May 19, 1964 K. P. SWANSON 3,133,320

TRUMPET FOR A SPINNING FRAME

Filed Aug. 10, 1962 3 Sheets-Sheet 1

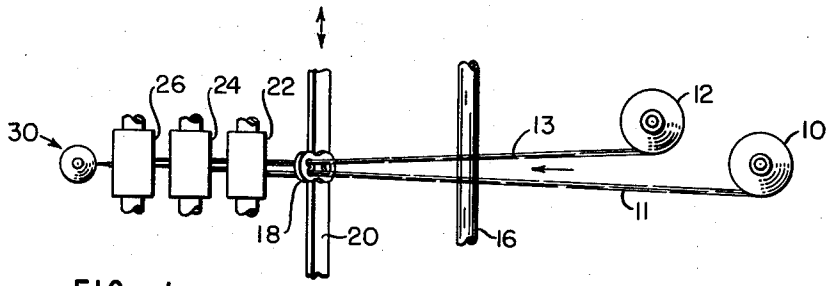

FIG. 1

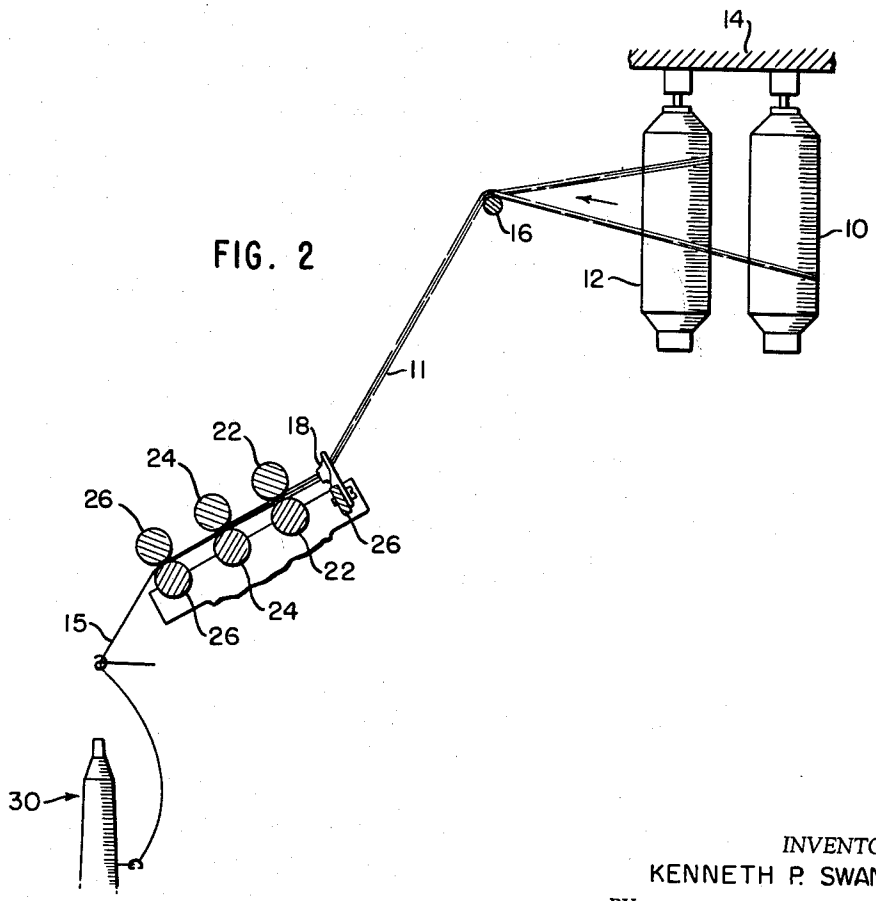

FIG. 2

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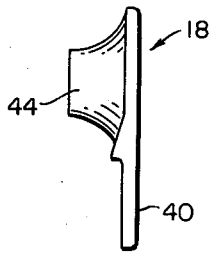
FIG. 3



