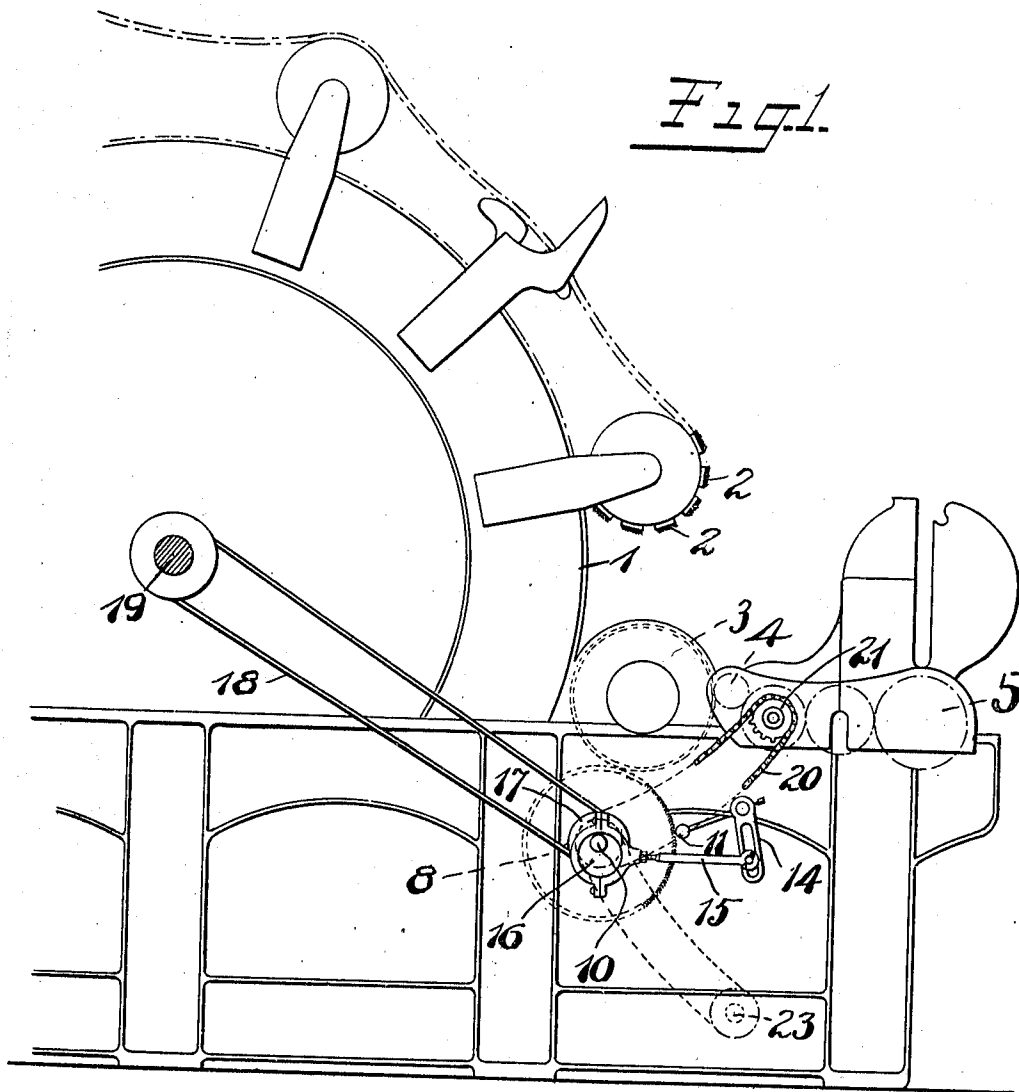


P. HARDMAN.
CARDING MACHINE.
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993,677.

Patented May 30, 1911.
2 SHEETS—SHEET 1.



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PETER HARDMAN, OF WILLIMANTIC, CONNECTICUT.

CARDING-MACHINE.

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To all whom it may concern:

Be it known that I, PETER HARDMAN, a citizen of the United States, residing at Willimantic, Windham county, Connecticut, have invented certain new and useful Improvements in Carding-Machines, of which the following is a full, clear, and exact description.

My invention relates to improvements in carding machines, the main object of said invention being to secure economies and improve the product.

In the accompanying drawings, Figure 1 is a side elevation of my invention as applied to a carding machine, certain parts of the latter being conventionally shown. Fig. 2 is a sectional view, said section being taken in a plane parallel to the plane of Fig. 1 and being diagrammatic in character. Fig. 3 is an end view of certain of the parts shown in Fig. 1, said view being also partly in section.

1 represents the surface of the main cylinder which is provided with the usual card clothing.

2—2 represent the so-called flats.

3 represents the lickerin roll of the ordinary type.

4 represents the feed roll.

5 represents the lap roll.

6—6 represent mote knives.

7 represents stock being fed from the lap roll to the lickerin 3. The lickerin is provided with a saw-tooth surface of the usual type. The adjacent surfaces of the main cylinder 1 and the lickerin roll revolve in the same direction as indicated by the arrows, Fig. 2, the former having the greater speed.

8 represents a stripping cylinder having a surface 9 of card clothing. This cylinder 8 is mounted to revolve on a shaft 10 and is so spaced relatively to the lickerin 3 that it is best adapted for the particular quality of fiber being employed. Ordinarily the card clothing of the stripping cylinder is spaced away from the lickerin roll about 7/1000 of an inch, although this distance may be varied as particular conditions require. The surface of the stripping cylinder 8 is well removed from the surface of the main cylinder 1 and has no cooperation therewith.

