

(No Model.)

H. B. ESTES.
SPINNING MACHINE.

No. 246,300.

Patented Aug. 30, 1881.

Fig: 2.

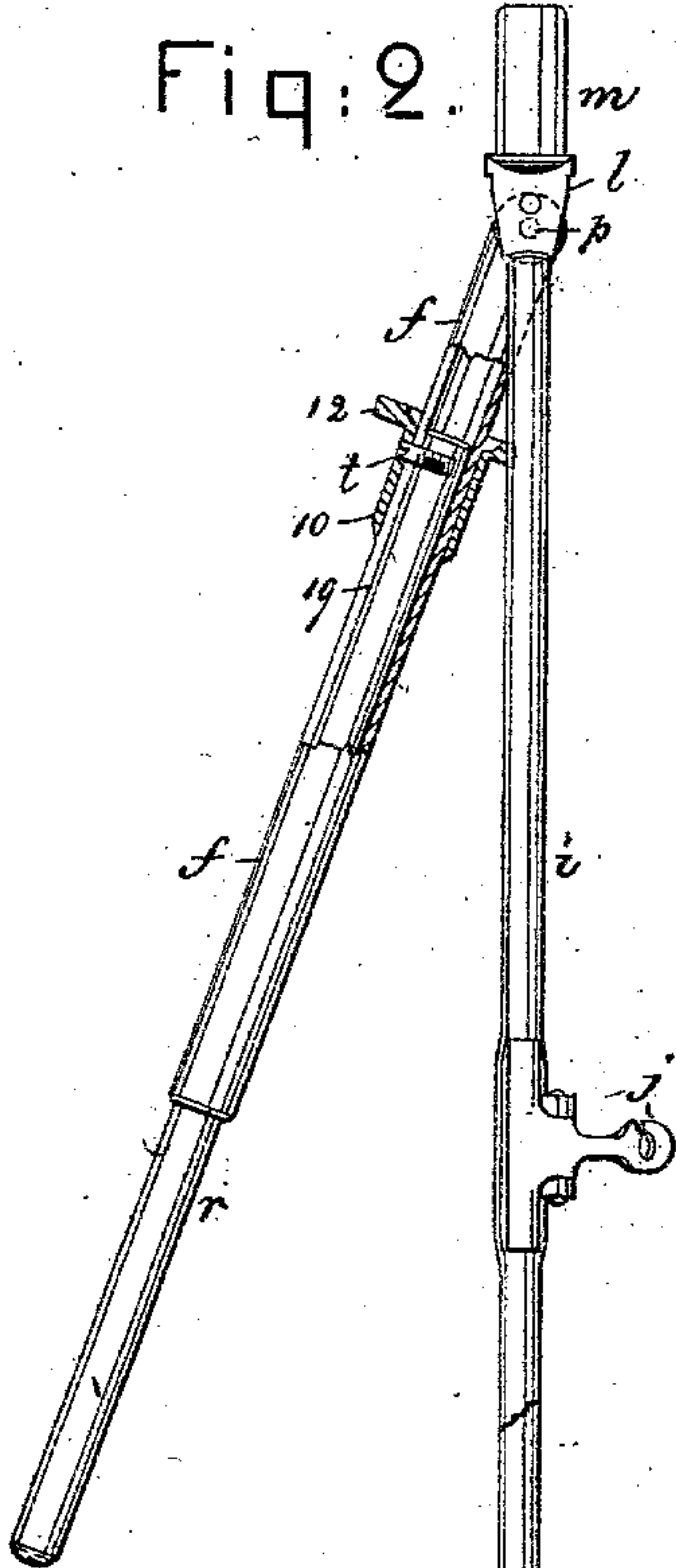


Fig: 1.

