

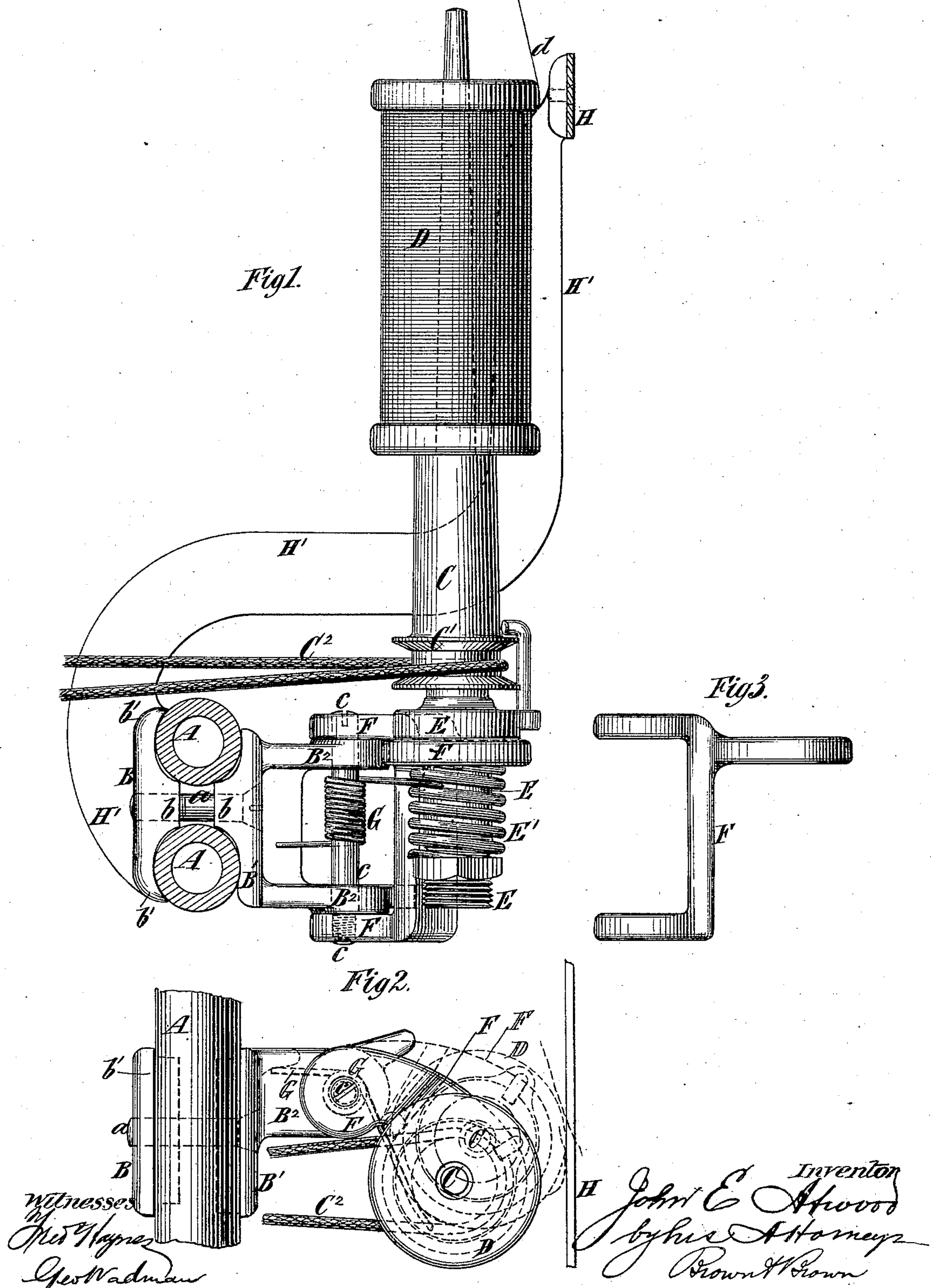
(No Model.)

J. E. ATWOOD.

DEVICE FOR SUPPORTING THE SPINDLES OF SILK SPINNING  
MACHINES, &c.

No. 302,814.

Patented July 29, 1884.





# UNITED STATES PATENT OFFICE.

JOHN E. ATWOOD, OF STONINGTON, CONNECTICUT.

DEVICE FOR SUPPORTING THE SPINDLES OF SILK-SPINNING MACHINES, &c.

SPECIFICATION forming part of Letters Patent No. 302,814, dated July 29, 1884.

Application filed July 17, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. ATWOOD, of Stonington, in the county of New London and State of Connecticut, have invented a new and  
5 useful Improvement in Devices for Supporting the Spindles of Machines for Spinning Silk and Other Fibrous Materials, of which the following is a specification.

