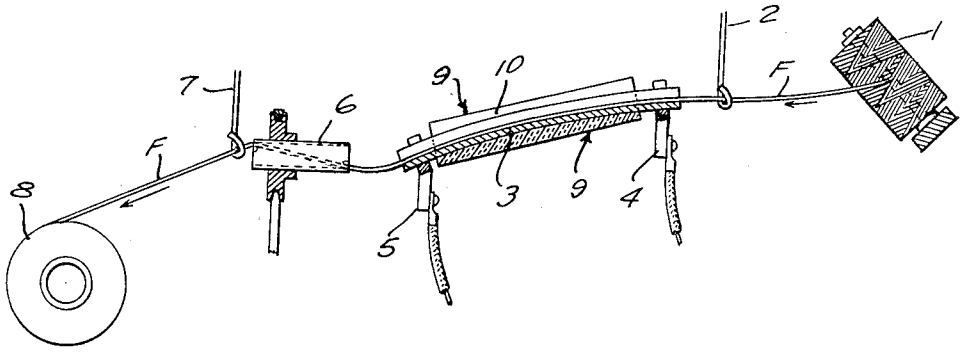
Feb. 5, 1957 L. VANDAMME ET AL 2,780,047

APPARATUS FOR PRODUCING CURLED YARN

Filed Sept. 19, 1955

Fig. 1.



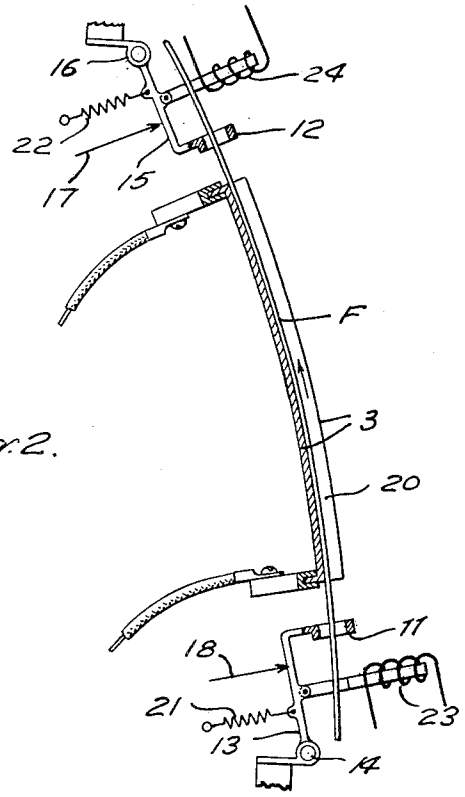


Fig. 2.

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APPARATUS FOR PRODUCING CURLED YARN

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Application September 19, 1955, Serial No. 534,945

Claims priority, application France September 22, 1954

3 Claims. (Cl. 57—34)

This invention relates to apparatus for producing crinkled yarn having improved stretchability from continuous thermoplastic filaments and is a further embodiment of the invention disclosed in co-pending application Serial No. 331,158, filed January 14, 1953, now Patent No. 2,741,893, and Serial No. 436,077, filed June 11, 1954, now Patent No. 2,761,272.

The applications above identified disclose apparatus for applying a false twist to thermoplastic filaments, heat setting the twist and then removing the twist to form a coiled or curled crinkled yarn.

An object of the present invention is to provide a novel and improved apparatus for the above purpose.

The invention provides an electrically heated member or heating the filament in advance of the point of application of the false twist. The member consists of a metallic strip bent into a U-section, similar to strips commonly used for umbrella ribs and made of metal, such as soft steel which can be heated by the passage of an electric current therethrough. The strip is held between two posts which also serve as electric terminals.

Very satisfactory results have been obtained in the case of 70 denier polyhexa methylene-adipamid filaments, passing at the rate of five meters per minute, with application of a false twist of 20,000 R. P. M. by passing 16 amperes through the strip at a tension of 1 volt, but it is understood that this example is not restrictive.

In order to avoid heat loss, the strip may be surrounded by a cylinder made of insulating material, for example asbestos board, with a longitudinal slot in which the metal strip is held.

Centering guides are provided for the filament entering and leaving the strip. The guides may be mounted to shift the filament away from the heater strip in case of current interruption or other accidental failure, in order to prevent overheating of the filament.

An embodiment of the invention is shown schematically on the drawings in which:

Fig. 1 is a diagrammatic view of a device embodying the invention; and

Fig. 2 is a detail view showing the movable guides at the points where the filaments enter and leave the heating strip.

Referring to the drawing, the filament F from winding 1 passes through guide 2 and enters the slot 20 of U-shaped strip 3, which is clamped at its ends between clasps 4 and 5 used also as current terminals. The filament F then passes through a rotating tube 6 to impart a false twist which feeds back along the portion of the filament in the slot 20 in the heating strip 3.

The strip 3 is heated by an electric current supplied between posts 4 and 5, to a temperature to heat the filaments for setting the false twist therein. Finally

the filament F passes through a guide 7 and is wound on spool 8.

Strip 3 is surrounded by an insulating cylinder 9 of asbestos or the like with a longitudinal slot 10 to receive the strip 3.

In the embodiment shown in Fig. 2, the filament passes through guide 11 upon entering and through guide 12 upon leaving the slot 20 in strip 3. The guides 11 and 12 have elongated openings for limiting the positions of the filaments.

Guides 11 and 12 are supported by small bent levers 13 and 15, which is pivoted at 14 and 16, respectively. The guides are held in place by springs 21 and 22. In the event of current stoppage and/or any other irregularity in the operation of the device fingers 13 and 15 are shifted in the direction of arrows 17 and 18 by the action of solenoids 23 and 24 to remove filaments from the slot 20 of the strip 3. The solenoids 23 and 24 are energized by relays not shown in the event of failure of heating current for the strip 3 or stoppage of the feed means, other mechanical or electrical control means may be provided to actuate the fingers 13 and 15.

As no heat losses occur at the ends of the heated strip 3 the strip may be bent at its ends to form hooks which are clasped in the posts 4 and 5 as shown. The useful heating length may thus be increased without increasing the space required for mounting the strip.

The strip 3 is shown as curved in a direction to provide a convex surface on which the filaments rest as they advance in the groove 20, to improve the heat transfer thereto as the filaments advance through the heater.

What is claimed is:

1. Apparatus for setting a false twist in thermoplastic filaments comprising a heater composed of a metal strip having electrical resistance characteristics, said strip being of U-shaped section providing a longitudinal groove to receive the filaments, said strip being arcuate in form to provide a convex surface on which the filaments rest as they advance along said groove, means passing an electric current through said strip for heating said strip due to its resistance, means feeding the filaments through said groove for heating therein, and a false twisting device disposed to impart a false twist to the filaments emerging from said heater whereby the twist feeds along said filaments into the heater and is set therein, and is later removed as the filaments pass the false twisting device.

2. Apparatus as set forth in claim 1 in which heat insulating material is disposed around said heater.

3. Apparatus as set forth in claim 1 having guides disposed to guide the filament into and out of said heater, and means shifting said guides laterally to shift the filaments out of said heater.

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