(No Model.)

R. B. DALY.

SPINNING MACHINE.

No. 246,469. Patented Aug. 30, 1881.

Fig: 1.

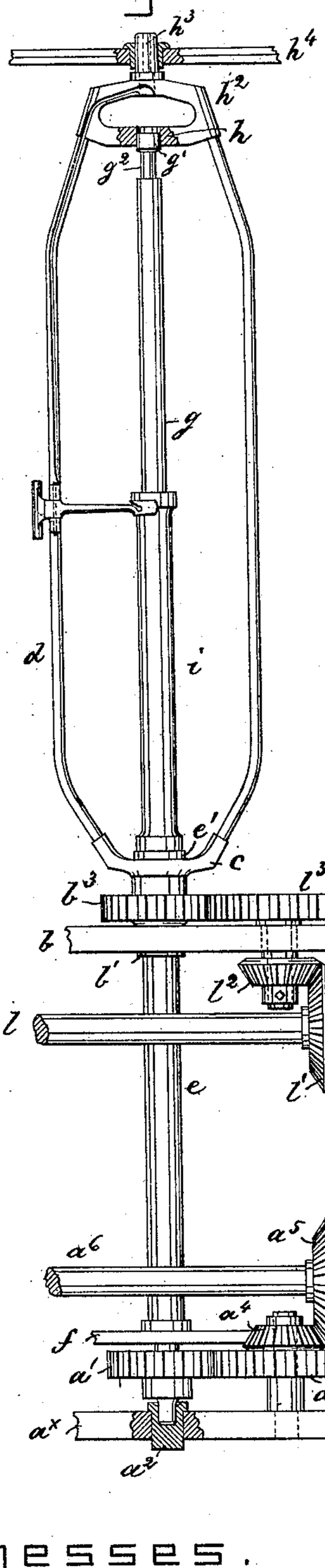


Fig: 2.

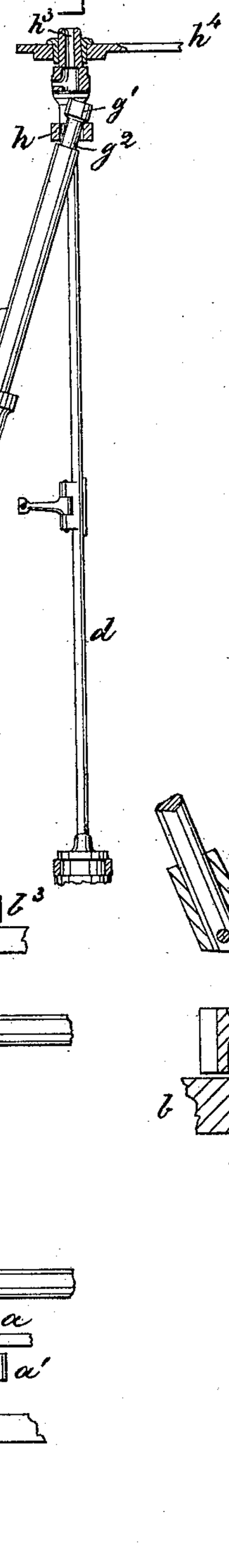


Fig: 4.