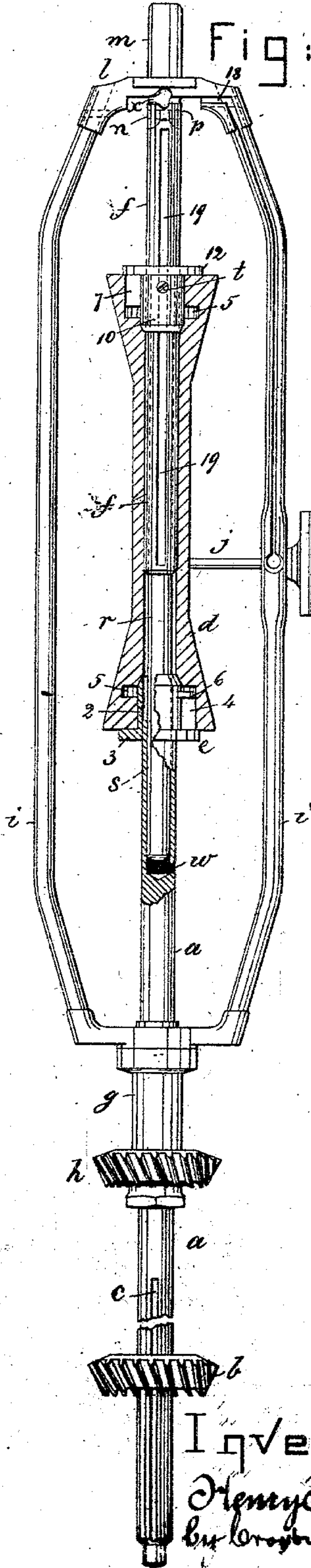
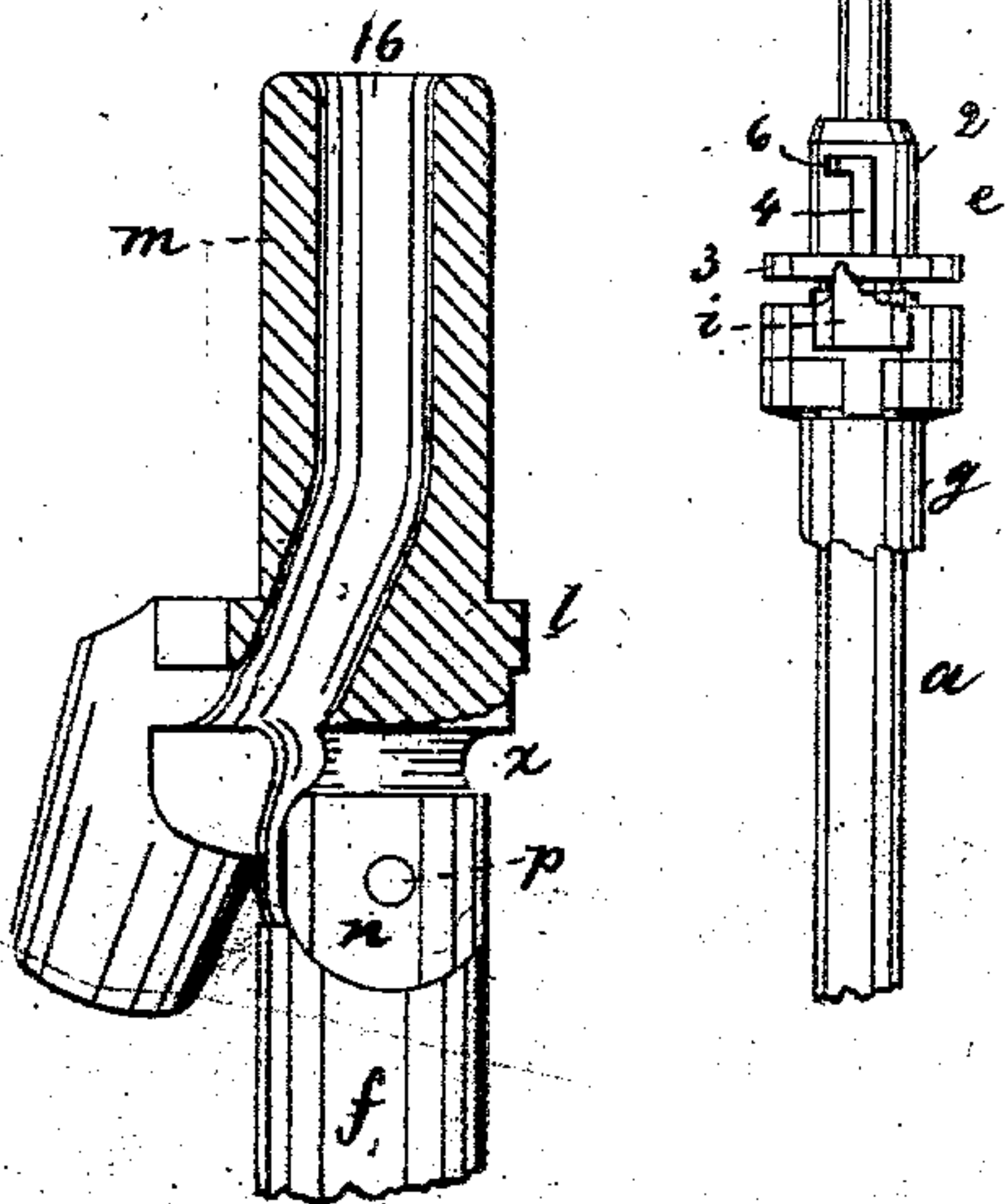


