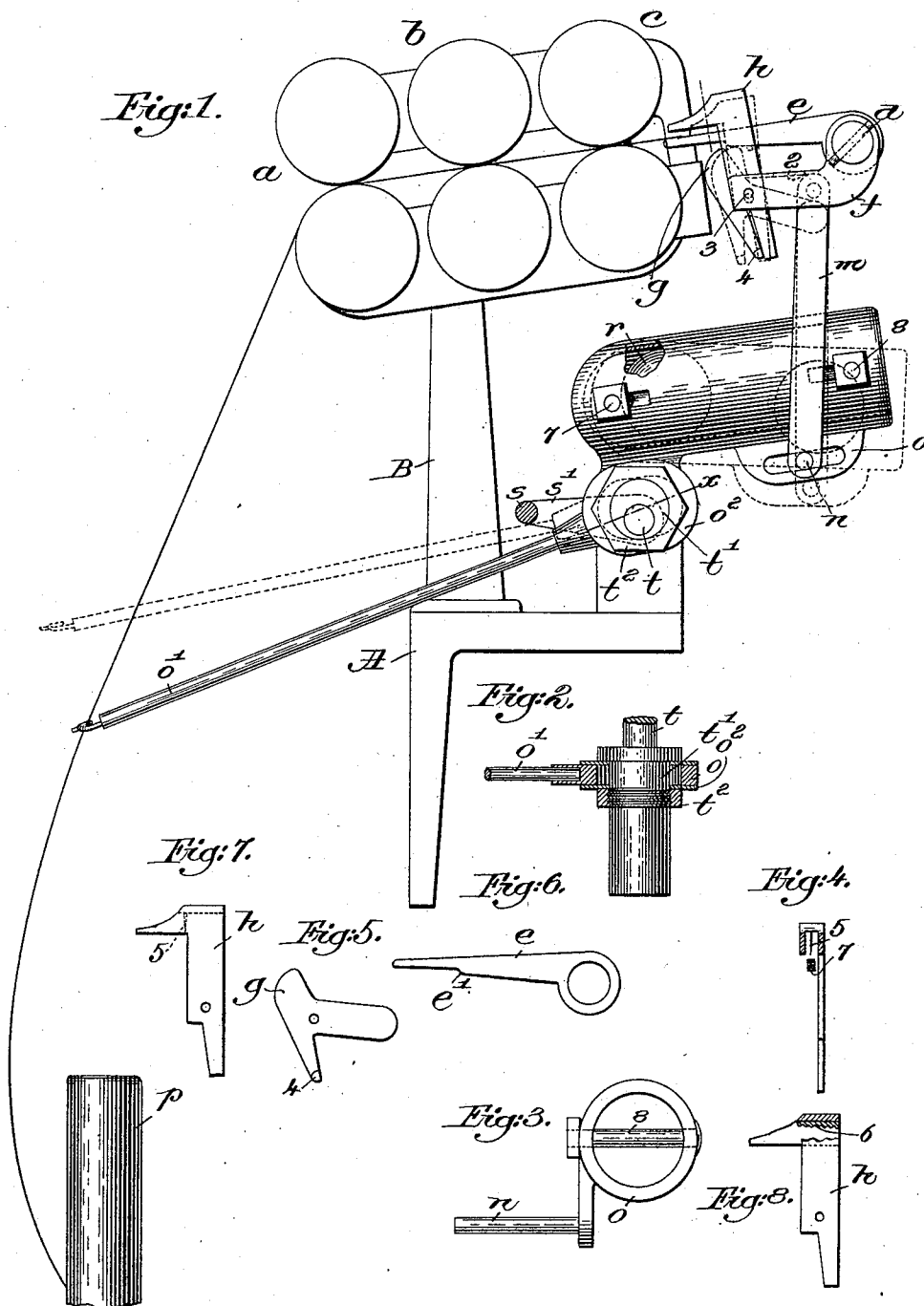


(No Model.)

W. E. ALLEN.
SPINNING MACHINE.

No. 578,051.

Patented Mar. 2, 1897.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM E. ALLEN, OF SALEM, MASSACHUSETTS.

SPINNING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 578,051, dated March 2, 1897.

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To all whom it may concern:

Be it known that I, WILLIAM E. ALLEN, of Salem, county of Essex, State of Massachusetts, have invented an Improvement in Spinning-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention has for its object the production of a novel mechanism whereby in case a yarn supported by a yarn-guide between the front rolls and spindle breaks the said roving will be automatically clamped and separated
15 behind the drawing-rolls.

