TEXTILE CARD AND LAP FEEDING MEANS

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

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This invention relates to a textile card and the combination therewith of means for facilitating the feeding of textile material from lap packages to the fiber working instrumentalities of the card.

The usual procedure for preparation of textile fiber material, such as cotton and many synthetics, for the manufacture of textile goods therefrom includes processing of the textile materials through a textile card. In such processing, the materials are conventionally supplied to a card in the form of a lap, or convolute wound package of a web or sheet of fibers about a rod known as a lap pin. Heretofore, with conventional cards processing material at production speeds below 20 pounds per hour, traditional approaches to supplying textile material from laps to such a card have proved entirely satisfactory.

The traditional feeding arrangement for a textile card uses a pair of cradle rolls positioned immediately adjacent a pair of feed rolls and feed the materials from a lap to the picker-in roll for subsequent processing by the main cylinder of the card and the other fiber working instrumentalities. A lap is received on and supported by the cradle rolls while rotated thereby to unwind the web of material and thus feed the material to the feed rolls of the card. With the now available capability of substantially increased production speed, in terms of pounds per hour, a single lap supported by cradle rolls cannot be relied upon to provide the high weights required without frequent replenishment. The necessity of such frequent attention by an operator tends to nullify, in part, the advantage which is obtained by the improvements in card operation, thus making a multiple lap feeding arrangement desirable. Additionally, a multiple lap feed is desirable as facilitating blending of fibers at the card.

A frequently encountered difficulty in the preparation of textile materials in a card is the inclusion of foreign matter in a web of material advanced from a lap through the feed rolls to the fiber working instrumentalities of the card. With the passage of foreign objects between the rolls, the spacing between the rolls at their nip is disturbed, and the feed rolls forced to rotate them to the desired position. Where a cradle roll lap feed is used, access for adjustment is readily obtained at any time that no lap is in position for feeding. With the increased production speed now possible, this problem presents an increased difficulty, as it may be anticipated to be encountered at more frequent intervals, and thus it is desirable that a multiple lap feeding arrangement include provision for access to the feed rolls of the associated card.

In providing for access to the feed rolls for adjustment, it is necessary to assure continued return of the members of the combination to the proper operative positions if such are in any way disturbed. Thus, any multiple lap feeding arrangement wherein access for adjustment is accomplished by temporary separation of members of the combination desirably includes some means for returning the members to proper operative alignment.

With the foregoing in mind, it is an object of the present invention to provide, in combination with a textile card, means for facilitating the supplying of webs of textile fiber material to the feed rolls of the card from a plurality of laps, while readily permitting access to the feed rolls for adjustment when such is required.

In accomplishing this object, this invention provides a subframe adapted to cooperate with the frame of the card and to provide a support for a plurality of laps, a means to advance the webs of textile material from the laps to the feed rolls of the card, and a means permitting ready removal of the subframe from its operating position in conjunction with the card to permit access for adjustment of the feed roll and accurate return of the subframe to the proper operative position.

Some of the objects and advantages of the invention having been stated, others will appear as the description proceeds, when taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view of a textile card and lap feeding means in accordance with this invention; FIGURE 2 is an enlarged scale elevation view, in section, of a portion of the apparatus of FIGURE 1; FIGURE 3 is a partial section view, taken as indicated by the line 3-3 in FIGURE 2; FIGURE 4 is a plan view, in partial section, taken as indicated by the line 4-4 in FIGURE 2; and FIGURE 5 is an enlarged scale perspective view, in partial section, of a portion of the apparatus of FIGURES 1-4.

Referring now more particular to the drawing, a high production textile card is there shown and indicated generally at 10 (FIGURE 1). The card 10 includes, as is conventional, a frame supporting the operating instrumentalities of the card and including a rearward portion 11 on which a picker-in cylinder 4 and feed rolls 15 and 16 are supported (FIGURE 2). Other fiber working operating instrumentalities are provided for the card 10 as is conventional, such as a main cylinder and moving flats, and a card drive is included to properly drive the operating instrumentalities of the card 10, including the picker-in 14 and the feed rolls 15 and 16, in rotation.

In order to accommodate a plurality of laps, and thus supply textile materials for processing at the rate required by the high production of the card 10 without requiring frequent attention, this invention contemplates the combination with the card of a supply means indicated generally at 18, which includes a subframe indicated generally at 20 and particularly adapted for cooperation with the rearward portion 11 of the frame of the card 10, as described more fully hereinafter.

Preferably, the subframe 20 comprises two side plates 21 and 22, each having a pair of depending legs. Each of the depending legs is provided with a leveling jack (FIGURES 1 and 3), in the form of a foot 24 which is vertically adjustable relative to the respective depending leg of the side plates 21 and 22, with the relative vertical displacement between a foot and the associated leg being determined by an adjustment means such as a bolt 25.

