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PROCESS FOR IMPROVING THE CARDING EFFECT OF CARDING CYLINDERS

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Fig. 1

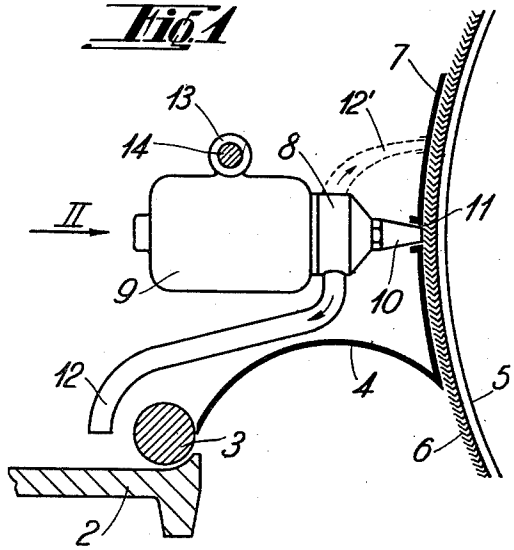
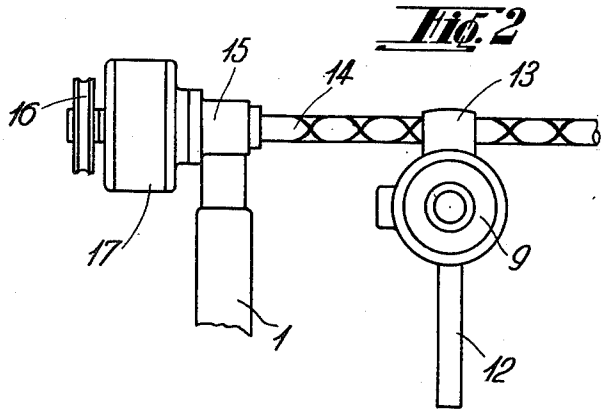


Fig. 2



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PROCESS FOR IMPROVING THE CARDING EFFECT OF CARDING CYLINDERS

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1 Claim. (Cl. 19—98)

1

The present invention refers to a process for improving the carding effect of carding cylinders for cotton and other textile fibres by means of which a continuous carding is attained.

As is known, in the process of carding as hitherto carried out a part of the fibres taken in or licked by the card clothing of the main carding cylinder is retained between the wire points clogging them up and finally forming a mass which progressively reduces its carding action, for which reason it is necessary at definite intervals to effect its cleaning, the carding engine being stopped for this purpose. The frequency with which it is necessary to strip the cards depends upon various circumstances such as the quality of the cotton, the speed of feed, the quality of the product which it is desired to obtain, etc., but in general it varies between three and four hours. This continuous clogging of the card clothing of the principal or main carding cylinder necessitates periodic stoppages of the carding operation in order to clean the card clothing. As a consequence of the clogging, the web is not uniformly treated and considerable variations in the number of the obtained sliver occur, since in starting the card after the cylinder has been cleaned the number of the sliver produced diminishes by degrees until choking takes place again, that is to say, it is not possible to obtain a uniform carding and, furthermore, losses of material and time are caused.

All these inconveniences inherent to the carding as hitherto carried out are entirely obviated by means of the process forming the object of the invention which consists essentially in effecting during the actual operation of carding, a gradual aspiration of air over the points of the card clothing of the carding cylinder by successive zones thereof, this air absorbing with it a part of the fibres, principally the short ones together with solid particles, and above all raising the mass of fibres in course of carding and keeping same on the surface formed by the tips of the points of the card clothing. This gradual aspiration modifies essentially the process of carding and brings about the following important advantages:

(*a*) The card clothing of the cylinder is kept continuously clean for periods of time practically unlimited;

(*b*) The web produced is constant in quality and thus the weight per metre of the sliver produced is constant;

(*c*) The yield of the material carded is a maximum in the first place because no losses are produced in clogging the card clothing, and in the

2

second place because there is no possibility of long fibres unduly passing to enlarge the residuum of the flats, as has taken place hitherto from the moment when the carding cylinder worked with clogging of the card clothing;

(*d*) Practically all stoppages of the carding engine are avoided which hitherto were necessary for the cleaning operation, with the consequent increase of production;

(*e*) There is attained a greater durability of the card clothing, the tips of the wire points undergoing no injury in the cleaning process, and the operatives avoid the trouble, annoyance and anti-hygienic operation of card stripping of the carding cylinder.

