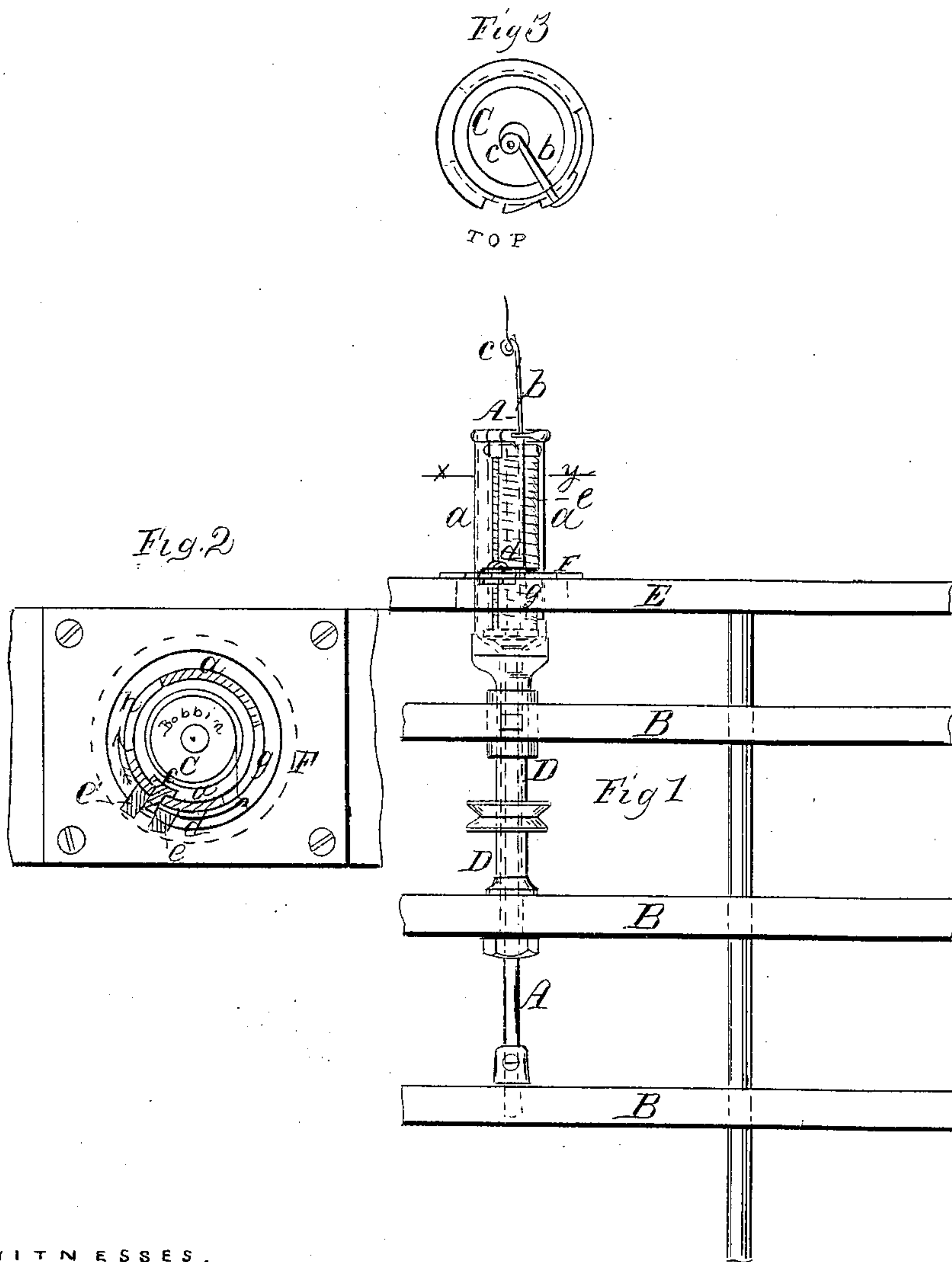


C. Harris,
Spinning Machine.
No. 80,949. Patented Aug. 11. 1868.



WITNESSES.

William H. Richard
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CHARLES J. HARRIS, OF WARREN, RHODE ISLAND.

Letters Patent No. 80,949, dated August 11, 1868.

IMPROVEMENT IN SPINNING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CHARLES J. HARRIS, of Warren, in the county of Bristol, and State of Rhode Island, have invented a new and useful Improvement in Machinery for Spinning Fibrous Material; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is an elevation of a spindle and flier constructed with my improvement.

Figure 2 is a top view below the line *xy* of fig. 1, showing in section the bobbin, the surrounding flier, the traverse-arm and block, and the guide for such block on the traverse-rail.

Figure 3 is a top view of the flier, flier-arm, and bobbin.

The invention hereinafter described relates to machinery for spinning fibrous material, from suitably-prepared roving, into thread or yarn; and embodies certain improvements, the end of which is to obtain, in the same machine, all the capacity of the flier-frame spinning-machine to manufacture fine and evenly-twisted yarns of high numbers and grade, with all the rapidity of production which characterizes the ring-spinning frame.

