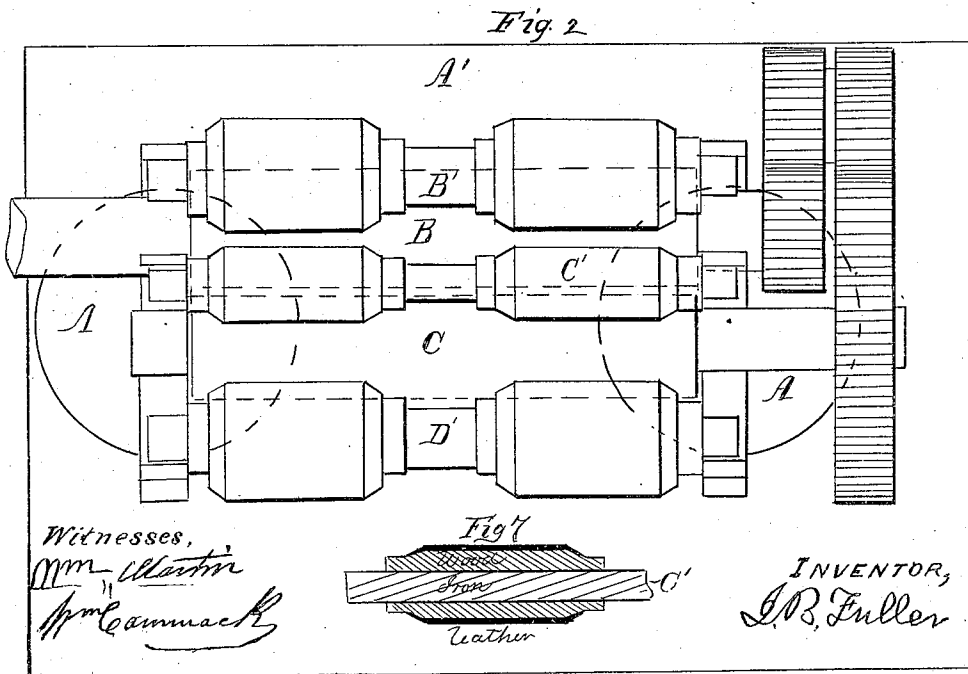
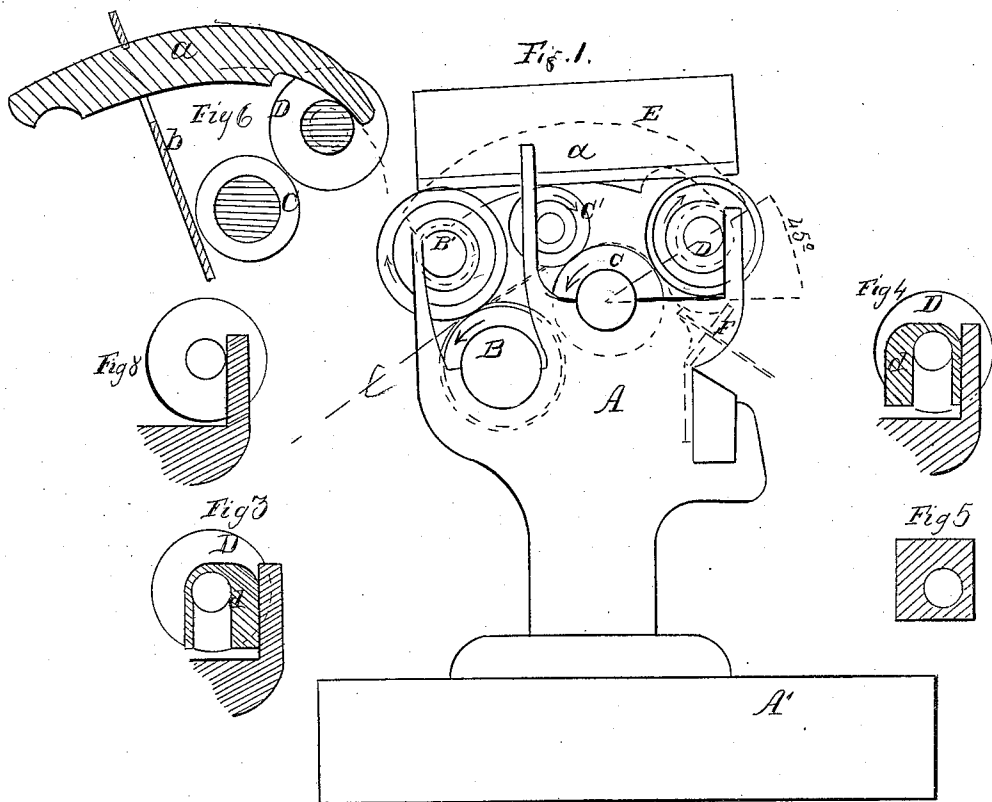


