G. C. G. YOUNG & M. M. WADDELL.

PROCESS OF SPINNING.

APPLICATION FILED FEB. 2, 1906.

1,051,361.

Patented Jan. 21, 1913.

2 SHEETS—SHEET 1.

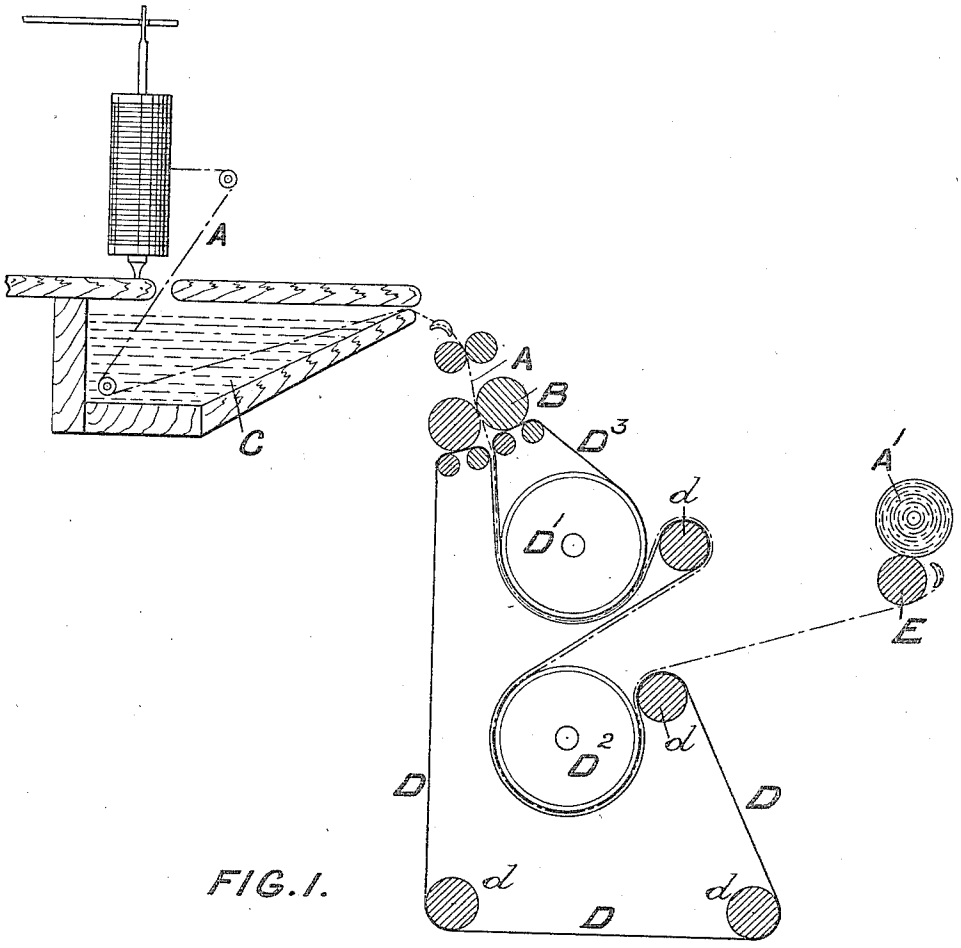

FIG. 1.

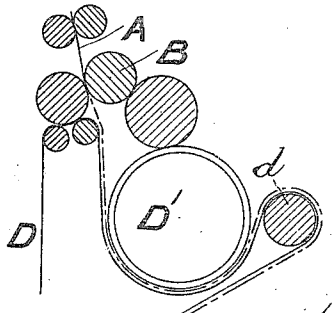

FIG. 2.

WITNESSES.

