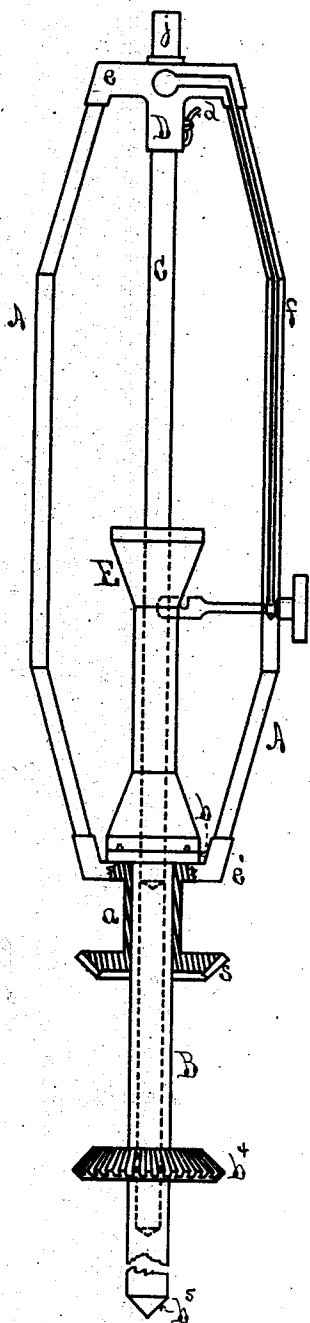


(No Model.)

J. F. FOSS.
Flier for Spinning Machines.
No. 236,942. Patented Jan. 25, 1881.

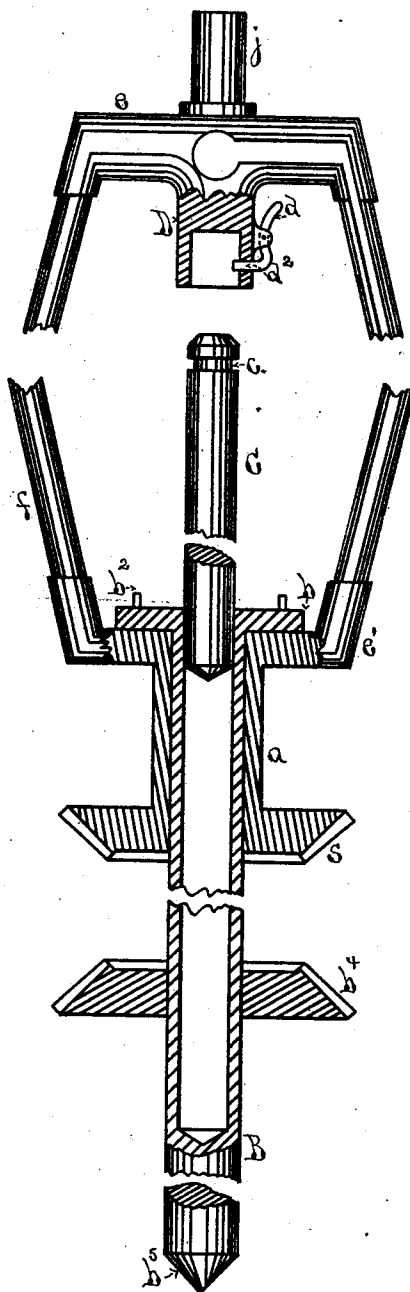
Fig. 1



Witnesses

Wm. S. Brown
George A. Wilber

Fig. 2



Inventor

John F. Foss.
By Wm. S. Brown
George A. Wilber

UNITED STATES PATENT OFFICE.

JOHN F. FOSS, OF LOWELL, MASSACHUSETTS.

FLIER FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 236,942, dated January 25, 1881.

Application filed August 28, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. FOSS, of the city of Lowell, county of Middlesex, and State of Massachusetts, have invented a new and useful Improvement in Fliers for Spinning-Machines, of which the following is a specification.

My invention relates to machines in which a roping or coarse roving is twisted sufficiently to be spun upon ring or other form of spinning-machines which finish the thread.

