

J. Lazier;
Spinning Mach.

Nº 69,002.

Patented Sep. 17. 1867.

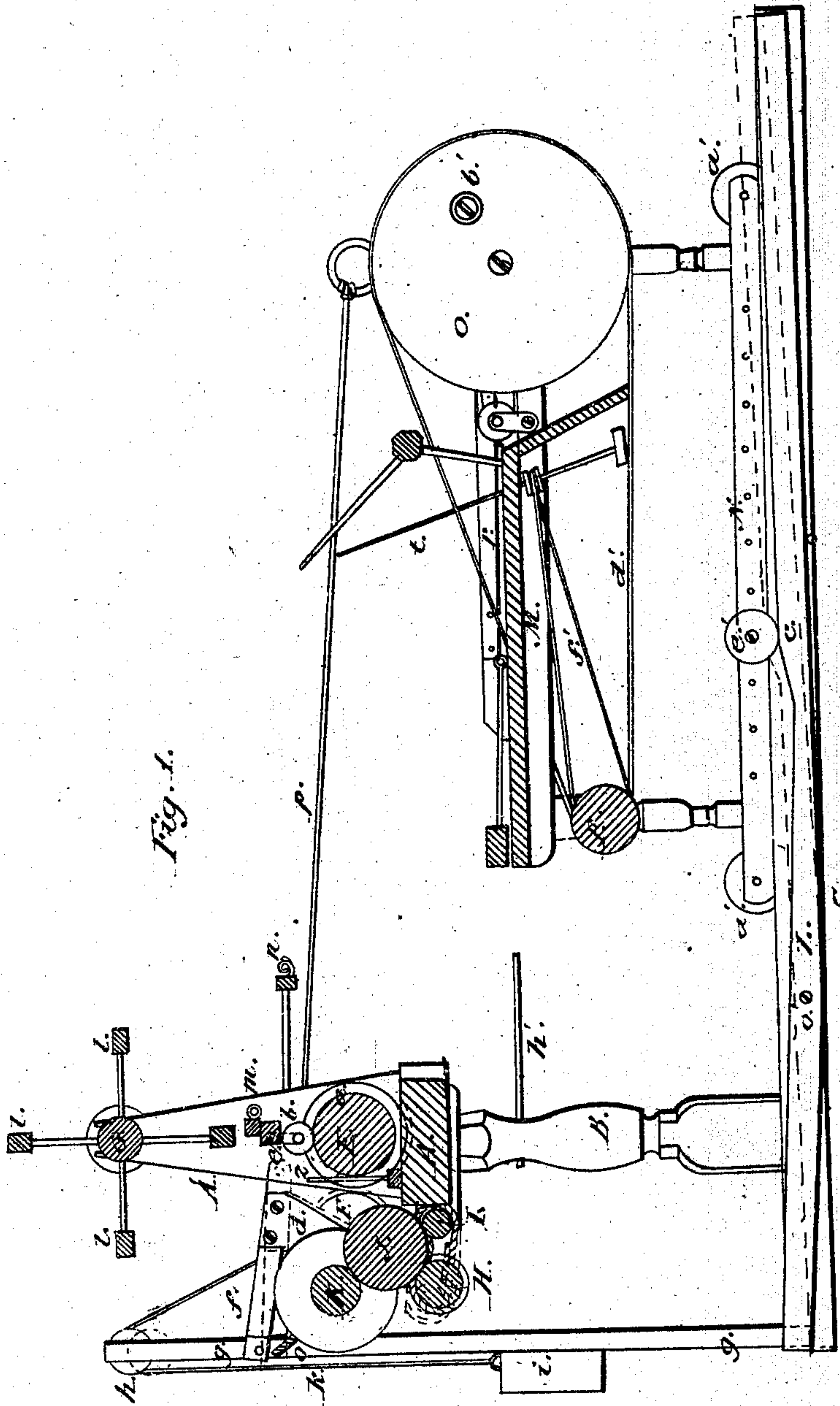


Fig. 1.

