3 Sheets—Sheet 1.

T. MAYOR.

RING SPINNING MACHINERY.

No. 180,143. Patented July 25, 1876

Fig. I.

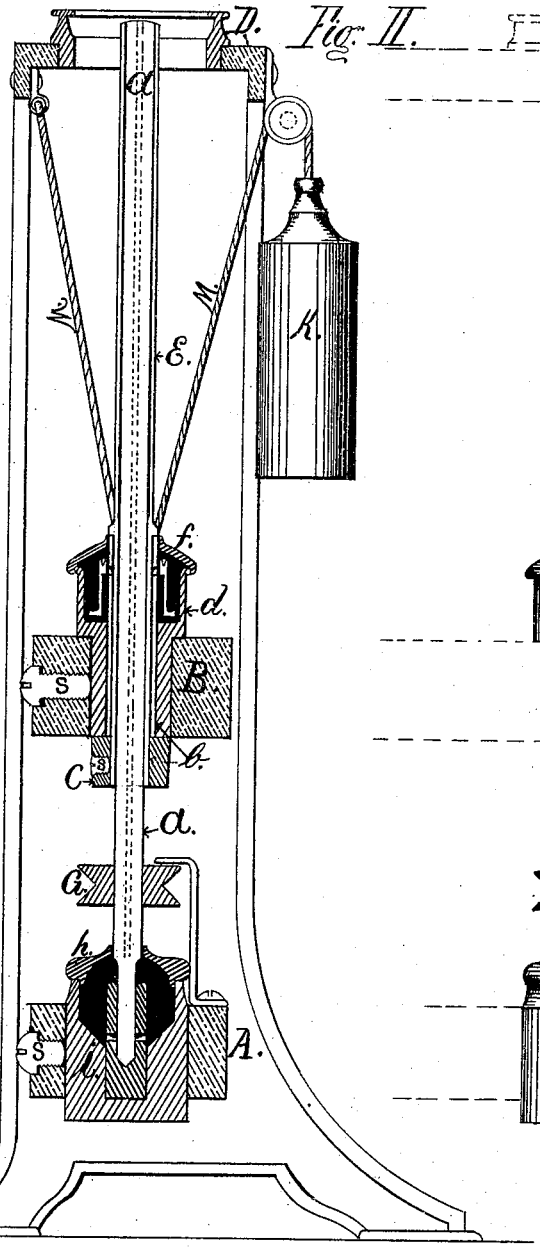
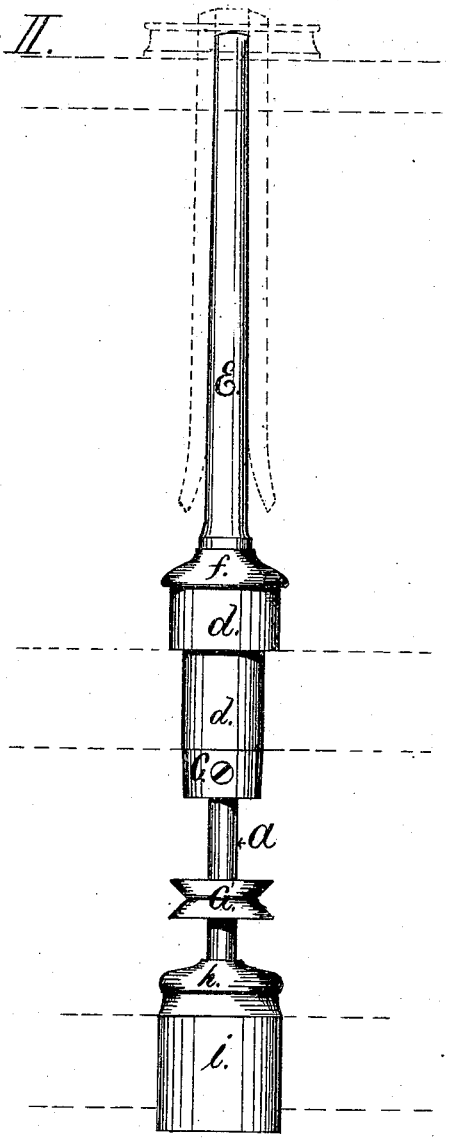


Fig. II.



