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RECOVERY APPARATUS FOR CARDING MACHINES

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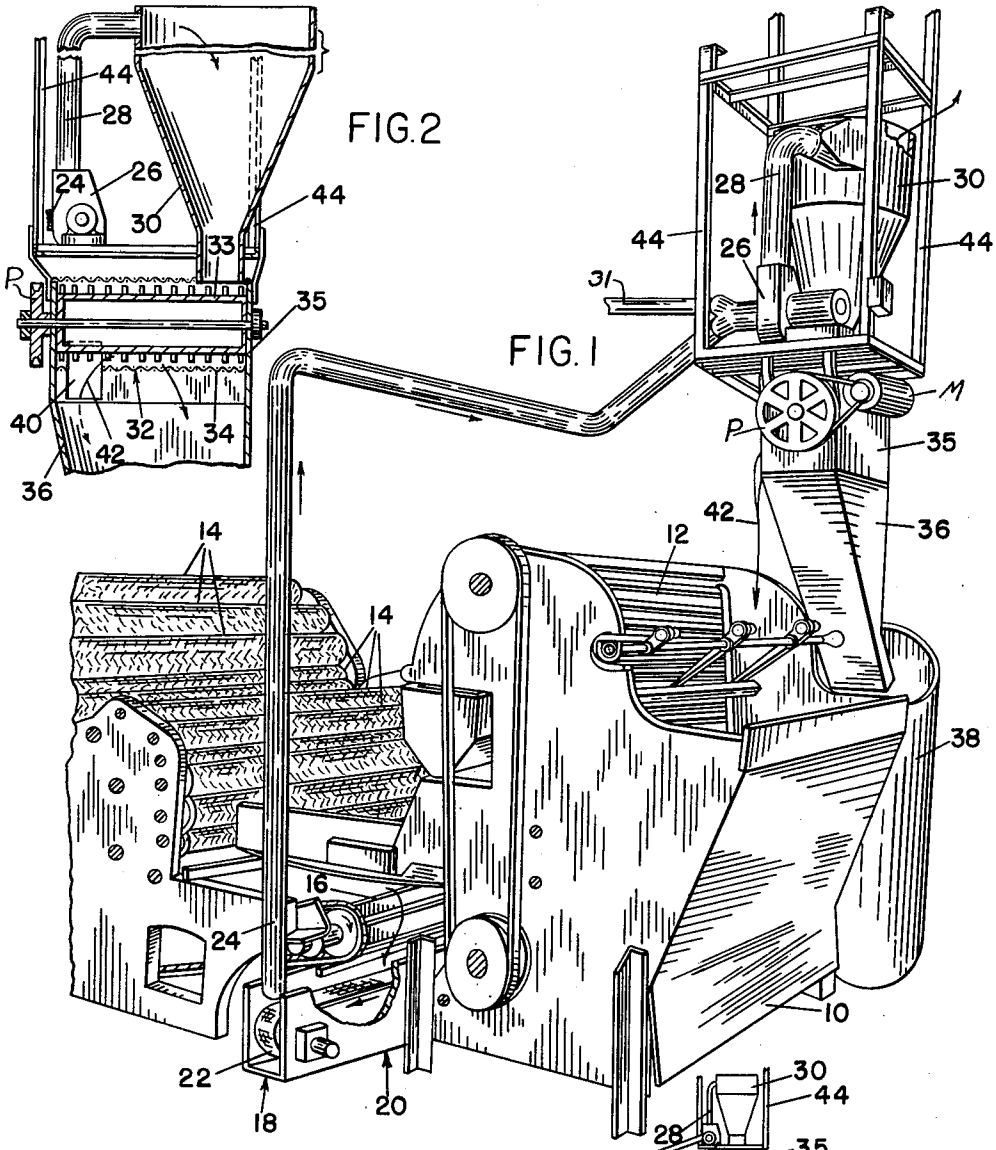

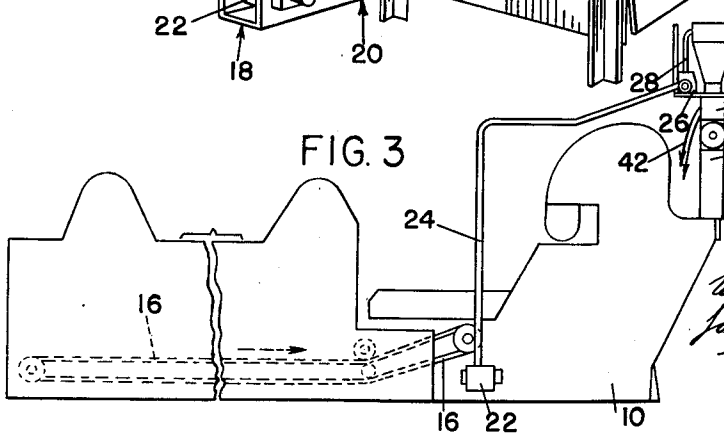

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RECOVERY APPARATUS FOR CARDING MACHINES

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This invention relates to new and improved recovery apparatus and method for recovering and cleaning fibrous materials from a textile processing machine in the nature of a carding machine. In the prior art, a certain percentage of fibers is lost in such machine operations, that is, the fibers are apt to drop down through the machine onto the floor, and periodically the machine has to be stopped and the floor cleaned from under the machine. This invention, however, provides means for continuously removing such detritus in the form of fibers which have dropped through the machine and conveying the same to a central location where the fibers are cleaned in a mechanical dusting apparatus, the fibers being automatically returned to the hopper or feed-in end of the processing machine for reprocessing thereof, the dirt being transferred into a container for the purpose. This recovery operation may operate continuously or intermittently, depending in part upon the particular setup of the machinery and how much fiber is lost from the processing machine, but in any event by the use of this invention none of the fiber is lost by falling to the floor and it is cleaned as by the mechanical duster.

