

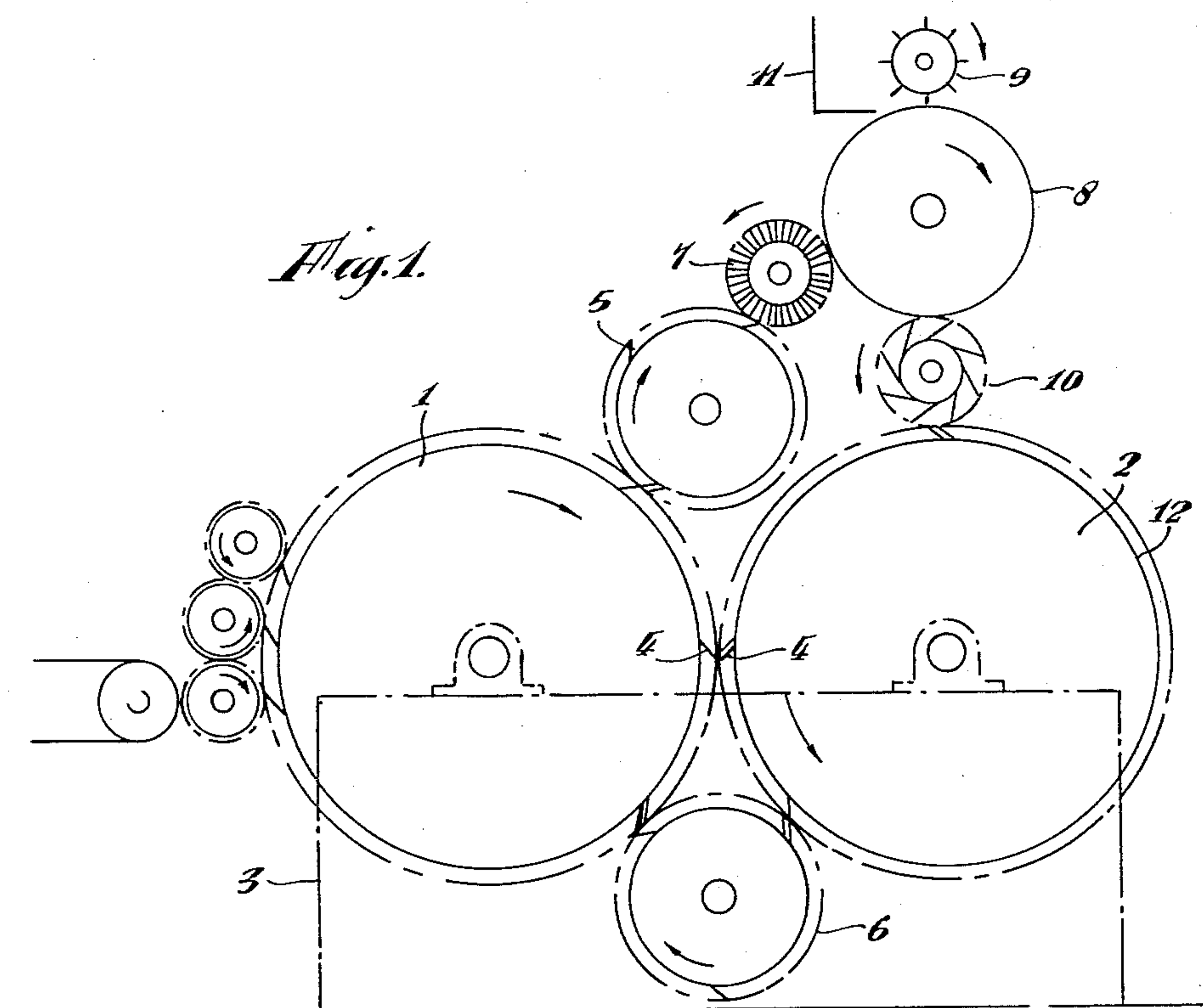
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A. VARGA
CARDING ENGINES