In order to support a plurality of lap pins and the laps wound thereon, the supply means 18 of this invention includes vertically upward guide members of the form of four lap guide standards 26, two secured to each of the side plates 21 and 22 of the subframe 20 and extending upwardly therefrom (FIGURES 1 and 2). Each of the standards 26 has a central longitudinal opening or slot...
therein, for receiving lap pins about which laps are wound, and is of sufficient lateral width to engage the end of a lap so that each cooperating pair determine the lateral or sideways position of the lap positioned thereby with respect to the card 10. Preferably, the standards 26 are of sufficient height so that each pair will receive and accommodate a pair of overlying or stacked laps, thus making possible the supply of material to the card 10 from four laps in all. However, it is contemplated that the standards 26 may be of reduced height so that each cooperating pair will receive and position a single lap, where the material being processed does not require a supply rate necessitating a four-lap feed.

In order to advance textile material from the laps positioned by the standards 26 to the feed rolls 15, 16 and thence to the fiber working instrumentalities of the card 10, my invention provides an endless, flexible member 30 which underlies and supports the laps positioned by the standards 26 and advance the web of textile fiber material from those laps to the card 10 (FIGURE 2). Preferably, the member 30 is a conveyor belt having a predetermined width substantially the same as the width of the laps and as the width of the card 10, and is supported for movement along a predetermined closed path of travel including a substantially horizontal reach which is substantially aligned with the feed rolls 15 and 16 by a pair of supporting rolls 31, 32. The horizontal reach is traversed by an upper run of the conveyor member 30, on which the laps positioned by the standards 26 are received. Each of the rollers 31 and 32 is secured to a respective shaft 34, 35 and supported for rotation by respective bearing means 36, 37 mounted on the side plates 21 and 22 of the subframe 20. One of the supporting rollers, preferably the roller 32, in interconnected to the card drive arrangement which rotatably drives the feed rolls 15, 16, as by a gear 38 secured to the respective roller shaft 35 and engaging a gear 39 in the card drive train (FIGURE 15).

In order to assure proper feeding of the web of textile fiber material from the laps resting on the member 30 to the feed rolls 15, 16 of the card 10, my invention provides a rigid platform 40, underlying the upper run of the conveyor member 30. The supporting platform 40 preferably is formed of sheet steel or similar material, and has depending side portions which are secured to the upper extremities of the side plates 21 and 22 of the subframe 20. This platform 40 prevents downward sag of the member 30, and thus precludes wrinkling or rippling of the web of textile material as the same is advanced to the feed rolls 15, 16.

In order to permit obtaining access to the feed rolls 15, 16 of the card 10, for adjustment of those feed rolls in the event a foreign object passes therethrough and forces the rolls apart or upon the occasion of a change in the textile material being processed, my invention provides wheeled jack means for raising and lowering the supply means 18 and for permitting rolling movement of the subframe 20 away from the frame of the card 10 while in the raised position. The jack means takes the form of a plurality of casters 41 (FIGURES 2–4) mounted for controlled unison movement between a fixed supporting position and a position in which the frame rests upon the feet 24 (FIGURE 2). Each of the casters 41 is mounted on a respective carrier plate 42, which in turn is secured to one of a pair of rocking shafts 44. Each of the shafts 44 is rotatably supported from the subframe 20 by a plurality of bearings 45, secured to frame cross-members 46. A control arm 48, connected to the two shafts 44, are engaged by respective lateral projections 49 extending from a jack rod 50, which extends lengthwise of the frame 20. One end of the jack rod 50 (FIGURE 4) has a threaded lateral projection 51 thereon, which is penetrated by a jack screw 52. The jack screw 52 is adapted to be engaged by a crank handle 53, and rotated to move the jack rod 50 laterally. Upon movement to the left in FIGURE 2, the lateral projections 49 engage the arms 48 and cause unison rotational movement of the shafts 44, pivoting the casters 41 downwardly into engagement with the floor surface 54 on which the supply means 18 and card 10 are supported and thus raising the subframe 20 and permitting rolling movement thereof away from the associated card 10, to provide access to the feed rolls 15, 16 for adjustment thereof.

In order to assure proper relative location of the subframe 20 with regard to the frame of the card 10 subsequent to adjustment of the feed rolls 15, 16 and as the supply means 18 is returned to an operating position, this invention provides alignment guide means on the subframe for cooperating with the card frame to assure correct placement of the member 30 relative to the feed rolls 15 and 16 (FIGURE 5). The alignment means comprises a cam-like projection on one of the frame members of the card 10 and the supply means 18 and a mating cavity on the other frame, with the cavity and projection cooperating during placement of the supply means into operating position to assure proper alignment of the supply means. Preferably, the cavity 60 is formed in one of the frame members, such as the side plate 21 and 22 of the subframe 20, during the original manufacture of the frame member, and is of part cylindrical configuration. Upon initial installation of the supply means 18 in combination with the card 10, scribe marks are drawn on the abutted face of the rearward portion 11 of the card frame and a cam-like half-round bar 61 of suitable material such as brass is placed in the cavity 60. The bar 61 is then secured in place by bolting to the card frame. Thereafter, upon removal of the supply means 18 from the operating position adjacent the card 10, the mating engaging of the half-round bar 61 and the cavity 60 upon return of the supply means 18 to the operating position assures proper alignment of the endless, flexible member 30 with respect to the feed rolls 15 and 16, so that textile fiber material from the laps supported on the supply means is properly advanced to and through the feed rolls.

