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MEANS FOR STRIPPING TEXTILE CARDING FLATS

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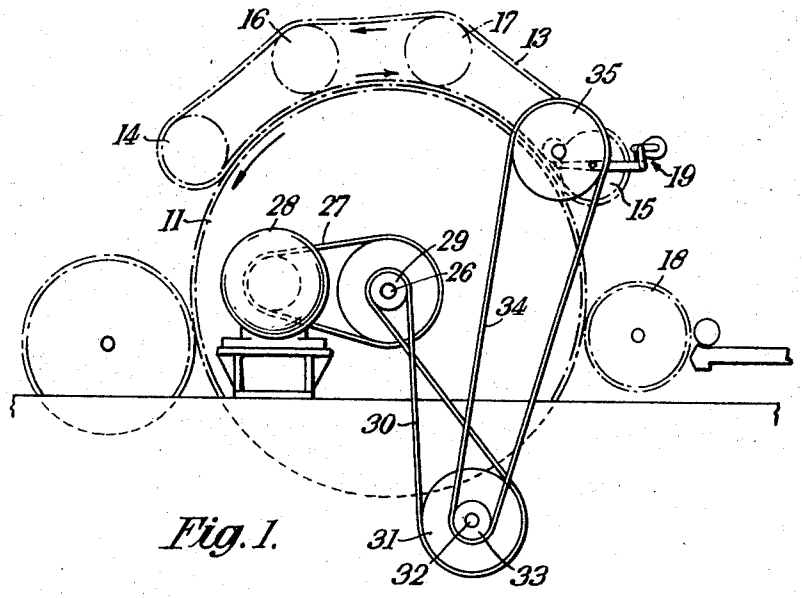


Fig. 1.

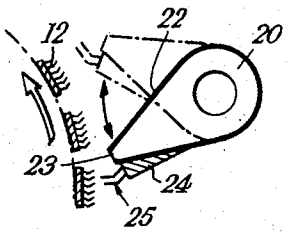


Fig. 3.

Fig. 2.

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MEANS FOR STRIPPING TEXTILE CARDING FLATS

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ABSTRACT OF THE DISCLOSURE

Apparatus for removing fibres and impurities from the flats of a textile card of the revolving flat type comprising combing means arranged for traversal in one direction through a flat-engaging zone to pick up fibres and impurities carried in the clothing of the flat in the zone and for traversal in a reverse direction to transfer the picked up fibres and impurities back to the surface of the flat clothing, and suction means for applying a suction to the flat to remove the fibres and impurities transferred back on to the flat, the suction means being mounted adjacent the combing means for movement therewith and leading the combing means when the combing means is moving in the one direction through the flat-engaging zone.

The present invention relates to an improved method of and means for stripping the flats of a textile carding machine of the revolving flat type, that is to say, a machine of the type used for example for processing cotton or synthetic fibres in which flats are caused in succession to move into and through an arcuate working region adjacent to and extending round the surface of a main cylinder so that fibres are carded between the cylinder and flats in this region, and in which the flats after passing through the working region follow a return path which eventually leads them back into the working region.

It is usual to remove short fibres and impurities etc., from the flats as they leave the working region and the conventional method of doing this is to provide an oscillating comb which cleans the fibres etc. from the surface of the flat clothing. The fibrous strips so formed are dropped by the comb on to the covers of the card or offered to a suction device which removes them from the vicinity of the card. The oscillating comb does not, however, penetrate through the teeth of the flat clothing, and fibres and impurities remaining in the flat card clothing are removed by a revolving brush which is itself occasionally stripped by a manually operated comb.

An object of the present invention is to provide an improved method of and device for stripping fibres and impurities from the flats of textile carding machines.

According to the first aspect of the present invention, there is provided a method of removing fibres and impurities from the flats of a textile card of the revolving flat type comprising the steps of transferring fibers and impurities from a card flat to combing means by relative movement between said combing means and the flat, transferring the fibres from the combing means back to the surface of the flat by relative movement between said combing means and the flat in the opposite direction, and removing the fibres transferred back to the flat by suction applied to the flat.