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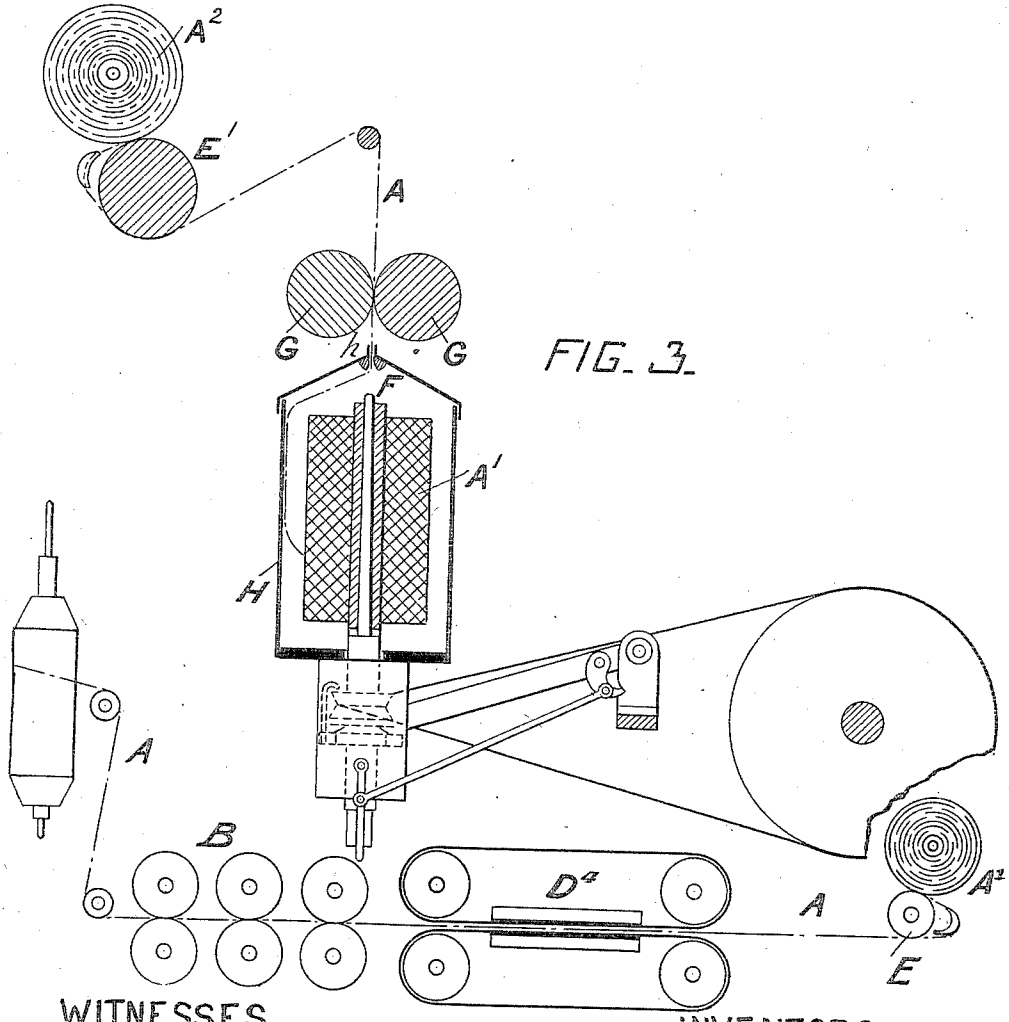

FIG. 3.

FIG. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

GEORGE CHARLES GILLESPIE YOUNG AND MARTIN MAGILL WADDELL, OF BALLYMENA, IRELAND.

PROCESS OF SPINNING.

1,051,361. Specification of Letters Patent. Patented Jan. 21, 1913.

Application filed February 2, 1906. Serial No. 299,164.

To all whom it may concern:

Be it known that we, GEORGE CHARLES GILLESPIE YOUNG and MARTIN MAGILL WADDELL, British subjects, and residents both of Ballymena, county Antrim, Ireland, have invented certain new and useful Improvements in Processes of Spinning, of which the following is a specification.

In the wet spinning of flax and kindred fibers the rove is immersed in a trough of hot water and thoroughly saturated as it passes to the drawing rollers for the purpose of facilitating the action of drawing and the wet rove after being drawn to the desired degree of fineness passes direct to the bobbin or pirn and is twisted and wound upon the bobbin or pirn in a wet state.

In the spinning of cotton, flax and other fibers in a dry state the rove is drawn to the desired degree of fineness and passes direct from the rollers to the bobbin or pirn. We have found that a stronger and better yarn is produced by applying heat to and drying the untwisted rove after it has been drawn out to the desired degree by the drawing action of the drawing rollers and before it is twisted into a finished yarn, the separate fibers being thereby rendered more cohesive and the drawn rove consequently strengthened thereby adding greater strength and evenness to the finished yarn.

Our present invention consists in (*a*) drying a wet untwisted rove after it leaves the front drawing rollers before receiving any twist; (*b*) winding the rove when dry after drawing into a roll without twisting it; (*c*) twisting the dry rove into yarn by rotating it in the form of a roll at a rapid rate while the yarn is drawn off by a pair of rollers.

