Feb. 14, 1928. 1,658,860

L. SCHORSCH

PROCESS FOR THE MANUFACTURE OF ROVING FROM COTTON AND SIMILAR FIBER MATERIAL

Filed March 22, 1926

Fig. 1.

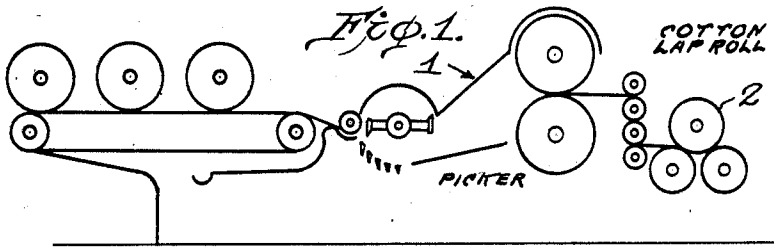


Fig. 2.

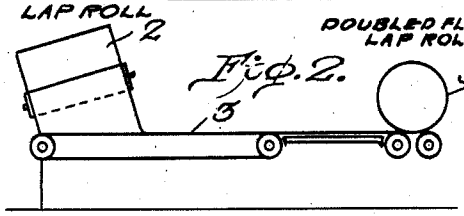


Fig. 3.

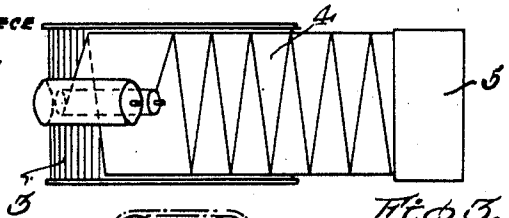


Fig. 4.

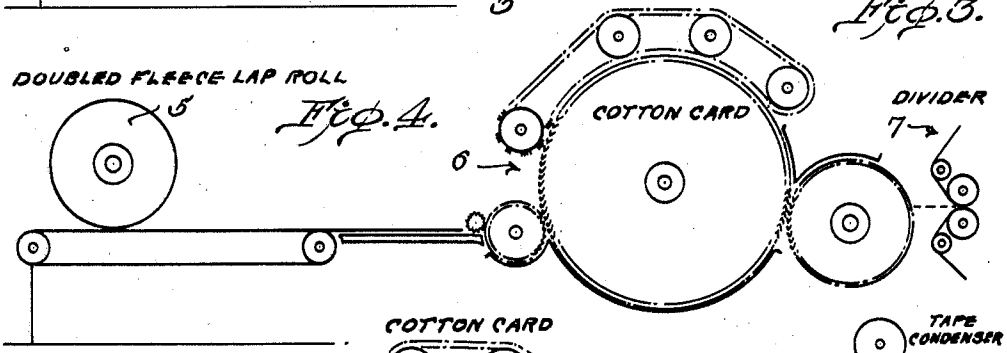


Fig. 5.

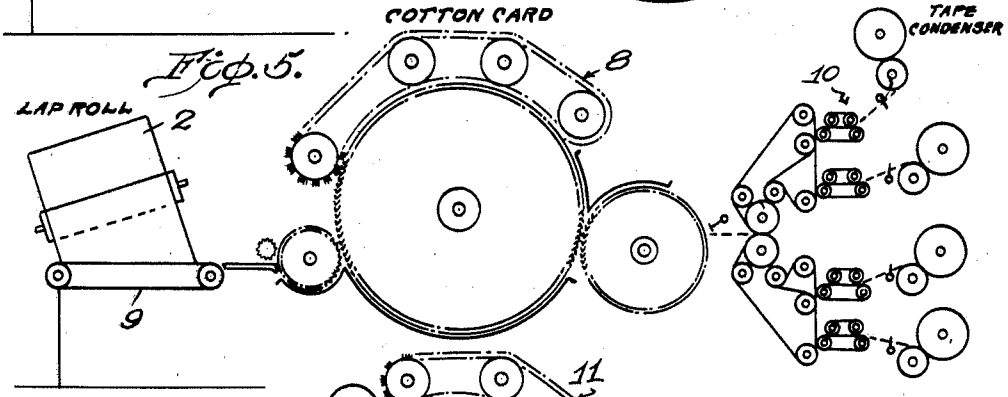
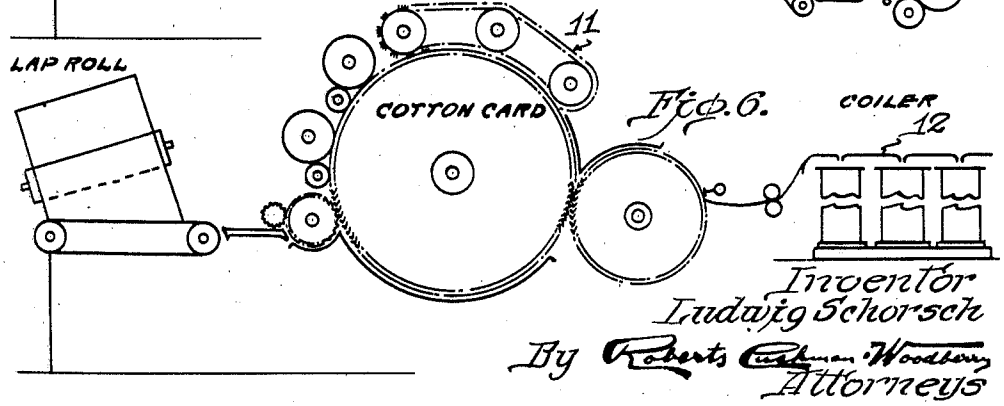


