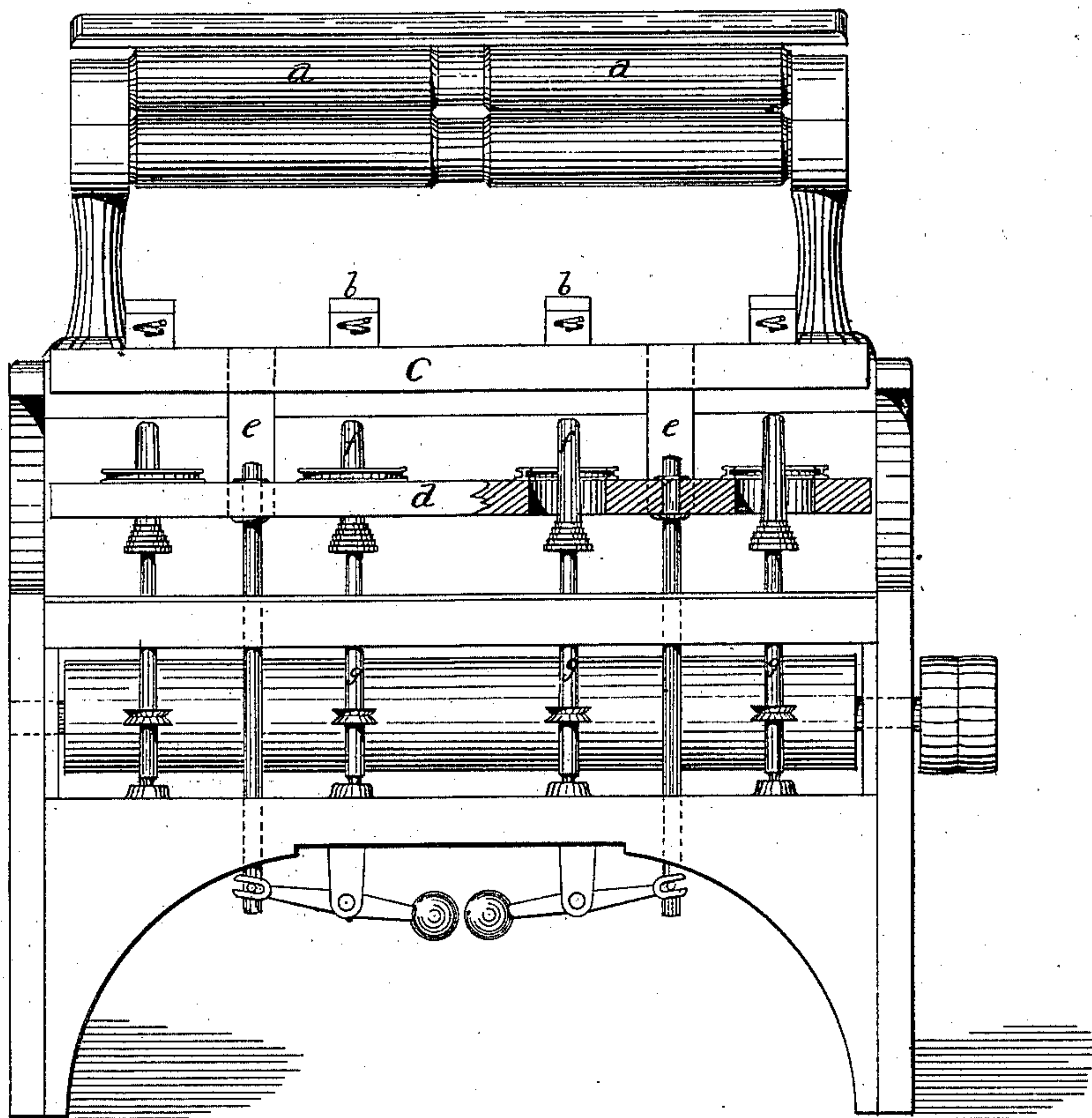


A. HOWLAND & H. LAWTON.
Ring-Spinning Machine.

No. 223,674.

Patented Jan. 20, 1880.

Fig 1



Witnesses

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William L. Cook.