Fig: 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY B. ESTES, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO GEORGE DRAPER & SONS, OF SAME PLACE.

SPINNING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 246,300, dated August 30, 1881.

Application filed February 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. ESTES, of Lowell, county of Middlesex, State of Massachusetts, have invented an Improvement in Spinning-Machines, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to that class of spinning-machines known as "speeders," and is an improvement on the mechanism described in United States Patent No. 228,809, dated June 15, 1880, to which reference may be had.

In this my invention the upper end of the quill is permanently but loosely connected with the bow-flier in line with its nose or upper bearing, connected with and extended above the yoke of the flier, so that the lower end of the quill may be readily turned or swung out laterally from between the flier-arms, to permit the bobbin to be removed or doffed by drawing it down and off the lower end of the quill. The quill is shown as connected with and rotated by the flier, instead of by the spindle, as in the patent referred to. Co-operating with this quill inside the bobbin, and movable longitudinally with relation to the quill to form a prolongation thereof when desired, and loosely connected therewith, is a slide-rod, made as a bolt, which extends into and through the bobbin, and, emerging from the lower end of the bobbin, is made to enter an axial socket in the upper end of the shortened spindle. When the lower end of the slide-rod is in the socket of the spindle the quill and spindle are locked or held together in line to permit the head or top of the spindle in engagement with the lower end of the bobbin to rotate the latter, and at the same time raise and lower it as the spindle is raised and lowered by reason of its connection with the usual traverse-rail. In my invention the parts which support the bobbin internally, and about which the bobbin is turned by the spindle, are connected with the flier, and always remain so without liability of becoming detached during doffing, and the bobbin may be quickly and easily doffed without especial care. As the operator applies a bobbin to the quill the upper end of the bobbin will act upon a collar of a bobbin-centering

device composed of a short sleeve and a connected flange or head, which is joined with the upper end of the slide-rod by a pin extended through a slot in the quill, and will move the slide-rod in the quill upward with the bobbin. In this way the operator, by grasping only the bobbin, is enabled to lift the slide-rod above the upper end of the spindle, so that when the lower end of the bobbin is placed on the head or top of the said spindle the lower end of the slide-rod will come correctly into line with the slide-rod-receiving socket or opening in the top of the spindle. I have provided the spindle with a hole or opening which intersects the lower end of the socket therein, which obviates the trapping the air below the end of the slide-rod, which would prevent the prompt entrance of the slide-rod into the said socket.