The distinguishing features of my improvements may be said to consist—

In the employment of a flier of peculiar construction, in combination with a spindle, which flier and spindle do not change, during the filling of the bobbin, their relative positions.

Also in the employment of a peculiar device, in combination with the flier, for presenting the material to be spun to the action of the flier, which shall cause the same, while being twisted, and until converted into thread or yarn, to pursue a line of travel which is free from any gyratory movement.

The essential parts of the apparatus employed are set out in the following description.

A description of the invention, as applied to a single spindle, must be understood to be the same for all the other spindles in a frame. In all other respects, too, where not otherwise mentioned, it is to be implied that the machine is to be constructed, arranged, and have motion communicated to the operating parts in any of the well-known ways.

A spindle, *A*, of ordinary construction, is properly stepped and bolstered in a suitable frame, *B*. Upon its upper end it carries a bobbin, *C*. The spindle is of the class technically known as "dead spindles," or those which are not driven by the direct application of power, but whose movement is incidental only to the movement of their fliers.

Surrounding the spindle *A* is the hollow flier-shaft or spindle *D*, which is properly bolstered, and should have a sufficient extent of journal-bearing surface in the frame *B* to insure perfect steadiness of movement under all conditions of speed. The upper end of this flier-shaft is furnished with a flier of peculiar construction. It consists of a cylindrical barrel, *a*, of thin metal, with apertures, hereinafter mentioned, and is of sufficient length and internal diameter to accommodate the bobbin *C* upon the spindle *A*. This flier is caused to revolve with great rapidity about the spindle, but, unlike all other fliers, it always revolves in the same plane relatively to the bobbin, whereby all the disturbances incident to a shifting or variable extent of bearing are avoided, and the highest practicable number of turns can be given to it without ill effects.

In order that the roving or yarn to be spun may be presented to the flier in a line coincident with the axis of the spindle, there is hinged to the top rim of the flier an arm, *b*, furnished at its end with a guiding-eye, *e*, for the yarn. This arm is hinged, instead of being rigidly attached to the flier, for convenience in doffing the filled bobbin, or setting an empty one upon the spindle. The joint of the hinge which attaches the arm to the flier, should be so constructed that when such arm is in proper position for the spinning of yarn, the eye in the end of the same will be directly over the axis of the spindle, and consequently the arm will stand at an angle with the line of the axis of the spindle produced, so as to describe, as the flier revolves, the figure of a cone.

As has been already stated, the flier constantly revolves in the same plane. In order that the yarn may be wound upon the bobbin, the traverse-rail *E*, instead of being connected with the flier, is connected with a device which may be called a travelling traverse-arm, and gives to the same a movement up and down, parallel

with the core of the bobbin, independent of the movement in a circle which it obtains from the flier. In the present instance the said traverse-arm, *d*, furnished with a thread-guide at its end, projects, in a curved line concentric with the flier, from a traverse-block, *e*, which block is furnished with a groove, so as to embrace the circular edge of the plate *F*, let into the top of the traverse-rail, and a lip, *f*, (fig. 2,) projecting from such block, enters a longitudinal slit in the flier, extending the whole length of the range of motion of the traverse-rail. Obviously the traverse-block and its arm *d* will revolve with the flier in a circular path, while the plane in which it revolves will be controlled by the traverse-rail, the flier revolving in a constant plane.

To enable the thread to run from the hook on the end of the traverse-arm *d* to the bobbin, a longitudinal opening, *g*, should be made in the side of the flier, extending the whole length of the bobbin; and in order to distribute equally about its axis the weight of metal in the flier, it will be well to balance it by removing a piece of metal of corresponding size from the side of the flier opposite to the aperture *g*, as seen at *h*, fig. 2.

It is also to be understood that the material to be spun is to be conducted in a well-known way from the delivering-rollers to the eye *c* in the end of the flier-arm *b*; and in order to bring the same to the said eye in a line coincident with the axis of the flier produced, guides of common construction are arranged to stand directly over the eyes in the flier-arms. As only that portion of the roving receives the twist which is located between the eye in the flier-arm and the delivering-rollers, it will be apparent to all familiar with spinning-machinery, that if conducted as above described, the yarn, while receiving its twist, will travel in a dead line, or, in other words, a line which is free from any gyratory motion.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A cylindrical flier, *a*, with a thread-guiding arm, *b*, hinged thereto, constructed substantially as herein described.
2. The arrangement of the flier *a b*, constructed as described, with the spindle *A*, to which it appertains, so that the relation of the two shall remain unchanged, by causing both to remain in fixed planes during the spinning operation, and the winding up of the bobbin, substantially as herein set forth.
3. The combination of the flier *a b*, the independent traverse-arm *d*, the block *e*, all constructed as described, with a suitably-operated traverse-rail, *E*, substantially as described.

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Witnesses:

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