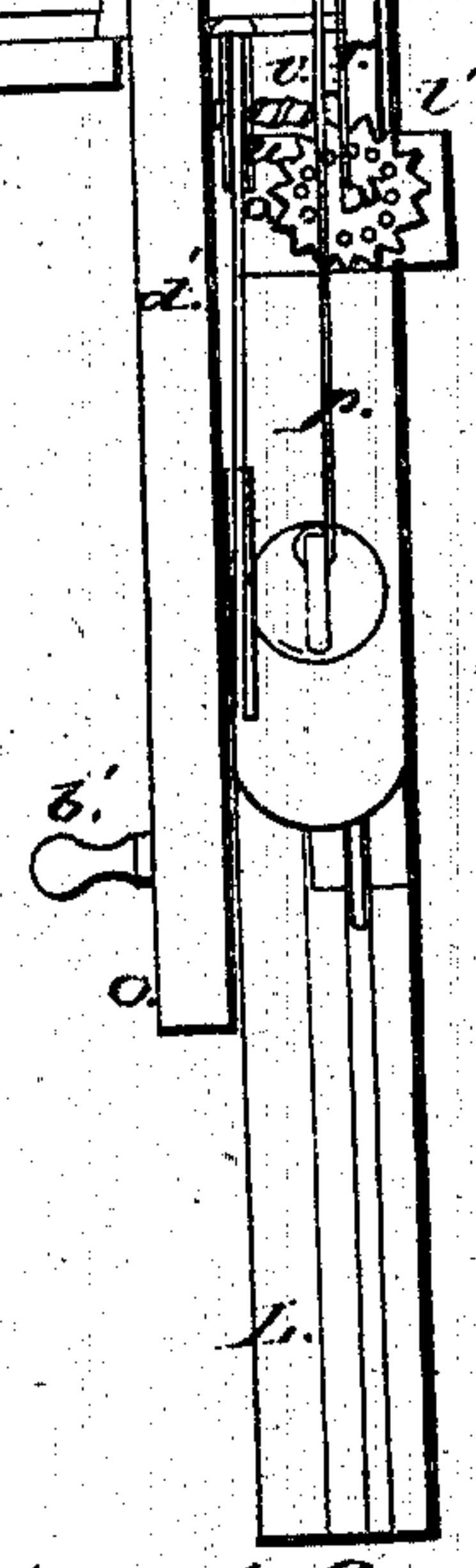
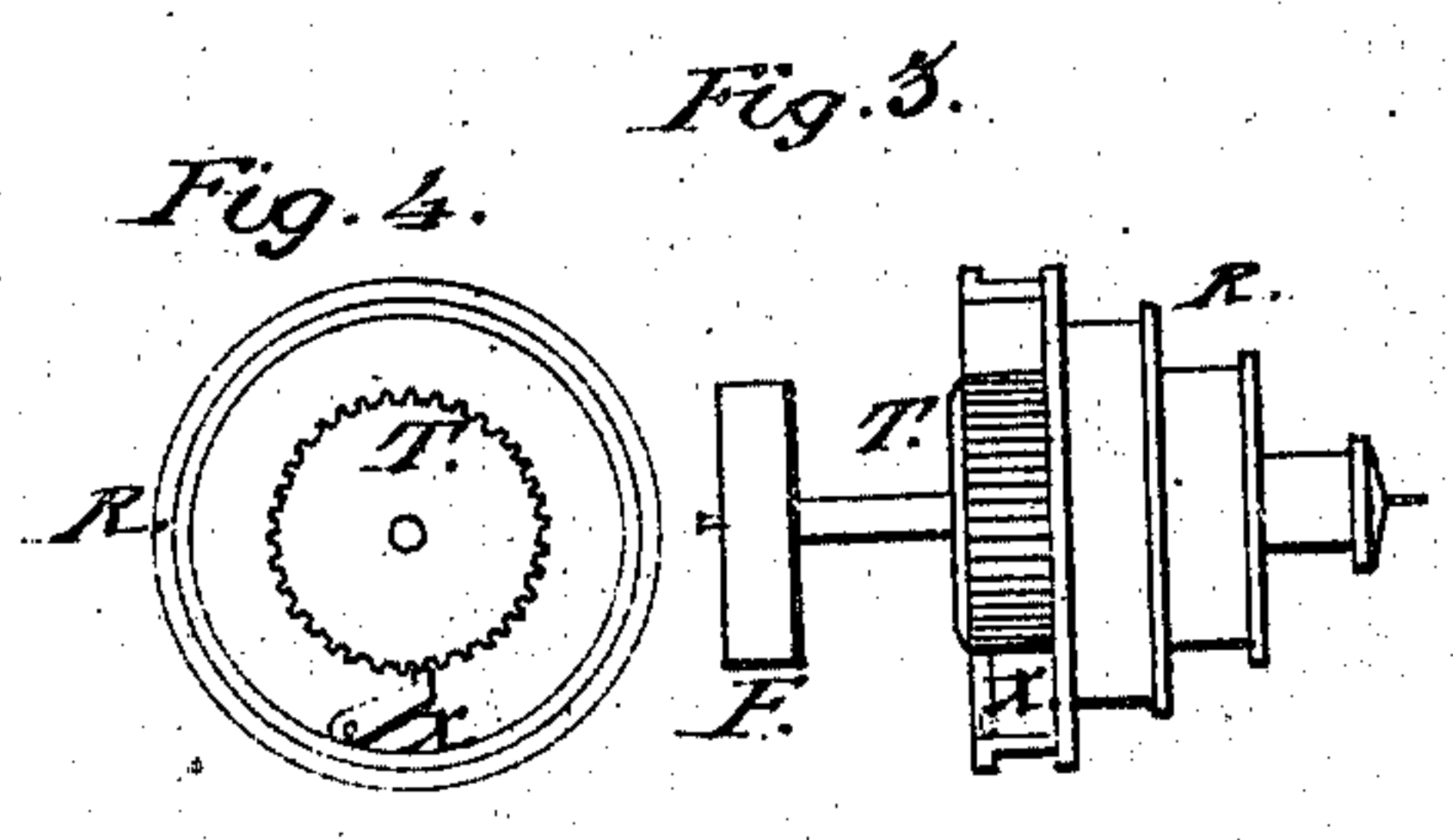
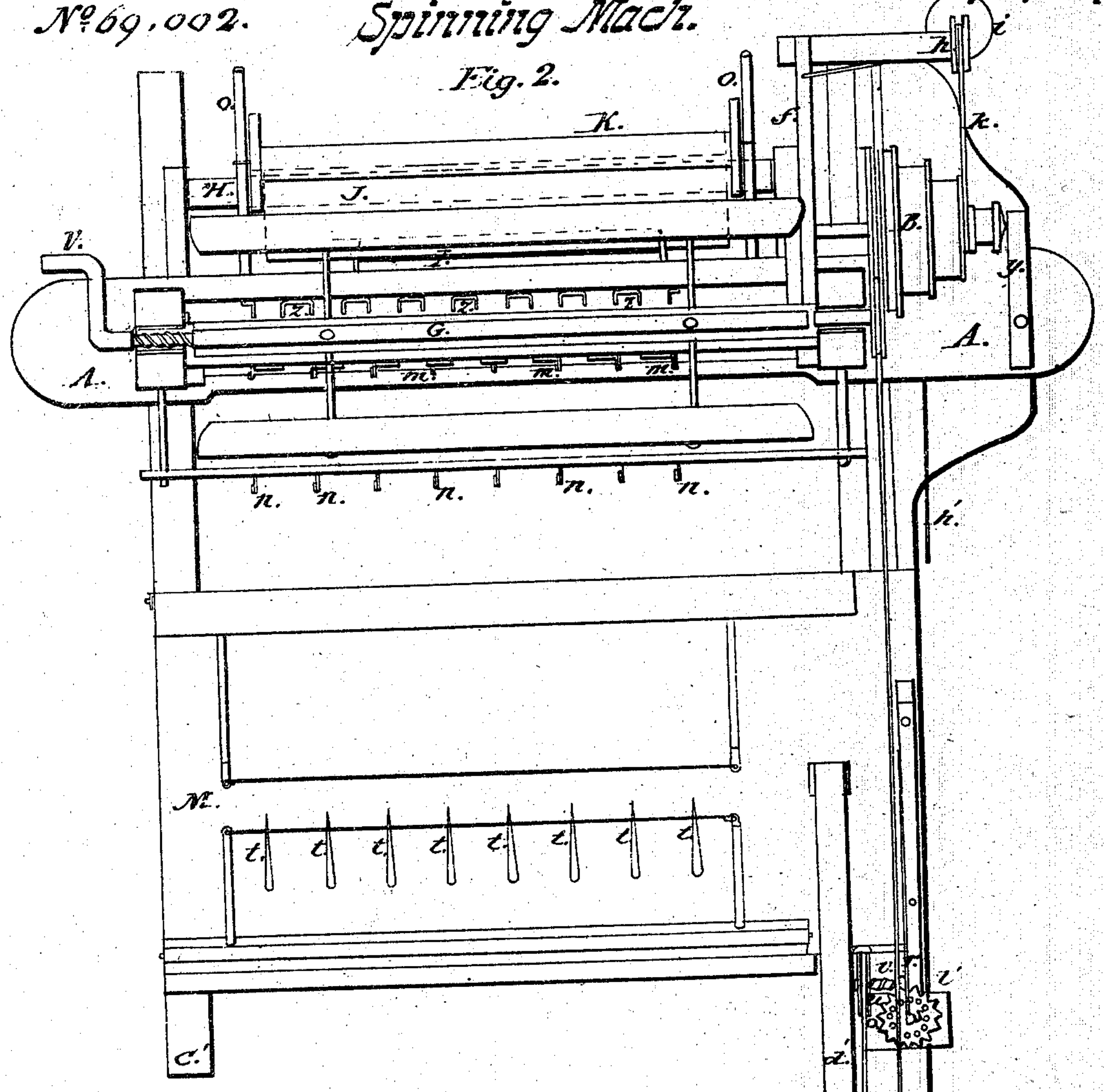
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United States Patent Office.

