2 Sheets—Sheet 1.

H. M. WILLIAMS.

Spindle and Flier for Spinning Machinery.

No. 200,115. **Patented Feb. 5, 1878.**

Fig. 1.

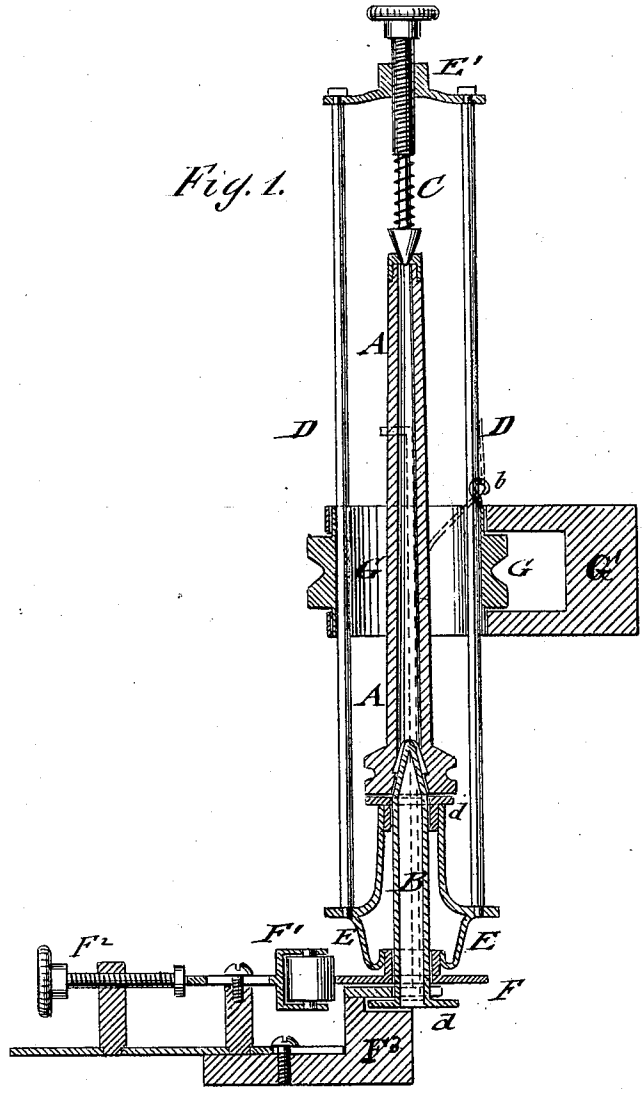
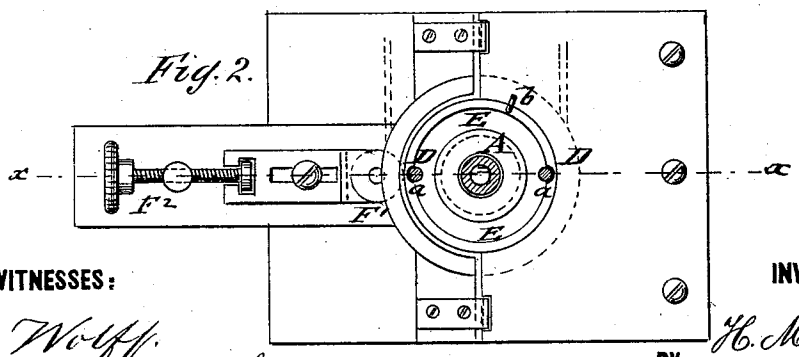


Fig. 2.



WITNESSES:

E. Wolff.

J. H. Scarborough.

INVENTOR:

H. M. Williams

BY

Munn & Co

ATTORNEYS.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

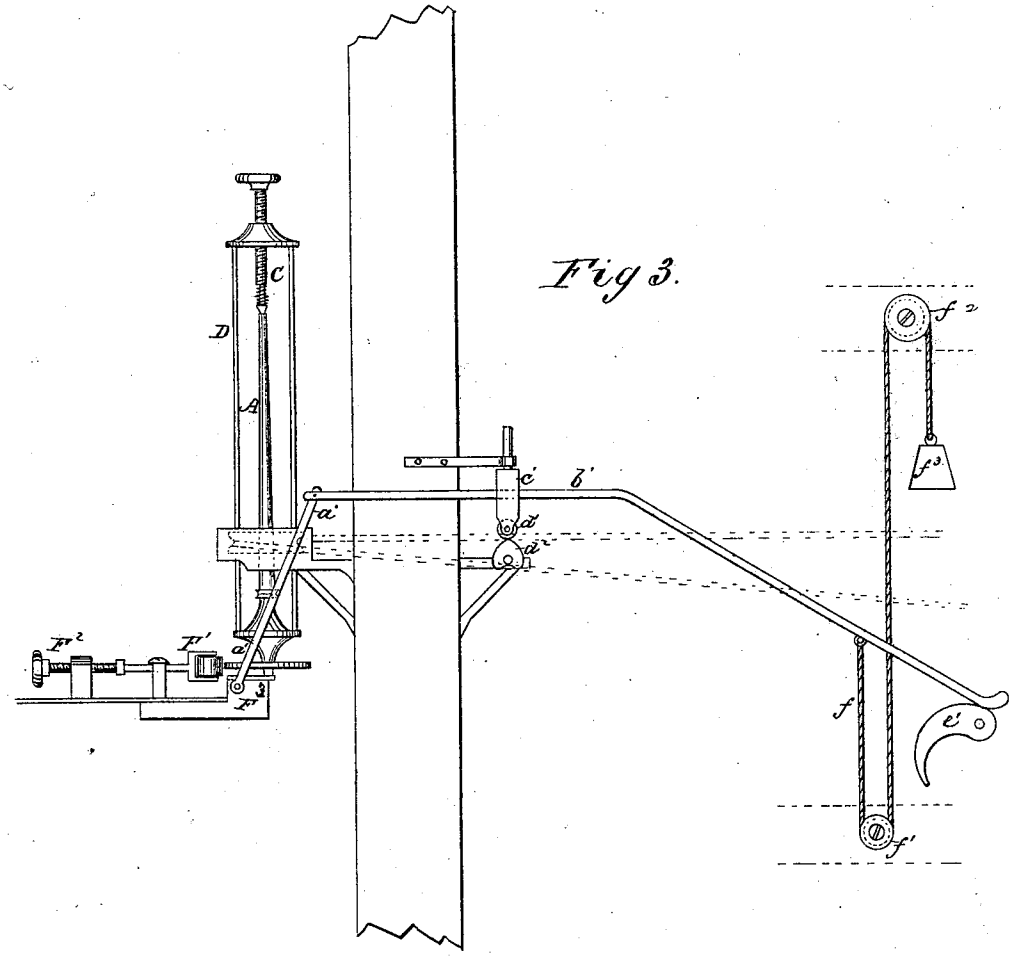
2 Sheets—Sheet 2.