*J. B. Fuller,  
Spinning Machine.*

No. 81,357.

*Patented Aug. 25. 1868.*



# United States Patent Office.

JIM B. FULLER, OF NORWICH, CONNECTICUT.

*Letters Patent No. 81,357, dated August 25, 1868.*

## IMPROVEMENT IN MACHINE FOR DRAWING AND SPINNING COTTON.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, JIM B. FULLER, of Norwich, in the county of New London, and State of Connecticut, have invented a new and useful Improvement in Machines for Drawing and Spinning Cotton; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, making part of this specification, in which—

Figure 1 is an elevation, and

Figure 2 is a plan of my improved apparatus.

Figures 3, 4, 5, 6, and 7 are detached sections of various parts, hereafter described.

The same letters of reference indicate similar parts in each figure.

Heretofore, in machines for drawing and spinning, where two top rollers rested on one bottom detaining-roller, the top back-roller has been held in place by means of "guide-fingers" or "slides," fastened to the stands, and rendered adjustable by means of screws or bolts.

In such machines, moving the back top roller forward or back (as it rested on the bottom detaining-roller) caused it to rise or fall, consequently raising or lowering the saddle which rested on the roller. This had the effect of altering the position of the stirrup and weights or springs, requiring their readjustment whenever the position of the back top roller was changed.

"Top middle rollers" for cotton-spinning frames have been made of iron, with a covering of cloth, rubber, or other substance, and an outside cover of leather or other material. They are usually placed at a distance from the drawing-rollers, a little greater than the length of the fibres, and if too light, are weighted down, so that the weight of the roller itself is not an essential feature in its construction.

My invention relates particularly to that class of drawing and spinning-frames for drawing and spinning cotton where the sliver or roving is drawn around a portion of the circumference of the lower detaining-roller, and where two top rollers rest upon only one bottom detaining-roller.

My invention consists—

First, in the employment of a bearing of peculiar construction, which, by turning it in different positions, I am able to adjust the back top roller to the length of cotton being drawn, more easily than by the means heretofore employed.

Second, in the employment of a saddle of peculiar construction, whereby the back top roller may be moved forward or back without changing the position of the stirrup, weights, or saddle while adjusting the said roller to the length of fibres being spun or drawn.

Third, in the employment of a "middle top roller" of peculiar construction, by which it can be placed so close to the drawing-rollers as to bear on the shortest fibres being drawn, and at the same time will be of the required weight to straighten the short fibres, without holding or breaking the long ones.

Fourth, in the combination and arrangement of the drawing and detaining-rollers, and the above-named devices, whereby I am able to produce a more uniform sliver, roving, or yarn, and whereby I can more readily adjust the back top roller to the length of fibre being drawn, than by other modes heretofore employed.

In the drawings, A represents the stands which support the rollers. The stands are secured to the top of the frame A', in the usual manner. B is the lower drawing-roller, of ordinary construction, and is supported in bearings in the stand A. B' is the upper drawing-roller, also of usual construction, resting on and held in contact with B by means of the saddle a. C is the lower detaining-roller, of usual construction. This roller is placed immediately back of the roller B, and its centre is placed at a distance equal to at least one-half of its diameter above the centre of B. C' is the "middle top roller," resting on C, as near to B as it will run freely.

