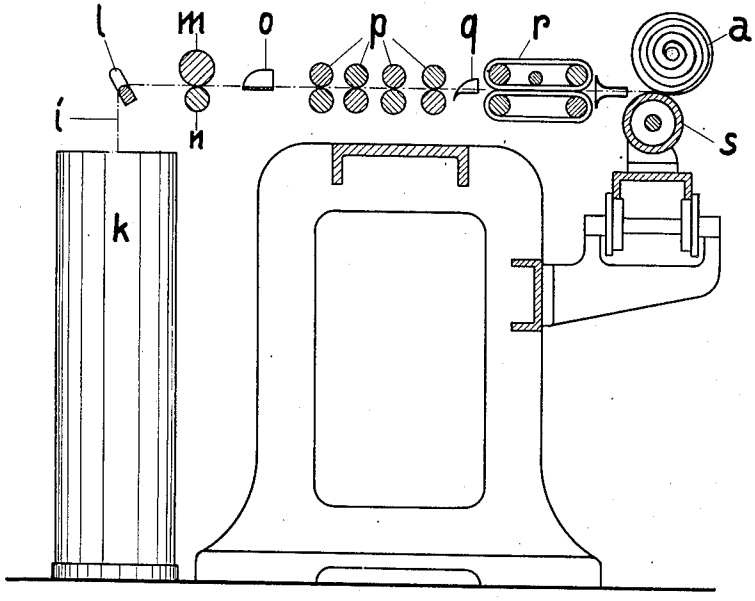
Sept. 12, 1933. E. KOCH 1,926,288

METHOD OF COTTON SPINNING

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Fig. 1



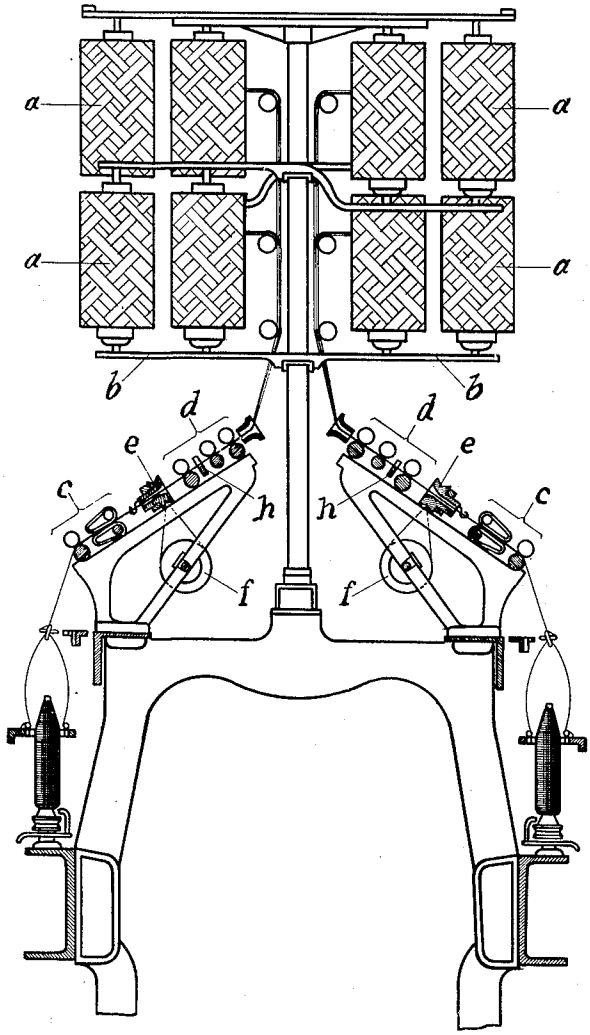

Inventor:
Ernst Koch
by S. Loreal,
Attorney

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Fig. 2




Inventor.
Ernst Koch
by
S. Sokal,
attorney.

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# UNITED STATES PATENT OFFICE

1,926,288

## METHOD OF COTTON SPINNING

Ernst Koch, Chemnitz, Germany, assignor, by mesne assignments, to Sachsische Textilmaschinenfabrik vorm. Rich. Hartmann, Aktiengesellschaft, Chemnitz, Germany, a joint-stock company of Germany

Application April 20, 1929, Serial No. 356,645, and in Germany May 1, 1928

11 Claims. (Cl. 118—39)

The subject of this invention is a new spinning process for cotton spinning. It is intended to dispense entirely with the flyer frames with a view to simplifying the working process and thereby realizing considerable economies in the mill installation and operating cost without impairing the quality of yarn. In consequence of a better preservation of the fibrous material resulting from the reduction of the number of working operations, the quality of the yarn is improved.

