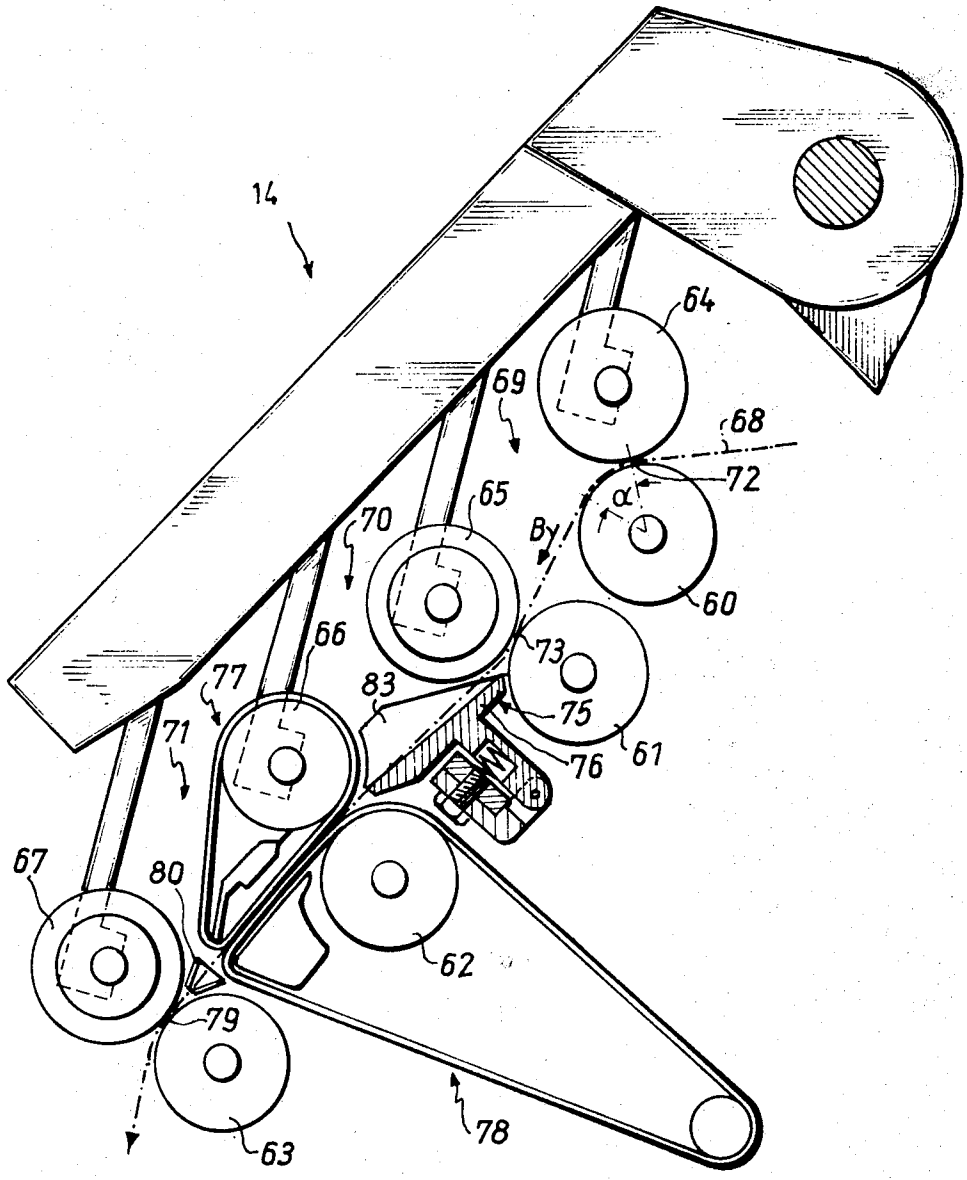
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RING SPINNING DRAFTING DEVICE

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RING SPINNING DRAFTING DEVICE

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U.S. Cl. 19—258 1 Claim

ABSTRACT OF THE DISCLOSURE

A pair of feed rollers and a pair of exit rollers are arranged at the ends of the preliminary drafting zone of the drafting path of a ring spinning drafting device in such a position that the roving is in contact with the bottom feed roller through an arc of between 40° and 60° extending from the nip of the feed rollers in the direction of rotation of the same, and then extends tangentially to the bottom feed roller from the end of the arc to the nip of the exit rollers.

CROSS-REFERENCE TO A RELATED APPLICATION

The present application is a divisional application of the copending application Ser. No. 556,226 filed June 8, 1966, now abandoned, in which restriction was required.

BACKGROUND OF THE INVENTION

In the application Ser. No. 556,226, a method is disclosed according to which fibrous material is carded then directly drafted on a drawing frame flyer drafting device with multiple doubling, and finally treated in a ring spinning drafting device.