JOHN LAZIER, OF BELLEVILLE, CANADA.

Letters Patent No. 69,002, dated September 17, 1867.

IMPROVEMENT IN SPINNING MACHINE.

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 LAZIER, of Belleville, in the county of Hastings, and Dominion of Canada, have invented certain new and useful improvements in Domestic Spinners; and 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, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My invention consists in certain improvements in machines for spinning yarn whereby the implement is adapted for use in families, and whereby yarn may be spun with a uniformity of size and twist, and with a speed hitherto unattainable with domestic implements of this nature, the nature of the said invention or improvements being hereinafter more fully explained.

Figure 1 is a longitudinal vertical section,

Figure 2 is a top plan view, and

Figures 3 and 4 are views of portions shown detached.

To construct my machine I provide a bed-piece, A, and support it at each end on a post, B, which in turn has its bearing on a rail, C, at one side, and a corresponding though shorter rail, C', on the opposite side. Upon the bed-piece A, at each end, I place an upright, A', in which is journaled a feed-roll, E, which has a friction-wheel, *a*, at one end. Directly over this feed-roll E is mounted a series of small pressure-rolls, *b*, the supports of which have their bearings in a bar above, and which are pressed down by small spiral springs *e*, as represented in blue in fig. 1. In the top of the supports A' I mount a reel-shaft, G, provided with arms *l*, and a crank, V, the latter having a screw-thread on its shaft to work a toothed wheel for the purpose of operating a spring-click to indicate the number of knots of yarn wound, as usual in ordinary reels. In rear of the bed-piece A is mounted a roll, H, which is driven by a crossed belt or cord from feed-roll E. Between the bed A and roll H is placed another roll, I, which, together with the roll H, forms a bearing for and imparts motion to a plain roll, J, which in turn imparts motion to the spool K, on which the roving is wound, and which spool has journals at each end, resting loosely on the inclined pins or rods *o*, as shown in figs. 1 and 2. It will thus be seen that motion is imparted to these rolls and the spool K from feed-roll E, and that consequently they will operate only at such times as the roll E operates.