In my invention the roving-clamp is shown as composed of a pair of jaws which besides having an opening-and-closing movement also move horizontally in the direction of the
20 length of the rolls by or with the usual reciprocating roving-rod, the said jaws when being closed on a yarn broken in front of the rolls moving backwardly away from the rolls to thus leave a drawn-out end, which is very
25 advantageous when again piecing up. The yarn-guide is provided with a counterbalancing-weight to enable the same to work in the most delicate manner, and the said weight is shown as free to slide or roll back after a roving
30 has been broken in order that the guide may be raised with considerable force. I have mounted the yarn-guide in such manner as will be described, whereby it may be
35 adjusted both longitudinally and vertically to the better adapt it to its work. I have also provided the machine with a depressing mechanism to simultaneously depress all the yarn-guides into their operative positions preparatory to starting up the machine after piecing
40 ends.

Figure 1, in section, shows a sufficient portion of a spinning-machine with my improvements added to enable my invention to be understood. Fig. 2 is a section in the dotted
45 line *z*, Fig. 1. Fig. 3 is a view of the inner or rear end of the yarn-guide. Fig. 4 shows the jaws in vertical section. Fig. 5 shows the cam-lever detached. Fig. 6 shows one of the guides detached. Fig. 7 shows the clamp-lever detached. Fig. 8 shows a modified form
50 of the parting device at the under or face side of the upper jaw.

The roller-beam A, the stand B for supporting the bearings for the upper and lower front, middle, and back rolls *a b c*, and the roving-rod *d* are and may be of any usual or suitable construction, and in practice they may be actuated by usual mechanism commonly found in spinning-machines. The roving-rod has fixed to it a series of guides or supports
55 *e*, having a cam-shoulder *e'*, (see Fig. 6,) one for each roving passing between the rolls. Alongside of each guide, and between it and a pin fixed in said rod, the roving-rod has mounted on it loosely a radius-bar or clamp-carrier *f*, having an attached lug or stop
60 2. The radius-bar has pivoted upon it at 3 a cam-lever *g*, having a tailpiece 4. The pivot 3 also supports a clamp *h*, having a forwardly-projecting jaw or finger provided, preferably, at
65 its under side with a parting tooth or device 5, (see Fig. 7,) the upper part of said clamp being shown as embracing the guide, (see Fig. 4,) the lower end or shank of the clamp being extended sufficiently below said pivot to enable it to be struck by said tail 4 to move the
70 clamp forwardly about said pivot.

One end of the cam-lever *g* has connected to it a link *m*, having in its lower end a hole which fits loosely over a guide-pin *n*, projecting from the inner end *o* of the yarn-guide
80 *o'*, said link sliding freely on said guide-pin as the cam-lever, guide, and radius-bar *f* are slid with the roving rod.

The yarn-guide is composed, essentially, of
85 a wire *o'*, having at its outer end a suitable eye for the passage of the yarn from the rolls to the bobbin *p* or spindle, and of a rear part *q*, shaped as a cylindrical box, in which is placed and free to roll a ball *r*, which acts as
90 a counterbalance for the yarn-guide to balance the same, or substantially so, when the yarn is running through the eye of the yarn-guide, and is unbroken, the ball at such time standing in the left-hand end of the box
95 shown in Fig. 1. This box is shown as slotted at its sides to receive adjusting devices, (shown as pins 7 8,) which may be adjusted toward or from each other in said box to limit the range of movement of said ball in said
100 box.

When the yarn breaks between the front rolls and the bobbin, the yarn-guide being no longer held down by the passing yarn

moves up under the action of the weight then standing in the left-hand end of the box, and immediately thereafter the ball begins to roll in the box toward its right-hand end, and the
 5 force for raising the yarn-guide is increased to its maximum extent, said extra weight tending to give additional force to the clamping mechanism to be described.

The dotted lines show the yarn-guide in
 10 the position it will assume after the breaking of the yarn, and as the box end of the guide descends the link acts on the cam *g* to turn it from its full into its dotted-line position, Fig. 1, the end of the cam acting on the cam-
 15 shaped part *e'* of the guide *e*, causing the lever *f* to descend and pull down with its fulcrum or pivot 3 the clamp *h*, causing it in its descent to move backwardly into the dotted-line position, Fig. 1, and clamp the roving,
 20 the latter pulling apart near the rolls. As the clamp moves downwardly and backwardly, as described, its parting member or device 5, a pin or pins, or a toothed or ribbed surface 6 comes onto the roving in such way
 25 as to hold portions thereof with different degrees of pressure or friction, so that as the rolls continue to act on the roving it will part the roving in such manner as to leave the ends of the fibers extended in such way that
 30 the said ends may be readily engaged and carried forward again by the rolls when the clamp is raised to free the roving.

I have provided the spinning-machine with a depressing-rod *s*, attached to an arm *s'*,
 35 said rod being extended across all the yarn-guides, so that when depressed it will act on and depress into working position all the yarn-guides preparatory to starting up the machine.