The present invention relates to a ring spinning drafting device by which a roving is drawn out.

SUMMARY OF THE INVENTION

It is the object of the present invention to provide a drafting device in which a roving is drawn out while its fibers are maintained in a smooth and parallel condition.

Another object of the invention is to provide a ring spinning drafting device which prepares a roving for spinning.

With these objects in view, a ring spinning drafting device according to the invention comprises a plurality of pairs of rollers disposed along a drafting path for a roving and dividing the path into a preliminary drafting zone, a condensing zone, and a main drafting zone. A pair of feed rollers and a pair of exit rollers is located at the ends of each zone, and preferably the exit roller of one zone is the feed roller of the subsequent zone. In accordance with the invention, the pair of feed rollers and the pair of exit rollers at the ends of the preliminary drafting zone are disposed so that a roving passing through the nip of the pair of feed rollers of the preliminary drafting zone, is in contact with one of the feed rollers, preferably the bottom feed roller, through an arc of between 40° and 60° extending from the nip of the feed rollers in the direction of rotation.

Preferably, the pair of feed rollers and the pair of exit rollers of the preliminary drafting zone are disposed so

that the roving runs into the nip of the exit rollers without previously winding about the peripheral surface of an exit roller of the preliminary drafting zone.

A condenser having a tapered channel for the roving is located in the condensing zone. Preferably, another condenser is located in the main drafting zone adjacent the nip of the exit rollers of the same, and between this condenser and the feed rollers of the main drafting zone, flexible apron guide means are provided which have portions located on opposite sides of the roving in the main drafting zone. The apron guide means form endless loops which are preferably driven by the feed rollers of the main drafting zone so that the roving moving from the condensing zone to the main drafting zone, is not engaged by the feed rollers of the main drafting zone, but by the pair of endless flexible apron guide means.

In the preferred embodiment the angle of the arc of contact between the roving and the bottom feed roller of the preliminary drafting zone is 50°. Particularly good spinning results are obtained since the roving runs into the nip of the pair of exit rollers of the preliminary drafting zone without contact with a peripheral arc of an exit roller of the preliminary drawing zone.

The condenser in the condensing zone preferably has a feed tongue at the bottom of its tapered channel which has a guide surface for the roving, and extends to the peripheral surface of the bottom feed roller of the condensing zone, which is also the bottom exit roller of the preliminary drafting zone so that any lap formation on the same is prevented.

The novel features which are characteristic for the invention are set forth in the appended claim. The invention itself, together with additional objects and advantages thereof, will be best understood from the following description of a specific embodiment when read in connection with the single figure of the accompanying drawing which is a schematic side elevation of a ring spinning drafting device, conventional parts being omitted for the sake of simplicity.

DESCRIPTION OF A PREFERRED EMBODIMENT

A roving **68** produced on a drawing frame flyer device is supplied to the ring spinning drafting device **14** and is guided between a plurality of pairs of top and bottom rollers which are disposed along a drafting path. The rollers **61–63** are driven rollers and supported in known manner. The drafting path includes a preliminary drafting zone **69**, a condensing zone **70**, and a main drawing zone **71**. A pair of feed rollers is provided at the beginning, and a pair of exit rollers is provided at the ends of each zone. Rollers **60**, **64** are the feed rollers for the preliminary drafting zone **69** and feed roving **68** to the exit rollers **61** and **65** of the preliminary drafting zone **69**, which are at the same time the feed rollers of the condensing zone **70**. A condenser **75** is provided in the condensing zone and has a channel **83** tapering in the direction of movement of roving **68** indicated by the arrow B. The condensed roving passes between two loop portions of a pair of endless apron guide means **77** and **78** which pass about the pair of rollers **62**, **66**. The exit rollers **63** and **67** draw the roving **68** from the apron guide means **77**, **78** through a condenser **80** and deliver the roving to a winding and twisting device. The pair of rollers **61**, **65** rotate at a higher speed than the pair of feed rollers **60**, **64** so that the roving is drawn out in the preliminary drafting zone **69** in a ratio 1.02 to 4:1. In the condensing zone **70**, the roving is drawn out in a ratio from 1.06 to 2:1. In the main drafting zone **71**, the roving **68** is drawn out in a ratio from 40 to 60:1. After leaving the nip **79** of the exit rollers **63**, **67** of the main drafting zone **71**, the roving is supplied to a

spindle and twisted to form a yarn. In accordance with the invention, the pair of feed rollers **60**, **64** is disposed in relation to the pair of exit rollers **61**, **65** of the preliminary drafting zone **69** so that the roving **68** is in contact with the periphery of the bottom feed roller **60** along an arc extending from the nip **72** an angle α which is between 40° and 60°, and advantageously 50°. From the end of the arc, the roving **68** extends straight and in a tangential plane on rollers **60** and **61** so that the roving is not wound about any arc of the exit rollers **61**, **65** before gripped by the nip **73** of the same.

