March 25, 1969 G. V. LOVELL 3,434,273

TAPE CLEANING APPARATUS

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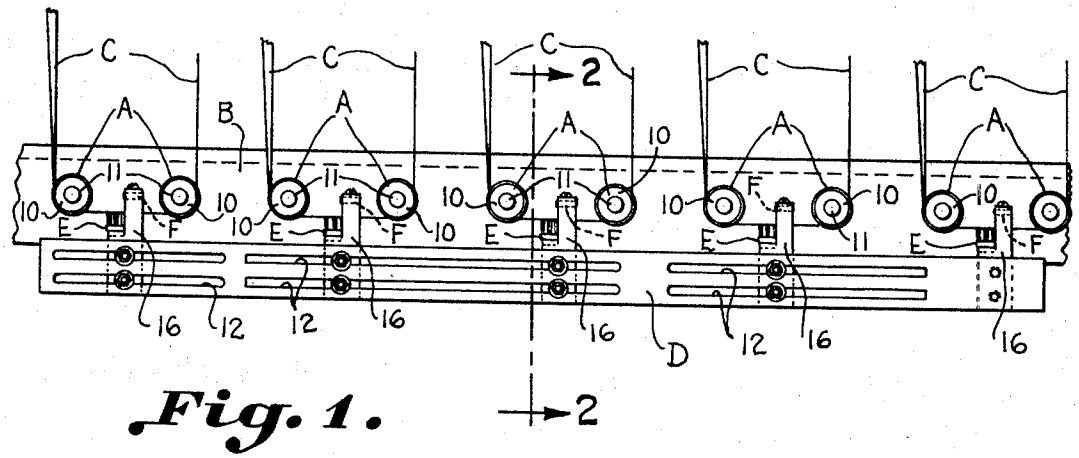


Fig. 1.

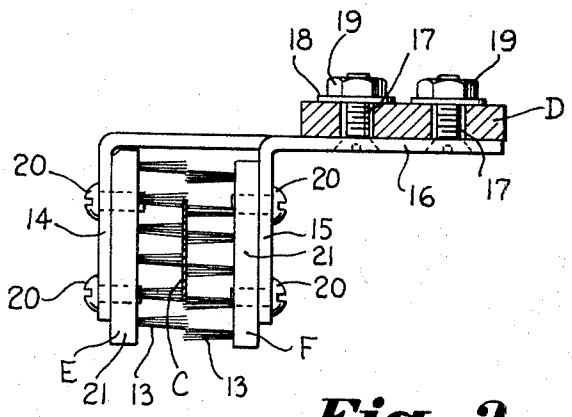


Fig. 2.

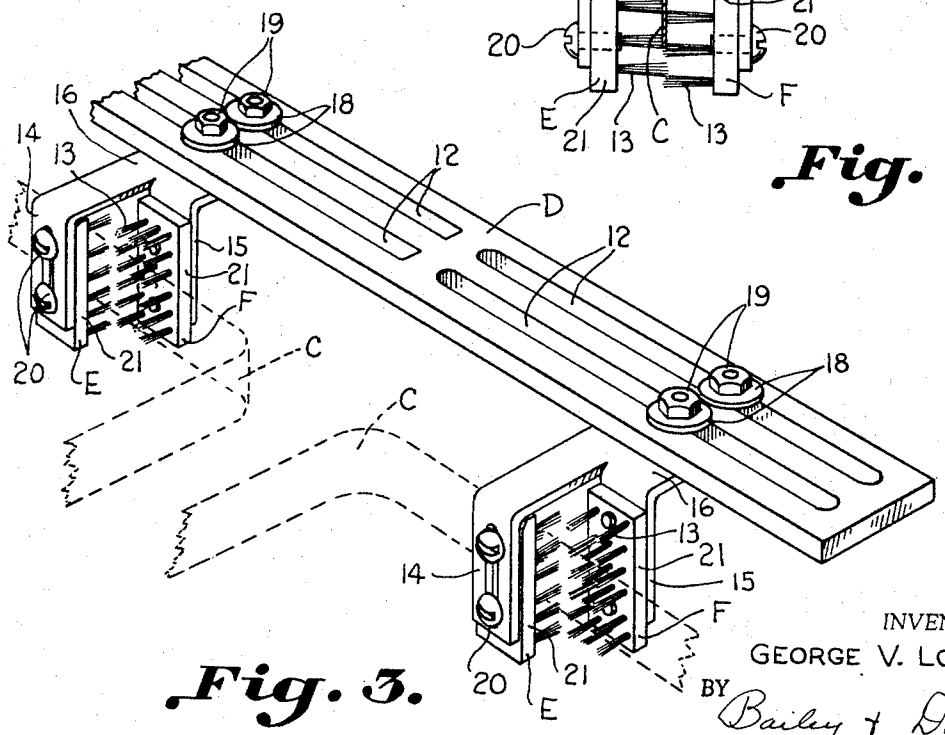


Fig. 3.