My invention relates to machines for spinning, in which each spindle has a whirl or pulley encircled by a driving-band.

When such bands are too slack, there is a slackness in the twist of the yarn or thread, and when the bands are too tight there is  
15 greater friction, requiring more power to drive the spindles and greater wear upon the spindles, spindle-bearings, and bands.

The object of one part of my invention is to take up automatically any slack in the bands  
20 which may result from stretching or from variations of weather, and to produce and maintain uniformly a degree of tension which will insure the best results.

The object of another part of my invention, which applies only to spindles which give the twist to the yarn as it passes off from them, as is common in spinning silk, is to break the thread or yarn automatically in case of the  
25 breaking of the band, and to thus prevent a quantity of untwisted thread or yarn from being taken off the spindle after the spindle has stopped.

The invention consists in the combination, with a spindle-rail, of a spindle provided with  
35 a whirl or pulley, a spindle step and bolster, a spindle-base in which said step and bolster are mounted, and which is so supported from the rail that it is capable of movement to carry the spindle toward and from the rail, a driving-band encircling the whirl or pulley of the  
40 spindle, and means, consisting of a spring or a weight, acting upon the spindle-base to impel it and the spindle away from the rail, and serving to maintain a proper tension on the driving-band. The power of the spring or  
45 weight acts in the opposite direction to the tension of the spindle-driving band, and the spring or weight is so proportioned that it will preserve the proper tension on the band. In  
50 order to support the spindle-base so that it will be capable of automatic movement, as above described, I may hinge it by a verti-

cal pivot to a spindle-rail or a bracket projecting therefrom, and the spring may be coiled around said pivot and have one end bearing  
55 on the base and the other on the bracket. This construction also forms a part of my invention.

To the end that the yarn or thread being spun off a spindle so supported may be broken  
60 when the spindle-band breaks, my invention consists in the combination, with the above-described movable spindle-base, spindle step and bolster, spindle, and spring or weight, of an abutment against which a bobbin placed  
65 on the spindle will be carried when the spindle moves outward at the breaking of the band, and between which and the bobbin the yarn or thread will catch as it is unwound from the bobbin, and so be broken off by the continued  
70 rotation of the spool upon which it is being taken up from the spindle.

The invention also consists in a novel combination of parts, hereinafter described and  
75 claimed.

In the accompanying drawings, Figure 1 represents a transverse section of a spindle-rail and an elevation of a spindle supported according to my invention, and an abutment against which the bobbin may strike. Fig. 2  
80 represents a plan of said parts, and Fig. 3 is an elevation of the spindle-base detached from other parts.

Similar letters of reference designate corresponding parts in all the figures.

The spindle-rail here shown is of the construction shown and described in my application for Letters Patent No. 101,042, filed July 17, 1883; but my invention may be employed with any kind of spindle-rail. The rail represented consists of two parallel round rods or  
85 tubes, A A.

B B' designate clamps or clamping-pieces, which are applied to opposite sides of the two rods or tubes A, and secured thereon by a  
95 screw or bolt, *a*, passing between the rods or tubes.

On the inner sides of one or both of the clamps B B' are projecting portions *b*, which I term "spacing projections," for the reason  
100 that they project or enter between the rods or tubes and hold them at a proper distance apart, and one or both of the clamps may project beyond the centers of and hug the tubes,



as shown at  $b'$ . The parts  $b'$ , I term "gathering-lips," as they hold the rods or tubes against spreading. The clamp or clamping-piece  $B'$  has projecting from it a bracket,  $B^2$ , the purpose of which I shall soon explain.

$C$  designates a spindle, on which is a bobbin,  $D$ , and the whirl or pulley  $C'$ , which receives the driving-band  $C^2$ . I do not show the driving-pulleys or drum for the bands, as they form no part of my invention, and any well-known construction and arrangement of pulleys for the driving-bands may be used.

$E$  designates a spindle step and bolster, and  $F$  designates what I term a "spindle-base," in which the step and bolster are mounted. The step and bolster  $E$  here shown have a yielding or flexible connection with the spindle-base by the spring  $E'$ ; but such a construction forms no part of this invention. It is what is commonly termed a "gravitating spindle;" but my invention is equally applicable to a spindle having its step and bolster rigidly mounted in the spindle-base  $F$ . To carry out my invention the spindle-base  $F$  must be so supported from the rail  $A$  that it shall be capable of movement to carry the spindle toward and from the rail; and in this example of my invention the desired result is attained by hinging the base by a vertical pivot,  $c$ , to the bracket  $B^2$ . The base can then swing horizontally from a position shown in full lines in Fig. 2, and even farther toward the rail  $A$ , to the position shown in dotted lines in said Fig. 2.