H. M. WILLIAMS.

Spindle and Flier for Spinning Machinery.

No. 200,115. **Patented Feb. 5, 1878.**

Fig 3.



WITNESSES:

Solon C. Kemon

Wm. H. Hadaway

INVENTOR:

H. M. Williams

BY

Munn & Co

ATTORNEYS.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY M. WILLIAMS, OF COLDWATER, MICHIGAN.

IMPROVEMENT IN SPINDLES AND FLIERS FOR SPINNING MACHINERY.

Specification forming part of Letters Patent No. **200,115**, dated February 5, 1878; application filed March 24, 1877.

To all whom it may concern:

Be it known that I, HENRY M. WILLIAMS, of Coldwater, in the county of Branch and State of Michigan, have invented new and Improved Spindles and Fliers for Spinning-Machinery, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical central section of my improved spindle on line *x x* of Fig. 2; and Fig. 2 is a top view of the same, partly in horizontal section. Fig. 3 is an elevation, showing the spindle attached to a winding-motion.

Similar letters of reference indicate corresponding parts.

The invention will first be described in connection with the drawing, and then pointed out in the claims.

In the drawing, A represents the bobbin, which is seated on the flanged conical head of a base-stool, B, and retained at the top by a sliding and spring-acted bearing, C, of inverted conical shape. The spring of the top bearing C may be adjusted by a tension-screw, as shown in Fig. 1.

The bobbin is turned with the base-stool and top bearing by vertical wire rods D, that are secured to top and bottom pieces E E′, which form a revolving frame, in which the base-stool and top bearings are supported. The vertical wires D are seated in grooves *a* at the inner circumference of a revolving ring, G, provided with a whirl and suitable bearings on the outer side.

The thread to be twisted and wound is brought through rollers from above, and passed through a small hook-eye, *b*, in the edge of the ring, and thence to the bobbin, as indicated in dotted lines in Fig. 1.

The base-stool B is provided with horizontal top and bottom flanges *d*, which serve to guide the stool when revolving with the wire frame, while a third intermediate flange, F, is made larger, in the form of a disk, and acted upon at the circumference by a tension-roller, F^1, which is adjusted by a screw, F^2, so as to bear with greater or less degree of friction on the disk F. This tension or brake device retards the motion of the bobbin, while the ring continues to revolve at the same speed.

The tension can be made so light that the finest thread may be wound without breaking.

The device is so arranged that the bobbin may work up and down through the revolving ring for the purpose of laying the thread evenly on the bobbin, which is accomplished by any one of the appliances now in use on twisters, continuous spinners, &c.

The turning of the bobbin depends on the strength of the thread that is spun, in the same manner as in the old-fashioned flier; but as, by the friction attachment, the turning of the bobbin may be made light or heavy, the same spindle may be used for spinning and winding all grades of yarn with equal facility.

a′ is a pitman or rod, attached to the movable block F^3 at one end, while the other end is connected with the end of a lever, *b′*, that has its fulcrum in a block, *c′*, movable vertically by a heart-cam, d^2, and provided with a friction-roll, d^1. The outer end of lever *b′* is supported by a cam, *e′*.

f represents a cord, attached at one end to lever *b′*, then passing down and around a pulley, f^1, and finally passing up and over a superposed pulley, f^2, its end being provided with a weight, f^3, the whole serving to retain the end of lever *b′* on the cam *e′*. The heart-cam d^2 moves rapidly, while the cam *e′* moves very slowly, a differential motion being thus produced that causes the spool to be filled when the cam *e′* reaches its greatest elevation.

Thus it will be seen that the ring G is stationary, being surrounded by the rigid casing G′, while the block F^3 moves up and down, carrying the bobbin with it, so as to lay the thread in an efficient and uniform manner.

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

1. The combination of the bobbin A with the base-stool B, and with the sliding and spring-acted top bearing C, supported in the top and bottom pieces of the revolving wire frame, substantially as specified.

2. The combination of the bobbin A and base-stool B, having guide-flanges and friction-disk F, with an adjustable tension or brake roller, F′, substantially as and for the purpose specified.

HENRY M. WILLIAMS.

Witnesses:

S. B. KETCHEL,

DAVID THOMPSON.