June 6, 1967 S. DAVIES 3,323,191

YARN STRINGING UP PROCESS

Filed May 20, 1965

FIG.I

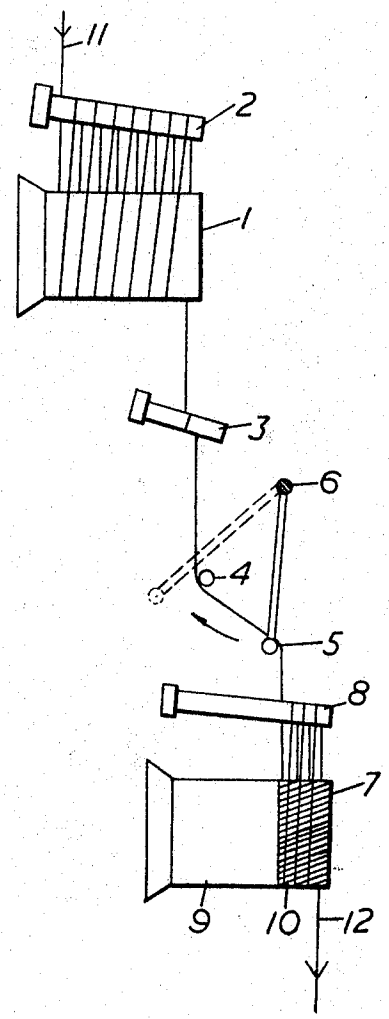
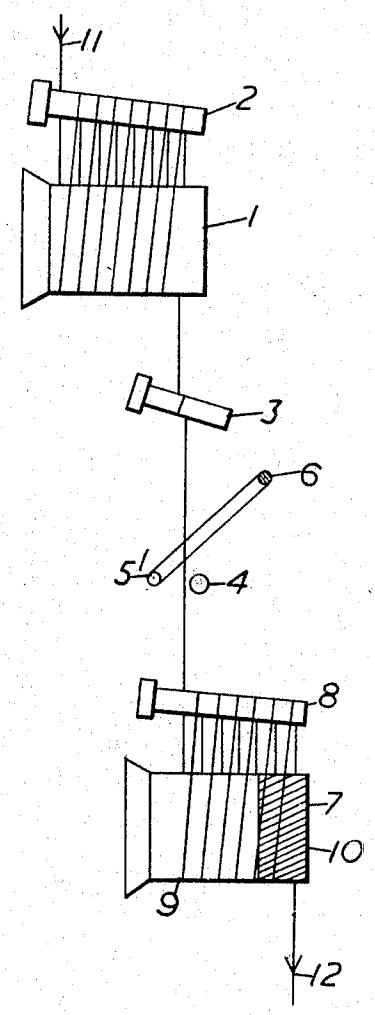


FIG.II



United States Patent Office 3,323,191 Patented June 6, 1967

3,323,191

YARN STRINGING UP PROCESS

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Filed May 20, 1965, Ser. No. 457,296
Claims priority, application Great Britain, May 20, 1964, 20,718/64
2 Claims. (Cl. 28—72)

This invention relates to improvements in the forwarding of synthetic polymeric filaments and to apparatus therefor. The invention is particularly concerned with the drawing of synthetic polymeric filaments.

In many processes polymeric filaments, hereinafter referred to as yarn, are forwarded from step to step by means of rotating rolls around which the filaments make a number of wraps. Such rolls frequently have a highly-polished chromed surface with which the filaments have a high coefficient of friction. As a result of this friction the filaments are caused to be forwarded at the peripheral speed of the roll provided that they make a sufficient number of wraps around the said roll to eliminate any tendency for slippage to occur.

In the drawing of polyamide filaments for example, the yarn is taken from a supply source, e.g. a cheese, and caused to make a plurality of wraps around a first pair of rolls, commonly called the feed rolls, which may have their axes skewed to maintain the wraps apart on the rolls. Normally one of the rolls is driven and the other is an idler. The yarn is forwarded by the feed rolls to a snubbing pin around which it makes one wrap and then to a second series of rolls, commonly called the draw rolls, consisting of a driven roll and an idler roll about which it makes a plurality of wraps, the driven roll rotating at a higher speed than that of the said first pair of rolls, and is finally forwarded by the draw rolls to a suitable wind up device, e.g. a ring and traveller system. The aforementioned rolls have a highly polished chromed surface to ensure a high frictional contact between the filaments and the rolls to prevent slipping.