$G$  designates a spring which is coiled around the pivot  $c$ , and the ends of which bear, one on the bracket  $B^2$  and the other on the step and bolster  $E$ , and through it acting on the spindle-base  $F$ . This spring  $G$  exerts a constant tendency to move or swing the base  $F$  outward, and so move the spindle  $C$  away from the rail  $A$ ; but the band  $C^2$  holds the spindle and base against swinging outward beyond its limit. The spring  $G$  keeps the band constantly under a uniform tension which will take up any slack in it, and by properly proportioning the force of the spring a proper tension on the band  $C^2$  will always be maintained. A properly-proportioned weight might be applied to the base  $F$  in lieu of the spring  $G$ , it being the equivalent of the weight. It will be understood that in case of the breakage of the driving-band  $C^2$  the spring  $G$ , or its equivalent weight, is relieved of any resistance, and will at once swing outward the base and spindle. Under ordinary circumstances the yarn or thread would continue to be unwound from the bobbin  $D$  in an untwisted state. To prevent this I provide an abutment,  $H$ , against which the bobbin on any one of the spindles in the machine will strike when the corresponding spindle is allowed to move outward, and in unwinding the yarn or thread  $d$  will surely be caught between the bobbin and abutment and at once broken off. The abutment shown consists of a rail,  $H$ , extending along the front of

the machine and supported by standards  $H'$  from the rail  $A$ .

The standards  $H'$  may be fastened to the rods or tubes  $A$  by means of clamps similar to the clamps  $B B'$ ; or they may be fastened in any other suitable manner.

In lieu of employing the bracket  $B^2$ , the base  $F$  may be pivoted directly to the spindle-rail, if the latter be of usual construction.

By my invention I provide for keeping a uniform and proper tension upon the band  $C^2$ , and I likewise prevent any considerable quantity of yarn or thread being taken from the bobbin  $D$  in an untwisted condition while the bobbin is at rest.

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

1. The combination, with a spindle-rail, of a spindle provided with a whirl or pulley, a spindle step and bolster, a spindle-base in which said step and bolster are mounted, and which is supported from the rail, substantially as specified, whereby it is capable of movement to carry the spindle toward and from the rail, a driving-band encircling the whirl or pulley of said spindle, and means acting upon the spindle-base to impel it and the spindle away from the rail, and serving to maintain a proper tension on the driving-band, substantially as herein described.

2. The combination, with a spindle-rail, of a spindle provided with a whirl or pulley, a spindle step and bolster, a spindle-base in which said step and bolster are mounted, which is supported from the rail, and which is mounted on a vertical pivot, as described, so as to swing horizontally toward and from said rail, a driving-band encircling the whirl or pulley of the spindle, and means for impelling said base automatically away from the rail, and serving to maintain a proper tension on the driving-band, substantially as herein described.

3. The combination, with a spindle-rail and a bracket projecting therefrom, of the base  $F$ , and the vertical pivot  $c$ , connecting said base with said bracket, the spring  $G$ , coiled around said pivot and bearing with its ends against said bracket and base, the step and bolster  $E$ , carried by said base, and the spindle  $C$  in said step and bolster, substantially as herein described.

4. The combination, with the rail, consisting of parallel rods or tubes  $A A$ , the clamping-pieces  $B B'$ , the latter carrying the bracket  $B^2$ , the spindle-base  $F$ , and pivot  $c$ , connecting it with said bracket, means for swinging said base automatically outward, a spindle step and bolster carried by said base, and a spindle,  $C$ , in said step and bolster, all substantially as described.

5. The combination, with a spindle-rail, of a spindle, spindle step and bolster, a spindle-base carrying said step and bolster, and supported from the rail so that it is capable of movement to carry the spindle toward and



from the rail, means acting upon spindle-  
base to impel it and the spindle away from  
the rail, and an abutment against which a bob-  
bin on the spindle will be carried by the out-  
5 ward movement of said spindle, and between  
which and the bobbin the yarn or thread will  
be caught in unwinding, and so broken off,  
substantially as and for the purpose described.

6. The combination, with a spindle-rail, a  
10 spindle-base supported from and capable of  
movement toward and from said rail, means

for impelling said base automatically away  
from said rail, and a spindle step and bolster,  
and a spindle carried by said rail, of the abut-  
ment-rail H, and standards H', supporting said 15  
abutment-rail from said spindle-rail, substan-  
tially as and for the purpose described.

JOHN E. ATWOOD.

Witnesses:

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WM. A. GILBERT.