Proposals have been previously made to attenuate the drawing frame sliver to the required fineness of yarn directly on a spinning frame and thereby to dispense with the flyer frames. This suggested direct spinning process in itself, however, as well as the means used in carrying it into effect, were so imperfect that the desired result could not be attained. The failure of the process was mainly due to the sliver being delivered from the drawing frame into cans in order to be fed from these to the spinning machine. It is, however, practically impossible to draw the sliver out of the cans if the same is not sufficiently compacted and condensed. Even without taking into account the further practical impossibility of placing the cans on the creel of a spinning frame, the non-compacted sliver is too liable to develop irregularities in the yarn due to faulty drafts.

With a view to overcoming these drawbacks and in order to realize the scope of the invention as aforesaid, the sliver is first condensed and then wound in the form of bobbins on a machine of suitable design for this purpose, in immediate succession to the drawing frame. The sliver bobbins thus obtained are then creeled on a spinning frame provided with high drafting mechanism and are directly spun into yarn.

According to the above mentioned previously proposed method, the slivers should be passed through a drawing device consisting of 6 pairs of ordinary gripping draw rollers having suitable means for condensing the sliver interposed between them. However, every drafting arrangement with positively clamping rollers tends to produce faulty drafts, which can only be compensated by repeated doubling applied between the drafting operations. For this reason the present invention provides for the employment of a drafting device of the so-called pull-through type, e. g. a combined roller and pull-through drafting device, as such a device has proved to be particularly suitable for the object to be accomplished. A device of this type is fully described in British patent specification No. 185,733.

The annexed drawings illustrate by way of example a spinning frame suitable for carrying out the improved method.

Fig. 1 shows diagrammatically in elevation a machine for condensing sliver and winding same on bobbins.

Fig. 2 shows diagrammatically in elevation a machine for spinning the sliver direct into fine yarn. The sliver bobbins or balls *a* which are preferably cross bobbins may be produced, for instance, by a special condensing and winding device of appropriate design as shown in Fig. 1. The condensing operation is best effected by imparting a false twist to the sliver through the medium of rub apron devices or revolving tubes. The sliver *i* is lifted out from a can *k* over the sliver guide bar *l* and passed through the pair of feed rollers *m* and *n*. When issuing from the latter it is slightly supported by a sliver guide *o* on its further way to a roller drafting device consisting for instance of four pairs of drawing rollers *p*, wherefrom it is delivered in the form of a broad thin fleece. This fleece after leaving the front pair of drawing rollers is compacted into a narrow ribbon by means of a wedge shaped conductor *q* and presented in this condition to a condensing device constituted by a unit of two endless upper and lower rub aprons *r* having a reciprocating lateral and rotary motion by which the sliver, when passing between the same, is rounded and condensed. The thus strengthened sliver is then passed through a funnel guide on to a lap winding apparatus or balling head with the balling roller *s* to which besides its rotary movement a continuous traverse motion is imparted for the purpose of producing a cross wound bobbin *a*.

The above described first step of preparing the sliver package forms the subject of Applicant's United States Patent No. 1,721,783 and it will be understood that no claim is made in the present application for anything claimed in applicant's prior Patent No. 1,721,783.

The bobbins *a* are placed on the creel *b* of the spinning frame. The latter is equipped with a combined drafting arrangement of the type described in British patent specification No. 185,733, which consists of a back drawing device *d* with three sets of drawing rollers and a front drawing device of the pull-through type with leather aprons *c*. A twister funnel or revolving tube *e* provided with a hook is interposed between the said two drawing devices for producing a false twist and condensing the slivers while

they are passing through. The said twisting device is driven from a rim pulley by means of a band.

In the first drawing device a flat rail *h* with narrow guide slots is provided for condensing and compacting the sliver.