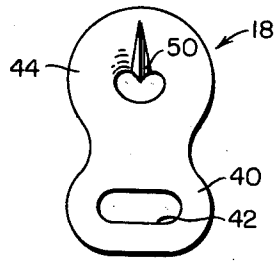


FIG. 4

FIG. 5

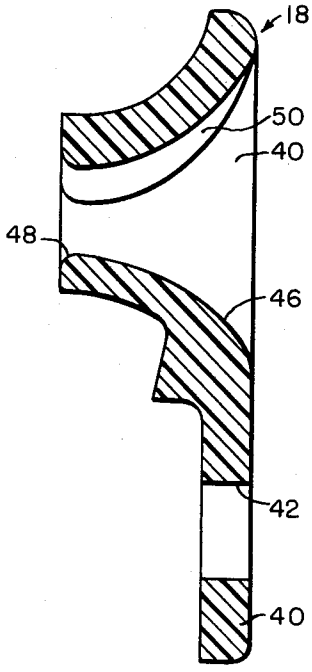


FIG. 6

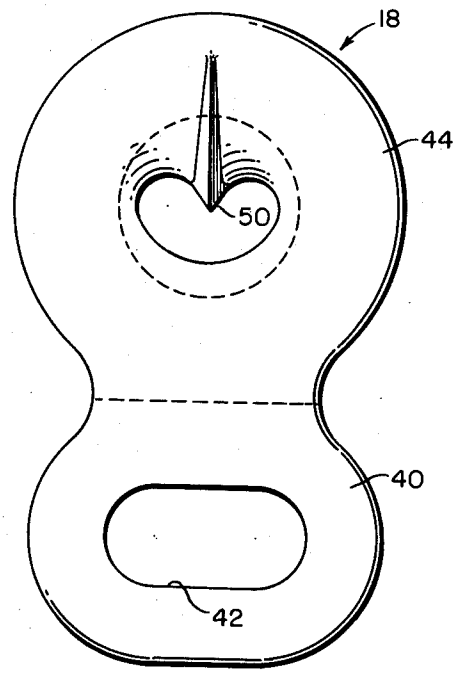


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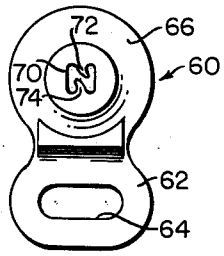
FIG. 7



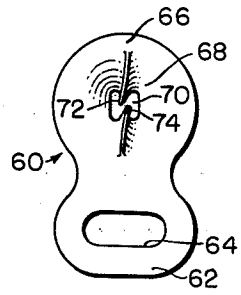


FIG. 8

FIG. 9

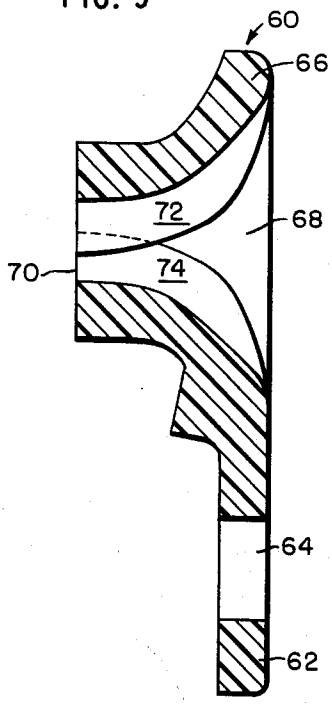
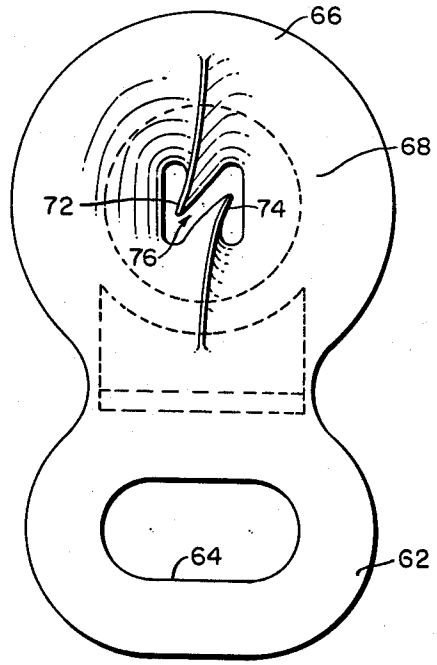


FIG. 10



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3,133,320

TRUMPET FOR A SPINNING FRAME

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Filed Aug. 10, 1962, Ser. No. 216,192
1 Claim. (Cl. 19—288)

My invention relates to a trumpet for a spinning frame. This application is a continuation-in-part of my prior United States patent application Serial No. 112,600 filed May 25, 1961, now abandoned, for Trumpet for a Spinning Frame.

