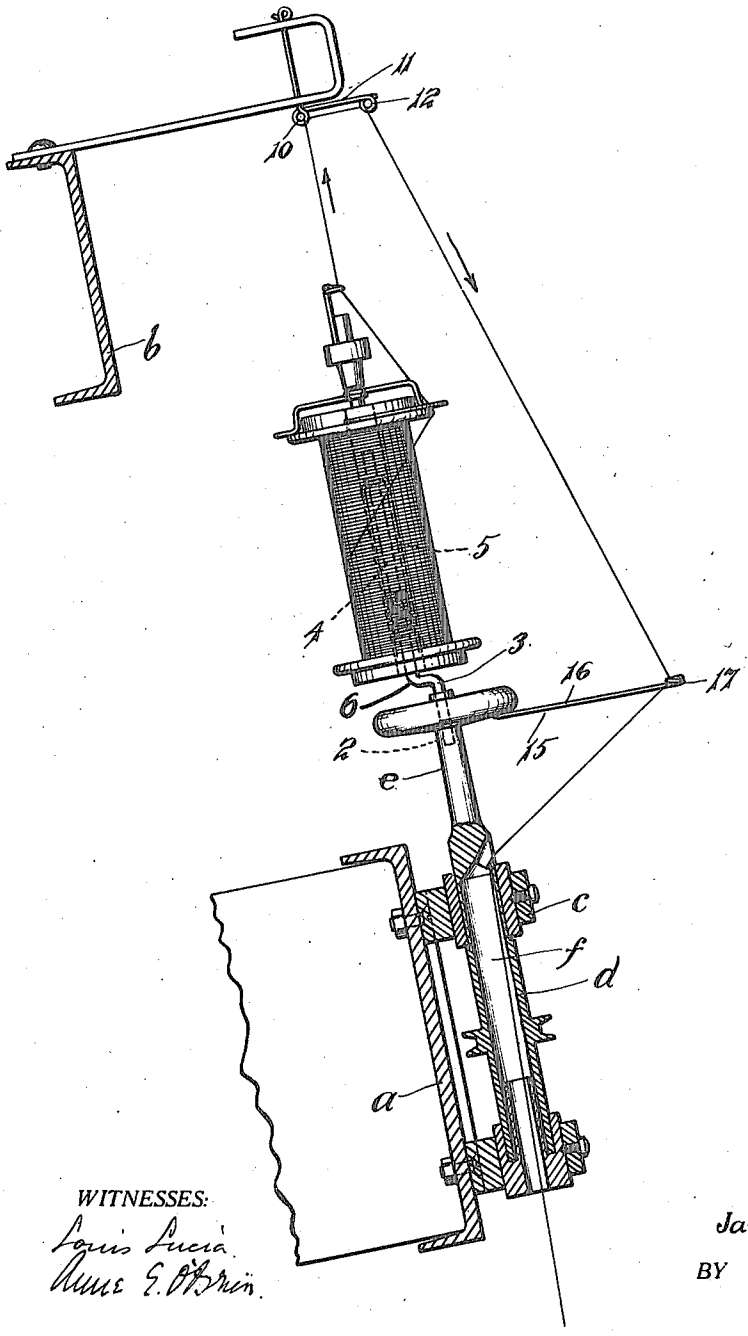
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TEXTILE SPINNER AND TWISTER.

APPLICATION FILED SEPT. 24, 1915.

1,233,591. Patented July 17, 1917.



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TEXTILE SPINNER AND TWISTER.

1,233,591. Specification of Letters Patent. Patented July 17, 1917.

Application filed September 24, 1915. Serial No. 52,510.

To all whom it may concern:

Be it known that I, JAMES LLOYD MACFARLANE, a citizen of the United States, and a resident of Atwoodville, in the county of Tolland and State of Connecticut, have invented certain new and useful Improvements in a Textile Spinner or Twister, of which the following is a specification.

This invention relates to textile spinning or twisting machines, and the object of the invention is to increase the efficiency and capacity of machines of this character, and so reduce the cost of the operations, with a resultant decrease in the cost of the product. The invention is illustrated in connection with a machine where a plurality of strands carried by a bobbin or carrier are to be drawn off and spun together. It results from the practice of the method, and the use of the apparatus herein to be described, that it is possible to put two spins into the thread during one complete rotation of the spindle, with the result that at the same spindle speed twice as many spins can be put into the thread as has heretofore been possible, or the same number of spins can be put in at half the spindle speed. Heretofore, if there were to be 16 turns or spins to the inch, it has been necessary to rotate the spindle 16 times. By my method and apparatus 16 turns or spins can be put in with 8 rotations of the spindle, or with 16 rotations of the spindle 32 turns or spins will be put into the thread. The resulting advantages in the saving of power, labor and time, and the consequent reduction in the cost of production will be obvious.

For purposes of illustration it has been sufficient to show a single spindle, but of course a machine embodying my invention would comprise a multiplicity of spindles each of which however acts independently of the others, and in reality there are a multiplicity of individual machines mounted on a common frame though the series of spindles may have a common drive. However, my invention is not concerned with the manner of driving the spindles or supporting or arranging them on the frame, but is to be found complete in the single spindle illustrated in the drawing.