2,994,927

Filed May 26, 1958

2 Sheets-Sheet 1



INVENTOR :

Andre Varga

By:

Pierce, Scheffler & Parker

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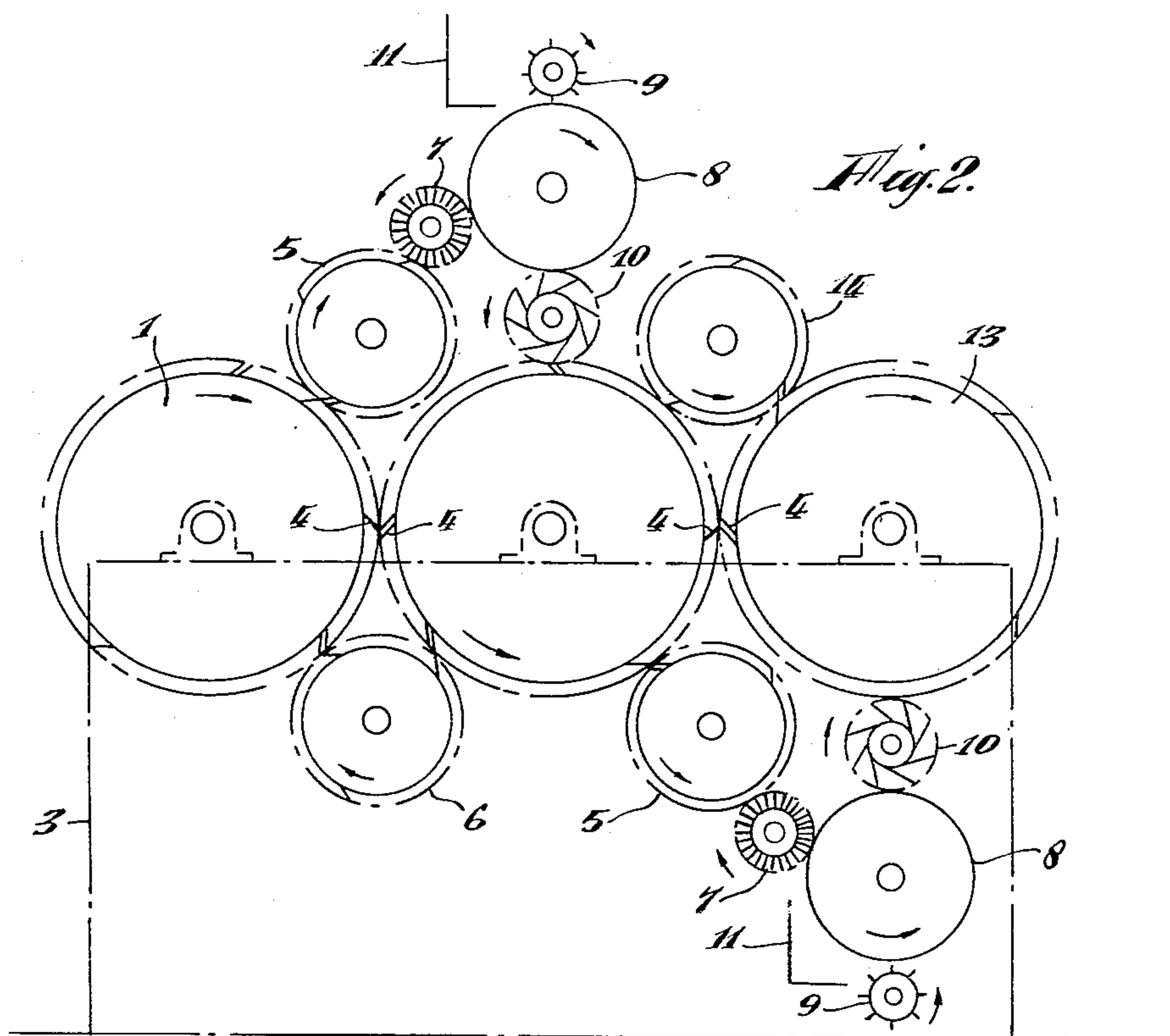
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CARDING ENGINES

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3 Claims. (Cl. 19—98)

This invention relates to carding machinery.