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3 Sheets—Sheet 2.

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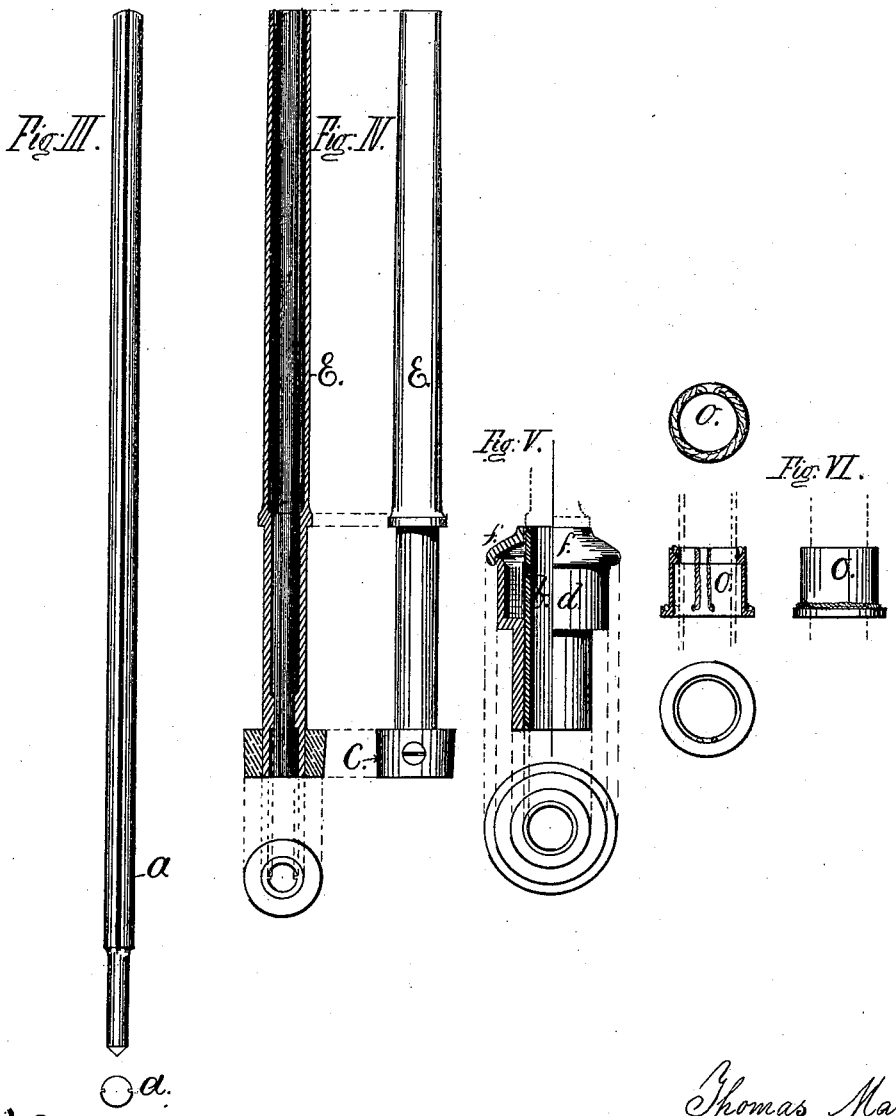

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3 Sheets—Sheet 3.

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RING SPINNING MACHINERY.

