EDDO V. BATES, OF LOWELL, MASSACHUSETTS.

METHOD AND APPARATUS FOR CARDING FIBROUS MATERIAL.


To all whom it may concern:

Be it known that I, EDDO V. BATES, a citizen of the United States of America, and a resident of Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Methods and Apparatus for Carding Fibrous Material, of which the following is a specification.

This invention relates to the method and apparatus for carding fibrous material such as wool, cotton, and the like.

An object of the invention is to produce a carding machine of a much simpler arrangement than those heretofore used, and one having a main or plurality of main cylinders or swifts of greatly reduced size, and having an appreciable reduction in the number of worker rolls and consequently strippers therefore.

A further object of the invention is to produce a carding machine at greatly reduced cost, and which has a lesser number of vital parts to keep in condition, and in adjustment, in consequence of which a saving of time and labor is made in the up keep thereof.

It is a further object of the invention to produce a carding machine which, by reason of the use of swifts of less diameter than heretofore, occupies less floor space, thus permitting a greater number of machines to be installed in a given space than has been possible in the past.

Another object of the invention is the production of a carding machine having all the above qualities, and which efficiently cards the material in such a manner that the possibility of breaking the fibers therefrom is greatly eliminated, resulting in the formation of a film, fleece, or sliver, comprising fibers of generally their original length, thereby producing a much better sliver at much less original cost per machine, and expenditure of time and labor in the up keep thereof.

A still further object of the invention is to produce a carding machine wherein an intermediate doffer or timer is arranged in a novel manner with respect to the other parts, and employed in conjunction with other well known parts, to not only function as an intermediate doffer but to actually aid in recarding certain of the material which has been previously acted upon by it, but which is not properly prepared to proceed further in the machine for final carding prior to final doffing.

Herefore the intermediate doffer or timer has functioned as a medium for transferring the sliver from one main cylinder to another, but at the doffing point it has aided greatly in the fibre straightening process started by the licker in and workers, and at the point of transfer it was stripped of its sliver, which was not further carded by that operation, but transferred to the second swift or cylinder, regardless of its condition, and did not again contact with the said timer but was carried on for subsequent carding and finally doffed.

The present invention contemplates a novel arrangement of the intermediate doffer or timer and strippers coacting therewith, with respect to the main cylinders or swifts, whereby the timer receives sliver from the first swift, and is stripped of said sliver prior to the transfer to the second swift, and whereby certain portions of the transferred material, if not properly carded at that time, or is bunchy, is picked up by the said timer, carried rearwardly and stripped therefrom, and again presented to the first swift for further carding, which occurs at the point of transfer, back again to the timer.

It is not known that a carding machine has ever been used wherein a timer has been so arranged as to receive sliver from one swift to be delivered to another, and thereafter again receive certain portions of the previously delivered sliver from the second swift to deliver it back to the said first swift for recarding.

While the present invention is shown in connection with a wool card set up, it will be understood that it might be used equally well in Garnets, or cotton cards, or in revolving flat cards, in which latter case the flats may be greatly reduced in number.

In view of the foregoing it will be understood that it is not the intention to limit the invention to the precise arrangement shown, as changes might be made therein without departing from its spirit and scope.

This invention consists in certain novel features of arrangement which will be fully understood from a description of the drawing and the claims hereinafter given.

Of the drawings:

Figure 1 represents a diagrammatic view...
of a wool card set up containing the invention.

Figure 2 is an enlarged view of a portion of the intermediate doffer or tummer with strippers therefor, and portions of the cylinders or swifts, to more clearly illustrate the novel arrangement of the tummer and the action thereof.

Like characters represent like parts throughout the figures of the drawing.

Referring to the drawing:

The drawings herewith illustrate the invention as applied to a two cylinder wool card, and preferably so, but it will be understood that more than two cylinders might be used if desired, and the invention might be applied to other forms of carding machines which it is not deemed necessary to illustrate.

In the present instance the machine is supplied with the usual lay feed rolls 10,icker in 11, and tumbler 12, which latter feeds the material to the first cylinder or swift 13 where it is acted upon by the workers 14 and 15.

In carrying out the invention it has been found that the number of workers necessary for the best results need not be as large as used heretofore, and in view of that fact a very material reduction in the diameter of the swift was made possible.

Upon leaving the worker 13, the partly carded material is acted upon by the fancy 16 preparatory to being taken up by the intermediate doffer or tummer 17.