In the stringing up of an apparatus as described above with the rolls running, which is normal practice, difficulty may be encountered when attempting to place the first wrap onto the draw roll. Owing to the high friction between the filaments and the roll, as soon as they make contact with the roll they are accelerated and tend to cling to and wrap onto the roll. Since there is a lower tension in the free end of yarn it is this portion of the yarn which becomes wrapped onto the roll. As a result the yarn has to be broken and the draw roll cleared of the yarn before another attempt can be made at restringing. This effect is particularly troublesome in high speed drawing since it is virtually impossible for an operator to pass the yarn round the rolls sufficiently quickly to prevent it from wrapping on.

We have now found that the stringing up process can be improved and the tendency towards wrapping of the free end of the yarn onto the roll diminished by using a roll having on the outside portion thereof a low friction section and arranging that the requisite number of wraps are made on this section before the yarn is brought into contact with the normal high friction section. Because the section on which the yarn is initially wrapped has a low friction surface, there is considerable slip between the yarn and the roll with the result that the yarn does not

attain the draw roll speed and has a reduced tendency to cling to the roll.

Accordingly therefore the present invention provides a process for stringing up a yarn forwarding device comprising a rotating driven roll the outside end section of the said driven roll having a low friction surface and the remainder of the roll a high friction surface, wherein the yarn is initially guided onto the low friction surface section of the driven roll around which the requisite number of wraps are made and is subsequently guided onto the high friction surface whereon it is accelerated to the peripheral speed of the roll.

Conveniently the low friction surface of the roll may be a matt surface.

In certain processes it may be desirable to have two driven rolls, in which case both rolls should have corresponding low friction surface sections.

The invention also extends to include the apparatus for carrying out the aforementioned process.

Our embodiment of the invention will now be more clearly described by reference to the accompanying drawings. In the drawings:

FIGURE I is a diagrammatic representation of a yarn drawing apparatus during stringing up according to this invention.

FIGURE II is a diagrammatic representation of a yarn drawing apparatus under normal running conditions.

In FIGURE I the yarn drawing apparatus comprises a driven feed roll **1** and an idler separator roll **2** having their axes skewed, a snubbing pin **3**, a fixed yarn guide **4**, a yarn guide **5** moveable about pivot **6**, a driven draw roll **7** and an idler separator roll **8**. The draw roll **7** has a polished high friction surface section **9** and a matt low friction surface section **10**.

In stringing up this apparatus, a yarn **11** is caused to make a plurality of wraps around the feed and separator rolls, the number of wraps being sufficient to prevent slipping occurring, a single wrap around the snubbing pin **3** and is then passed around guides **4** and **5** and thence to the draw roll and separator roll around which it is caused to make a number of wraps. The draw roll is normally driven with a peripheral speed at least 3 times greater than that of the feed roll. The guide **5** is so positioned that the yarn passing around the draw roll is in contact with the low friction surface section only. Since there is a considerable amount of slipping between the yarn and the low friction surface the yarn does not tend to cling to the surface when the first wrap is being put on, and hence the tendency for the free end **12** of the yarn to become wrapped around the draw roll is diminished.

When the requisite number of wraps have been made around the rollers the guide **5** is moved to the position **5'** shown in FIGURE 2 and the yarn, under the action of yarn guide **4**, is moved onto the high friction surface section of the draw roll **7**, whereon it is accelerated to the peripheral speed of the roll. The yarn is taken off the draw-roll via the low friction surface, thus reducing the possibility of a back-wrap occuring as a result of one or more filaments separating from the yarn.

What we claim is:

1. In a process for stringing up a yarn forwarding device having at least one rotating driven roll which has a low friction surface on the outside end section thereof and the remainder of the roll having a high friction surface, the improvement comprising stringing up the

yarn the requisite number of wraps onto the outside low friction surface of said drive roll and subsequently guiding said yarn onto the high friction inside surface whereby yarn being subsequently processed will initially contact the high friction surface prior to being removed from the outside low friction surface.

2. The process of claim 1 wherein the yarn wrap is made around the driven roll as described in claim 1 and idler rolls.

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