One problem that arises in processing wool fibres is the removal of burrs and other impurities. It is desirable to remove these impurities before they are broken up into smaller particles by the disintegrating action of carding wires and to achieve this removal before a carded web is submitted to further processing.

It is known in the forepart of worsted carding machines to mount a worker roller to split away part of a wool lock from a carding or lickerin roller and subject it to a burr-removal process by means of one or two Morel rollers. A second worker roller may be employed to take off the remaining part of the lock from the same carding or lickerin roller by means of a brush and a further Morel roller and then subject both lock parts to the usual carding process. It is also known to take off part of a lock from a carding or lickerin roller by means of a worker roller, subject this lock part to a burr-removal process employing a Morel roller and then reuniting this treated lock part with the other parts of locks which remained on the surface of the said carding roller. In both these arrangements the burr-removal process employing Morel rollers actually precede a proper carding operation on a carding engine and thus are primarily concerned solely with the removal of burrs, and in one case return the treated lock part to the same roller at a further part of its periphery.

The term "Morel" roller as used herein is intended to include not only the well-known type of roller which is adapted to receive fibres in such a manner that burrs or other impurities adhering to them tend to be exposed on the periphery of the roller, accessible to the burr beating means, but also to include any type of roller and card clothing capable of achieving the same object. The term "locks" is also intended to refer to tufts, small masses and agglomerations of fibres. The term "carding rollers" is also intended to include so-called lickerin rollers.

The main object of this invention is to improve the process of burr-removal by integrating it into the carding operation with the specific object of producing under progressively favourable processing conditions, a more burr-free carded web.

Accordingly there is provided a method of processing wool fibres during a carding operation, consisting in feeding wool locks to a train of at least two co-operating carding rollers rotating in opposite directions at successively increased speeds, the second carding roller stripping the first, submitting the locks to the action of a divider roller in working co-operation with the first carding roller, treating the portion of fibres retained by the divider roller to a burr-removing process, depositing this treated portion of fibres on to the second carding roller in such a manner that the latter carries it round past the arc where it is stripping those portions of the locks which were left by the divider roller on the first carding roller.

The method may include the step of removing part of the locks from the second of the two carding rollers and returning it to the first carding roller for the purpose of repeating the aforesaid burr-removal process. The

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method may also include lifting away part of the treated locks from the second carding roller and subjecting them to a further burr-removing process and then depositing them on to another following carding roller which is in stripping co-operation with the second roller.

The invention includes apparatus having a train of at least two carding rollers in stripping engagement, means for driving the rollers in opposite directions at successively increased speeds, a driven divider roller mounted to be capable of worker engagement with the first of the carding rollers, stripping means for transferring fibres from the divider to a Morel roller, a burr beater associated with the Morel roller, and stripping means for transferring the treated fibres from the Morel roller on to the second carding roller for them to be carried past the arc where there is stripping co-operation between the two carding rollers and the lock parts on the first carding roller are transferred to the second carding roller. The apparatus may include a second divider roller mounted to be capable, through worker action, of removing part of the fibres from the second carding roller and causing them to be transferred to the first carding roller for repeated burr-removing treatment.

The apparatus may include a train of at least three carding rollers driven at successively increasing speeds and each stripping the preceding one, divider rollers mounted one above and one below each co-operation arc of any two carding rollers and in a manner that enables one to be in working engagement with one carding roller and the other respectively in working and stripping engagement with two adjacent carding rollers, and at least two sets of burr-removal elements, the whole arrangement being such that fibres may be removed from a carding roller and processed for burr-removal by one set of elements, then deposited on to another carding roller and some of the fibres passed for further burr-removal processing by the second set of elements.