Planes passing through the parallel axes of feed rollers **60** and **64**, and through the parallel axes of exit rollers **61** and **65**, define the same angle α with each other, and the path of roving **68** between roller **60** and roller **61** is perpendicular to the plane passing through the axes of rollers **61** and **65**.

Rollers **62** and **66** and the inlet between the coextensive loop portions of apron guide means **77**, **78** which pass about rollers **62**, **66**, are positioned in relation to rollers **61** and **65** so that the roving is in contact with the periphery of top roller **65** along a small arc before passing through the channel **83** of condenser **75**. The feed tongue **76** of condenser **75** is in contact with the periphery of bottom roller **61** so that when the end of a new roving is threaded into the drafting path between the rollers, the leading end of the roving cannot be pulled down by the bottom roller **61** rotating in counterclockwise direction, and formation of a lap is prevented. Feeding tongue **76** guides the leading end of the new roving into the tapered channel **83** without requiring manual insertion by an operator. Furthermore, feeding tongue **76** strips fibers of the bottom roller **61** so that all fibers of the roving move into the condenser channel **83**. To improve the effect, bottom roller **61** may be provided with oblique grooves, and the condenser is constructed of a material having good sliding properties, such as a synthetic plastic material.

The endless loops of the apron guide means are bands forming endless loops and consisting of leather or a synthetic material. The rollers **62** and **66** drive the apron guide means which are supported to form loop portions between which the roving is guided along the main drawing zone of the drafting path. The ends of the guiding loop portions are connected with other loop portions which are transverse to the drafting path, so that the roving passes into the tapered interior of condenser **80** and to the nip **79** of the exit rollers **63** and **67** which rotate at high speed. Top roller **66** is biased toward bottom roller **62** so that the roving is clamped with small pressure between the apron guide means **77**, **78** and transported and confined by the same so that the fibers cannot separate while the roving in the main drawing zone **71** is drawn out in a ratio from 40 to 60:1.

The second condenser **80** in the main drafting zone **71** has the purpose to condense the drawn out comparatively thin roving so that during the following twisting of the yarn in a twisting and winding device, all fibers are fully twisted into the yarn. The twisting and winding device is conventional, and generally consists of a spindle, a spinning ring, and a traveller.

The top rollers **64**, **65**, **66** and **67** are biased in the usual manner toward the bottom rollers substantially as described in the U.S. Pat. 3,006,036.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of drafting devices for fibrous material differing from the types described above.

While the invention has been illustrated and described as embodied in a ring spinning drafting device having a preliminary drafting zone, a condensing zone, and a main drafting zone between which pairs of rollers are provided, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claim.

What is claimed is:

1. Ring spinning drafting device comprising, in combination, four pairs of top and bottom rollers having parallel axes disposed along at least one drafting path for a roving, and dividing said path into a preliminary drafting zone, a condensing zone, and a main drafting zone so that a pair of feed rollers and a pair of exit rollers is located at the ends of each zone, the pair of exit rollers of said preliminary drafting zone being also the pair of feed rollers of said condensing zone, and the pair of exit rollers of said condensing zone being also the pair of feed rollers of said main drafting zone, said pair of feed rollers and said pair of exit rollers of said preliminary drafting zone having first and second nips located in first and second planes passing through the axes of the respective pairs of feed and exit rollers, respectively, said first and second planes defining an angle between 40° and 60° with each other so that a roving extending between said first and second nips abuts the bottom roller of said pair of feed rollers of said preliminary drafting zone along an arc between 40° and 60° and extends tangentially to said bottom roller of said pair of feed rollers from the end of said arc to said second nip perpendicularly to said plane passing through the axes of said pair of exit rollers of said preliminary zone so that said roving is not wound about the peripheral surface of the bottom roller of said pair of exit rollers of said preliminary drafting zone; also comprising a pair of flexible apron guide means in said main drafting zone forming a pair of endless loops about the feed rollers of said main drafting zone, said endless loops having coextensive loop portions extending along said main drafting zone and forming between said feed rollers of said main drafting zone an inlet for the roving; a first condenser in said condensing zone having a tapered channel for condensing the roving and for guiding the same from the nip of said pair of feed rollers of said condensing zone toward said inlet; said feed rollers of said main drafting zone, said inlet, and said channel being positioned in relation to the nip of said pair of feed rollers of said condensing zone so that the roving abuts the top roller of said pair of feed rollers of said condensing zone along a small arc; and a second condenser in said main drafting zone disposed adjacent the nip of said pair of exit rollers of said main drafting zone between the same and the ends of said pair of loop portions.

References Cited

FOREIGN PATENTS

578,855	7/1958	Italy.
512,355	1/1921	France.
998,688	1/1952	France.
645,066	10/1950	Great Britain.
894,044	4/1962	Great Britain.

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