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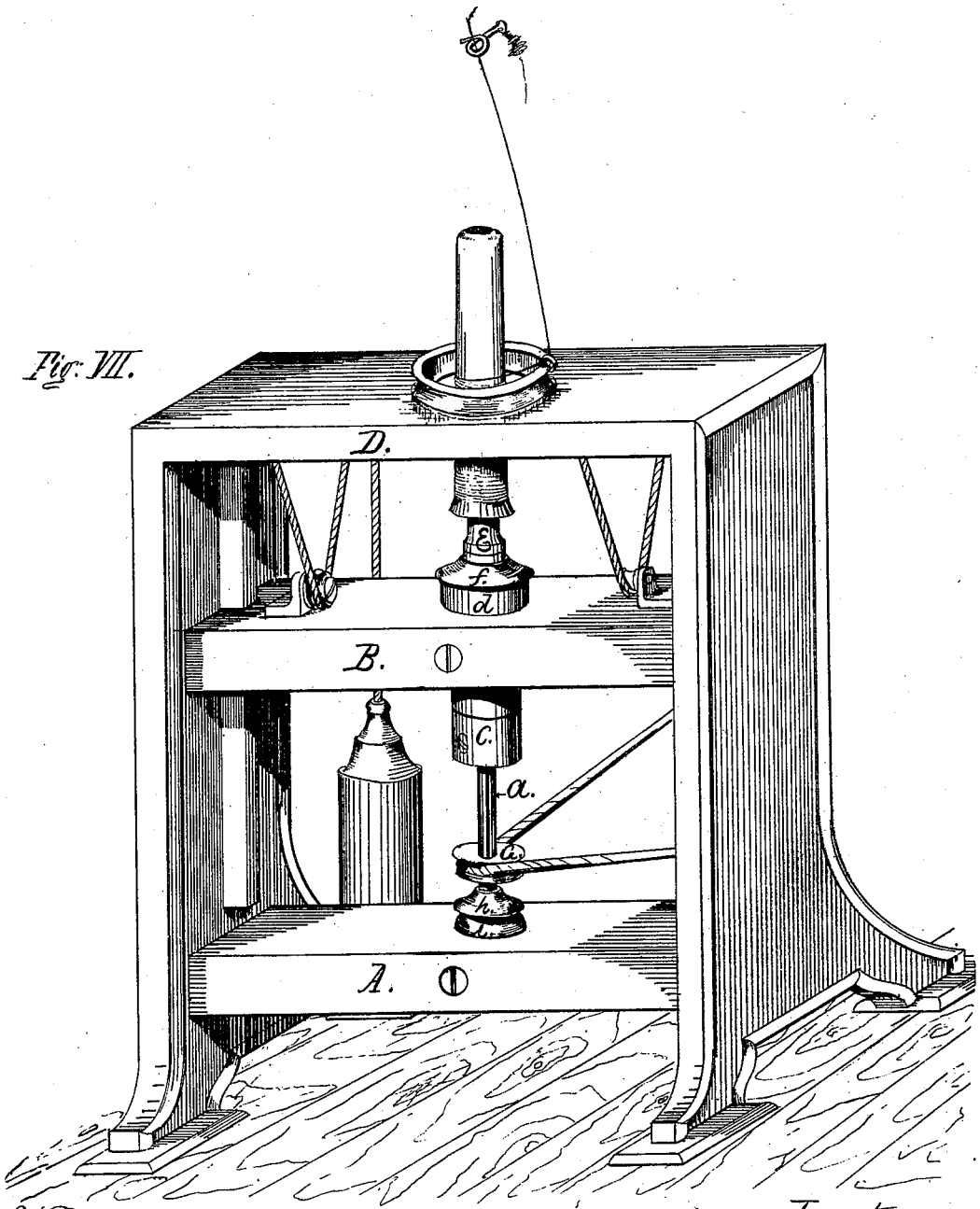
Fig. VII.



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UNITED STATES PATENT OFFICE.

THOMAS MAYOR, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN RING SPINNING MACHINERY.

Specification forming part of Letters Patent No. **180,143**, dated July 25, 1876; application filed September 4, 1874.

To all whom it may concern:

Be it known that I, THOMAS MAYOR, of the city and county of Providence, State of Rhode Island, have invented a new and useful Improvement in Spinning Machinery; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Similar letters of reference indicate corresponding parts.

Figure I is a vertical section through the center of the spindle. Fig. II is an elevation of the spindle, showing the bobbin and ring in broken lines. Fig. III shows the spindle in elevation and section. Fig. IV shows the spindle-tube in section and elevation. Fig. V shows the bolster-tube and oil-cup. Fig. VI shows the oiling-tube in section and elevation. Fig. VII is a perspective, showing the relation of the different parts when the bobbin is partly raised.

This invention relates to the class of spinning machinery known as "ring spinning-frames," in which a traveler, passing freely around a ring, gives the required drag to the yarn while the same is receiving the necessary twist, and is also wound on the bobbin, the ring and its rail being a stationary part of the machine, so that the length of the thread between the traveler and the delivery-rolls shall always be a fixed and unvarying quantity.