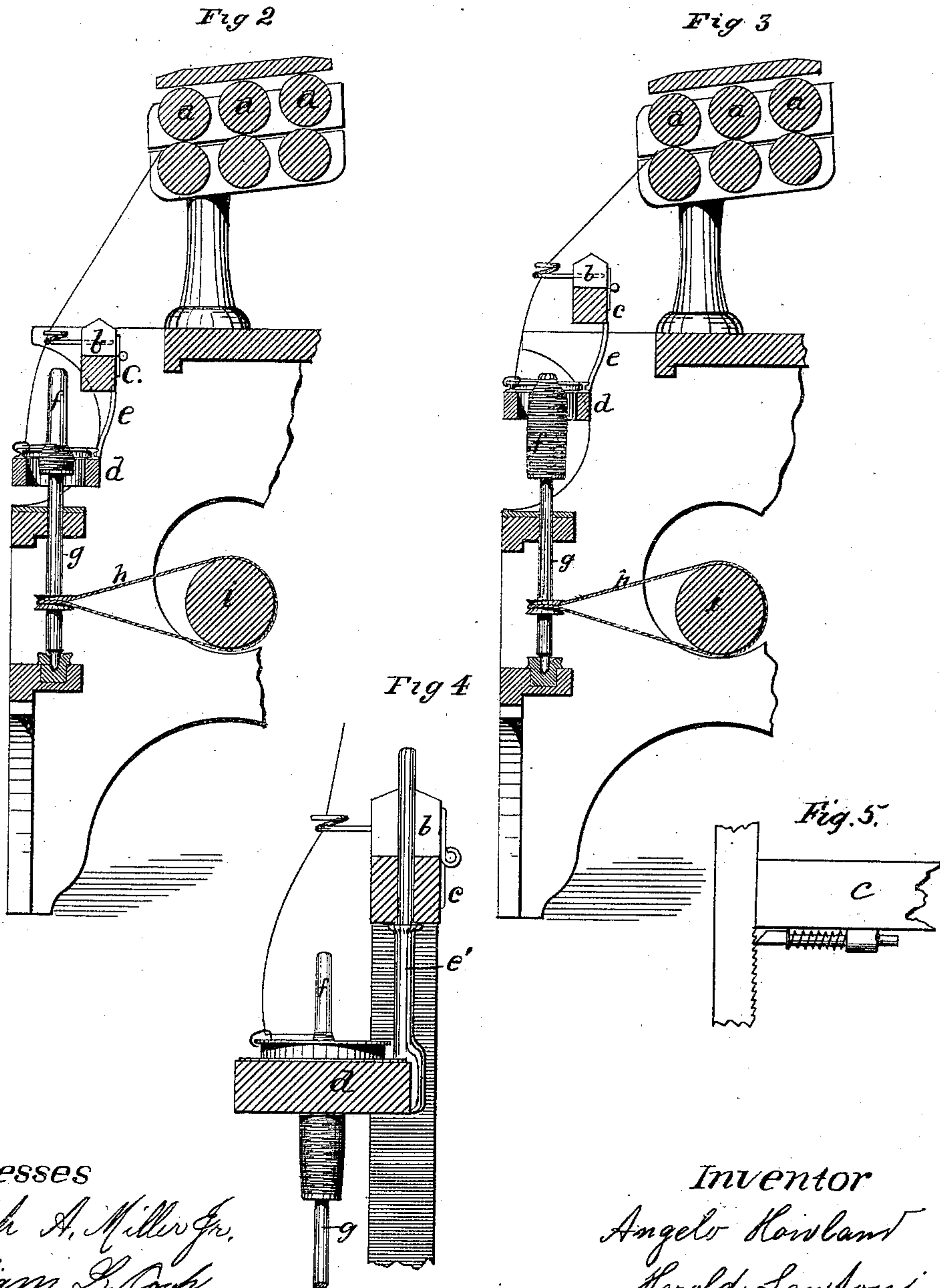
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UNITED STATES PATENT OFFICE.

ANGELO HOWLAND AND HAROLD LAWTON, OF WESTERLY, RHODE ISLAND,
ASSIGNORS TO JOHN BIRKENHEAD, OF MANSFIELD, MASSACHUSETTS.

RING-SPINNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 223,674, dated January 20, 1880.

Application filed March 11, 1878.

To all whom it may concern:

Be it known that we, ANGELO HOWLAND and HAROLD LAWTON, both of Westerly, in the county of Washington and State of Rhode Island, have invented certain new and useful Improvements in Ring-Spinning Machines; and we hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to those parts of a ring and traveler spinning-machine which are known as the "guides," through which the threads pass from the drawing-rolls to the travelers of the rings, it being to impart to the said guides or their carrying-rail movements with and corresponding to those of the ring-rail, such movements being continuous or intermittent with those of the rail, as will be hereinafter explained. The yarn-guides are preserved at a uniform distance from the ring-rail during its reciprocating vertical movements and move with it at the same rate of speed. Furthermore, the guides are movable vertically independently of the rail for the purpose of being adjusted to different altitudes above it.