Referring now to the accompanying drawings in which two constructions are shown diagrammatically:

FIG. 1 is a side view of two carding rollers with one set of burr-removal means; and

FIG. 2 is a side view of three carding rollers with two sets of burr-removal means.

In one particular basic arrangement shown in FIG. 1 two carding rollers 1, 2 are mounted side-by-side in a framework 3 so that their surfaces are closely adjacent to each other in what may be termed "carding co-operation" and with any known means for driving the rollers at different speeds so that the second roller 2 is turning at a sufficiently greater surface speed in order to be capable of stripping all fibres from the preceding roller 1. It will be understood that the direction of rotation of the rollers is such that the succeeding roller rotates in an opposite direction to the preceding roller, i.e. assuming the first to be rotating in a clockwise direction as indicated the second will be anti-clockwise with the first of the carding clothing 4 inclined and pointing respectively in the direction of their rotation. A driven divider roller 5 or 6 is mounted respectively between the top and bottom arcs of the two adjacent carding rollers and of these divider rollers the top one 5 is mounted so that it is in working cooperation with roller 1 and clear of roller 2 but the divider 6 is in working cooperation with the carding roller 2 and in "stripping" cooperation with the other roller 1. With the divider roller 6 rotating clockwise as shown fibres stripped from the carding roller 2 will be carried down and then up to carding roller 1 which will strip-off

the fibres and carry them round again to the divider roller 5. On the other hand, the divider 6 may be rotated anti-clockwise and the fibres carried by it be passed back to the carding roller 1 over a shorter arc of the divider roller periphery.

Means, such as a rotary brush 7, is mounted in engagement with the first top divider roller 5 to remove fibres therefrom and transfer them to a Morel roller 8 with which a rotary beater 9 is associated to remove burrs and the processed fibres carried round by the Morel roller are stripped from the periphery thereof by stripper roller 10 and deposited on to the second adjacent carding roller 2. To achieve this task the brush 7, the Morel roller 8 and its associated stripper 10 must be rotated at gradually increasing surface speeds from that of the divider roller 5 from which fibres are stripped until the processed fibres are deposited on to the carding roller 2 which will be rotating at a surface speed greater than the stripper 10 which deposits the fibres from the Morel roller on to the carding roller. The burrs removed from the Morel roller 8 are deposited into a suitably placed tray 11 which may have automatic or other means for taking away the burrs. Means 7 and 10 may be a brush or any suitable type of stripper roller.

The processed fibres deposited on to the second carding roller 2 in the train are carried round past its stripping co-operation line with the first carding roller 1 where the fibres left on the surface of the first carding roller will also be picked up and all are carried round this second carding roller to the bottom divider roller 6 which is in working cooperation with it. The fibres retained by this bottom divider roller are stripped by, and thereby returned to, the first carding roller 1 as aforesaid. In this manner both parts of the lock have been subjected to a first carding action and, therefore, being of a reduced size and in a slightly more open state are carried once more round the first carding roller and presented to repeated treatment under improved conditions to the burr-removing elements aforementioned. It will be understood that by setting this bottom divider roller 6 closer or further away from the second carding roller 2 more or less of the locks can be retained by it and returned to the first carding roller 1 for a repeated de-burring process. Alternatively, the divider roller 6 may be moved to an inoperative position if required.

The fibres carried round the carding roller 2 may be removed by any known means, say at the point 12, such as by a doffing roller or by any other suitable roller of a carding machine.

As shown in FIG. 2 a further de-burring set of elements 5, 7, 8, 9, 10 and 11 are placed between the second carding roller 2 and a third carding roller 13 in the train and these are arranged below the axes of the carding rollers. It will be understood that in this case part of the lock of fibres will be removed from the second roller 2 of the carding train, processed for de-burring and then placed back on to the third roller 13 of the train. With this second de-burring set of elements arranged below the carding rollers a further divider roller 14 is mounted in the top arc between the second and third carding rollers 2, 13 and in working cooperation with the third carding roller and capable of being set and driven as aforementioned for the divider roller 6. Here again, fibres can be transferred back on to the second of the carding rollers in a train for repeated de-burring or allowed to pass forward undisturbed on the third carding roller as desired.