The invention will be fully described with reference to the accompanying drawings:—

Figure 1 is a transverse sectional elevation of apparatus employed for drying the rove A and winding it into a roll A′. Fig. 2 is a transverse section of modified construction of drying apparatus. Fig. 3 is a transverse sectional elevation of apparatus for twisting the rove A—from the roll A′—into yarn and winding the yarn into a second roll A^2. Fig. 4 is a transverse section of modified construction of apparatus winding a dry rove into a roll A′.

In wet spinning the rove A is passed through hot or cold water in the trough C and drawn between the drawing rollers B to the requisite degree of fineness in the usual way. The drawn rove A after it emerges from the nip of the drawing rollers B and before it is twisted is dried to a degree sufficient to consolidate the wet fibers to a cohesive condition. The untwisted rove A as it passes from the nip of the drawing rollers B is delivered onto a traveling flannel or blanket D which absorbs and presses out the moisture from the rove A. The flannel or blanket D passes in contact with hot cylinders D′ and D^2 heated by steam or gas and over a number of guide rollers *d*.

The rove A may be pressed between the blanket or flannel D and a second blanket or flannel D^3 as in Fig. 1, or it may be carried by the blanket or flannel D into direct contact with the heated cylinder D′ as in Fig. 2. Or the untwisted rove A may be dried in any other way such as by passing directly over hot plates, pipes, rollers or cylinders.

The untwisted rove A when dried is passed from the blanket or flannel D to a winding roller or drum E and is thereon wound into a roll A′.

In dry spinning when a dry yarn is being dealt with the untwisted dry rove is wound into a roll without twist but to consolidate or give sufficient cohesion to the fibers thereof to enable such to be handled it is passed through a condensing device or between reciprocating or vibrating rubbers D^4 Fig. 4, after leaving the drawing rollers B. The condensing or rubbing device D^4 gives sufficient coherence to the untwisted drawn rove and renders it strong enough to be wound up into the roll A′ by the winding roller E.

The roll A, of consolidated dry or dried untwisted rove is placed upon a spindle F and the rove drawn off therefrom by a pair of rollers G. The spindle F is rotated at a high velocity say 10,000, 50,000 or even 100,000 revolutions per minute thus giving the desired amount of twist to the rove A′ and converting it into yarn which is wound up as quickly as delivered into a roll A^2 by the winding roller E′. The spindle F and the roll of untwisted rove upon it is surrounded by or inclosed within a fixed or stationary shield H to prevent the loose end of the yarn ballooning or flying off at right angles to the spindle. The shield is at the top provided with a guide eye *h* through

which the rove is delivered to the roller G as it is drawn off from the roll A′.

This method of spinning by winding the untwisted rove A into a roll A′, and then twisting it into yarn by placing the roll A′ onto a spindle which is rotated rapidly while the rove is being drawn off as shown in Fig. 3, may be applied to jute, cotton, wool or other fibers which are drawn and twisted in the dry state, in which case the water trough C and the drying apparatus shown in Fig. 1, is dispensed with and the condensing apparatus shown in Fig. 4 is employed. In this method of spinning and twisting no strain at all is put upon the yarn the centrifugal motion of the roll A′ throwing the rove off as quickly as it can be drawn forward by the rollers F and wound up again after being twisted upon the roll A^2.

What we claim as our invention and desire to protect by Letters Patent is:—

1. The method or process of wet spinning which consists in passing the rove through a trough of water to saturate the fibers with water and drawing the fibers while so saturated into an untwisted rove of the desired degree of fineness, for spun yarn, drying and consolidating the untwisted drawn rove before twisting and only imparting to it the desired degree of twist after being dried, substantially as described.

2. The method or process of wet spinning which consists in passing the rove through a trough of water to saturate the rove with water and drawing the fibers while so saturated into an untwisted rove of the ultimate degree of fineness for spun yarn, drying and consolidating the untwisted drawn rove, winding the dried consolidated drawn rove onto a spool without twist withdrawing the same from the spool and subsequently imparting to it while still dry the desired degree of twist substantially as described.

In witness whereof, we have hereunto signed our names in the presence of two subscribing witnesses.

GEORGE CHARLES GILLESPIE YOUNG.
MARTIN MAGILL WADDELL.

Witnesses:
JOHN STEELE,
WILLIAM DAVIDSON ERWIN.