J. M. STONE.

Building Mechanism for Spinning-Frames.

No. 166,316. Patented Aug. 3, 1875.

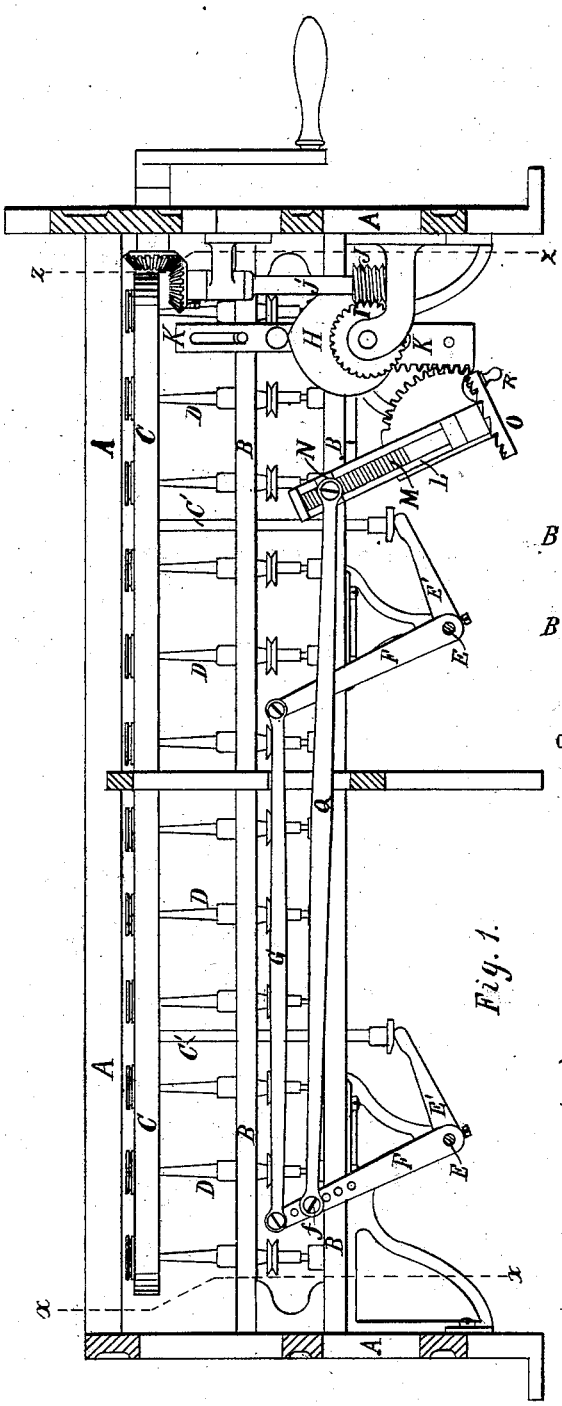

Fig. 1.

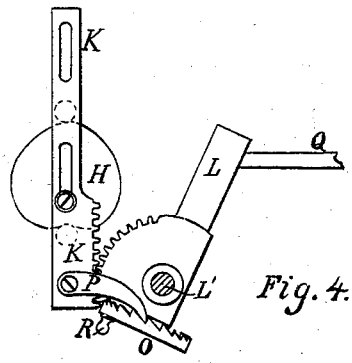

Fig. 4.

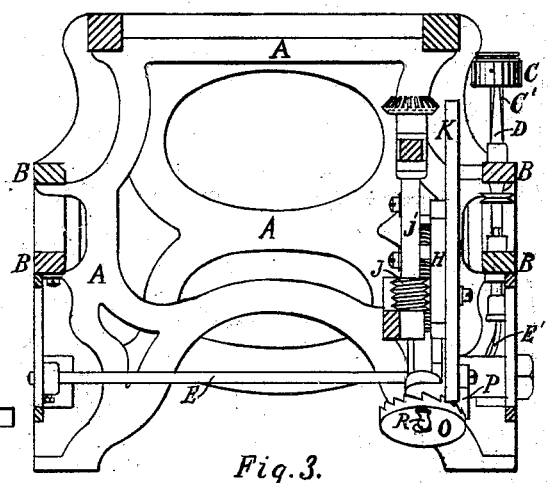

Fig. 3.

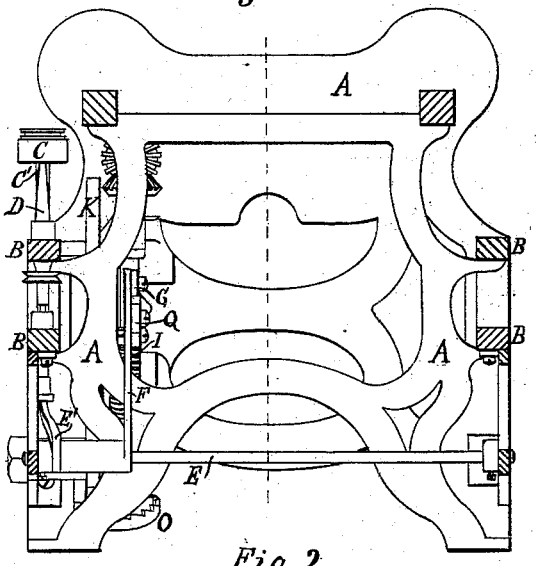

Fig. 2.