From the invention important results or advantages follow—viz., uniformity of tension of the yarn and looser twist of it, and, besides, it enables very light travelers to be employed.

In a warp-spinning frame having our invention, the length of yarn between each guide and the traveler of the ring appertaining thereto being always the same during the upward movement of the ring-rail, the resistance of the air to the yarn while revolving with the traveler remains substantially equal or alike, thereby rendering the tension uniform.

In a filling-frame where the yarn spun is laid in successive conical layers on the cop the power of the latter to drag the yarn and traveler constantly varies, it being greatest while the bottom of the layer is being formed and least when the top part of such layer is being made.

We combine with the guides or their support-rail and the ring-rail means or mechanism by which the guides not only may be suitably raised as each conical layer of each cop

is produced, but be retained in position during the next reciprocation of the ring-rail. In consequence of this the length of the yarn exposed to the resistance of the air is the least while the upper part of a conical layer is being made and greatest while the lower part is being formed, the drag on the yarn and its twist being thereby rendered essentially or approximately uniform.

Figure 1 of the drawings is a front elevation of a portion of a ring-spinning machine, such figure showing the delivery-rolls and the guide-rail, its guides, and the connections of the former with the ring-rail. Fig. 2 is a transverse section thereof, taken through the guide-rail near one of the guides, and showing its position relatively to the bobbin while the yarn may be in the act of being wound on the lower part of such bobbin. Fig. 3 is a like section, but representing the positions of the ring-rail and the guide-rail when the yarn is being laid on the upper part of a bobbin. Fig. 4 is a sectional view, showing the manner of connecting the guide-rail with the ring-rail, in order for the guides to be raised to the proper height on the production of each conical layer of a cop. Fig. 5 shows the mechanism or serrated rack and its spring-latch by which the guide-rail is allowed to rise or be moved upward with the ring-rail by means as represented, and be retained in position while the next cop-layer is made.

In Figs. 1, 2, and 3 of the said drawings, the drawing-rolls are represented at *a*, the guide-rail at *c*, the ring-rail at *d*, and the connections of the ring-rail and the guide-rail at *e*, such connections as represented in such figures being posts or standards extending up from the ring-rail to the guide-rail and fastened to them.

e', Fig. 4, is a post projecting up from the ring-rail *d* and passing loosely through the guide-rail, and provided with a shoulder which, while being against the guide-rail and moved upward, correspondingly elevates such rail, such being accomplished while each conical layer of yarn is being extended or projected above that on which it may be laid.

f is the bobbin; *g*, the spindle; *h*, the driving-band of the latter, and *i* its driving-drum.

For warp-spinning frames it may be ob-

served that, to adapt them to secure the advantages of our invention, the ring-rail and the guide-rail or its guides need only be so connected as to cause the two to reciprocate together at an equal distance apart with uniform speed.

For a cop or filling spinning-frame the guide-rail is to maintain a fixed relation with the ring-rail while reciprocating to form a conical layer on each of the bobbins, except in being elevated, as explained, while the upper part of the layer, or that part of it projecting above the next layer below, is being made. The rack and spring-catch to allow the said raising of the guide-rail and to support it in its raised position are seen in Fig. 5, *c* being the guide-rail, and the rack being applied to the frame of the machine, there being one of such spring-latches and its rack at each end of the guide-rail.

From the above it will be seen that the ring-rail and the yarn-guides are so constructed with guide-supports, sustained by the rail, as to be movable at the same rates of speed with and by it, and that the guide-rail is adapted to be movable vertically independently of the ring-rail, for the purpose of being adjusted to different altitudes above it.

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

1. In a ring-spinning frame, the yarn-guides, movable with the ring-rail and provided with mechanism to move them therewith and maintain them at a uniform distance therefrom during a partial or entire vertical movement of such rail.

2. The combination, with the ring-rail of a spinning-machine, of the posts *e'*, secured to the ring-rail, and provided with shoulders on which the guide-rail rests, and the guide-rail provided with holes through which the upper parts of the posts *e'* traverse, and means, substantially as described, by which the guide-rail is retained in the position to which it is raised by the ring-rail at its upward traverse during the downward and part of the upward traverse of the ring-rail, substantially as and for the purpose set forth.

3. In a ring-spinning frame, the combination of the ring-rail and the yarn-guides with guide-supports sustained by the rail, so as to be movable at the same rates of speed with and by it, and adapted to be moved vertically independently of the rail, for the purpose of being adjusted to different altitudes above it.

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