So far, with the exception of the size of the swifts, and the number of workers used, the arrangement is well known in the art, the position of the tummer however has been arranged so that it is in direct working relationship with the second swift whereby it may relieve the said swift of uncared or bunched material previously stripped from itself.

At the point of transfer of the material from the first swift to the doffer or tummer, very effectual carding takes place, after which the material, now somewhat condensed is removed from the tummer by the stripper 18 and delivered thereby to the second swift or cylinder 19.

If at this time the material is sufficiently well carded to escape the now stripped portion of the tummer 17, it will be carried forward for subsequent operations by the workers 20 and 21, and the fancy 22, which as usual prepares the material for removal by the doffer 23 to be in turn stripped by the comb 24.

If however the material is bunched and insufficiently carded so as to contact with the said previously stripped portion of the tummer, it will be taken up by it and carried rearwardly to the stripper 25, which will again transfer it to the first swift 13, and it will again undergo a carding operation on its next transfer from the said swift back to the tummer.

By the use of the above arrangement it will be readily seen that the tummer in this instance functions to doff all the material from the first swift, but only superfluous, bunched, or uncared material from the second swift, and by so doing, a uniform layer of material is assured for the said second swift, which naturally results in a much more even and uniform layer or film of finished product.

It will be understood that the arrangement of the doffer or tummer 17 relatively to the swift 19 is one that offers excellent advantages in the carding operation, as the material deposited on the said swift 19 is not deeply imbedded in the clothing thereof and consequently upon its passage past the adjacent clothing of the tummer, the fiber straightening process is easily carried out and with a minimum of breakage to the fibers.

It will also be understood that the carding process at this point is continuous so long as material is being deposited on the said swift, even though the tummer removes certain of the material from it, that material too receives the advantages of the carding at that point and time.

This added advantage in the carding process obtained as it is by the novel arrangement of the tummer with respect to the second swift has developed better sliver to such an extent that it has made it possible and in fact advisable to diminish the number of workers used, and thereby enables the use of swifts of much smaller diameter, which means a great reduction in first cost of machine and conservation of floor space.

Having described the invention I claim:

1. A machine for carding fibrous material comprising a plurality of swifts, means interposed between pairs of said swifts to transfer sliver from one swift to another in its progress through the machine, said means including a tummer so arranged as to contact with each swift of a pair to first receive all the material from one swift and advance it toward the second swift, and to thereafter receive certain portions of said material from said second swift and return it to be received by said first swift for further carding.

2. A machine for carding fibrous material comprising a plurality of swifts; a tummer interposed between two swifts of a pair and arranged in direct operative relation therewith whereby it may receive material from each of said swifts; a stripper arranged to clear said tummer and transfer the material thereof to one of said swifts; and a stripper arranged to clear said tummer of material received by it from said last mentioned swift.
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and transfer it to the preceding swift for further carding.

3. A machine for carding fibrous material comprising a swift having means coacting therewith to card fibrous material; a second swift also having means coacting therewith to card fibrous material, and arranged to receive carded material from said first swift in its progress through the machine; and means whereby certain portions of carded material received from said first swift may be returned thereto from said second swift for further carding.

4. A machine for carding fibrous material comprising a swift having means coacting therewith to card fibrous material; a second swift also having means coacting therewith to card fibrous material and arranged to receive carded material from said first swift in its progress through the machine; and means coacting with both of said swifts to transfer carded material from said first swift to said second swift, one portion of said means being arranged to remove superfluous material from said second swift prior to further carding operations thereon, and transfer it back to be again received by said first swift whereby a uniform layer of carded material may be maintained on said second swift for subsequent carding operations.

5. A machine for carding fibrous material comprising two swifts of small diameter; carding devices coacting with each of said swifts and adapted to aid in carding fibrous material; and means coacting with each of said swifts whereby material is transferred from one swift to another and whereby superfluous material so transferred may be removed from its swift and returned to the other swift to thereby maintain a uniform layer of transferred material.

6. The method of carding fibrous material consisting of first feeding the material to be carded to a swift and coacting carding devices, doffing the material from said swift and transferring it to a second swift for further carding but prior to said further carding arranging the carded material on said second swift in a uniform layer by doffing superfluous material therefrom and returning said superfluous material to the first swift for further carding and to be again advanced.

Signed by me at Lowell, Mass., this 27th day of May 1924.

EDDO V. BATES.