

J. BIRKENHEAD.  
Ring and Traveler Spinning-Frame.

No. 219,613.

Patented Sept. 16, 1879.

Fig. 1.

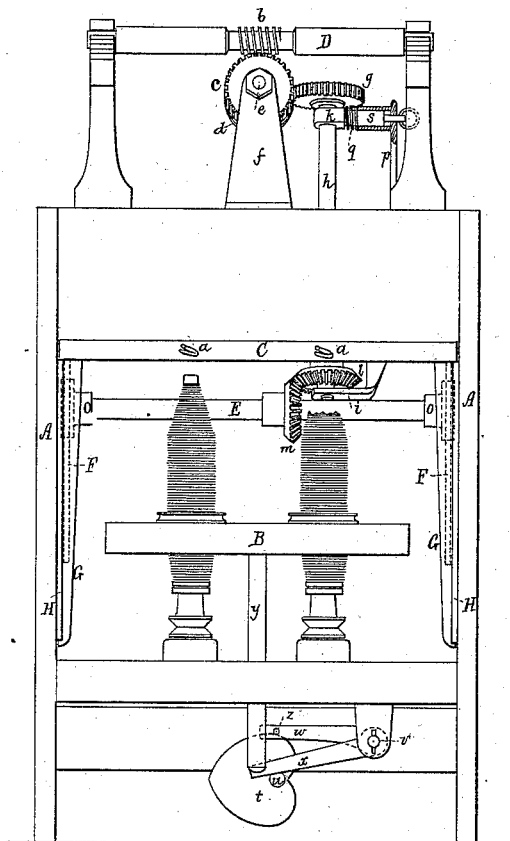


Fig. 2.

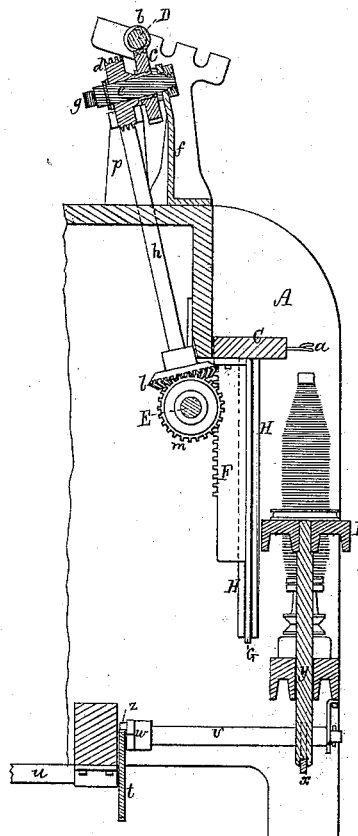
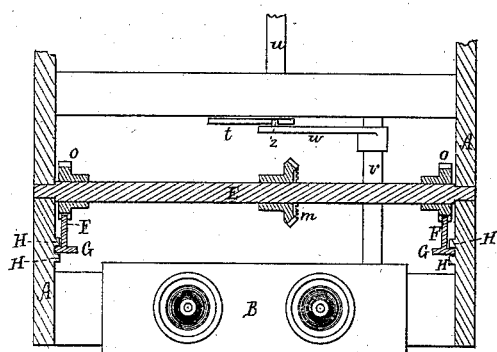


Fig. 3.



Witnesses  
S. N. Papp  
W. W. Lamb

Inventor  
John Birkenhead.  
by attorney  
R. H. Edley

# UNITED STATES PATENT OFFICE.

JOHN BIRKENHEAD, OF MANSFIELD, MASSACHUSETTS.

## IMPROVEMENT IN RING-AND-TRAVELER SPINNING-FRAMES.

Specification forming part of Letters Patent No. **219,613**, dated September 16, 1879; application filed July 7, 1879.

### *To all whom it may concern:*

Be it known that I, JOHN BIRKENHEAD, of Mansfield, of the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Ring-and-Traveler Spinning-Frames; and do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a front elevation, Fig. 2 a vertical and longitudinal section, and Fig. 3 a horizontal and transverse section, of a spinning-frame with my invention, which relates to mechanism for operating or moving the guides through which the yarns pass in going from the drawing-rollers to the travelers.