The coarse slivers of the cotton drawing frame placed on the creel *b* of the spinning machine in the form of bobbins *a* can be sufficiently drafted down and attenuated to the required fineness of yarn by means of the combined drafting device for producing high and even the highest amounts of drafts, and can finally be spun into marketable counts of yarn in one single operation.

The means for condensing and winding the sliver may be combined with the drawing frame or independently assembled on a separate machine. If desired the said means may be also directly applied to a carding engine.

I claim:

1. A method of cotton spinning consisting in first condensing by false twisting the drawing frame sliver and winding same on bobbins without twist, then creeling the said bobbins on a spinning machine, passing the sliver from the bobbins through a high draft mechanism, and finally spinning an attenuated sliver directly into finished yarn, substantially as described.

2. In the art of cotton spinning the improvement consisting in first condensing the drawing frame sliver, and winding same on bobbins without twist, and then creeling the said bobbins on a spinning machine for spinning the so prepared sliver into finished yarn, substantially as described.

3. A method of cotton spinning consisting in first condensing the drawing frame sliver by imparting a false twist thereto, winding said condensed sliver on bobbins, creeling the said bobbins on a spinning machine, passing the sliver from the bobbins through a high draft mechanism, imparting to the sliver during its passage through the high draft mechanism a false twist, and finally spinning continuously the attenuated sliver directly into finished yarn upon a spinning frame, substantially as described.

4. A method of directly spinning drawing frame cotton sliver into finished yarn, consisting in first condensing the drawing frame sliver and winding same on bobbins without twist, then creeling bobbins on a continuous spinning machine, imparting to the sliver coming from the bobbins a preliminary draft, then imparting to the sliver a false twist, then imparting to the sliver a further draft and finally spinning the attenuated sliver directly into finished yarn, substantially as described.

5. A method of directly spinning drawing frame cotton sliver into finished yarn, consisting in condensing the drawing frame sliver and winding same on bobbins without twist, creeling the bobbins on a continuous spinning machine, imparting to the sliver coming from the bobbins a preliminary draft, afterwards imparting to the preliminarily drawn sliver a false twist and a further draft, then imparting to the sliver a final draft, and finally spinning the attenuated sliver directly into finished yarn, substantially as described.

6. A method of directly spinning drawing frame cotton sliver into finished yarn consisting in condensing the drawing frame sliver and bringing same without twisting to the condition of cross bobbins, creeling the cross bobbins on a spinning machine, imparting to the sliver coming from the cross bobbins a high draft in two stages, imparting to the sliver between the two draft stages a false twist, and finally spinning the attenuated sliver directly into finished yarn, substantially as described.

7. In the art of spinning directly drawing frame cotton sliver into finished yarn, the improvement consisting in winding the sliver upon bobbins, preferably cross bobbins without twist, attenuating the sliver coming from the cross bobbins by drafting in two stages and imparting a false twist, before the final spinning, substantially as described.

8. In the art of directly spinning drawing frame cotton sliver into finished yarn, the improvement consisting in first imparting a false twist to and condensing the drawing frame sliver, winding same on bobbins without twist, and then creeling said bobbins on a spinning machine for spinning the so prepared sliver into finished yarn, substantially as described.

9. A method of spinning directly drawing frame cotton sliver into finished yarn, consisting in first condensing the drawing frame sliver by imparting a false twist thereto, winding the condensed sliver on cross bobbins without twist, then creeling the bobbins on a spinning machine, imparting to the sliver coming from the bobbins a high draft, and finally continuously spinning the attenuated sliver directly into finished yarn, substantially as described.

10. A method of directly spinning cotton sliver into finished yarn, consisting in condensing and imparting a false twist to the drawing frame sliver and winding same on to bobbins without twist, creeling the bobbins on a spinning machine, imparting to the sliver coming from the bobbins a preliminary draft imparting to the sliver a false twist, imparting to the sliver a final draft, and directly and continuously spinning the attenuated sliver into finished yarn, substantially as described.

11. A method of directly spinning drawing frame cotton sliver into finished yarn consisting in condensing and imparting a false twist to the drawing frame sliver and bringing same without twist to the condition of bobbins, creeling the bobbins on a spinning machine, drawing the sliver from the bobbins and imparting to the sliver a high draft, imparting to the sliver a false twist, imparting to the sliver a second high draft, and spinning the attenuated sliver continuously into finished yarn, substantially as described.

ERNST KOCH.