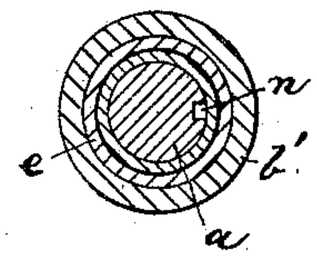
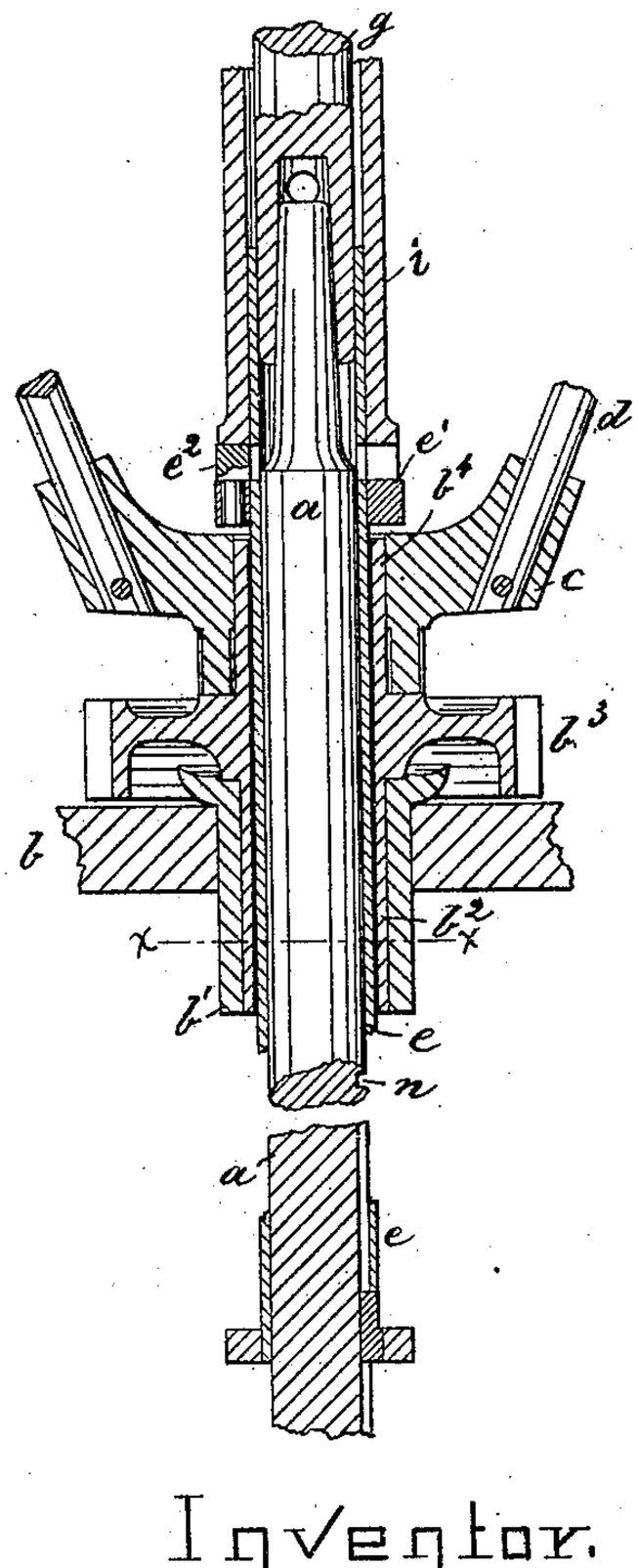


Fig: 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

RICHARD B. DALY, OF NEWTON UPPER FALLS, MASSACHUSETTS.

SPINNING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 246,469, dated August 30, 1881.

Application filed April 4, 1881. (No model.)

To all whom it may concern:

Be it known that I, RICHARD B. DALY, of Newton Upper Falls, county of Middlesex, State of Massachusetts, have invented a new and useful Improvement in Spinning-Machines, of which the following description, in connection with the accompanying drawings, is a specification.

This invention in spinning-machines is an improvement on that class of spinning-machines known as "speeders."

In this my invention the spindle, which does not traverse as it rotates, is made quite short, it extending from the step-rail up through the flier-rail and through the bottom of the flier just far enough to enable its upper end to enter the bobbin guide-rod above the head of a sleeve, which, surrounding the spindle, engages the lower end of the bobbin just above the bottom of the flier. This bobbin guide-rod, which receives and holds the bobbin during its rotation by the head of the said sleeve driven by the spindle, is loosely connected with the yoke at the top of the flier, so that the said rod may be raised or moved longitudinally far enough to remove the lower hollow end of the rod from or cause it to engage the reduced upper end of the spindle. When the rod and spindle are disengaged the rod may be swung outward to remove a bobbin from the rod or put one on it; but when spinning is being done the rod and spindle are engaged, and the rod serves both as a continuation of the spindle and as the center support for the bobbin during its rotation, the rod, as herein shown, rotating with the spindle by means of the taper fit between the upper end of the spindle and the rod; but it will be understood that the fit between the spindle and rod may be such as to leave the rod substantially at rest.

Figure 1 represents, in front elevation, a sufficient portion of a spinning-frame to illustrate my invention, some of the parts being broken out to better illustrate their construction; Fig. 2, a partial side elevation, showing the guide-rod swung out from between the flier-arms as it will be when doffing. Fig. 3 is an enlarged detail of the lower end of the flier, guide-rod, bobbin-flier gear, its support or bearing, and the upper end of the spindle and sleeve; and Fig. 4 is a cross-section of the sleeve and spindle on the line $x\ x$, Fig. 3.