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TAPE CLEANING APPARATUS

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ABSTRACT OF THE DISCLOSURE

A plurality of cleaning devices are provided for cleaning lint and the like from tapes used for driving the spindles on a textile strand processing machine, such as a spinning frame.

This invention relates to a cleaning device for textile strand processing machines, and more particularly to a device for cleaning lint and the like from tapes used for driving the spindles on a spinning frame.

The spindles on spinning frames are generally driven by a plurality of endless tapes. The spindles are mounted in rows on opposed spinning rails and an endless tape is disposed about a pair of spindles on a spindle rail and extends across the spinning frame for driving a corresponding pair of spindles carried on the opposed spindle rail. A drum is provided in the medial portion of the spinning frame and each of the tapes is wrapped around the drum so that as the drum is rotated such drives the tapes. Each endless tape, in turn, drives four spindles.

During the spinning operation lint will accumulate on these tapes, and if not removed, such causes variations in the speed that the spindles are being driven. Since the amount of twist being placed in the yarn is directly controlled by the rotation of the spindles, such variations in speed will produce a nonuniform strand.

Another problem encountered if the lint is not removed from the tapes is that slubs will form in the strand and, if they are not removed from the strands prior to the weaving operation, a second grade product will be produced. Thus, it is important to maintain the driving tapes as lint free as possible. Heretofore, the operators of the spinning frames would clean the tapes by hand with a brush. Such is a relatively slow process since both sides of each tape had to be brushed.

Automatic cleaning apparatus have been developed, such as the one illustrated in Patent No. 3,129,553, granted to Weaver on Apr. 21, 1964. However, for one reason or another they have not been adopted by the textile industry. It is believed that one of the reasons why the previously proposed cleaning devices have not been adopted is due to the accumulation of lint therein which eventually required cleaning, and where the device is in continuous contact with the tapes such caused excessive wear of the tapes.

Accordingly, it is an important object of the present invention to provide a cleaning device for removing lint and the like from tapes used for driving spindles on a spinning frame.

Another important object of the present invention is to provide a cleaning apparatus which incorporates a plurality of cleaning devices which enables an operator to clean a plurality of tapes on a spinning frame simultaneously.

Still another important object of the present invention is to provide a cleaning apparatus for cleaning a plurality of tapes used for driving spindles on a spinning frame without requiring the attendance of an operator during the cleaning operation.

Still another important object of the present invention is to provide a cleaning apparatus for cleaning the

tapes of the spinning frames so as to minimize slippage between the tapes and the spindles.

The invention will be more readily understood from a reading of the following specification and by references to the accompanying drawing forming a part thereof, wherein an example of the invention is shown and wherein:

FIGURE 1 is a fragmentary plan view of a portion of a spinning frame illustrating the spindle rail, a plurality of spindles mounted thereon, and a cleaning apparatus constructed in accordance with the present invention.

FIGURE 2 is an elevational view taken along line 2—2 of FIGURE 1 illustrating a cleaning device constructed in accordance with the present invention, and

FIGURE 3 is a fragmentary perspective view illustrating a portion of the cleaning apparatus constructed in accordance with the present invention.

The drawing illustrates a portion of a spinning frame having a plurality of rotating spindle assemblies A. The spindle assemblies A are carried in a row on a spindle rail B. Another corresponding spindle rail is located on the other side of the machine and is not shown. A plurality of endless tapes C are provided for driving the spindle assemblies. Each of the tapes C are disposed around respective pairs of spindle assemblies on a spindle rail B and extend across the spinning frame for driving a corresponding pair of spindle assemblies carried on the opposed spindle rail. The tapes are driven by a rotating drum (not shown) disposed in the medial portion of the spinning frame. A plurality of aligned cleaning devices are provided for cleaning lint and the like, from the spinning tapes C. An elongated mounting member D supports the cleaning devices. Each cleaning device includes a pair of closely aligned opposed brush elements E and F, respectively. One of the brush elements of a pair engages one side of a particular tape, while the other brush element engages the opposite side of the same tape for removing lint and the like therefrom. The cleaning devices are spaced on the mounting member D for cleaning a plurality of successive tapes on the spinning frame simultaneously.