In customary practice, a strand of roving is led from a rotatably mounted spindle or "package," over a roving bar, and through a bell-shaped trumpet disposed in correct position behind the drafting rolls of a spinning frame, the purpose of the trumpet being to locate the roving accurately and precisely with respect to the drafting rolls so that the roving will enter the bite of the rolls at the correct point and in a straight run.

It has been found that yarn of improved strength and uniformity may be produced by running two rovings separately through the same set of drafting rolls and then combining them as they enter the twisting system. To achieve that end, others have provided trumpets with completely separated holes for the passage of the rovings, but such trumpets have not found favor in the mills. When one of the rovings breaks, the operator must reeve the end through the proper hole in the trumpet, and it is not only difficult to find the correct hole, but easy to break the other roving in the course of fumbling to find the hole.

The principal object of my invention is to improve the efficienty of double roving spinning.

Another object of my invention is to reduce the length of time required to restore a double roving system to operation after the breaking of a roving.

It is a further object of my invention to provide a trumpet for a spinning frame which may be used interchangeably in applications in which the "package" is disposed either above or below the longitudinal axis of the trumpet.

An important feature of my invention resides in a trumpet having a single passage and a rib disposed in at least one surface of the passage to divide the passage into a pair of connected, generally U-shaped, apertures.

It is an important feature of my invention, in an alternative embodiment thereof, that a pair of opposed ribs are disposed in a trumpet having a single passage, the opposed ribs being oriented in such fashion that the trumpet will operate effectively with the "package" positioned either above or below its longitudinal axis.

I have found, in the preferred embodiment of my invention, that a double roving trumpet of the kind described offers a great advantage. When one of the rovings breaks, the operator has merely to twist the broken end around the unbroken roving, behind the trumpet; thereupon the unbroken roving carries the end through the trumpet and into the bite of the back drafting rolls. When the rolls exert a pull on the broken end, the two rovings then automatically separate, because of the action of the rib, and the two rovings once more pass in parallel paths through the drafting rolls.

The nature of the invention will be more readily understood and appreciated from the following detailed description of a preferred and an alternative embodiment thereof, selected for purposes of illustration and shown in the accompanying drawings, in which:

FIG. 1 is a schematic plan view of the principal elements of a spinning frame;

FIG. 2 is a similar view in side elevation;

FIG. 3 is a view in side elevation of a trumpet constructed in accordance with the invention;

FIG. 4 is a view in end elevation of the trumpet;

FIG. 5 is a view in vertical cross-section upon an enlarged scale;

FIG. 6 is a view in end elevation to the same enlarged scale;

FIG. 7 is a view in rear end elevation of an alternative embodiment of the trumpet;

FIG. 8 is a view in front end elevation of the alternative embodiment of the trumpet;

FIG. 9 is a view of the alternative embodiment of the trumpet in vertical cross-section upon an enlarged scale; and

FIG. 10 is a view in end elevation of the alternative embodiment of the trumpet to the same enlarged scale.

In FIGS. 1 and 2 there are shown, diagrammatically, the essential elements of spinning frame with which a trumpet constructed in accordance with the invention is particularly useful. A creel includes a frame or support 14 from which a number of rolls or packages of roving depend; as shown in FIG. 2, a pair of packages 10 and 12 of roving are rotatably suspended from the frame 14. From the packages 12 and 14 the rovings 11 and 13 are led over a roving bar 16 and thence downwardly through the trumpet 18 which is mounted on a transverse bar 20 disposed behind the drafting rolls. Customarily, three pairs of drafting rolls are employed, a pair of back rolls 22, a pair of middle rolls 24, and a pair of front rolls 26. The middle rolls 24 rotate faster than the back rolls 22, and the front rolls 26 rotate faster than the middle rolls 24; hence the fibers of the roving are drafted. The rovings 11 and 13, after leaving the trumpet 18, proceed through the drafting rolls along parallel paths until they leave the bite of the front rolls 26. Then they enter the twisting system, indicated generally at 30, and then combine into a single roving 15, which is twisted in customary fashion and wound on the spindle of the twisting system.