The object of my invention is to provide a flier with a spindle which shall at all times be supported at its ends, which shall be extremely rigid, shall be of the least possible length, and at the same time admit of the convenient and easy removal or replacement of the bobbins. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the entire flier and spindle. Fig. 2 is an enlarged broken view, partly in section and partly in elevation.

A is the flier, consisting of the ends *e* and *e'* and sides *f*. To the top end, *e*, is attached the usual upward-projecting hollow stud, *j*, which forms the upper bearing of the flier, and through which the roping is carried into the flier-spindle. Directly below the stud, on the axial line of the flier, is extended the hollow nose D. Attached to this nose is a spring-catch, *d*, having an end, *d²*, projecting through the shell of the nose, and extending a short distance into the cylindrical opening of its interior. Attached to the bottom *e'* is the sleeve *a*, which forms the lower bearing of the flier. Attached to this sleeve is the pinion *s*, which is driven by the usual bevel-gear wheel of such machines.

B is the spindle, driven by the spline bevel-pinion *b⁴*. The spindle B is made hollow and provided with a button, *b*, at its top, having an upward-extending pin, *b³*, which catches into a notch in the bottom of the bobbin and carries it with the spindle.

C is a guide-rod, extending, when in operative position, from within the hollow of the spindle B, on the line of the bottom *e'* of the flier, up through the bobbin E, into the hollow nose D, where it is caught and held by the

projecting end *d²* of the snap-catch *d*, which projects into the annular groove cut near the top of and around the rod C.

The rod C, being of substantially the same diameter as the opening through the bobbin, and extending from the bottom to the top of the flier, and closely fitting the bearings in which it is sustained at its top and bottom, sustains the bobbin while in all parts of its traverse, and prevents its vibration or gyration, while the spindle, being somewhat larger and tubular, possesses a rigidity not to be obtained in a small solid spindle.

The spindle B, being lifted by the traverse-rail upon which its step is placed, rises through the sleeve *a* and upon the rod C, carrying upward the bobbin E as the roving is wound upon it, and thus lays successive layers upon it as it rises and falls within the flier, in the usual and well-known manner, while the spindle, being extended within the flier only to the lower part of the bobbin, has less length and less tendency to vibrate or gyrate, and, being sustained by the rod C as well as by the sleeve *a* and its step-bearing *b⁵*, it has at all times three points of support—one at each end and one in the middle—thus sustaining it far better than any spindle can be which, by the rise of the traverse-rail, is projected up into the flier away from its points of support.

When it is desired to “doff” or remove the bobbin from the flier, when full, to substitute an empty one, it is done by retracting the projecting end *d²* of the spring-catch *d*, by pressing upon the upper end of the catch, when the rod C, being free, drops down into the hollow spindle a little farther than the length of the bobbin, when the bobbin can be lifted up and removed, and an empty one substituted, after which the operator, by seizing the top of the rod C, lifts it, and as it is accurately directed by its fit in the hollow spindle, it enters the hollow nose D without difficulty, and is caught by the catch *d* and held in position. As the catch *d* engages into an annular groove in the rod C, it does not prevent the rotation of the rod if the frictional contact of the spindle and bobbin be sufficient therefor, while the rod being cylindrical, as is also the opening into which it enters in the spindle, it is free to ro-

tate at that point, so that it may rotate either with the flier or the spindle, or it may rotate with the latter at a less speed than that is moving.

5 What I claim as new and of my invention is—

1. The combination of the hollow spindle B and guide-rod C with the flier A, provided with the hollow nose D, which has a catch or
10 stop to retain the end of the guide, substantially as described.

2. The combination of the hollow spindle B

and guide-rod C with the flier A, provided with a connecting mechanism which will sustain and hold the top of the guide-rod, substan- 15
tially as described.

3. The combination of the flier A, provided with the hollow nose D and the catch *d*, with the guide-rod C, which is provided with an annular groove, *c*, substantially as described. 20

JOHN F. FOSS.

Witnesses:

DAVID HALL RICE,
N. P. OCKINGTON.