From the foregoing it is shown that the application of the present invention in the process of carding permits of obtaining a constant and uninterrupted carding such as it has not up to the present been possible to attain.

The process described may be carried into practical execution by means, for example, of an apparatus which comprises essentially one or more aspirating mouth-pieces or similar devices for mounting as close as practicable to the points of the card clothing of the carding cylinder and combined with suitable means for it or their support and to permit regular and gradual displacement of the said aspirating mouth-piece or mouth-pieces along the length of the said cylinder in both directions, and one or more outlet conduits for the aspirated material which is discharged either in front of the feed cylinder of the carding engine, or above the point of aspiration, or in any other suitable place.

On the accompanying drawings is shown diagrammatically and by way of non-restrictive example one embodiment of the said apparatus.

Figure 1 is a partial view in elevation of the rear portion of a carding engine with the apparatus according to the invention in its operative position;

Figure 2 is a side view of the said apparatus looking in the direction of the arrow II of Figure 1.

The apparatus according to the example shown on the drawing is fitted at the rear part of the carding engine at the top of the cover of the taker-in or licker-in, and in the space which remains between this and the curve which the flats form. Of the parts shown on the drawing, 1 illustrates one of the supports for the apparatus, 2 is the feed table, 3 the feed cylinder, 4 the cover of the licker-in, 5 the main carding

cylinder, 6 the points of the card clothing of the cylinder, and 7 the cover thereof.

The apparatus proper is constituted essentially by an electro-aspirator, the body or casing 8 of which is coupled direct to an electric motor 9 and has an aspiration or suction tube 10 which is arranged coaxially with respect to the axis of the impeller of the aspirator and which terminates in a mouth-piece located at the least possible distance from the points 6 of the card clothing, to which end the cover 7 is provided over its whole length with a slot 11. From the body 8 of the aspirator there is fitted, radially or tangentially, an outlet conduit 12 which discharges either in front of the feed cylinder 3 or above the point of aspiration as shown in dotted lines 12^1. The body of the electric motor 9 is provided in its upper part with an annular strap 13 through which passes a suspension rod 14 arranged parallel to the axis of the carding cylinder 5, the rod 14 being fixed in supports 15 above the benches of the carding engine and having a double thread co-operating with a corresponding thread in the ring or strap 13 of the motor 9, so that on the rotation of the said rod the motor and the parts carried thereby are displaced alternately in one or the other direction along said rod. There is provided for actuating the rod 14, for example, a driven pulley 16 which may be combined with a reducing gear 17. The electric motor 9 is connected in any suitable manner with a fixed point of current supply located in general on one of the benches of the carding engine, and, if desired, there may be combined therewith automatic switches in such manner that at the end of the travel of the electric motor in one or the other of the two directions in which it moves, the electric circuit is opened and does not close again until the extreme opposite end of the travel is again reached.

By means of the apparatus described and arranged in the manner indicated, the result is attained that by the aspiration of the tube 10 the whole mass of fibres in course of carding is raised and kept on the surface formed by the tips of the points 6 of the card clothing, thus completely preventing the choking thereof giving as a result a constant carding. This result is not altered by the fact that a part of the fibres are extracted from the said mass by means of the aspiration, since they are again returned to the carding cylinder at the place from where they were drawn out either indirectly through the outlet conduit 12, the feed cylinder 3 and the licker-in, or directly through the outlet conduit 12^1. In the first of these cases, the result is attained that the short fibres and particularly the solid particles may be separated during their second passage through the licker-in. As has been stated, the aspirator can operate continuously during its displacement along the rod 14, that is to say, in one or the other direction, or only during one of these, there being provided in this travel the appropriate automatic switches so that there results a completely regular feed.

It is to be noted that the invention described may be subject to variations of detail without thereby departing from the fundamental principle of the invention.

The apparatus described hereinbefore is claimed in my copending application, Ser. No. 71,147.

I claim:

A process for improving the carding effect of carding cylinders which comprises the step of continuously applying suction to the web of fibers being carded on the carding cylinder, such suction being applied progressively back and forth across the surface of the cylinder as said cylinder rotates, the suction being sufficient only to raise the fibers from the base of the teeth to the tips thereof, without complete removal and carrying away of such fibers, whereby the major portion of the fibers remains on the the carding cylinder and travels along therewith for completion of the carding operation, and whereby the clothing of the cylinder is kept continuously clear for long periods of time.

AGUSTIN MASALLERA CASTELL.

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