In the drawings, A is the step-rail, B is the bolster-rail, and D the ring-rail, which latter is, in this invention, a stationary and fixed part of the spinning-machine. The spindle revolves freely in its bearing in the bolster-tube *b*, attached to the bolster-rail B, to which reciprocating motion is imparted, as was before usually done to the ring-rail. To allow this bolster-rail B, with all the spindles, to traverse with the least amount of power, I balance the weight of the same by means of the weights K, secured to chains or cords M, and passing over sheaves or pulleys, as is plainly shown in Figs. I and VII.

The spindle *a* is of uniform diameter, except the part below the whirl G, and has two narrow grooves on its sides, parallel with its central axis, and extending from end to end; and the tube E fits over the spindle *a* and encompasses the same, its lower part having an interior diameter so as to closely fit to the spindle, while its upper interior diameter is slightly larger than the spindle, so that no friction may be caused at this upper part of the tube E. At the lower close-fitting part of the tube E two splines enter and fit into the grooves of the spindle, so that when rotative motion is imparted to the spindle *a*, the same rotative motion is also imparted to the tube E, which latter has a reciprocating traverse motion imparted to it. The spindle *a* may, therefore, be considered as a non-reciprocating revolving or live spindle, while the tube E may be considered a reciprocating revolving or live-spindle tube.

The spindle-tube E revolves and has its bearing within the bolster-tube *b*, on which it also rests, by means of a collar projecting from the spindle-tube E, immediately above the bolster-tube, and it is prevented from lifting out of the bolster-tube by having the loose collar C secured to its lower end.

The bolster-tube is shown as extending to the top of the oil-cup and cover. This construction is applicable when a paper tube is to be used for a bobbin, or a cop is to be spun on the same. When, however, a bobbin is to be used, I extend the bolster-tube into the bobbin, so as to give a firm bearing to the reciprocating live-spindle tube above the base of the bobbin.

The bolster-tube *b* is firmly secured to the block *d*, which forms the oil-cup, and also secures the whole upper part, or reciprocating part, of the spindle by the screw S. The oil-cup is closed by a cap, *f*, to prevent dust from entering the oil. This cap can be raised when the spindle is running, and the machine may, therefore, be oiled without stopping the same.

To insure a uniform lubrication of the bolster-tube, the wick-supporting tube O is inserted in the oil-cup. A portion of the wick surrounds the base of the wick-tube O, and is always immersed in the oil. The ends of the wick extend upward to a groove formed on the upper edge of the tube O. The oil is carried thus by the wick to this upper groove

by capillary attraction, and uniformly supplied to the bearing-surface.

The step-bearing *i* is provided with a large oil-cup and close-fitting cover, *h*, so as to hold oil for a long time, and secure thorough lubrication of the step.

The step-block is made of a diameter larger than the diameter of the whirl and cap, so that the spindle, whirl, and cap may be removed through the opening made in the step-rail for the reception of the step-block *i*. By this arrangement the spindle, whirl, and step may be all removed or replaced and firmly secured by the one screw S, securing the step-block to the step-rail A.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, in a ring spinning-frame, provided with a stationary ring-rail, of the non-reciprocating live spindle with a reciprocating live-spindle tube, arranged to support the cop or bobbin, substantially as and for the purpose described.

2. The combination, in a ring spinning-frame, of a fixed and stationary ring-rail with a reciprocating bolster-rail, a non-reciprocating live spindle, and are ciprocating live-spindle tube, arranged to impart reciprocating motion to the cop or bobbin without changing the position of the whirl, by which they are rotated, substantially as and for the purpose set forth.

3. The combination of the reciprocating bolster-tube *b* and wick-tube O with the reciprocating live-spindle tube E and non-reciprocating live spindle *a*, substantially as described.

4. In a ring spinning-frame, the combination of a stationary ring and ring-rail, a stationary step and step-rail, a reciprocating bolster-rail, a non-reciprocating live spindle, and a reciprocating live-spindle tube, the whole operating together, substantially as and for the purpose set forth.

In witness whereof I have hereunto set my name.

THOMAS MAYOR.

Witnesses:

JOSEPH A. MILLER,

CYRUS E. LAPHAM.