Figure 1 represents, in elevation and partial section, a flier and spindle embodying my invention, with the bobbin in section and the upper end of the spindle broken out to show the slide-rod entered therein to lock and hold the quill in line with the spindle, stiffen the parts, and hold the bobbin firmly at the center of the flier. Fig. 2 is a partial side elevation of Fig. 1, showing the quill and slide-rod turned out laterally from between the flier-arms in the position the quill will occupy when doffing the bobbin, the quill being partially broken out to show the slide-rod, the bobbin-centering device being in section, one arm of the flier being also broken away to show the top of the spindle; and Fig. 3 is a detail of the flier-nose and part of the yoke.

The spindle *a* will have its step in a traverse-rail of usual construction, and will be rotated in the usual way by means of the bevel-gear, having a key to enter the usual groove, *c*, in the spindle, the said gear *b* being so held that it cannot rise and fall as it is rotated, and consequently the spindle *a*, acted upon by the traverse-rail, will be raised and lowered, and with it its attached bobbin, as the spindle is rotated. The spindle *a*, instead of being of sufficient length to extend nearly to the top of the bobbin *d*, is shortened and provided with a bobbin-driving head, *e*, composed, as herein shown, of a sleeve, 2, a collar, 3, and a lug, 4,

at the side of the sleeve. The ends of the bobbin *d* are chambered to fit the sleeve of this head *e*, and either end of the bobbin which may happen to be down when applied to the quill *f* will rest on the said collar 3.

I have shown the lug 4 as provided with a bobbin-holding lip, 6, which, after the lip has been inserted a little way into a longitudinal groove, 7, of the bobbin-head, (the groove being shown most clearly and lettered only at the top of the bobbin in Fig. 1,) comes in line with a small annular groove, 5, so that the bobbin at that time seated on the collar 3 may be partially rotated by hand and cause the lip 6 to enter the said groove 5 and prevent the bobbin being lifted, unless it is again positively rotated on the said head by the operator, so as to permit the lip 6 to come opposite the vertical slots in the bobbin. The lug 4, by its engagement with the bobbin, rotates it positively in unison with the spindle. The bearing *g* for the flier will be held in the stationary flier-rail, with the gear *h* next below the said rail, and the said gear, driven by another bevel-gear, will rotate the flier, all in the usual manner. The flier-arms *i* and presser *j* are of usual construction. The upper ends of the flier-arms are joined with a flier-yoke, *l*, having above it the usual hollow nose, *m*, which, besides serving as the top bearing for the flier, also permits the introduction of the roving into the opening 16 of the nose in the axis of rotation of the flier. I have provided the under sides of this yoke with a projection, *n*, which is opened at one side in continuation of opening 16, (see Fig. 3,) and close to the under side of the yoke I have provided this projection *n* with an annular groove, *x*, to permit the roving led into the nose and below the yoke to be wrapped part of the way around the said projection, after which the roving is led into the slot 18 in the yoke and flier-arm, down along the said arm, and out of the same onto the presser *j*. Passing the roving about the projection *n* insures that all the twist put into the roving by the flier shall be put in between the said projection and the usual rolls (not shown) which deliver the roving to the flier, and consequently the roving between the projection *n* and the bobbin will be kept uniform as to twist. This projection is herein shown as made available as the support for the quill *f*, which is shown as a hollow tube, slotted at one side, as at 19, for nearly its whole length, the connection between the said quill and the projection *n* being, as herein shown, made as a hinge-connection—viz., by means of a pin, *p*, (shown in dotted lines, Figs. 1 and 2,) extended through the crotched lower end of the projection *n*, and through an ear at the upper end of the quill *f*, the latter being free to turn out from and into position between the flier-arms *i* about the said pin or pivot *p*.