The trumpet per se is illustrated in a preferred embodiment in FIGS. 3–6 inclusive. The trumpet of FIGS. 3–6 inclusive is intended for use in systems substantially similar to that illustrated in FIGS. 1 and 2 in which the package is located above the longitudinal center line of the trumpet. In FIGS. 3 and 4 the trumpet is shown approximately at full scale and the trumpet is shown on a much enlarged scale in FIGS. 5 and 6. The nature of the trumpet is such as to lend itself to fabrication by single-shot injection molding of a plastic such as polystyrene, suitably plasticized polyvinyl chloride, nylon, or other conventional plastic customarily employed in injection molding. The material is not, however, critical; the trumpet may be formed as a metal stamping.

The lower portion of the trumpet is formed as a flat plate or bar 40 provided with a transversely extending aperture 42. The aperture 42 is adapted to receive a bolt or other fastening means by which the trumpet may be secured in proper position upon the bar 20 of the spinning frame. It will be noted that a normal position for the

trumpet is shown in FIGS. 1 and 2 in which the trumpet is secured in upstanding relation to the bar **20**. The upper portion of the bar or plate **40** merges smoothly into a bell-shaped member **44** provided with a through and through passage having a flared mouth **46** leading to a discharge orifice **48** of lesser dimension than the flared mouth. Molded into the upper portion of the aperture formed in the bell-shaped member **44** is a rib **50** originating in the upper surface of the flared mouth **46** and increasing in vertical dimension as it passes to the rear of the orifice **48**. The rib **50** is approximately triangular in cross-section with an apex pointed downwardly. The presence of the rib produces a heart-shaped aperture through the bell-shaped member **44** and provides a pair of parallel grooves or passages in the upper portion of the aperture. Incidentally, it will be understood that the bell-shape of the member **44** is convenient from the standpoint of molding efficiency and appearance, but the exterior shape of the member is not functionally important to the operation of the trumpet; the trumpet could be carved from a cubical block, for example.

The trumpet is generally indicated by the reference character **18** and is shown in FIGS. 1 and 2 as mounted on the bar **20** in upstanding relation between the back drafting rolls **22** and the roving bar **16**. When the spinning frame is to be operated, the rovings **11** and **13** may be twisted together by the operator and passed through the trumpet into the grip of the back rolls **22** and then led forwardly through the other pairs of rolls and downwardly into the twisting system. When the frame is then started it will be found that the rovings **11** and **13** are automatically separated by the action of the rib **30** and thereafter pass through the drafting rolls in parallel paths, as shown in FIG. 1. The two rovings are then combined into one roving **15** just prior to entry of the roving into the twisting system. It might be thought that the two rovings would be apt to pass together through the trumpet on one side or the other of the rib **50**, but experience has shown that such a condition will not occur, since the rib invariably causes and maintains the desired separation between the rovings **11** and **13**. As a test, the two rovings have been deliberately started through the trumpet on the same side of the rib **50**, but the separation takes place automatically and at once.

It has been found in the textile mills that the operators of the spinning frames simply will not take the trouble to reeve the rovings through the separate holes of a double trumpet. To do so requires extended reaching and inevitable fumbling in the course of trying to introduce the end of the limp roving through one of a separate pair of holes in a conventional double trumpet. There is, however, no similar problem involved when the trumpet constructed in accordance with my invention is employed. When one of the rovings breaks, it is merely necessary for the operator to take the end of the broken roving and twist it around the unbroken roving, behind the trumpet. The unbroken roving will then carry the end of the broken roving through the trumpet and into the drafting rolls, whereupon the two rovings will separate as soon as the broken roving is pulled by the drafting rolls. The result is that the efficiency of double-roving spinning is greatly increased and the objectives of double-roving spinning more easily and cheaply achieved.

