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METHOD AND DEVICE FOR REMOVING IMPURITIES BY ASPIRATION
FROM ROLLERS OF CARDING MACHINES

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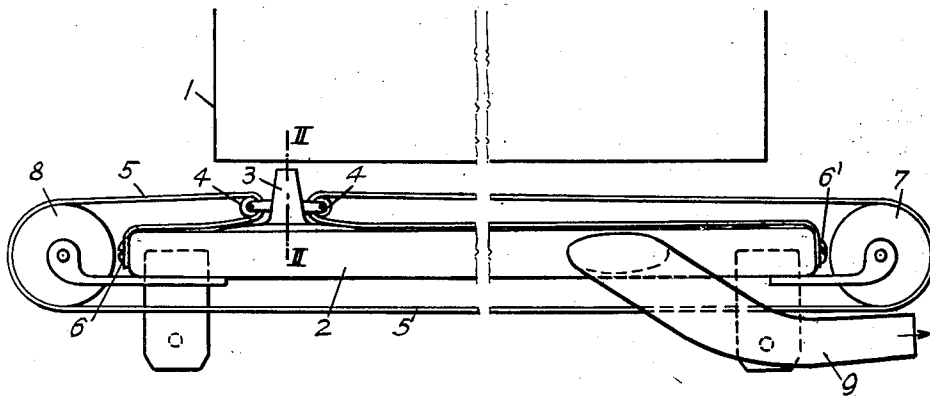


FIG. 1.

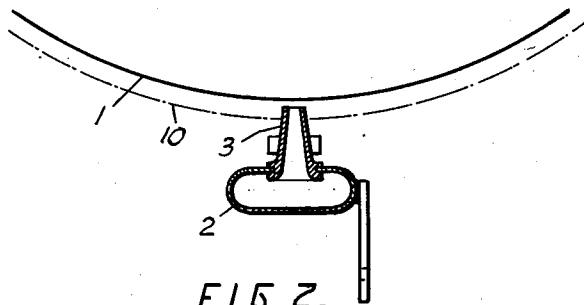


FIG. 2.



FIG. 3.

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METHOD AND DEVICE FOR REMOVING
IMPURITIES BY ASPIRATION FROM
ROLLERS OF CARDING MACHINES

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5 Claims. (Cl. 19—109)

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The present invention relates to improvements in a method and device for removing impurities by aspiration from rollers of carding machines.

Aspiration apparatus hitherto used for removing of impurities from rollers of carding machines show numerous drawbacks. The carding machine prior to cleaning has to be put out of operation, the supply of material to the machine interrupted and the material still remaining in the machine allowed to run out. Only then the aspiration apparatus may be put in action cleaning first the main and then the taking off (doffing) rollers while the carding machine runs idle. After the two rollers have been cleaned the aspiration apparatus is switched off and the carding machine prepared for further operation. Upon re-starting the operation of the carding machine the emerging slivers have first to be discharged outside the cans until they show sufficient uniformity. This is, of course, the cause of a considerable waste apart from a heavy loss of time by interrupting the operation of the machine.

The cleaning of carding machines is effected in practice in intervals of about two hours and it is self evident that the uniformity and quality of yarn varies, since the yarn produced shortly after the machine has been cleaned is of a far better quality than the yarn produced shortly before the cleaning operation.

The main object of the present invention is to remove the above drawbacks and to provide means for removing impurities from rollers of carding machines without the necessity of interrupting the operation of the machine.

A further object of the invention is to provide means by which the cleaning of the rollers of a carding machine may be carried out continuously or at least in short intervals so as to avoid considerable differences in the quality of the produced yarn, which have been inevitable with the apparatus hitherto used.

According to the present invention impurities adhering to the card clothing are removed by aspiration in a continuous way or intermittently in short intervals by a strong flow of air sucked in by a nozzle being in communication with a slot, in which the nozzle carries out movements, preferably reciprocal, along the whole width of the roller to be cleaned.

In a practical embodiment of the invention the carding machine is provided in one or several places with a rigidly mounted tube provided with a longitudinal suction slot. A suction nozzle adapted to produce a strong flow of air is mount-

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ed for reciprocal movement in the said suction slot. The movement is imparted to the nozzle by a resilient strip or belt which according to the present invention serves simultaneously to seal the inoperative portions of the suction slot so as to prevent false air entering the tube. The tube is attached by suitable means to a vacuum pump, exhauster or the like suction apparatus. The resilient belt is preferably secured by each of its ends to corresponding end portions of the tube and is guided in close contact with the slot in the latter. The nozzle is provided with suitable entraining means such as rollers or the like, the belt passing over said rollers and over driving, and if necessary, tensioning pulleys which may be mounted in suitable points, for instance, adjacent the ends of the suction tube.