In the drawings and specification, there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:
1. In combination with a textile card having a card frame, fiber working instrumentalities supported by the frame, and feed rolls supported by the frame and rotatably driven for feeding fibers to the working instrumentalities; means for facilitating the supplying of a web of textile fiber material to the feed rolls from a plurality of laps thereof each wound about a lap pin and comprising: a subframe adapted to be connected to the card frame adjacent the feed rolls, cooperating alignment guide means carried by proximal portions of said subframe and card frame for assuring proper initial alignment thereof in a horizontal plane and comprising a cam-like projection having an accurately working surface, and a mating cavity for matingly receiving said projection therein, said subframe having a vertically adjustable foot for supporting the subframe in said horizontal alignment with said card frame, an endless, flexible conveyor member having a predetermined width substantially the same as the width of the laps, means mounted on said subframe for supporting said conveyor member for movement along a predetermined closed path of travel, wherein an upper run of said conveyor member is substantially aligned with the feed rolls,
means for operatively connecting said conveyor member to the feed rolls to be driven therefrom for movement of the conveyor toward the feed rolls at a rate in predetermined coordination to the feed roll fiber feeding rate,

a plurality of upstanding lap guide means mounted on said subframe for engaging a plurality of the lap pins and positioning the laps wound thereabout to rest on said conveyor member transversely of said upper run and at predetermined spaced locations therealong so that textile material from the laps is advanced by said conveyor member to the feed rolls, wheeled jack means mounted on said subframe for raising and lowering the subframe for facilitating its movement into aligned position with said card frame and for permitting rolling movement of the subframe when in a raised position so that free access is obtained to the feed rolls for adjustment thereof, said wheeled jack means comprising a plurality of casters and means interconnecting said casters for unison movement in a direction away from said card frame to a retracted position out of engagement with a floor on which the subframe rests and for unison movement in a direction toward said card frame to an extended position wherein the subframe is supported by said casters.

2. The combination claimed in claim 1 wherein said means interconnecting said casters for unison movement comprises:
a pair of shafts mounted on said subframe for movement about horizontally spaced apart axes,
a pair of mounting brackets secured to each of said shafts for mounting said casters, and
means for moving said shafts in unison including a manually operable jack screw positioned at the end of said subframe, remote from said card frame, for ready access thereto.

3. In combination with a textile card having a card frame, fiber working instrumentalities supported by the frame, and feed rolls supported by the frame and rotatably driven for feeding fibers to the working instrumentalities; means for facilitating the supplying of a web of textile fiber material to the feed rolls from a plurality of laps thereof each wound about a lap pin and comprising:
a subframe adapted to be connected to the card frame adjacent the feed rolls, mating alignment guide means provided on proximal portions of said subframe and card frame for assuring proper initial alignment thereof in a horizontal plane and comprising a cam-like projection having an arcuate working surface, and a mating cavity for matingly receiving said projection therein, said subframe having vertically adjustable feet for supporting the subframe in said horizontal alignment with said card frame,
an endless, flexible conveyor member having a predetermined width substantially the same as the width of the laps, means mounted on said subframe for supporting said conveyor member for movement along a predetermined closed path of travel, wherein an upper run of said conveyor member is substantially aligned with the feed rolls, said means comprising a pair of roller members, one of which is positioned adjacent said feed rollers, and bearing means on said subframe supporting said roller members for rotation about predetermined horizontally spaced apart axes, means including a driven gear secured to said one roller member, for operatively connecting said conveyor member to the feed rolls to be driven therefrom for movement toward the feed rolls at a rate in predetermined coordination to the feed roll fiber feeding rate,
a plurality of upstanding lap guide means mounted on said subframe for engaging a plurality of lap pins and positioning the laps wound thereabout to rest on said conveyor member transversely of said upper run and at predetermined spaced locations therealong so that textile material from the laps is advanced by said conveyor member to the feed rolls, and wheeled jack means mounted on said subframe for raising and lowering the same and for permitting rolling movement thereof when in a raised position so that free access is obtained to the feed rolls for adjustment thereof by raising and rolling away said subframe.

4. The combination claimed in claim 3, wherein said cam-like projection and mating cavity of said alignment guide means comprises a half cylindrical projection on one side of said subframe and the card frame and a mating half cylindrical projection on the other of said subframe and the card frame.

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DORSEY NEWTON, Primary Examiner.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION


Inventor(s) Homer W. Groce

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, Line 42, the figure "4" should be --14--. Column 3 Line 34 "in" should be --is--. Column 4, Line 25, "plate" should be --plates--; same column, Line 65, delete "a". Column 5, Line 6, "beans" should be --means--.

SIGNED AND SEALED

OCT 21 1969

(Seal)

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