It will be appreciated that by selective setting and engagement of the respective divider rollers 6 and 14 fibres from a lock can be directed at will to once or often repeated burr-removal processing in a more or less carded, i.e., opened, state in order to obtain a very clear fibre web and yet preserving the fibre lengths by the application of the combination of progressive opening and de-burring operations.

The invention may be modified by increasing the num-

ber of carding rollers in a train and the positioning of divider rollers between the arcs of the train of rollers and also in the positioning of units of de-burring elements. It is considered that two sets of de-burring elements are normally the maximum required for all types of fibres.

The invention may be such that any of the dividers may be capable of being driven in either of two directions of rotation and any of the carding rollers, dividers, brushes, and Morel rollers may be mounted for adjustment in relation to co-operating elements. Allowance may also be made for adjustability of relative and absolute roller or other element speeds, and the driving means for the train of carding rollers and at least the divider rollers may be such that as sets or in combination, their speed of rotation may be varied.

What I claim is:

1. Apparatus for processing wool fibres comprising a frame, first and second driven carding rollers rotatably connected to said frame, said carding rollers being in stripping engagement and being driven in opposite directions with said second roller having a greater peripheral speed of rotation than the peripheral speed of rotation of the first roller, a divider roller connected to said frame in working engagement with said first carding roller, a Morel roller, first stripping means for transferring fibres from said divider roller to said Morel roller, burr beater means in engagement with said Morel roller for removing the burrs in the fibres thereon, and second stripping means for transferring the treated fibres from said Morel roller onto said second carding roller.

2. Apparatus for processing wool fibres comprising a frame, first and second driven carding rollers rotatably connected to said frame, said carding rollers being in stripping engagement and being driven in opposite directions with said second roller having a greater peripheral speed of rotation than the peripheral speed of rotation of the first roller, a first divider roller rotatably connected to said frame in working engagement with said second carding roller and in stripping engagement with said first carding roller, a second divider roller connected to said frame in working engagement with said first carding roller for removing a portion of the fibres thereon, a Morel roller, first stripping means for transferring fibres from said second divider roller to said Morel roller, burr beater means in engagement with said Morel roller for removing the burrs in the fibres thereon, and second stripping means for transferring the treated fibres from said Morel roller onto said second carding roller at a point on the periphery thereof in advance, relative to the direction of rotation of said second carding roller, of the arc subtended intermediate the point of cooperation of said first divider roller with the second carding roller and the point of stripping cooperation of the second carding roller with the first carding roller.

3. Apparatus for processing wool fibres for removing the burrs therefrom comprising a frame, first, second and third driven carding rollers rotatably connected to said frame, said carding rollers being in stripping engagement and said second carding roller being driven in a direction of rotation opposite from the direction of rotation of said first and third carding rollers, the peripheral speed of said second carding roller being greater than the peripheral speed of said first carding roller and less than the peripheral speed of said third carding roller, any successive pair of said carding rollers consisting of said second carding roller and one of said first and third carding rollers having a first divider roller in working engagement with the carding roller of said pair having the greater rotational speed and in stripping engagement with the carding roller of said pair having the lesser rotational speed, a second divider roller connected to said frame in working engagement with the carding roller having the lesser rotational speed for removing a portion of the fibres thereon, a Morel roller, first stripping means for transferring fibres from said

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second divider roller to said Morel roller, burr beater means in engagement with said Morel roller for removing the burrs in the fibres thereon, and second stripping means for transferring the treated fibres from said Morel roller onto said carding roller having the greater rotational speed at a point on the periphery thereof in advance, relative to the direction of rotation of the carding roller having the greater rotational speed, of the arc subtended intermediate the point of cooperation of the first

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divider roller with the carding roller of greater rotational speed and the point of stripping cooperation between the two carding rollers.

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