Fig. 6.



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UNITED STATES PATENT OFFICE.

LUDWIG SCHORSCH, OF GOERKAN, CZECHOSLOVAKIA.

PROCESS FOR THE MANUFACTURE OF ROVING FROM COTTON AND SIMILAR FIBER MATERIAL.

Application filed March 22, 1926, Serial No. 96,567, and in Germany October 19, 1925.

This invention pertains to textile manufacture and more particularly to an improved method of making roving from cotton and similar fibrous material. In my copending application Serial No. 46,166, filed July 28, 1925, I have described a process of making roving in which I have combined certain steps common to the fine cotton spinning system with other steps heretofore known only in the coarse carded yarn system, said process being conveniently performed by the combined use of a revolving flat card which delivers directly to a tape condenser or other means adapted to divide the web or fleece from the card into a plurality of longitudinally extending strips and preferably to condense each of said strips into a roving, such rovings, in accordance with my improved process, being spun directly into the yarn.

In practicing the process described in my aforesaid application, I have found that because of inequalities width-wise of the lap which is fed to the carding machine, although such lap as formed by the picker should be and ordinarily is of substantially exact and uniform weight per unit of length, the individual rovings or slivers delivered by the tape condenser are not of as exact uniformity as is to be desired.

In certain systems of spinning, for example the coarse carded yarn system, several cards are arranged to operate in succession, each card except the last receiving the entire product of the preceding card or cards in the form of a bat or sliver, the finisher card only delivering its web or fleece in the form of a plurality of slivers, but obviously to multiply machines in this manner for the purpose of correcting the inequalities in the material would result in the sacrifice of most of the advantages of my aforesaid process as described in my said application for patent.

The principal object of the present invention is to provide an improved and simple method of preparing a web or fleece, for delivery to the single flat or half-flat half-roller card employed in practicing my aforesaid process, of such character that the rovings delivered by the tape condenser, also used in said new process, may be of substantially uniform size and character, and thus, in effect, the process herein disclosed may be considered to constitute an improvement upon the process of my aforesaid application Serial No. 46,166.

The broad underlying principle of the present process may be carried out in various ways and I hereinafter describe two of such modes of procedure. I may, for example, double a fleece or web so as to form a plurality of plies or folds and roll the doubled web to form a lap roll, afterward feeding the doubled or folded fleece from such a lap roll or a plurality of such lap rolls, in the ordinary way to a card or other machine; or secondly, I may first roll the web or fleece to form a lap roll of usual form, and subsequently double or fold such material to provide a plurality of plies or folds as the material is unrolled from the lap for delivery to the card or other machine which is to perform a subsequent operation upon the material.

When I speak of "doubling" the lap I do not intend to limit myself to employment of two plies only but by this term intend to include any such superposition of portions of the web or fleece upon each other as to produce a plurality of plies.

Stated more specifically, in practicing the present process in accordance with the first of the above-named procedures I take the web or fleece delivered by a picker of known type and fold such web or fleece in such a manner as to produce a plurality of transverse folds or plies. The picker just referred to is a machine of well known type usually comprising a feed apron to which one or more laps from an earlier picker of the series is delivered, a rotary beater, a grid, and a condenser cylinder or screen, and as above stated the web or fleece delivered by such a picker is of accurately uniform weight per unit of length.

