in the form represented in fig. 4, and then bent to the form represented at fig. 5, with the lower part in the form of a nearly complete hollow cylinder, and of slightly greater diameter than the bore of the tubes *c*, so that when sprung into the tube they will be held in place by the spring of the cylindrical part, as represented in fig. 3. The fingers *e* will spring open to liberate the thread, and are closed to nip the thread by a mortise-plate, *f*, which embraces them. These plates, one for each pair of fingers, are attached to a bar, *g*, or the bar itself may be formed with mortises to dispense with the plates. The bar *g* has a movement up and down, guided by rods *h h*, or equivalent means, to open and close the fingers; which movement is given by the two arms *i i* of a rock-shaft, *j*, which is provided with another arm, *k*, having a connecting-rod, *l*, at its outer extremity. The lower end of this rod has a long mortise, which embraces and slides on the cam-shaft *m*; and one face of it is provided with two parallel flanches, *n n*, which are alternately acted upon by a pin, *o*, which, for convenience, projects from the face of a cam-wheel, *p*, on the cam-shaft *m*, so that at every revolution of the said shaft the bar *g* is elevated to open the fingers, and then depressed to close them. Above the bar *g* there is a clamp-bar, *q*, provided with two parallel bars, one at each end, which slide in suitable guides, and their lower ends rest on the peripheries of two heart-cams, *p p*, on the cam-shaft, so that the said bar *q* is elevated and depressed by each revolution of the cam-shaft. To the front edge of the clamp-bar are connected two parallel rods, *r r*, the lower one being fixed and the upper one journaled so that it can be rocked by an arm, *s*, at one end. From this upper rod project a series of spring-clamp fingers, *t*, one for each twister-tube, (but one is represented;) and these are so formed and placed that when the arm *s* is in the forward position the clamp-fingers *t* will be so far from the lower rod *r* as to permit the rovings to pass freely; and when in the back position, the finger *t* will clamp the rovings against the lower rod *r*. The clamping and unclamping operations are performed in the following manner: The clamps are held in the open position by a spring, *u*, which acts on the arm *s*, and a spring-catch, *v*, catches on to a pin, *w*, projecting from the arm *s*, to hold them in a closed position. When the clamp-bar *q* reaches the end of its downward motion, the spring-catch strikes a stop, *z*, which liberates the arm *s* of the clamp-rod, that the clamps may be opened by the tension of the spring *u*; and when the clamp-bar is rising, the pin *w* on the arm *s* is brought in contact with an inclined cam, *y*, by which the arm is forced inward until the clamps are closed and the pin *w* is caught by the spring-catch *v*. The operation of clamping the rovings takes place when the required length of rovings has been delivered; and as the length is required to be different for threads of different degrees of fineness, the inclined cam *y* is fitted to slide on a rod, *z*, and provided with a temper-screw, so that it can be shifted and set

at any desired elevation. The roving is on a spool, a' , that turns freely in standards $b' b'$ on the clamp-bar q , and, as the clamp-bar rises, it is made to deliver the roving by rolling against a delivery-plate, c' , which is mounted so that it can slide vertically on a rod, d' , mounted on a rock-shaft, e' , journaled to the frame a . The face of the said plate c' is self-adapting to the varying diameter of the spool of roving by the rocking of the rod d' on the said shaft e' , and its surface is caused to bear gently against the roving on the spool a' by the tension of a spring, f' , attached to the frame and to an arm, g' , on the hub of the rod d' . At each operation, when the required length of roving has been given out, it is necessary to force back the delivery-plate from contact with the roving on the spool to stop the delivery at the time the rovings are clamped, that the clamps may continue to rise to draw the rovings to the extent required to produce the threads. This throwing back of the delivery-plate is effected by a spur, h' , on one of the sliding rods of the clamp-bar q , which strikes an arm i' , on the rock-shaft e' , and vibrates it until a spur, j' , on the said shaft is caught by a spring-catch, k' , which holds it during the continued upward movement of the clamp-bar, and until it returns to its lowest position, at which time the clamp-bar strikes the lever of the catch k' to liberate the rock-shaft, and permit the rock-shaft to be moved in the opposite direction by the tension of a spring, l' , that the delivery-plate may again bear against the roving on the spool for the next delivery. The motion of the rock-shaft last described is caused to act on the rod d' to throw back the delivery-plate by an arm, m' , on the rock-shaft, which carries a lever pawl, n' , that catches into the ratchet teeth of a sector rack, o' , on the rod d' , and on the return motion of the rock-shaft, the bent arm of the pawl strikes a stop, p' , to disengage it from the sector-rack. If the delivery-plate was relieved from the spool of roving suddenly by inertia, it would continue to turn and deliver roving after the delivery-plate liberates the spool. To prevent this, a little before the delivery-plate is thrown back, it is made to rise for a short distance with the spool, and whilst yet in contact with the roving; and this is effected by a spur, q' , which projects from the rear edge of the clamp-bar q , and which comes in contact with the lower edge of the delivery-plate a little before the back movement takes place, so that the rotation of the spool shall be stopped before the delivery-plate is moved back.

I do not wish it to be understood as limiting my claim of invention to the special arrangement of machinery for imparting the motions herein described, as any skilled machinist may obtain the same motions by well-known mechanical equivalents. Nor do I wish to be understood as limiting my claim of invention to the special mode of constructing the nippers on the twistors, as the mode of construction may be varied without changing the mode of operation of this part of my invention.

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

Closing and opening the fingers on the twisting-tubes by the motion of the bar, or the equivalent thereof, substantially as and for the purpose specified.

And I also claim delivering the roving by the rolling of the periphery of the roll of roving on the spool against the surface of the delivery-plate, operated substantially as and for the purpose described.

JOHN RICH.

Witnesses:

JOHN P. GREGORY,
CHARLES S. REX.