To operate the feed-roll E and feed the roving only at certain intervals, and to cause it to cease its operations automatically at given periods, I provide the following means: I pivot a lever, L, along the inside of the bottom rail C, and at its end pivot an upright, *g*, as shown in fig. 1. Near its top the upright *g* is pivoted to an arm, *f*, which has its opposite end pivoted to the upright A', as shown clearly in fig. 1. To this arm *f* is secured rigidly a vertical arm, *d*, which forms the bearing for the journal of the friction-wheel F, coinciding with the friction-wheel *a* on feed-roll E. As may be seen by fig. 3, the shaft of wheel F is of considerable length, and has secured rigidly upon it a ratchet-wheel, T, over which projects the hollow end of a set of cone pulleys, R, which latter turn loosely on the shaft in one direction, but which are caused to engage with the ratchet-wheel T by a pawl, *x*, as shown in figs. 3 and 4, and thereby rotate the wheel F when moving in the opposite direction. The outer end of the shaft of this wheel F has its bearing in a fixed block, *y*, secured to the extreme or outer end of bed-piece A at the right-hand side of the machine, as shown in fig. 2, and the inner end, having its bearing in the movable arm *d*, it follows that the friction-wheel F is brought into contact with the friction-wheel *a* whenever the standard *g* is lowered, as indicated in red in fig. 1, and whenever the standard *g* is raised the wheel F is thrown away from the wheel *a*, and ceases to actuate it. On the top of the standard *g* is a pulley, *h*, over which passes a cord, *k*, having a weight, *i*, attached to its lower end, its opposite end being secured to the smaller portion of the cone pulleys R, as shown in fig. 2, so that when said pulleys R have been rotated in one direction, (as will be hereinafter explained,) by which the cord *k* will be wound upon the pulleys, the weight *i* will act to unwind the cord, and in doing so will rotate the pulleys R in the opposite direction—these parts constituting the feeding-devices.

The spinning apparatus consists of a carriage, M, of the usual form, but mounted on three wheels, two, as represented by *a'* of fig. 1, being mounted in a longitudinal bar, N, and working in a groove formed for them

in the face of the bar C, as shown in fig. 2, the third wheel being attached to a single leg on the opposite side of the frame M, and running on the surface of the base-bar C'. By thus mounting the mule or spinning-frame on three wheels or points of support it readily adjusts itself to the irregular or uneven surface of the floors of ordinary dwellings, and thereby prevents it from tilting or tipping, as it would if mounted on four wheels in the usual manner, and it also enables me to construct my bottom frame, on which it runs, of the two single and independent bars C and C', as shown. The frame M is provided with a series of spindles, *t*, to which motion is imparted from a drum, P, operated by a hand-wheel, O, in the usual manner, as shown in fig. 1. On the right-hand side of the frame, and just in front of the wheel O, is located a small wheel, *u*, driven by a cord from a pulley on the outside of the wheel O, as shown in fig. 2, and the shaft of the pulley *u* has a screw-thread, *v*, formed on it, which engages in the teeth of worm-wheel *s*, journaled upon the face of a block, *w*, which latter is pivoted at its inner end to the carriage-frame in such a manner that by pushing back the outer end of said block *w* the wheel *s* will be disengaged from the screw *v*. A spring is connected with the journal of the wheel *s* in such a manner that when the wheel is disengaged from the screw *v* the wheel will be caused, by the force of said spring, to rotate in a direction opposite to that in which it has been moved by the operation of the screw, the same, or an additional spring, at the same time, serving to hold the block *w* forward, and thus keep the wheel *s* in contact with the screw *v*, except when released by the block *w* coming in contact with the projecting rod *h'* attached to the standard B, and which can only occur when the carriage M is run forward under the feeding-frame. The wheel *s* has a pin or stud, *l'*, projecting from its upper surface, which, as the wheel is rotated by the screw, operates a spring-click, *r*, the recoil of which, striking against the bar to which it is attached, serves to notify the operator. There is also a series of holes in said wheel *s* for the insertion of a pin, so that by adjusting said pin the number of turns made by the wheel O before the click *r* sounds the alarm can be regulated at pleasure. By this means the apparatus may be set so as to give to each thread as it is spun a uniform number of twists, and a greater or less number, whenever desired, by simply moving the pin in the wheel *s*. The bottom bar N of the carriage has attached to its inner side a wheel, *e'*, so located as to project vertically over the inside of the base-bar C, and be directly over the lever L, as shown in fig. 1. The lever L has a cam-like projection, *c*, formed on its upper face, which the wheel *e'* strikes as the carriage is drawn back, thereby depressing the outer end of the lever, and elevating the standard *g* and its arm *f*, thus throwing the wheel F out of connection with the feed-roll E, as hereinbefore described. The bar N is provided with a series of holes, so that the wheel *e'* may be adjusted forward or backward, and thus, by operating the lever sooner or later, regulate the time when the feed-roll E shall cease to operate, and consequently the amount of roving fed out at each movement of the carriage, and thus, by regulating the quantity of roving or material fed out and the number of twists given to each thread, the yarn can be spun coarse or fine, hard or slack twisted, as desired, and at the same time be rendered perfectly even and uniform. A cord, *p*, extends from the post at the right hand of the carriage, and is connected at its opposite end to the cone of pulleys R, so that as the carriage M is moved back by the operator the pulleys R are set in motion, and operate the wheel F out of connection, when, of course, the feed mechanism will cease to operate, and remain stationary while the twisting is being finished, and the thread wound upon the spindles, as the carriage is run back in the usual manner. There will of course be a stop, of any suitable kind, to limit the movement of the carriage on the track, so as to insure the drawing of the threads of the same length at each movement of the carriage. Instead of making the wheel *e'* adjustable on the bar N, the same results may be accomplished by making the wheel stationary, and having the cam-like projection *c* of the lever L adjustable instead.