11 is what I will term a stripping comb which is associated with the surface of the stripping cylinder 8. This comb 11 is

mounted upon a bracket 12, carried by a rocker shaft 13 so that said comb may be moved toward and from the surface of the stripping cylinder 8.

14 is a rocker arm mounted on the shaft 13 and connected by a link 15 with an eccentric 16, which is mounted to loosely rotate, for example, upon an extension of the shaft 10.

17 is a pulley connected with the eccentric 16.

18 is a drive belt leading from the pulley 17 to a drive pulley 19 on the main shaft or arbor of the main cylinder 1, hence, as the main cylinder 1 is rotated, it will drive the eccentric 16, and, through the connections described, will operate the comb 11 toward and from the surface 9 of the stripping cylinder. The stripping cylinder 8, is driven in any suitable manner, preferably by a sprocket chain 20 leading from a sprocket 21 to a sprocket 22 fixed on the shaft 10. The sprocket 21 is driven from any suitable source of power, but the same is preferably so associated with the feed of the machine that the relative speed of rotation of the cylinder 8 will be maintained. To accomplish this, the sprocket 21 might be mounted upon one of the shafts of the feed rolls, or the gears connected therewith, as shown diagrammatically in Fig. 1.

23 is a waste shaft of the ordinary type arranged to catch and collect waste, said shaft being driven, for example, by a sprocket.

In operation it is important to appreciate that the surface speed of the lickerin roll 3 and the stripping cylinder 8 is very materially different. For example, in ordinary practice, the surface speed of the lickerin roll 3 would be approximately one thousand feet per minute, whereas the surface speed of the stripping cylinder 8 would be, for example, fifteen inches per minute, although these speeds may be varied within reasonable ranges to increase or decrease the percentage of waste being made and according to the quality of work desired and stock employed. It is also important to appreciate that the adjacent surfaces of the lickerin roll and the stripping cylinder move in the same direction, although at different speeds, as above described.

When the machine is in operation, the stock 7 is fed to the lickerin 3 where it is

caught by the surface and carried rapidly forward toward the cylinder 1 in the direction of the arrows. On its forward course of travel the stock passes the mote knives 6 which perform their usual function, after which it passes the adjacent surface 9 of the stripping cylinder 8, at which point a combing action takes place, the short fibers and other foreign substances being thrown on the stripping cylinder by centrifugal action, while the long fibers are held by the teeth of the lickerin and carried forward to the main carding cylinder 1. As the short fibers and foreign substances are accumulated upon the surface of the stripping cylinder 8, the surface of said cylinder moves forwardly, that is, in the direction of the arrows, Fig. 2, until said short fibers and foreign substances encounter the comb 11, by which the same are removed from the surface and discarded.

The surface speed of the cylinder 8 and the oscillating movement of the comb 11 are relatively such that although the comb moves to and fro, it will not be away from the surface 9 of the stripping cylinder for a sufficient length of time at any period to permit said waste or impurities to escape the action of the comb. I have found in practice that by removing, so far as possible, the short fibers and other foreign substances from the stock upon the lickerin that the main cylinder and flats are not only kept in a cleaner and better condition, but that a superior quality of product is obtained than obtainable by any machines as heretofore constructed, known by me. It will, of course, be understood that the teeth of the card clothing of the stripping cylinder are inclined against those of the lickerin, as shown, so as to secure the desired combing effect.

As illustrative of the efficiency of my improved carding machine, I might mention that when said machine is employed for the purpose of reclaiming waste, the amount that said machine will reclaim in a given period of time is over twice that that can be reclaimed by a carding machine of the ordinary revolving flat type, equipped with the usual lickerin screen. Not only is my improved machine superior to the ordinary machine referred to in the reclaiming of cotton waste, but the actual product derived by

employing my machine for this purpose is shown to be very much superior.

What I claim is:

1. In a carding machine, a main carding cylinder, a lickerin roll adjacent thereto, the adjacent surfaces of said cylinder and roll moving in the same direction, the former at a greater speed, a stripping cylinder having card clothing thereon, the surface of said stripping cylinder being arranged closely adjacent to said lickerin roll, the adjacent surfaces of said roll and said stripping cylinder moving in the same direction, the latter at a very much slower speed, and means for removing impurities and short fibers from the card surface of said stripping cylinder.

2. In a carding machine, a main carding cylinder, a lickerin roll adjacent thereto, the adjacent surfaces of said cylinder and roll moving in the same direction, the former at a greater speed, a stripping cylinder having card clothing thereon, the surface of said stripping cylinder being arranged closely adjacent to said lickerin roll, the adjacent surfaces of said roll and said stripping cylinder moving in the same direction, the latter at a very much slower speed, and means for removing impurities and short fibers from the card surface of said stripping cylinder, said cleaning means comprising a comb.

3. In a carding machine, a main carding cylinder, a lickerin roll adjacent thereto, the adjacent surfaces of said cylinder and roll moving in the same direction, the former at a greater speed, a stripping cylinder having card clothing thereon, the surface of said stripping cylinder being arranged closely adjacent to said lickerin roll, the adjacent surfaces of said roll and said stripping cylinder moving in the same direction, the latter at a very much slower speed, means for removing impurities and short fibers from the card surface of said stripping cylinder, said means comprising a comb, and a movable support for said comb whereby said comb may be moved to and fro in the act of removing said impurities from the card surface of said stripping cylinder.

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Witnesses:

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