In speeders as heretofore made, so far as I am aware, the gear which drives the flier has had its support in a flier-rail, the spindle has been guided in a spindle-rail below the flier-rail, the gear for driving the spindle being located at the spindle-rail, and below these rails the lower end of the spindle has been supported in a traversing step-rail, thus requiring a considerable length of spindle below the bottom of the flier.

By my construction I have been enabled to materially shorten the length of the spindle below the bottom of the flier, and am therefore enabled to lower the flier.

The spindle a has its lower end fitted to a step, a^2, in the step-rail $a^\times$, set preferably on or close to the mill-floor, and above the step-rail the spindle has a gear, a', connected with it, which is driven by the gear a^3 on a stud having at its upper end a bevel-gear, a^4, driven from a bevel-gear, a^5, on a horizontal shaft, a^6, extended lengthwise of the frame either outside or inside the spindles, such shaft a^6 and its attached bevel-gears a^5 being now commonly used in speeder-frames.

The rail b receives the bolster b' for the neck b^2 of the flier-gear b^3, the bottom c of the flier d being connected with the top part, b^4, of the flier-gear, so as to be driven by it. The hollow neck of the flier-gear receives through it the sleeve e, having a head and collar, e', provided with a bobbin-driving dog or stud, e^2, of any usual construction. The lower end of this sleeve is supported upon a projection of the traverse-rail f, arranged at the rear side of the row of spindles of the frame, and operated in the usual manner, the traverse-rail being, however, in my plan located between the step and flier rails. The sleeve e is connected with the spindle by a spline, n, so as to be rotated by but yet slide on the spindle. The spindle has its lower end or step bearing in a fixed step-rail, and the sleeve is raised and lowered on the spindle by the traverse-rail, the head e' of the sleeve, during its rotation, being traversed up and down on the guide-rod g, the dog

engaging and rotating the bobbin *i* for spinning. The upper end of the spindle, projected just above the bottom of the flier, and above the head *e'* when the sleeve is fully depressed, is, as herein shown, tapered or reduced in diameter to fit a hole made in the lower end of the guide-rod *g*, the latter, when upon the spindle, as in Fig. 1, forming practically a continuation of the said spindle.

The upper end of the guide-rod *g* is provided with a head, *g'*, and a reduced portion, g^2, below it, the head *g'*, when in the socket made for its reception in the part *h* of the flier-yoke h^2, serving to support the rod so firmly that it cannot move laterally at top; but when the guide-rod is lifted, as in Fig. 2, the head *g'* is removed from the said receiving-socket, bringing the reduced portion g^2 of the rod *g* opposite the part *h* of the yoke, so that the guide-rod, its lower end being at such time lifted above and disengaged from the top of the spindle, may be turned or swung out from between the arms of the flier, as in Fig. 2, to doff the bobbin *i*, which in Fig. 1 is shown in elevation, and which may be of any usual construction.

The hollow nose h^3 of the flier, above the yoke h^2, is steadied in the usual flier-plate, h^4.

The flier-gear b^3 is driven by a shaft, *l*, like shaft a^6, having a system of bevel-gears, *l'*, like gear a^5, each gear *l'* engaging a bevel-gear, l^2, secured to the neck of the gear l^3, which engages and drives the flier-gear.

In my improved construction, with the rails located as described, the traverse-rail being between the flier-rail and the step-rail, I am enabled in practice to reduce the length of the spindle below the flier-rail—say, in a twelve-inch traverse spindle, at least nine inches—thus enabling the flier and usual roller-beams above it to be correspondingly lowered, which is of great importance, as it enables the bobbin and usual delivery-rolls to be so lowered as to greatly facilitate doffing and enable the spindles and fliers to be run more steadily.

I claim—

1. The shortened spindle and fixed step-rail for it and the flier and flier-gear and rail to support it, combined with the bobbin-engaging sleeve fitted to the spindle and extended through the flier-gear, and with the traverse-rail and suitable means to operate it and rotate the spindle, substantially as described.

2. The shortened spindle, the fixed rail to support its lower end, the sleeve fitted to the spindle, as described, and provided with a bobbin-engaging head, and suitable means to rotate the spindle, combined with the flier and the loosely-connected bobbin guide-rod, adapted to fit the upper end of the spindle to retain the bobbin in place or to be disengaged from the spindle and swung out for doffing the bobbin, substantially as described.

3. The flier and its yoke and portion *h*, having a socket therein, combined with the bobbin guide-rod having a head, and reduced in diameter below the said head to permit the head to be lifted from the socket and the guide-rod to be swung out of the flier, substantially as described.

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

RICHARD B. DALY.

Witnesses:
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