The hubs *o*² of the yarn-guides have elongated holes which receive eccentrics *t'*, placed on a rod *t*. The eccentric has a projecting threaded hub, (see Fig. 2,) on which is
 40 screwed a clamping-collar *t'*², and by unscrewing the said collar the hub of the yarn-guide may be slid forwardly or backwardly on said eccentric, and the eccentric may be turned
 45 to raise or lower the center of the yarn-guide, and thereafter the collar may be turned to clamp the hub and hold the eccentric and hub fixed together. In this way the yarn-guide may be adjusted either up or down or
 50 backward or forward, as desired.

When the yarn-guides are depressed, the
 55 cam *g* is moved into its full-line position, so that it is moved off of the cam-surface of the guide *e*. The tail of the cam meets the lower end of the clamp and tips it forward, and as the cam meets the lug or stop 2 of the radius-
 60 bar said clamp is raised and carried into its open full-line position.

The parting device may be one or more pins 5 to enter slight grooves or depressions
 65 7 in the top of the guide, or it may be a corrugated or other piece 6 of india-rubber to act with variable pressure on the roving, so as to hold some parts of it with greater pressure

than other parts, so that when the roving is pulled apart the fibers will be drawn out and left with a ragged extended end.

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

1. A set of rolls, a roving-rod, a roving-guide attached to said rod and extended there-
 75 from toward the bite of the said rolls to support the roving close to said guide, a vertically-sliding clamp shaped to embrace said guide when it descends on the roving, and an independent carrier for said clamp, combined
 80 with a yarn-guide, and means intermediate it and said clamp to open and close the same, substantially as described.

2. A set of rolls, a roving-rod having an attached guide to support the roving, a sliding
 85 clamp, a radius-bar mounted loosely on said roving-rod and extended toward said rolls, and a cam carried by said radius-bar, combined with a yarn-guide and connections between it and said cam to close and open said clamp,
 90 substantially as described.

3. A set of rolls, a roving-rod, a roving-guide attached to said rod and extended
 95 toward the bite of the said rolls to support the roving near said rolls, a vertically-sliding clamp having a parting device to act on the roving lying on said guide, and an independent carrier for said clamp, combined with a
 100 yarn-guide, and means intermediate said yarn-guide and clamp to open and close the latter, substantially as described.

4. A set of rolls, a support for a roving located at the rear of said rolls, a sliding clamp
 105 to act on said roving when the yarn breaks in front of the said rolls, a yarn-guide composed of a rod having at one end a thread-eye, and presenting at its opposite end a slotted tubular box, a pivot for said yarn-guide,
 110 a roll located in said box, and an adjustable stop located in that one of the slots of the box substantially in the same vertical plane as the pivot of the yarn-guide, said stop arresting
 115 said roll in said box in a position to enable it to substantially counterbalance the yarn-guide when acted upon by the yarn, and a second stop connected with the said box near
 120 its outer end to arrest the said roll after the breaking of the yarn, said roll by its change of position actuating the yarn-guide with its maximum force to operate the clamp and
 cause it to move quickly to part the roving after the yarn breaks, substantially as described.

5. A set of rolls, a support for a roving located at the rear of said rolls, a sliding clamp
 125 to act on said roving when the yarn breaks in front of said rolls, a yarn-guide composed of a rod having at one end a thread-eye and presenting at its opposite end a slotted tubular box, a pivot for said yarn-guide, a roller lo-
 130 cated in said box, and two adjustable stops located in the slots of the said tubular box, the adjustment of said stops in said box limiting the movement of the roll in the box where-

by one and the same roll may both substantially counterbalance the lever and on the breaking of the yarn effect the movement of said lever with a maximum force, to quickly
5 actuate the thread-clamp to drop on and part the roving, substantially as described.

6. The yarn-guide having a slotted hub, combined with a rod, an eccentric loose on said rod, and a clamp to hold the hub of the
10 said guide on the eccentric, substantially as described.

7. A roving-rod having an attached guide and a clamp to act on and hold a roving supported by said guide, combined with means
15 to move said clamp backwardly when acting on the said roving to part the same, the said clamp having thereafter a forward movement to carry the roving toward the rolls, substantially as described.

20 8. A guide to support the roving, a sliding clamp to act on said roving preparatory to parting it, and a cam to cause the said clamp to descend, combined with a pivoted yarn-

guide, a freely-movable weight adapted to roll thereon, and connections between said
25 cam and yarn-guide whereby the said weight by its action after the yarn breaks moves the said cam and clamp with a maximum of power, substantially as described.

9. A guide to support the roving, a pivoted
30 clamp to act on said roving preparatory to parting it, a cam to cause the said clamp to descend, means to move the said cam to enable the clamp to hold the roving firmly, and a tailpiece to act on and turn the said clamp
35 forwardly on its pivot when the clamp is being opened to release the roving, substantially as described.

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

WILLIAM E. ALLEN.

Witnesses:

GEO. W. GREGORY,
EMMA J. BENNETT.