Witnesses.

Thisbee Miller

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Inventor.

Joseph M. Stone

UNITED STATES PATENT OFFICE.

JOSEPH M. STONE, OF NORTH ANDOVER, MASSACHUSETTS.

IMPROVEMENT IN BUILDING MECHANISMS FOR SPINNING-FRAMES.

Specification forming part of Letters Patent No. **166,316**, dated August 3, 1875; application filed April 27, 1875.

To all whom it may concern:

Be it known that I, JOSEPH M. STONE, of North Andover, in the county of Essex and State of Massachusetts, have invented certain Improvements in Spinning-Machines, of which the following is a specification:

My invention relates more especially to certain modifications in the construction of that part of a spinning-machine which guides the yarn as it is wound upon the bobbin, by which a conical form is given to the yarn at the ends when heads are not used upon the bobbins.

In this case the improvement is shown and described as applied to what is known as the "ring and traveler" machine, and the bobbins are made without heads, like "quills," or with the ends of the same slightly enlarged, and the yarn is wound upon them with each successive layer slightly shorter than the last, so that when the requisite amount of yarn has been deposited upon the bobbins the yarn will present at each end of the bobbin a conical form; or, instead of this, the order of winding on the yarn may be reversed, if preferred. For this reason it becomes necessary to interpose between the mechanism which carries the ring-rail up and down, and the "heart-motion," as it is called, which imparts the reciprocating movement to the ring-rail, a mechanism for modifying the constant movement imparted by the heart-cam, so as to automatically vary the extent of movement imparted to the ring-rail, in order to produce the result in winding the yarn upon the bobbin that I have before stated.

My invention, therefore, consists in the combination with the heart-cam mechanism and the ring-rail mechanism, a radial arm, which receives a constant oscillating movement from the heart-cam, by suitable devices to be described, and by means of a block which is moved radially upon said radial arm automatically, and is connected with the ring-rail mechanism, a variable extent of movement is given to the ring-rail corresponding to the radial position of the block upon the arm, the details of which mechanism will be hereafter more fully described.

In the drawings, Figure 1 is a longitudinal sectional elevation of some of the principal parts of a ring spinning-machine, looking outward. Fig. 2 is a transverse sectional elevation of the same on the line *x x* of Fig. 1. Fig. 3 is a transverse sectional elevation of the same on the line *z z*, and Fig 4 is a separate view of the radial-arm and sliding-rack that operates it, as seen from the side opposite to Fig. 1.

A A is the frame of the machine; B B, the spindle-rails; C, the ring-rail; C′ C′, the guides which carry the ring-rail; and D D, &c., the spindles, all constructed in the usual way for ring-spinning. E E are rocking shafts, carrying horizontal arms E′ E′, upon the outer ends of which arms the rail-guides C′ C′ are supported. To each of the shafts E is also attached an upright arm, F, at a right angle to the arm E′, and the upper ends of the said arms F are connected by a rod, G, which is jointed to both. By this arrangement the rocking shafts E and the two ends of the ring-rail C are made to move in coincidence. H is the heart-cam, by which the requisite alternating movement is given to the ring-rail C through the mechanism to be described. The heart-cam H is rotated by the worm-gear I and worm J upon the shaft J′, which is driven in any convenient way from the machine. The heart-cam H imparts a vertical reciprocating motion to the sliding rack K, which is guided by the frame of the machine, and is moved up and down by the cam in the usual way. L is a radial arm, so called, which is made to oscillate upon an axis, L′, in the position shown in the drawing, and has attached to it a toothed sector, which engages with the teeth of the sliding rack K, and thereby receives a regular vibrating movement from the heart-cam in an obvious manner. The radial arm L is provided with a radial screw, M, which is mounted upon it in bearings, as shown, and works in the block N, which slides upon the arm, and is moved in and out, or held in position upon the arm by the screw. The screw is turned by the ratchet O upon the lower end of the screw, and the pawl P, which is jointed to the lower end of the slide K, in the manner shown in Fig. 4, and by the joint movements of those two parts the pawl is made to take successively into the notches of the ratchet, and gradually turn the screw, and thereby change the radial distance of the

block N from the center of the arm L, and, consequently, the extent of the motion imparted thereby. The block N is connected by a long jointed rod, Q, to the most distant of the rocker-arms F, to which this rod is also jointed at *f*, by which a reciprocating movement is given to this part of the mechanism which carries the ring-rail C, and the extent of this movement is gradually varied by the change of position of the block N upon the arm L in an obvious manner. The position of the joint-pin *f* on the arm F may also be varied by means of several holes in the arm F, as shown, to suit the length of the bobbin. R is a crank attached to the ratchet O by which to turn the screw back by hand to restore the block N to the proper position to commence the bobbin.

The mode of operation of this machinery is believed to be sufficiently obvious without further explanation.

What I claim is—

1. The combination, substantially as shown and described, of the ring-rail and its connected mechanism, the heart-cam, the radial arm provided with the screw, the movable block and the ratchet, and the slide K, provided with the pawl P, as and for the purpose set forth.

2. The combination, with the radial arm, of the ratchet O, the pawl P, and the slide K, substantially as described.

Executed April 23, 1875.

JOSEPH M. STONE.

Witnesses:

ABISHAI MILLER,

WM. C. HIBBARD.