According to a second aspect of the present invention, there is provided a method of removing fibres and impurities from the flats of a textile card of the revolving flat type comprising the steps of traversing combing means across the width of the flat in one direction to remove

fibres and impurities therefrom, reversing the direction of traverse of the combing means to transfer the fibers and impurities back on to the surface of the flat clothing and applying suction adjacent to the flat clothing to remove fibres and impurities disposed thereon.

According to a third aspect of the present invention, there is provided apparatus for removing fibres and impurities from the flats of a textile card of the revolving flat type comprising combing means arranged to pick up fibres and impurities from a card flat by relative movement between the combing means and the flat and to return the picked up fibres back on to the surface of the flat by relative movement in the opposite direction between said combing means and the flat, and means for applying suction to the flat to remove the fibres and impurities transferred back on to the surface of the flat.

According to a fourth aspect of the present invention, there is provided apparatus for removing fibres and impurities from the flats of a textile card of the revolving flat type comprising combing means arranged for traversal in one direction across the width of the flat to pick up fibres and impurities carried in the clothing of each flat and for traversal in a reverse direction to transfer the picked up fibres and impurities back to the surface of the flat clothing, and suction means for applying a suction to the flat to remove the fibres and impurities transferred back on to the flat.

One embodiment of the invention will now be described by way of example with reference to the accompanying drawing in which:

FIG. 1 is a schematic side elevation of a textile card including apparatus according to the invention.

FIG. 2 is a schematic sectional side elevation of part of the card shown in FIG. 1, drawn to an enlarged scale,

FIG. 3 is a sectional side view of part of the apparatus shown in FIG. 2.

Referring to the drawing, a high production textile card comprises a main cylinder **11** on which fibres are advanced up into and through an upper arcuate working region of the cylinder where they are engaged by carding flats **12** moving in an arcuate path in the opposite direction. The flats **12** are supported at their ends in conventional manner by a pair of spaced endless chains **13** which are guided round front and rear block wheels **14** and **15** at the front and rear ends of the working region of the main cylinder **11** and over intermediate guide wheels **16** and **17**, so that the flats **12** after passing through the working region leave the rear end thereof nearest the taker-in **18**, pass round the rear block wheels **15** and then follow a return path over the guide sprocket wheels **16** and **17** to the front block wheels **14** round which they pass back to the front end of the working region of the cylinder **11**.

Each flat **12** is arranged as best seen in FIG. 2 to move through a stripping position at the rear of the block wheels **15**. At the stripping position, there is arranged a stripping device **19** comprising a suction tube **20** extending in the axial direction of the card cylinder and fixedly mounted on a shaft **21** for pivotal movement about its longitudinal axis. The tube **20** is so shaped as to form an elongate nozzle **22** tapering in the direction of the flat **12** at the stripping position and terminating at the flat **12** in an elongate suction slot **23** parallel to the flat **12** and extending the full length of the flat, and the arrangement is such that the nozzle **22** can, by pivoting the suction tube **20**, be swivelled from a trailing position, as shown in full line in FIG. 3, in which it is behind the flat **12** to a leading position, as shown in broken line in FIG. 3, in which it is in advance of the flat **12**. The trailing side of the nozzle **22** is built up to carry a bar **24** supporting a stripping comb **25** comprising two rows of downwardly

directed knee-type stripping wires which are raked in the direction of advance of the flat at the stripping position, and the arrangement is such that during an advance swivelling movement of the nozzle **22** the wires of the comb **25** engage the wires of the flat **12** at the stripping position, with the points of the stripping comb penetrating the flat clothing.

The drive for imparting the oscillatory motion to the suction tube **20** is obtained from the main cylinder shaft **26** which is driven by a belt **27** from an electric motor **28**. The cylinder shaft **26** carries a pulley **29** which imparts a drive to a belt **30** drivingly engaging a pulley **31** on an intermediate drive shaft **32** which also carries a pulley **33** which imparts a drive to a belt **34** drivingly engaging a pulley **35** fixed on a cam shaft **36** which carries a cam **37** engaged by a cam-follower roller **38** rotatably mounted on one end of a lever **39** pivotally supported on a stationary pin **40** and pivotally connected at its other end by a link **41** to an arm **42** fixed on the shaft **21** supporting the suction tube **20**. Rotation of the shaft **36** carrying the cam **37** imparts an oscillatory movement to the lever **39** and this oscillatory movement is imparted to the suction tube **20** by the link **41**. Adjustment of the amplitude of oscillation of the tube **20** can be made by repositioning of the end of the link **41** in a slot **43** in the arm **42**.