In order that the invention may be clearly understood and readily carried out in practice it will now be described in detail on the hand of the accompanying drawing wherein,

Fig. 1 shows in a diagrammatic representation a device for carrying out the method according to the invention in an elevational view; and,

Fig. 2 is a cross sectional view taken along the line II—II of Fig. 1.

Figure 3 shows a modification of the device shown in Figure 1.

Referring first to Fig. 1 the main roller of the carding machine is marked with the reference numeral 1. Underneath the roller 1 a tube 2 is rigidly mounted, said tube 2 being provided with a suction slot in which a suction nozzle 3 (see also Fig. 2) is mounted for sliding movement. The nozzle 3 is provided at both sides with attachments carrying rollers 4 which serve for imparting longitudinal movement to the nozzle. Reciprocating motion is imparted to the suction nozzle 3 by a resilient strip or belt 5 which at the same time serves to seal the inoperative portions of the suction slot of the tube 2. The resilient belt is secured by each of its ends to corresponding ends 6 and 6' of the tube 2 and guided in close contact with and along the suction slot as far as the nozzle 3 and over the rollers 4 back to driving or tensioning pulleys 7, 8 which are mounted at the ends 6', 6 respectively of the suction tube 2. The driving pulley 7 is actuated by a reciprocal drive (not shown), preferably from the shaft of the supply roller, either continuously or intermittently by means of mechanical or electric time switches in intervals adjusted according to the particular quality of the treated material. The suction tube 2 is connected by means of an attachment 9 to a sucking conduit

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of an exhauster, vacuum pump or the like. The switching on of the exhauster or vacuum pump is synchronised with the movement of the suction nozzle 3.

Fig. 2 shows in a cross sectional view the mounting of the suction nozzle 3 for sliding movement in the suction slot of the tube 2, underneath the main roller 1. The nozzle 3 is travelling in a gap of the screen 10.

By the method and device according to the present invention a considerable improvement in the quality and uniformity of the produced yarn is attained, since the material taken off from the main roller contains a far smaller percentage of impurities. Moreover, special manipulation which has up to now been indispensable in connection with the known suction apparatus is entirely dispensed with. The continuous operation of the apparatus according to the invention allows a better utilisation of the machine while at the same time the waste is considerably reduced.

It is self evident that the invention is in no way limited to the embodiment disclosed above and may be modified in various ways without departing from its scope. So for instance if a material is treated containing a large proportion of impurities the number of suction nozzles in each tube may be increased.

I claim:

1. An apparatus for removing impurities by aspiration from rollers of a carding machine, comprising in combination: a tube having an axis substantially parallel to that of the roller to be cleaned, a longitudinal slot in the said tube, a nozzle mounted for reciprocal longitudinal movement in the said slot and in open communication with the interior of the said tube, means for imparting reciprocal movement to the said nozzle along the slot in the tube, means for producing vacuum in the interior of the tube and nozzle; and means for sealing the inoperative portions of the slot in the tube.

2. An apparatus for removing impurities by aspiration from rollers of a carding machine, comprising in combination: a tube having an axis substantially parallel to that of the roller to be cleaned, a longitudinal slot in the said tube, a nozzle mounted for reciprocal longitudinal movement in the said slot and in open communication with the interior of the said tube, means for imparting reciprocal movement to the said nozzle

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along the slot, means for sealing the inoperative portions of the slot in the tube and means for producing vacuum in the interior of the said tube and nozzle.

3. An apparatus as claimed in claim 2, wherein the means for imparting reciprocal movement to the nozzle and sealing the inoperative portions of the slot consist of a resilient belt.

4. An apparatus for removing impurities by aspiration from rollers of a carding machine, comprising in combination: a tube having an axis substantially parallel to that of the roller to be cleaned, a longitudinal slot in the said tube, a nozzle mounted for reciprocal longitudinal movement in the said slot and in open communication with the interior of the said tube, a resilient belt secured by its ends to the end portions of the said tube respectively, at least one driving pulley and at least one tensioning pulley mounted adjacent each end of the said tube, entraining means mounted on the said nozzle, the resilient belt passing around the said entraining means on the nozzle, around the driving and tensioning pulleys and being guided in close contact with the inoperative portions of the said slot in the tube.

5. An apparatus for removing impurities by aspiration from rollers of a carding machine, comprising in combination, a tube having an axis substantially parallel to that of the roller to be cleaned, a longitudinal slot in said tube, a plurality of nozzles mounted for longitudinal movement in the slot of said tube and in open communication with the interior of said tube, means for imparting a reciprocal movement to said nozzles along the slot in said tube, means for producing a vacuum in the interior of said tube and said nozzles, and means for sealing the inoperative portions of the slot in said tube.

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