Conveniently the folding of the web or fleece as just referred to may be accomplished by arranging the axis of the unrolling picker lap roll substantially parallel to the direction of movement of a travelling lattice, feed table, or other moving conveyor, and by means of any suitable oscillating or reciprocating folding device, such as is well known in the art, or by hand, or by moving the lap roll bodily in a direction transverse to the direction of the movement of the lattice, I cause the unrolling fleece to fall upon

the lattice in folds which extend transversely to the direction of movement of the lattice and diagonal to the length of the lattice. By proper relative adjustment of the speed of unrolling and the rate of travel of the lattice the doubled fleece may be made to consist of two or a greater number of layers or plies, thus distributing the longitudinal inequalities in the fleece over its entire width so that the resulting doubled fleece is of almost exact uniformity in a transverse direction. This doubled fleece is now rolled by hand or by means of suitable and usual mechanism to provide a new lap roll, and this new lap roll, consisting of a doubled fleece, may be fed endwise, either singly or in combination with other laps and in usual manner to subsequent machinery, for example a revolving flat card such as described in my aforesaid application.

In accordance with the second mode of procedure above briefly outlined, I take the ordinary lap roll from the picker and deliver it directly to the card or other machine or apparatus which is to perform the next operation upon the fleece. In accordance with the present invention I furnish such card, preferably the revolving flat card of my new process, if it is not originally so provided, with a travelling feed-lattice, or belt conveyor adapted to deliver to the licker-in or other equivalent part of the card. I now preferably dispose the lap roll from the picker in such a manner that as the fleece is unrolled therefrom it may be deposited in transverse folds upon the lattice or conveyor, obtaining the desired folding of the material manually or by means of such known mechanical arrangements as may be necessary. As above suggested the relative speed of the unrolling fleece or web and the rate of travel of the lattice determines the number of thicknesses or layers in the doubled or folded web so that the number of layers in the doubled fleece or web may thus be varied. This doubled fleece or web, of substantial uniformity in a transverse direction, is fed by the lattice directly to the revolving flat card, as referred to in my copending application Serial No. 46,166 and is delivered by this card in the form of a plurality of longitudinally extending strips to a coiler or to a tape condenser of well known construction which condenses the narrow strips into individual rovings adapted to be spun directly into yarn of a high quality.

In the accompanying drawings I have illustrated diagrammatically apparatus useful in performing my herein disclosed process, and in the drawings

Fig. 1 is a diagrammatic side elevation of a picker arranged to deliver the cleaned fiber in the form of a lap roll;

Fig. 2 is a diagrammatic side elevation illustrating a desirable form of apparatus for doubling the fleece produced by the picker;

Fig. 3 is a diagrammatic plan view of the apparatus shown in Fig. 2;

Fig. 4 is a diagrammatic side elevation illustrating the delivery of the doubled fleece produced by the apparatus of Figs. 2 and 3 to a cotton carding machine;

Fig. 5 is a diagrammatic side elevation illustrating an apparatus in which the lap roll produced by the picker of Fig. 1 is folded and delivered directly to a card; and

Fig. 6 is a diagrammatic side elevation in general similar to Fig. 5 but illustrating a different type of card.

In Fig. 1 the picker 1, which may be of any usual type (preferably a finisher picker) delivers the cleaned and opened fiber in the form of a lap roll 2. In accordance with my first mode of procedure, I preferably mount the lap roll 2 above a traveling lattice or conveyor 3 (Figs. 2 and 3) and by movement of the lap roll or of the fleece unrolling therefrom, (or both) I cause the fleece to fall in overlapping transverse zigzag folds 4 on the lattice 3, which delivers the folded fleece endwise to apparatus which rolls it to form a doubed fleece lap roll 5.

I now place one or more of these doubled fleece lap rolls 5 in suitable position for feeding it or them in usual manner (endwise) directly to a cotton card 6 (Fig. 4). As shown in this figure the card delivers the carded fleece to a divider and coiler 7 which divides the carded fleece into a plurality of longitudinally extending strips and coils each strip in the form of a sliver in a can. While in Fig. 4 I have shown the card 6 delivering to a coiler, it is to be understood that the coiler may be replaced by any desired mechanism or apparatus, such for example, as a tape condenser.