I have found that when the guide-support rail of a ring-and-traveler spinning-frame has been supported by devices applied to it and the ring-rail so as to be movable with and by the latter, the weight of the guide-rail and its supports being borne by the ring-rail, the proper laying of the yarns on the bobbins is liable to be injuriously affected—in other words, that a small ridge is apt to be formed in each yarn-load, or too much winding of yarn in one place in the load of each bobbin is very liable to occur. To overcome this difficulty I have applied to the guide-rail means of counterbalancing or nearly counterbalancing it and its supports; but with my present invention the said guide-rail is neither directly nor indirectly supported by the ring-rail, but traverses vertically independently thereof, and is operated by mechanism so separated from or independent of the ring-rail or its operative mechanism as to exert no influence on either to cause the ring-rail at the extreme of a traverse thereof to be arrested long enough for the formation of any such ridges in the yarn-loads of the bobbins as mentioned.

In carrying out my invention, I support the guide-rail by toothed racks extending down from it at its ends and engaging with gears carried by a horizontal shaft, and I combine therewith mechanism for revolving such shaft to effect upward motion of the guide-rail, and subsequently admit of it being lowered or dropped to a lower position. The racks are so made that after the guide-rail may have attained a certain altitude it cannot be raised higher by the racks, though their operative

gears may continue in revolution with the shaft.

In the drawings, A denotes the frame of a ring-spinning machine; B, the ring-rail, and C the guide-support rail, the latter having the yarn-guides *a a* projecting from it in the usual manner.

D is a shaft of the set of draw-rollers, such shaft being supposed to be provided with the usual means of revolving it. At the middle of this shaft is a screw, *b*, that engages with a worm-gear, *c*, fixed to a worm or screw, *d*, which, with the said gear *c*, is supported on an arbor, *e*, projecting from a post, *f*.

The worm *d* engages with a worm-gear, *g*, fixed on the upper part of a shaft, *h*, which, stepped at its foot in a bracket, *i*, is supported just below the worm-gear by a movable box or bearing, *k*. At its lower part there is fixed upon the shaft a bevel-gear, *l*, that engages with another such wheel, *m*, fixed on the shaft E, which, extending across the frame and supported in suitable bearings, carries two gears, *o o*, to engage with the two short toothed racks F F, that extend down from the guide-rail or project from guide-arms G G thereof, each of which arms extends between two vertical guide-bars, H H, fixed to the side of the frame.

From this it will be seen that on the shaft D being revolved motion will be imparted to the shaft E, to cause the guide-rail, by means of the racks and their operative pinions or gears, to be forced upward.

The box *k*, that supports the shaft *h*, is movable, to enable the shaft to be moved so as to draw the gear at the head of the shaft out of engagement with its operative screw, in order that the guide-rail, by its own weight and that of the racks, may drop back or downward to a position for it again to commence an upward traverse.

The said box *k* has a spindle, *s*, projecting from it through a standard, *p*, and there is between the box and standard, and encompassing the spindle, a helical spring, *q*, which serves to press the shaft-box in a direction away from the standard.

Just prior to the operation of doffing the bobbins the attendant on the machine is to draw back the spindle *s*, so as to allow the guide-rail to fall to its lowermost position—

that is, so as to rest on the upper ends of the two sets of guide-bars H H.

The mechanism for actuating the ring-rail is shown as consisting not only of a heart-cam, *t*, fixed on a shaft, *u*, but of a shaft, *v*, provided with two arms, *w x*, one of which bears on the heart-cam by means of a stud, *z*, while the other sustains the ring-rail by a slide-bar, *y*, extending down from it to the said arm. The ring-rail is supposed to be provided with the usual appliances for supporting and guiding it in its traverse. It will be seen that the mechanism which operates the ring-rail performs no office in causing it to actuate the guide-rail, or in any way aids in operating mechanism for moving such guide-rail.

What I claim as my invention is as follows:

1. In combination with the ring-rail and its operative mechanism, the yarn-guide rail, movable relatively thereto, as described, and provided with actuating mechanism—viz., the racks F, pinions *o*, shaft E, bevel-gears *l m*, shaft

*h*, worm-gears *c g*, screws *b* and *d*, and shaft D, arranged and applied as set forth—wholly independent of the ring-rail or its operative mechanism, substantially as described.

2. The combination of the racks F, extending down from the guide-rail C, with the said guide-rail and with the pinions *o* and their shaft E, and mechanism for revolving the latter to effect upward motion of the guide-rail, and subsequently to admit or allow of it dropping to its lowermost position, as described, such mechanism, as represented, consisting of the draw-roller shaft D, screws *b* and *d*, worm-gears *c* and *g*, arbor *e*, post *f*, shaft *h*, movable bearing *k*, bracket *i*, bevel-gears *l* and *m*, spindle *s*, standard *p*, and spring *q*, all arranged and applied substantially as set forth.

JOHN BIRKENHEAD.

Witnesses:

R. H. EDDY,  
W. W. LUNT.