This roller is intended to run so close to the drawing-rollers as to hold back with sufficient force and to straighten the short fibres without breaking the long ones. An iron roller covered in the usual manner would not allow the long fibres to slide under it, while one of wood, or wood with a small iron centre, if covered with leather, will secure a sufficient amount of detention without being so heavy as to hold the longer fibres.

For sea-island cotton, I make this of wood not exceeding, for spinning-frames, five-eighths of an inch in diameter, and for drawing-frames not exceeding seven-eighths of an inch diameter, and cover the bosses with leather in the usual manner. Otherwise it is made in the same form as the iron part of an ordinary tip roller.

For short cotton, I make the bosses of wood, and secure them to an iron shaft, and cover the bosses with leather, so that the whole will not exceed, for spinning-frames, five-eighths of an inch in diameter, (see fig. 7,) and for drawing-frames, seven-eighths of an inch diameter.

D is the upper detaining-roller, and is of usual construction. This roller rests on and against the back side of the roller C, at a point about forty-five degrees above the centre of C. This I have sometimes called the "top back roller."

d is a bearing of U-shape, one side being thicker than the other. The object of this is to form an adjustable bearing for the purpose of adjusting the roller D to the length of fibres being drawn. When drawing upland cotton, it should be placed in the position shown in fig. 3; when drawing New Orleans cotton or Texas cotton, it should be placed in the position shown in fig. 4; and when drawing sea-island cotton, it should be taken out and the bearing of the roller should rest against the upright finger of the stand or cap-bar, as seen in fig. 1. This result or effect may be produced by bearings of various forms, as, for instance, fig. 5 being simply a square block with a hole drilled through it for the bearing, the centre of the hole being at a different distance from each of the four sides of the block.

b is a stirrup of ordinary construction.

E is a clearer for keeping the rollers clean.

F is a guide, through which the sliver or roving is fed to the machine.

a is a saddle for holding down the front and back top rollers B' and D, resting on their middle bearings. The back part of this saddle, at a, is cut out on a circle, the radius of which is the centre of the roller C, so that the roller D can be moved forward or back in adjusting it to the length of cotton being drawn, without raising or lowering the back end of the saddle, and consequently without altering the position of the stirrup b, or the weight or spring, (not shown.)

The rollers B and C are geared together in the usual manner for producing the required amount of elongation and fineness, and the rollers all revolve in the direction indicated by the arrows.

The operation of my invention is as follows:

The roller D being adjusted to the length of the fibres, and the machine put in operation by the usual means, the sliver of roving is drawn through the guide F, between the rollers C and D, over a portion of the circumference of the roller C under the roller C', and is drawn down to the required degree of elongation and fineness by the drawing-rollers, and delivered into cans for redrawing, or to the spindle, to be twisted into roving or yarn.

To make the most perfect yarn, the roller D should be placed back far enough to just clear the longest fibres as they are drawn out by the drawing-rollers. Then the curved surface of the roller C will cause a partial detention of the long fibres, while the roller C' will straighten the short ones by slightly holding them back; the whole forming a cheap, effective machine, easily adjusted, and producing a uniform sliver, roving, or yarn.

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

1. The bearing d, or its equivalent, constructed as described, so that by turning it in different positions the roller D may be adjusted to the length of cotton being drawn, substantially as and for the purpose specified.
2. The saddle, the back part of which is cut out, as described, so that in moving the back top roller forward or back, the position of the saddle-stirrup and weight or spring is not altered, substantially as and for the purpose set forth.
3. In a drawing or spinning-frame, where two top rollers rest on only one bottom roller, and where the sliver is drawn partially around the said bottom roller, I claim the middle top roller C', constructed and operated as shown and described, in combination with the roller D and C and bearing d, substantially as and for the purpose specified.
4. The rollers C C' D and the bearing d, combined and arranged substantially as and for the purpose set forth.
5. The rollers B', C, and D, in combination with the saddle a, substantially as and for the purpose herein specified.

Norwich, July 4, 1868.

JIM B. FULLER.

Witnesses:

WM. MARTIN,  
WM. CAMMACK.