

# UNITED STATES PATENT OFFICE.

RUSSELL HANDY, OF MANVILLE, RHODE ISLAND.

## IMPROVEMENT IN THE ART OF PREPARING COTTON FOR SPINNING.

Specification forming part of Letters Patent No. **166,001**, dated July 27, 1875; application filed October 24, 1874.

*To all whom it may concern:*

Be it known that I, RUSSELL HANDY, of the village of Manville, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in the Art of Preparing Cotton-Sliver for Spinning; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to use the same.

The object of this invention is, first, to preserve the cotton fiber in its natural condition and to save labor, power, room, and first cost of machinery; and to simplify the process and cost of production, while the yarn is improved in strength and quality.

The nature of the invention consists in dividing the sliver, as the same is delivered at the end of the railway-head, into two or more parts, and passing the same through two or more eveners, and from these at once to the slubbing-frame without passing the same, as is now the practice, through one or more drawing-frames.

The usual practice in the manufacture of cotton-yarn heretofore has been to collect the sliver from a set of carding-engines on the railway-head, and pass the same to the drawing-frame, for the purpose of straightening the fiber and equalizing the substance of the sliver delivered from the carding-engines. To accomplish this six card-slivers are usually passed in at one head of the drawing-frame, joined into one, and at the same time drawn out or extended to six times their length, and the resulting sliver was considered to be an average of the original six slivers, of uniform weight and substance throughout when this operation was repeated through the three heads of the drawing-frame, or through two or three separate frames. A close examination of the sliver reveals, however, that in the drawing-frame the strain on the sliver has a tendency to extend the weaker portions of the same more than the heavier and stronger parts, and that the resultant or drawn sliver is not as uniform as it should be to produce fine yarn of uniform quality.

In the old process, where the product of each carding-engine was delivered into a can, and a number of these were brought to the

drawing-frame, this method was necessary to produce a uniform sliver; but even in this case the repeated drawing injured the fiber, as the continued friction, both of the fibers against the machine, and also on themselves, injured the cohesion of the fiber and impaired the strength of the yarn.

When we carefully examine the nature of the cotton fiber we find that each fiber has a peculiar twist, and that the fiber itself is broad, resembling the blade of most grasses. The value of the fiber, therefore, independent of the length, depends on the spiral form by which a number of fibers readily intertwine, by which the fibers so intertwined become locked together. In doubling and drawing the cotton sliver repeatedly in the drawing-frame, the natural twist is destroyed, which will be at once apparent by examining carefully the sliver before entering the drawing-frame, and comparing it with the sliver leaving the same. Short staple, having considerable strength, in the sliver entering the drawing-frame, will frequently part at the bite of the rolls, by the weight of the sliver hanging in the can, when the frame is stopped. It is a fact well known to all observant manufacturers of cotton yarn that too much doubling and drawing of short cotton is injurious to the weaker staples.

Doubling and drawing has been considered necessary to lay the fiber even and parallel, as also to draw out those parts in which more fibers are contained in the cross-section of the sliver than in other parts. This would be the result to a certain extent where sliver from carding-engines of such imperfect construction as deliver the same varying in quality had to be used; but the present improved carding-engine delivers an almost uniform sliver, by doubling a number of which on the railway, and passing the same through the eveners, the quality will be found as uniform as when drawn and doubled in the drawing-frame, while the fiber is preserved and in better condition to produce uniform fine and strong yarn requiring less twisting.

To accomplish these results without the use of the drawing-frame, I divide the sliver delivered from a section of carding-engines by placing one or more partitions in the end of

the railway, and pass the desired number of slivers, sufficient to form the size of band required, through separate openings, and so each to an evener, and, without passing the same into cans, and through the drawing-frames again into cans, and then to the slubbing-frame, I deliver the same at once to the slubbing-frame. By so arranging the speed of the railway-belt as to give any desired amount of drawing to the sliver between the carding-engine and railway, a light sliver having all the fibers laid parallel can be produced, and by dividing the same at the end of the railway, and passing each sliver through an evener, I consider that I can accomplish better results, than can be accomplished by any number of drawing and doubling frames, without injury to the fiber.

Not only is the yarn produced by my improvement strong, even, and elastic, but a large saving in waste is effected by dispensing with the drawing-frames. I also save in my process the attendance of the persons required to operate the same; also, repeated handling of the cans, the cost of these cans, the wear and tear on the same, the large first cost of the drawing-frames, the power and the oil, as well as the room, they require.

The application of this improvement on a large scale, and continued for a sufficient time to test its value, proves that by the same a superior quality of yarn and cloth is produced at a large saving in the cost of production, requiring fewer machines and less power, room, and help than the older process heretofore in use.

In changing old mills to work under my improvement but little alteration is required, while in fitting out new mills a large amount is saved in the cost of machinery without a decrease of production.

Having thus described my invention, I claim as new and desire to secure by Letters Patent as my invention—

The improvement in the art of preparing cotton for spinning, the same consisting in the division of the product of two or more cards into slivers at the end of the railway, the passage of each sliver directly through an evener, and from this to the slubbing-frame, substantially as and for the purpose herein described.

RUSSEL HANDY.

Witnesses:

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