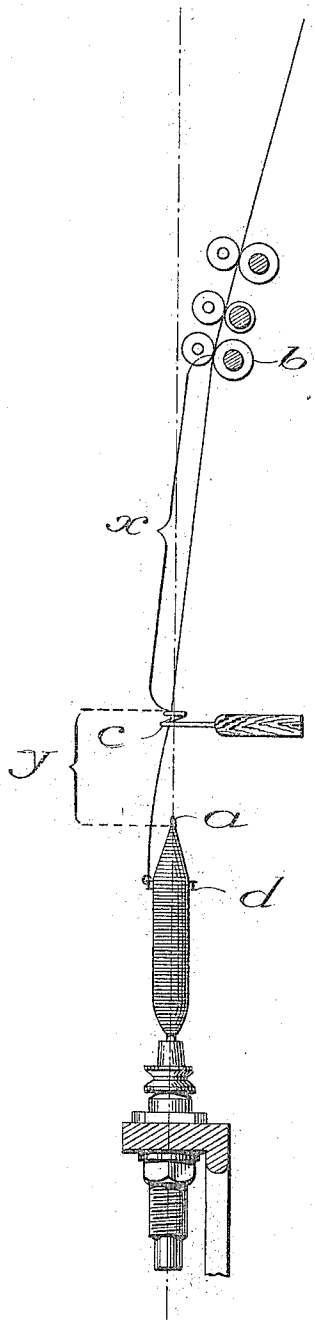
Oct. 14, 1924.

1.511,883

H. HAMEL

RING SPINNING MACHINE

Filed Nov. 24, 1923



Inventor:

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by Meyer and Cavanagh

Attys.

Patented Oct. 14, 1924. 1,511,883

UNITED STATES PATENT OFFICE.

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RING-SPINNING MACHINE.

Application filed November 24, 1923. Serial No. 676,770.

To all whom it may concern:

Be it known that I, HERMANN HAMEL, residing at 21, Friedrich-Auguststrasse, Dresden-Blasewitz, Germany, have invented certain new and useful Improvements in Ring-Spinning Machines, of which the following is a specification.

Various attempts have been made to solve the problem of producing loosely twisted soft cotton woof threads in ring spinning machines. One attempt to adapt ring spinning machines to this purpose consisted in placing the spindles in an oblique position. In other attempts, the spindles of the ring spinning machines were left in their vertical position, but the thread guide was omitted and the drawing device was placed in a practically vertical position so that the friction of the thread in the thread guide was eliminated and the balloon described by the rotating thread extended from the spindle to the point of delivery of the thread from the drawing device, that is to say to the bite of its delivery rollers. For this reason the distance between the point of delivery from the drawing device to the highest position of the traveler could not be made to exceed the usual distance between these points.

Another known form of ring spinning machine with vertical spindles is that described in the British Patent 10,081 of 1887, in which, in order to enable heavier travellers than usual to be used and to obtain uniformity of thread tension and twist and to reduce the size of the balloon described by the rotating thread, the drawing device is placed almost vertically above the thread guide and at a distance therefrom which is about double the ordinary distance. But in this machine the drawing device is placed so that a straight line drawn through the bites of its rollers forms an angle with the vertical equal to 45°, so that the twist imparted to the thread cannot advance without hindrance up to the bite of the delivery rollers of the drawing head, because the thread comes into contact with the periphery of the drawing head rollers in front of their bite.

In distinction herefrom the present invention is based on recognition of the fact that, without mounting the spindles in an oblique, instead of vertical position, and while retaining the customary thread guide and its usual distance from the head of the spindle, by which the size of the balloon generated by the rotating thread is determined, fine, loosely twisted, cotton woof threads can be spun satisfactorily in a ring spinning machine if the four following features are combined:

1. vertical or substantially vertical spindle,
2. delivery rollers of the drawing device placed substantially vertically above the thread guide,
3. the line drawn through the bites of the pairs of rollers of the drawing head forms a comparatively small angle with the vertical, and
4. the distance from the delivery rollers to the thread guide is at least twice the distance between the guide and the uppermost position of the traveller ring.

A coincidence of these four features in the same machine is necessary to obtain the desired result because, if the distance from the delivery rollers to the thread guide is considerable, but the drawing device does not form a relatively small angle with the vertical, but a comparatively large angle as in the aforementioned ring spinning machine, the twisting of the thread will not extend up to the bite of the delivery rollers but, as the thread contacts with the periphery of the lower delivery roller in front of the bite, the spun thread will exhibit points with unsufficient twist at periodic intervals, where the thread is liable to break.

The invention is illustrated diagrammatically in the drawing, in which a ring spinning machine is shown having a spindle a, a drawing device with a pair of delivery rollers b, a thread guide c and a traveller ring d. x denotes the distance between the bite of the front or delivery rollers b of the drawing device and the thread guide c and y the distance between the latter and the uppermost position reached by the traveller ring.

The spindles a are mounted in a vertical position and the front or delivery rollers b are substantially in a vertical line with the thread guide c or the other end of the spindle a. The distance x between the delivery rollers and the thread guide c or the top point of the balloon formed by the rotating thread is more than double the corresponding distance in ordinary ring spinning machines. The oblique position of the drawing device is such that the line through the

bites of its rollers forms an angle of about 15° with the vertical spindle axis. The greatest permissible deviation from the vertical spindle axis has been found to be about 30°. By this arrangement the knee in the thread formed between the spindle, the eye of the thread guide and the delivery rollers in ordinary ring spinning machines with vertical spindles and obliquely arranged drawing devices arranged laterally of the vertical spindle axis is eliminated, and besides the pull of the traveller d and the entire twist of the thread are distributed over a long section of thread, and the twist imparted to the thread can advance without hindrance up to the bite of the delivery rollers, while the ordinary arrangement of the thread guide and the advantageous vertical arrangement of the spindles as in ordinary ring spinning machines may be adhered to.

I claim:—

1. In a ring spinning machine, adapted for spinning loose twist cotton threads, a substantially vertical spindle, a drawing device, a traveller ring, and a thread guide, the delivery rollers being placed substantially vertically above the thread guide, the line through the bites of the drawing device rollers forming a small angle, not more than thirty degrees in relation to the spindle axis, and the distance from the bite of the delivery rollers to the thread guide being substantially greater than twice the distance from the thread guide to the traveller ring when the latter is in its uppermost position.

2. A ring spinning machine comprising a substantially vertical spindle, a drawing device, a traveller ring and a thread guide, the delivery rolls of the drawing device being located approximately vertically above the thread guide, the line through the bites of the drawing device rollers forming a small angle, not more than 30° in relation to the spindle axis, and the distance from the bite of the delivery rollers to the thread guide being at least approximately three times the distance from the thread guide to the traveller ring when the latter is in its uppermost position.

In testimony whereof I affix my signature in presence of two witnesses.

HERM. HAMEL.

Witnesses:
M. Croebe,
Vars Warky.