In the present embodiment of the invention the driving mechanism for oscillating the tube **20** is such as to cause the tube to execute oscillations at a rate of 30 to 50 oscillations per minute. The width of the suction slot **23** is arranged to be less than the width of a flat **12** and the suction nozzle tube **20** is connected to a suction pump which will draw air through the tube at the rate of 300 cubic feet per minute at a pressure of 3.8 inches static water pressure. The flats are arranged to move at a rate of 4 inches per minute.

In the operation of the card, each flat is in turn brought to the stripping position where the suction nozzle tube **20** is continuously oscillating. At the stripping position the teeth of the wires of the stripping comb **25** advance through the flat clothing during an advance movement of the suction nozzle tube **20**, picking up fibres and impurities from the clothing. On the return movement of the suction nozzle tube **20** the fibres and impurities picked up by the comb **25** are transferred back to the points of the flat clothing, this transfer being assisted by the raking of the stripping comb teeth in the leading direction. As the suction slot **23** is in advance and adjacent to the stripping comb **25**, when fibres are laid on the points of the flat clothing during the return stroke they are stripped therefrom by suction into the suction slot **23** either on the return stroke or on the next forward stroke.

From the foregoing description it will be apparent that the invention provides a stripping device for a card which is neat in appearance and occupies little space. It effectively cleans the flats and completely removes the fibres and impurities and is itself virtually self-cleaning.

In the embodiment of the invention hereinbefore described the suction slot **23** is positioned closely adjacent to the stripping comb **25** and any fibres which become loose during the interaction of the stripping comb and the flat are immediately sucked away and the suction also tends to keep the stripping comb **25** itself clear of fibres.

In the arrangement hereinbefore described, the flats

run with the working flight of the kats moving towards the taker-in end of the card, but the stripping arrangement will work equally well when the flats move in the opposite or conventional direction.

A stripping device as hereinbefore described may of course be applied to the flats either at the beginning or at the end of their return patch, or at an intermediate position.

Whilst in the arrangement hereinbefore described the suction nozzle **23** and the fibre stripping comb **25** form a single unit and oscillate together, it will be appreciated that they may be separately mounted and traversed in any desired manner to achieve the same effect.

In yet another embodiment of the invention, the suction nozzle tube may be stationary and a stripping comb may be traversed in a path across the flat to be cleaned and may lie between the suction device and the flat.

In still yet another embodiment of the invention, the stripping comb may be arranged to advance across the flat to be cleaned and continue in its forward traverse until it reaches a suction slot in a stationary suction tube so arranged that the suction at the slot withdraws the fibres from the teeth of the stripping comb.

The flat stripping comb may be made from angle wire teeth, as hereinbefore described, using one or more rows of teeth, or it may be made from straight wire, bristle or synthetic material set at such an angle as to achieve the cleaning effect previously described.

What we claim as our invention and desire to secure by Letters Patent is:

1. Apparatus for removing fibres and impurities from the flats of a textile card of the revolving flat type comprising combing means arranged for traversal in one direction through a flat-engaging zone to pick up fibres and impurities carried in the clothing of the flat in said zone and for traversal in a reverse direction to transfer the picked up fibres and impurities back to the surface of the flat clothing, and suction means for applying a suction to the flat to remove the fibres and impurities transferred back onto the flat, said suction means being mounted adjacent said combing means for movement therewith and leading said combing means when said combing means is moving in said one direction through said flat-engaging zone.

2. Apparatus according to claim **1** wherein said suction means comprises a suction tube arranged for oscillation about its longitudinal axis and formed with a side nozzle extending the full length of the flat in the flat-engaging zone, and wherein said combing means is fixedly mounted on said nozzle.

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DORSEY NEWTON, Primary Examiner

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