The drawing is a side view, partly in section, of the apparatus constituting my invention, and by means of which the methods hereinafter described can be carried out.

Referring to the drawings, *a*, *b*, are intended to denote portions of a machine frame on which my apparatus is mounted, spindle bearings being mounted on the section *a* and another part of the apparatus on the section *b*; *c* denotes the spindle bearings, and *d* the spindle mounted at its lower end in the bearings, with its upper end *e* projecting above the bearings free and unsupported. A passage *f* is provided axially of the lower end of the spindle from one side of the bearings to the other. The upper end of the spindle is recessed as at 2 to receive the base 3 of a non-rotating carrier support on which there is yieldingly mounted the carrier holder 4, which by preference has spring fingers 5 secured thereto at one end only, and which are forced into the bore of the carrier with the result that the carrier is yieldingly supported with respect to the base for the purpose of eliminating to the greatest possible extent any vibration which might otherwise be occasioned by the mounting of the non-rotatable support in the end of the rotating spindle. This support, or at least the holder portion of it, is overbalanced, as for instance by the offsetting of a portion of it, as indicated at 6, where the carrier is arranged in upright position and it is desired to eliminate any tendency for it to rotate. In the upper end of the carrier there is mounted any suitable form of tension device to control the unwrapping of the strands from the carrier.

In the upper frame section *b* and in substantial axial alinement with the carrier is a rotatably mounted eye 10 provided with a laterally extending arm 11 having at its end a second eye 12. This device as a whole may for convenience be described as a trailing flier. Secured to the upper end of the spindle is a positive flier 15 having an outstanding arm 16 with an eye 17 at its end.

The apparatus is threaded up in the following manner: The strands are first passed through the tension device on the top of the carrier, then through the alined eye 10 of the trailing flier, then through the laterally offset eye 12, then down through the eye 17 of the positive flier; then through the hollow spindle to the lower side of the bearings, and thence it may go to any suitable take-up carrier which is driven at a proper speed relative to the spindle speed so as to draw the strands off the carrier properly. Power being applied to the spindle *d*, the

positive flier is caused to revolve about the longitudinal axis of the spool on the carrier which will move the strands extending between the trailing and positive fliers about the spool. It is to be understood that the strands when unwound from the spool, and after passing through the machine are received on a positively driven element in a twisted condition, the strands being given a double twist, the initial one being between the tension device on the carrier and the trailing flier, while the second twist is between the trailing flier and the receiving element for the strands. With each revolution of the spindle, the strands are given a double twist adding materially to the improved operation and construction of the device.

It will be seen that by the revolution of the spindle and the attached flier, the downward pass of the strands is carried entirely about the carrier; in other words, its path of movement entirely encircles the carrier from which the strands are being removed, with the result that the plurality of strands are spun twice for each rotation of the spindle.

For whatever use the spinning of strands, or threads, (or whatever name may be applied to the material being operated upon), is intended, by the practice of this improved method and the use of this improved apparatus, the advantages heretofore pointed out may be enjoyed. I am aware that this invention is adapted for numerous uses, and I am also aware that in many of its details the apparatus may be subject to alterations and modifications while yet not departing from the broad scope of the invention as set forth herein and in the appended claims. Terms used are descriptive only and are not to be understood as having a limiting effect.

While the non-rotatable carrier support mounted in the rotatable spindle is an essential feature of this machine, it is apparent that the carrier itself need not necessarily be non-rotatable. What I have termed the "trailing flier" may be subject to material modification, but the reverse pass of the strands and its movement entirely encircling the carrier are essential features of the invention; also the hollow spindle which permits of passing the strands through the bearings is a feature of essential importance in this machine.

I have shown but one carrier on which four strands are wound. A plurality of carriers might be used, each with a single strand or thread, and the scope of the invention and claims is intended to cover this and other changes.

I claim as my invention—

1. In a machine of the character described, a spindle, a flier mounted on and driven by said spindle, a trailing flier spaced from the positive flier, a delivery carrier mounted between said fliers and supported by said spindle, the strand from said carrier being passed first through said trailing flier and then in an opposite direction and outside of said carrier to said positive flier.

2. In a machine of the character described, a spindle provided with a flier, a delivery carrier, a non-rotatable support therefor mounted on said spindle, a rotatably mounted trailing flier above said carrier, the strand moving in a path entirely outside of said carrier and threaded first through said trailing flier and then through said positive flier.

3. In a machine of the character described, a spindle, a positive flier mounted thereon, a trailing flier rotatably mounted and spaced from said positive flier, a delivery bobbin mounted between said fliers, a non-rotatable support therefor mounted on said spindle, the strand as it leaves the bobbin following a path entirely outside thereof and being threaded first through said trailing flier and then through said positive flier.

4. In a machine of the character described, a spindle and bearings therefor, the spindle being provided with a passage from one side of the bearings to the other, a positive flier mounted on the spindle, a trailing flier rotatably supported and spaced from said positive flier, a delivery carrier mounted between said fliers, a non-rotatable support therefor mounted on said spindle, the strand from said carrier being threaded first through said trailing flier exteriorly of said carrier, through said positive flier, and then through the passage in the spindle to a point at the opposite side of said bearings from the carrier.

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Witnesses:
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