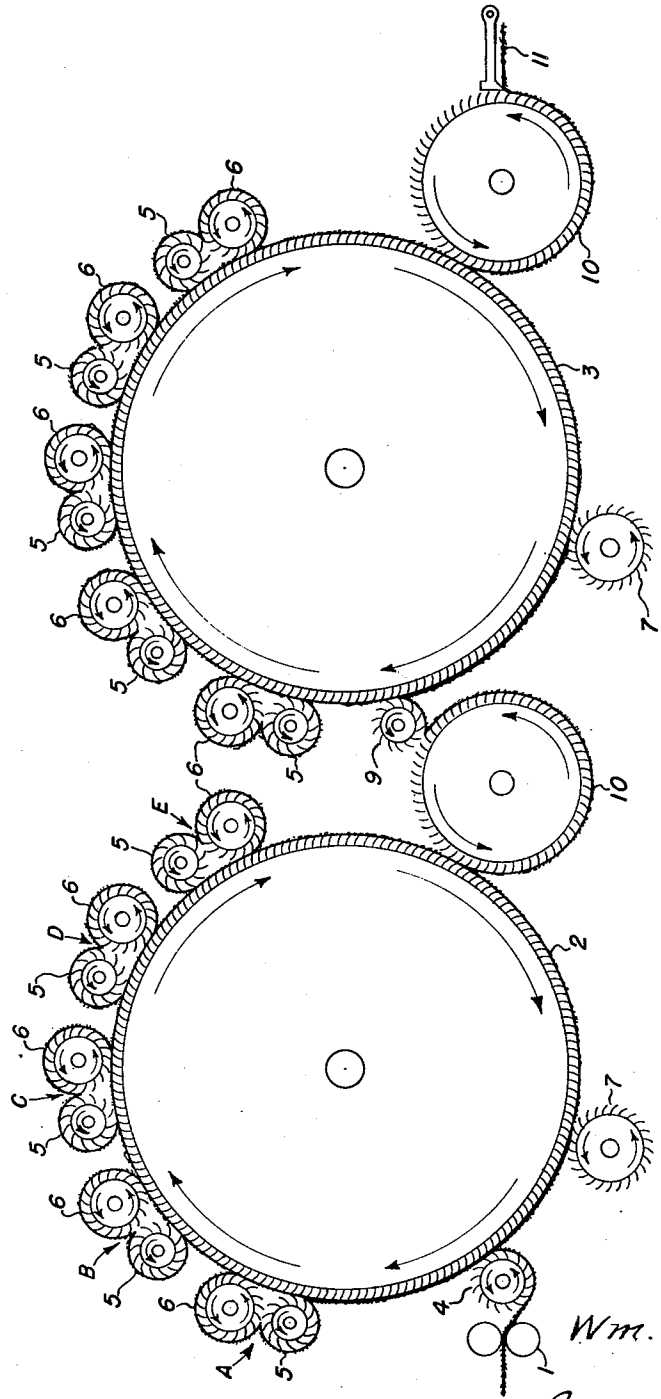
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METHOD OF CARDING FIBROUS MATERIAL

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METHOD OF CARDING FIBROUS MATERIAL

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1 Claim. (Cl. 19—106)

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This invention relates to improvements in the method and apparatus for carding fibrous material, particularly wool.

In carding systems conventionally employed, the fibrous material is fed in the form of a web to a cylinder rotating at relatively high speed, say 1000 to 1200 feet per minute, and having wire teeth pitched forward in the direction of travel for receiving the web. At spaced points around such a cylinder are arranged in sets one or more workers with teeth point to point with those on the main cylinder and one or more strippers which engage the workers and have teeth back to point with those on the main cylinder. The workers rotate relatively slowly as compared with the rotation of the main cylinder and the strippers rotate faster than the workers in order to clear the workers but slower than the main cylinder so that the strippers may in turn be cleared by the main cylinder. A portion of the stock transferred back to the cylinder by a stripper is reworked by its companion worker and a portion is carried forward to the next set of workers and strippers. In this conventional system, after the last set of workers and strippers, a doffer is provided rotating at a slower rate than the cylinder and having teeth pitched point to point with the cylinder teeth. It is also customary to position a fancy in front of such a doffer to raise both the carded and imbedded stock from the main cylinder clear of the cylinder points so that it may be picked up by points of the doffer and carried on to the next cylinder or to the end of the card or condenser.

A disadvantage of this system is that a portion of the stock becomes imbedded in the wire of the main cylinder soon after delivery and is not subjected to the carding action of the workers in the manner of the stock carried at the outer portion of the cylinder wires. This condition maintains in some degree no matter how many sets of workers and strippers are used and regardless of the number of main cylinders employed in the system.