The operation of the machine is as follows: The spool K, filled with roving, prepared in the usual manner, is placed in position, as represented in fig. 1, and the ends of the slivers are passed through between the feed-roll E and the pressure-rollers *b*, and made fast to the points of the spindles. The operator then runs the carriage back, turning the wheel O, which feeds the slivers through until the small wheel *e'* strikes the projection *c* on lever L, which throws the feed mechanism out of operation. The operator continues to draw the carriage back, and to twist the threads at the same time, until the carriage has been moved the proper distance, and which is indicated by a stop, after which the twisting is continued until the required number of twists is given, and which is indicated by the spring-click *r*, operated as previously described, when the carriage is run forward, and the threads thus spun are wound upon the spindles in the usual manner; and this operation is continued to any required extent. By changing the cord *p* to the different-sized pulleys R the feed of the machine may be increased or decreased, as desired, and thus the yarn made finer or coarser at will; and it may also be drawn finer by adjusting the wheel *e'* so as to throw the feed out of operation sooner. When it is desired to use the ordinary short "rolls," as furnished by country carding machines, the roll J and spool K are removed, and a pair of rolls having an endless apron around them is attached by a suitable frame in rear of the feed-roll E, and the "rolls" are laid thereon by an attendant, and fed through the same as the roving is fed from the spool.

To use the machine for doubling and twisting yarn, the threads from the spindles are passed separately through the eyes *n*, and two threads are then passed together through one of the eyes *m*, from whence they are wound on to the reel above, the bar holding the eyes *m* being adjustable or movable, so as to spread or wind the yarn evenly along on the reel. To twist it, it is only necessary to attach the ends of the two threads thus united together to the point of the spindle, and draw them off the reel, the latter unwinding as the carriage is drawn back, and the threads twisted and wound on to the spindles as usual.

By these means I provide a machine that is adapted for use in families everywhere, that will make yarn equal in quality, in all respects, to that produced in factories, and that will produce it with great rapidity,

while at the same time it is capable of being so changed and adjusted as to make it coarse or fine, slack or hard twisted, as desired.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. Mounting the carriage M on three wheels, arranged to run on the rails C and C', substantially as shown and described.

2. I claim providing the spinning-frame with a register for determining the number of twists, when said register is arranged to reset itself automatically as the carriage is run forward, substantially as set forth.

3. I claim arranging the mechanism, herein described, that feeds the roving or sliver, in combination with the carriage, in such a manner that as the latter is run back the former will be automatically thrown out of operation, substantially as described.

4. I claim so arranging the devices, herein described, for throwing the feeding mechanism out of gear that they may be adjusted to stop the feeding sooner or later, substantially as described.

5. The spiral springs e, arranged to operate upon the pressure-rolls b, as described.

6. I claim providing the feeding-frame with the reel G and the two series of eyes m and n, when arranged for joint action, substantially as described.

7. I claim operating the feeding mechanism by means of its being so connected with the carriage that the moving of the carriage shall set it in motion by the unwinding of the cord p from the pulleys B, said pulleys being rotated in the opposite direction by means of the weight i, or its equivalent, when the carriage is returned, substantially as described.

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Witnesses:

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W. H. SCHOLES.