Another object of the invention resides in the provision of an apparatus and method as above set forth wherein the separating medium, i.e., the duster, is suspended from the ceiling and need not be mounted in any way upon the machine which of course is already set up. The carding apparatus for instance is not modified or changed in any way, and the recovery apparatus for carrying out the process of recovery of the fibers and cleaning the same does not interfere in any way either with the operation or with the setup of the apparatus, so that it will be seen that the present cleaning or recovery apparatus may be quickly and easily applied to already existing machinery.

The invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly set forth in the appended claims.

Reference is to be had to the accompanying drawings, in which:

FIG. 1 is a perspective view with parts broken away illustrating the recovery apparatus and process;

FIG. 2 is a sectional view illustrating the mechanical duster; and

FIG. 3 is a diagrammatic view illustrating the general position of the recovery apparatus.

In illustrating the present invention, it has been shown as applied to a more or less conventional carding machine, but a similar recovery method and apparatus could be utilized for other textile processing machines also.

In the drawings, the reference numeral **10** indicates the feed box of a carding machine, the material to be carded being deposited within the feed box **10** and then being carried in the usual manner as by an apron **12** or the like to be fed through the rolls which are generally indicated at **14**. The details of this machine are well known in the art and not particularly pertinent to the present invention except that the fiber recovered is dropped by gravity or other means directly into the forward part of the machine in the box **10** where it may be reprocessed by being passed along by the apron **12**, etc. to be carding or processing rolls.

Underneath the entire operative length of the machine,

we prefer to provide a traveling slat-like apron or the like **16** which may be driven by the general machine mechanism or by a separate motor if desired. In any event, this apron travels in the general direction of the arrow as shown in FIG. 3 and all detritus which escapes from the carding rolls or other mechanism and would otherwise fall upon the floor falls instead on apron **16** and is directed to a transverse traveling mechanism generally indicated at **18**. In this case, the transverse device **18** is illustrated as a channel **20**, there being a narrow belt **22** therein, the belt being driven in the direction of the arrow in FIG. 1 towards the intake end of a pipe **24**. The detritus is moved by a suction of air upwardly through pipe **24**. This apparatus effectively delivers all of the material which may fall from the machine during the processing operations thereof to the pipe **24**.

The pipe **24** rises vertically as shown in FIG. 1 and air is conveyed therethrough by means of a fan not shown but which may be located in a housing at **26**. Air and detritus is thence blown upwardly through a pipe **28** into a receiver or separator **30**. The air escapes out of the open top of the receiver or separator **30** and the fiber material then falls, as by gravity, down to a mechanical duster generally indicated by reference numeral **32**. Pipe **24** may be branched to also service another part of the machine if desired, as indicated at **31**.

The mechanical duster **32** includes a generally cylindrical screen **34** which is fixed and inside the screen there is a rotary, high-speed helically spiked cylinder **33** which may be driven by a pulley P from a motor M. The fibers descend through an opening in the screen into the duster and are thrown outwardly by the cylinder onto the inside surface of the screen. Dirt and unwanted detritus being heavier, pass through the screen and are collected in the housing **35** and fall by gravity or any other means down the chute **36** to be collected in a barrel or the like **38**.

However, the fibrous material is cleaned and passes through an opening **40** at the rear of the device and falls back into the feed box **10** of the carding machine, see arrow **42** in FIG. 1, and is thus reprocessed as desired. It will be seen that the present invention provides for a recovery of all fibers which are usually lost during the carding operations or in similar operations of the textile industry. Not only are the previously lost fibers recovered but they are cleaned prior to the return to the processing equipment by the mechanical action of the duster.

The entire dusting apparatus may conveniently be mounted to be suspended from the ceiling as by a framework at **44** and thus no burden is placed on the pre-existing processing machinery.

Having thus described our invention and the advantages thereof, we do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what we claim is:

1. The combination of a textile carding machine having a hopper for receiving fibers to be carded and carding cylinders, with a conveyor located under the carding cylinders and conveying dropped or lost fibers to a central point adjacent the hopper, means conveying the fibers upwardly to an air separation chamber above the hopper, the fibers falling by gravity therein, a mechanical duster also above the hopper, and comprising a cylindrical screen and a fast rotatable spiked cylinder therein, the fibers being processed through said cylindrical screen and the spiked cylinder throwing off the heavier dirt by centrifugal force through the screen, the clean fibers remaining within the screen, means directing the now-cleaned fibers out of the screen and back down to the hopper of the carding machine, a dirt receptacle, and means directing the dirt to the receptacle.

2. The combination of claim 1 wherein the conveyor

moves in a direction to transport the fibers oppositely to the direction of progress of the fibers through the carding cylinders, and includes a conveyor adjacent the hopper and moving the fibers transversely of the carding machine to a point where the means conveying the fibers upwardly takes the fibers.

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