The slide-rod *r*, fitted, as herein shown, within the quill *f*, is connected by a pin or screw, *t*, with the centering device for the upper end

of the bobbin, the said device being composed of a sleeve, 10, preferably beveled or made cone-shaped at its lower end, and having a head, 12, to come in contact with the upper end of the bobbin, as in Fig. 1. The guide and slide-rod are rotated by and in unison with the flier, and are always connected and in proper position with relation to each other to permit a bobbin to be applied to or to be removed from the quill. If a bobbin, *d*, is to be applied, the slide-rod and quill will be turned out more or less from between the flier-arms, as in Fig. 2, (the presser being preferably at the rear side of the flier,) and the operator will grasp a bobbin and push it up along the slide-rod until the head of the bobbin meets the head of the centering device, when further upward movement of the bobbin will lift the slide-rod *r* with it, retracting the slide-rod into the quill *f*. The bobbin will be moved upward until the lower end of the slide-rod has been lifted to a point above the head *e* of the spindle *a*, when the operator will place the lower end of the bobbin upon the said head and partially rotate the bobbin until the driving-lug 4 enters one of the slots 7, of which there may be several in the bobbin, thus engaging the lug with and so as to drive the bobbin. Placing the end of the bobbin on the said head and permitting the bobbin to move downward insures the proper and straight entrance of the lower end of the slide-rod into the socket *s* at the upper end of the head and spindle. The slide-rod will, being made sufficiently heavy, cause its lower end to enter the said socket by the action of gravity alone.

The slide-rod should fit the socket *s* rather closely, to insure the greatest steadiness in rotation of the spindle and flier and keep the head of the spindle central. If the spindle be fitted rather closely to the said socket, the latter would act as a dash-pot and the air would be trapped therein under the descending slide-rod. So to obviate this I have provided the spindle with an air-hole, *w*, (shown in heavy black lines, Fig. 1,) to permit the air to be forced out under the descending slide-rod.

Connecting the quill positively with the upper portion of the flier and the slide-rod positively with the quill and extending the slide-rod directly into the spindle forms a very stiff and firm support for the bobbin as it is rotated by the spindle, and generally stiffens the entire apparatus to enable it to move at high speed.

I claim—

1. The flier *i*, its attached pivoted quill to enter and steady the bobbin during its rotation, and the slide-rod carried by the quill, combined with the spindle adapted to engage the slide-rod and drive the bobbin, substantially as described.

2. The bow speeder flier provided with axial bearings at each end, the quill pivoted upon the flier at its upper end, and the slide-rod carried by and extended below the quill and be-

low the lower end of the bobbin, combined with the shortened spindle α , engaged by the lower end of the slide-rod, substantially as described.

3. The flier and its pivoted quill and the slide-rod connected therewith, combined with the head or collar 12, to bear against the upper end of the bobbin, substantially as described.

4. The spindle, its head, and connected lug 1, provided with the lip 6, to engage the

notched and grooved bobbin and prevent it from being lifted from the said head, substantially as described.

In testimony whereof I have signed my name 15 to this specification in the presence of two subscribing witnesses.

HENRY B. ESTES.

Witnesses:

G. W. GREGORY,

ARTHUR REYNOLDS.

It is hereby certified that in Letters Patent No. 246,300, issued August 30, 1881, upon the application of Henry B. Estes, of Lowell, Mass., for an improvement in "Spinning Machines," the domicile of the assignees and grantees, George Draper & Sons, was erroneously written and printed in said Letters Patent, and in the printed specification attached to and forming a part thereof "of same place," instead of "of Hopedale, Mass.;" that the proper corrections have been made in the files and records pertaining to the case in the Patent Office, and are hereby made in said Letters Patent.

Signed, countersigned, and sealed this 11th day of October, A. D. 1881.

[SEAL.]

A. BELL.

Acting Secretary of the Interior

Countersigned:

E. M. MARBLE,

Commissioner of Patents.