Each of the spindle assemblies includes a whorl **10** and a spindle **11**. An endless tape C, constructed of any suitable material, is disposed about respective pairs of whorls **10** on one spindle rail B and ertend across the spinning frame to the whorls **10** of a corresponding pair of spindle assemblies carried on the spindle rail on the other side of the spinning frame. As the tape is driven by the rotating drum carried within the center of the spinning frame, such in turn, drives the spindle assemblies.

The cleaning devices are mounted on an elongated mounting bar D which has parallel longitudinal slots **12** therein, so that the spacing between the cleaning devices can be adjusted. It is desired that the spacing between the cleaning brushes be the same as the spacing between pairs of spindle assemblies carried on the spindle rail B. The cleaning device, during the cleaning operation, should be centered between the spindle assembiles of each respective pair.

Each cleaning device includes a pair of closely aligned opposed brush elements E and F. The bristles **13** of the brush elements may be constructed of any suitable material, such as nylon, or the like. The brush elements E and F are carried on a pair of laterally spaced downwardly extending flanges **14** and **15**. The flanges **14** and **15** are integral with a horizontal member **16**, which is in turn, bolted to the mounting member D by countersunk bolts **17**. The bolts extend through the horizontal member **16** and an elongated slot **12** in the mounting member D, and are secured thereto by a washer and nut **18** and **19**, respectively. Such enables the position of the

cleaning elements to be adjusted so that they can be centered between the spindles of respective pairs of spindles during the cleaning operation.

The brush elements E and F are, also, spaced longitudinally so that the edge of one brush is adjacent the opposite edge of the other brush element. Such prevents the tape C and the bristles **13** of the brushes E and F from overheating during the cleaning operation. When the cleaning apparatus is placed on the tapes, as illustrated in FIGURE 1, the operator does not have to hold it since the contact between the tape C and the respective brush elements E and F is sufficient to support the cleaning apparatus. Actually, the cleaning apparatus more or less floats on the moving tapes C during the cleaning operation. The brush elements E and F are secured to the downwardly extending flanges **14** and **15**, respectively, by bolts **20** which extend through the flanges and engage the body **21** of the brush elements.

The cleaning device on the right end of the mounting member D, illustrated in FIGURE 1, may be fixed to the mounting member D since the position of the other devices can be adjusted relative thereto.

In operation, the operator merely positions the cleaning apparatus on the tapes while the spindles are running so that the tape C passes between the bristles of the brush elements E and F. The brush element E cleans one side of the tape C, while the brush element F cleans lint and the like from the other side of the tape. It is noted that the cleaning apparatus illustrated in FIGURE 1 simultaneously cleans five tapes at one time. After the tapes have been cleaned the operator removes the apparatus and cleans the next five adjoining tapes.

What is claimed is:

1. For use in a textile strand processing machine such as a spinning frame having a plurality of rotating spindle assemblies, said spindle assemblies being carried in rows on opposed spindle rails, a plurality of endless tapes, each of said tapes being disposed about respective pairs of spindle assemblies on a spindle rail and extending across said spinning frame for driving a corresponding pair of spindle assemblies carried on said opposed spindle rail, means for driving said tapes for rotating said spindle assemblies on said spinning frames, the improvement including, a plurality of aligned cleaning devices for cleaning

lint and the like from said spinning tapes, an elongated mounting member for supporting said cleaning devices, each cleaning device including a pair of closely aligned opposed brush elements, one of said brush elements of a pair engaging one side of a particular tape for removing lint and the like therefrom, the other of said brush element of a pair engaging the opposite side of said particular tape for removing lint and the like therefrom, and said cleaning devices being spaced on said mounting member for cleaning a plurality of successive tapes on said spinning frame simultaneously.

2. The device as set forth in claim **1**, wherein said cleaning devices are provided with means for adjusting same longitudinally relative to each other along said elongated mounting member.

3. The device as set forth in claim **1**, wherein said opposed brush elements of said cleaning devices are longitudinally spaced from each other, and said mounting member extends laterally from said brush elements, whereby the contact between said tapes and respective brush elements is sufficient to support said cleaning devices.

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74—230; 15—256.5