It is an object of the present invention to avoid the foregoing and other disadvantages of the systems heretofore in use and to provide a very material increase in quality and quantity of the resulting carded material. Specifically, the invention contemplates recovering well carded material directly from the workers without the step as heretofore of returning this material to the main cylinder, mixing it with the residual material thereon, and then raising it by fancy and doffer for delivery to the condenser.

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The invention also contemplates lifting the stock remaining on the main cylinder after recovery of the carded material clear of the points of the cylinder for further carding action on the same cylinder, preferably in admixture with new stock.

Other and further objects and advantages of the invention will be apparent from the following detailed description taken in conjunction with the accompanying drawing wherein a preferred embodiment of the principles of the invention has been selected for exemplification.

In the drawing the figure represents a diagrammatic view of a wool carding machine showing my invention.

In the drawing, wherein like numerals refer to like parts, the usual feed rolls 1 deliver stock to be carded onto lickerin or tumbler 4 and thence to main cylinder or swift 2 which rotates at relative high speed such as 1000 to 1200 feet per minute. The teeth of cylinder 2 are pitched forward and pointed in the direction in which the stock travels from the receiving to the delivering end of the machine.

Around cylinder 2 are arranged a plurality of sets, indicated at A, B, C, D and E, of workers 6 having teeth point to point with those on the cylinder and strippers 5 which engage the workers and have teeth back to point with those on the main cylinder. Each worker 6, rotating at a slower speed than the main cylinder 2 receives a portion of stock from the cylinder and each stripper 5, rotating faster than its companion worker 6 but slower than the cylinder 2, receives all the stock from the worker and returns it to the cylinder. A portion of the returned stock is reworked by the same worker and a portion proceeds to the succeeding worker. This cycle continues with each set of workers and strippers A, B, C, D and E, the load becoming lighter as the stock approaches the last set E.

I have illustrated and described up to this point merely a conventional system. In such a conventional system, it is customary to position a fancy, not shown, after the worker and stripper set E traveling at a faster surface speed than the cylinder 2 and having wire points pitched back to back with the cylinder teeth to cause a brushing effect which raises both the carded and imbedded stock from the cylinder clear of the cylinder surface in order that it may be picked up by a succeeding doffer, also not shown, the points of which are pitched point to point against the main cylinder and which travels at a considerably slower surface speed than the cylinder.

In the present invention such fancy and doffer are omitted. An additional worker 10 replaces the ordinary doffer and, like the workers 6, is provided with teeth pitched point to point against the cylinder teeth and travels at a slower rate of speed than the cylinder 2. Worker 10 receives only the desirable stock on the outer surface of the main cylinder which has been subjected to the carding action of the preceding workers 6 unadmixed with the undesirable stock imbedded in the cylinder which passes on to fancy 7. The stock picked up on worker 10 is removed by angle stripper 9 which delivers the same to a further main cylinder 3 which is similar in all respects to cylinder 2 and, like cylinder 2, is provided with sets of workers and strippers A, B, C, D and E and another final worker 10 from which the material is stripped by comb 11 in the form of a thin web which thence passes on to the usual condenser.

A fancy 7 is arranged in back of each worker 10, as shown, to lift the imbedded stock remaining on main cylinders 2 and 3 without in any manner interfering with the recovery of the preferred carded material directly from the workers 10. Fancies 7 not only prevent filling and clogging of cylinders 2 and 3, but permit recording of the imbedded material on the same cylinder. The imbedded material lifted from cylinder 2 may be recycled in admixture with newly fed stock from lickerin 4. If a more intimate mixture of the recycled and new stock is desired, the stock lifted out of the cylinder 2 by fancy 7 may be passed to the feed box or table for more thorough mixing with the new stock and reintroduced into the system through the feed rolls 1 and lickerin 4.

While I have herein shown and described two main cylinders 2 and 3 each being associated with five sets of workers and strippers, it will be understood that this arrangement is only suggestive and does not in any manner limit the invention which contemplates the use of a single or any desired number of main cylinders and the use of a single worker or any other desired number of worker and stripper sets, or the like, essential features of the invention being that the desirable carded stock is delivered directly from the workers to a succeeding main cylinder or swift or to the final delivery point and the imbedded stock is reworked on the same cylinder, regardless of other steps in the method and structural modifications in the apparatus.

Having thus described my invention, I claim:

In the method of carding fibrous material wherein the material is fed from a feed box to a relatively high speed rotating cylinder and the upper layer of the material on the cylinder is transferred to and subjected to the action of a worker, the improvement which comprises, removing said upper layer of material directly from the worker and conveying it away from the cylinder, lifting substantially the remainder of the material from the cylinder, passing the lifted remainder material to the feed box and therein mixing the same with new material and refeeding the remainder material in admixture with new material to the cylinder.

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