Turning now to FIGS. 7 through 10 inclusive, an alternative embodiment of my invention is disclosed. In the embodiment of FIGS. 3 through 6 inclusive the trumpet disclosed is intended for use where the "package" or spindles of roving **10** and **12** are located above the cross bar **20** on which the trumpet **14** is mounted. In the preferred embodiment it is therefore only necessary to provide a rib **50** located in the uppermost portion of the trumpet **18**. Since the roving will enter the trumpet **18** and will be drawn against the uppermost surface thereof, as seen in FIG. 2, the rib **50** will function properly to produce the desired results of my invention.

On occasion it is desired to mount the trumpet **18** in depending relation to the cross bar **20** or, alternatively, to draw the roving from below the cross bar **20**. It will be observed that under such conditions the rib **50** of the preferred embodiment will not operate to separate the two strands of rovings **11** and **13** since the rib **50** will be positioned on the face of the trumpet **18** opposite to the face against which the roving will bear as it enters the trumpet. In the alternative embodiment of FIGS. 7 through 10 a trumpet is disclosed having an opposed rib construction whereby the roving may be introduced to the trumpet from either above or below the longitudinal center line thereof.

In FIG. 7 a trumpet, indicated generally at **60**, is shown having the general outline of the trumpet of the preferred embodiment. As before, the lower portion of the trumpet **60** is formed as a bar or plate **62** having a central aperture **64** whereby it may be attached to the cross bar **20** of the spinning frame. The upper portion of the bar or plate **62** merges smoothly into a bell-shaped member **66** provided with a through-and-through passage having a flared mouth **68** leading to a discharge orifice **70** of lesser dimension than the flared mouth **68**. Molded into the upper portion of the aperture formed in the bell-shaped member **66** is a depending rib **72** originating in the upper surface of the flared mouth **68** and increasing in vertical dimension as it passes to the rear of the orifice **70**. Molded into the lower portion of the aperture **68** formed in the bell-shaped member **66** is an upstanding rib **74** originating in the lower surface of the flared mouth **68** and increasing in vertical dimension as it passes to the rear of the orifice **70**.

It will be noted that the depending rib **72** and the upstanding rib **74** are each of a vertical dimension slightly greater than one half the vertical dimension of the passage through the trumpet **18** from approximately one half the way through the passage to the discharge orifice **70**, as seen most clearly in the enlarged sectional view of FIG. 9. This vertical dimension is desirable in order to insure that the tangled strands of roving will separate properly. In order to prevent the passage through the trumpet **18** from being divided into parallel discrete passages by the ribs **72** and **74**, they are given respectively a slight inclination from the vertical away from each other. As will be seen in FIG. 10, the rib **72** is inclined slightly to the left of the vertical and rib **74** is inclined slightly to the right of the vertical. The combined angles of inclination should be sufficient to produce a passage, indicated generally at **76** in FIG. 10, of sufficient width to easily admit at least one strand of roving between the ribs **72** and **74**.

It will be noted that in the alternative embodiment of my invention a pair of parallel grooves or passages are provided in both the upper portion and in the lower portion of the aperture. It is thus possible to use the trumpet of the alternative embodiment on a spinning frame in which the spindles of roving are located either above or below the longitudinal center line of the passage through the trumpet.

As in the preferred embodiment, when one strand of roving breaks it remains only necessary to wrap the broken strand of roving about the intact strand and to continue operation of the spinning frame. The intact strand of roving will carry the end of the broken strand through the trumpet **18**, and by operation of the rib **72** or **74** as the case may be, the broken strand of roving will be transferred through the passage **76** to the proper groove and aligned for entry into the drafting rolls.

Having thus disclosed my invention, in both a preferred and an alternative embodiment thereof, what I claim as new and desire to secure by Letters Patent of the United States is:

A spinning frame trumpet comprising a member, means at the bottom of the member for supporting the member in vertical position, said member having a horizontal

through-and-through hole flared at one end, a first rib disposed in the upper surface of said hole and depending more than 50% of the distance between the upper and lower surfaces of the hole, a second rib disposed in the lower surface of the hole and extending upward more than 50% of the distance between the upper and lower surfaces of said hole, said first and second ribs being inclined away from each other to define a cross-over passage between said ribs, said ribs serving to divide the upper and lower portions of the hole into pairs of parallel passages connected by the space between the inclined ribs.

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