According to my second mode of procedure, I take the lap roll 2 as formed by the picker 1 and mount the roll directly behind a cotton card 8 (Fig. 5) but prior to feeding the fleece from the roll 1 to the card 8 I double this fleece, preferably by mounting the lap roll 5 above the lattice or belt 9 and causing the fleece as it unrolls and falls upon the belt to lie in overlapping folds. The folded or doubled fleece passes endwise directly to the card 8 and as shown in Fig. 5 the carded fleece is delivered directly to a tape condenser 10 which divides it and converts it directly into a plurality of rovings fit for spinning without further treatment.

In Fig. 6 the fleece from the lap roll 1 is delivered by a card 11 to a coiler 12, where it may be formed into one or more slivers as desired.

The cards 6 and 8 of Figs. 4 and 5 respectively are flat revolving cards of the kind commonly used in the fine cotton spin-

ning system, while in Fig. 6 I have illustrated a half-flat half-roller card which, while capable of carding the fiber to the desired degree in a single operation is more rapid in operation than the ordinary flat revolving card.

While I have hereinabove made reference to "cotton" as the material operated upon I wish it to be understood that other fiber similar to cotton, for example cottonized flax, hemp, or china-grass waste may be prepared by the same or an equivalent process and means.

By the method described it is possible without the use of complicated and expensive machinery to form slivers of uniform character when dividing the web from the finisher card transversely, since the folding of the bat in the manner described results in evening it to such an extent that it is of substantially uniform thickness throughout its entire width.

While I have thus described certain preferred procedures for accomplishing the object of the invention, I wish it to be understood that these particular steps have been described by way of example only and that I contemplate that the object may be attained by other modes of procedure than those described without departing from the spirit of the invention.

I claim:

1. That method of manufacturing cotton yarn which comprises feeding cotton fibers to a picking machine, delivering the fiber from the picking machine in the form of a bat, doubling the bat to form folds extending transversely across the bat, feeding the folded bat endwise to a cotton card, carding the bat, dividing the carded bat to form longitudinally extending strips, and condensing each strip to form an individual sliver.

2. That method of making yarn from cotton or similar fiber which comprises as steps doubling a fleece of substantially uniform weight per unit of length, such as is produced by a picker, whereby to form transverse folds, completing the carding of the folded web in a single operation upon a cotton card, dividing the carded fleece to form a plurality of strips, and condensing each strip to form a roving.

3. That method of making yarn from cotton or similar fiber which comprises as steps doubling a fleece of substantially uniform weight per unit of length to produce overlapping folds extending transversely of its length, feeding the folded fleece to a cotton carding machine, and dividing the carded doubled fleece to form a plurality of longitudinally extending strips, and condensing each strip to form a roving.

4. That method of making yarn from cotton or similar fiber which comprises as steps doubling a fleece of substantially uniform width per unit of length to produce overlapping folds extending diagonally of its length, carding the folded fleece by means of a revolving flat card to cause its fibers to extend substantially parallel to the length of the fleece, dividing the carded fleece into a plurality of longitudinally extending strips, and condensing each strip to form a roving.

5. That method of making yarn from cotton or similar fiber which comprises as steps doubling a fleece such as is produced by a picker whereby to form overlapping folds extending transversely and diagonally of the length of the fleece, feeding the doubled fleece to a revolving flat card, and delivering the carded doubled fleece to a tape condenser to be divided and condensed into a plurality of rovings.

6. That method of making yarn from cotton or similar fiber which comprises as steps doubling a fleece such as is produced by a picker whereby to produce folds extending diagonally across the width of the fleece, feeding the folded fleece endwise to a cotton carding machine, and completing the carding of the doubled fleece in a single operation.

7. That method of making yarn from cotton or similar fiber which comprises as steps doubling a fleece such as is produced by a picker to produce folds extending transversely of the length of the fleece, and subsequently dividing the fleece to produce a plurality of longitudinally extending strips.

8. That method of making yarn from cotton or similar fiber which comprises as steps doubling a fleece of substantially uniform weight per unit of length, such as is produced by a picker, whereby to produce folds extending transversely of the width of the fleece, feeding the doubled fleece endwise to a revolving flat card, carding the fleece, delivering the carded fleece directly to a tape condenser, dividing the carded fleece into a plurality of longitudinally extending strips, and condensing each strip into a roving.

9. That method of making yarn from cotton or similar fiber which comprises as steps doubling a fleece of substantially uniform weight per unit of length, such as is produced by a picker, whereby to form transverse folds, and carding the doubled fleece in a cotton carding machine in a single operation.

In testimony, that I claim the foregoing as my invention, I have signed my name this 1st day of December, 1925.

LUDWIG SCHORSCH.