

A. W. GREER, SR. & J. A. GREER.
 CARDING MACHINE.
 APPLICATION FILED AUG. 20, 1913.

1,146,065.

Patented July 13, 1915.
 2 SHEETS—SHEET 1.

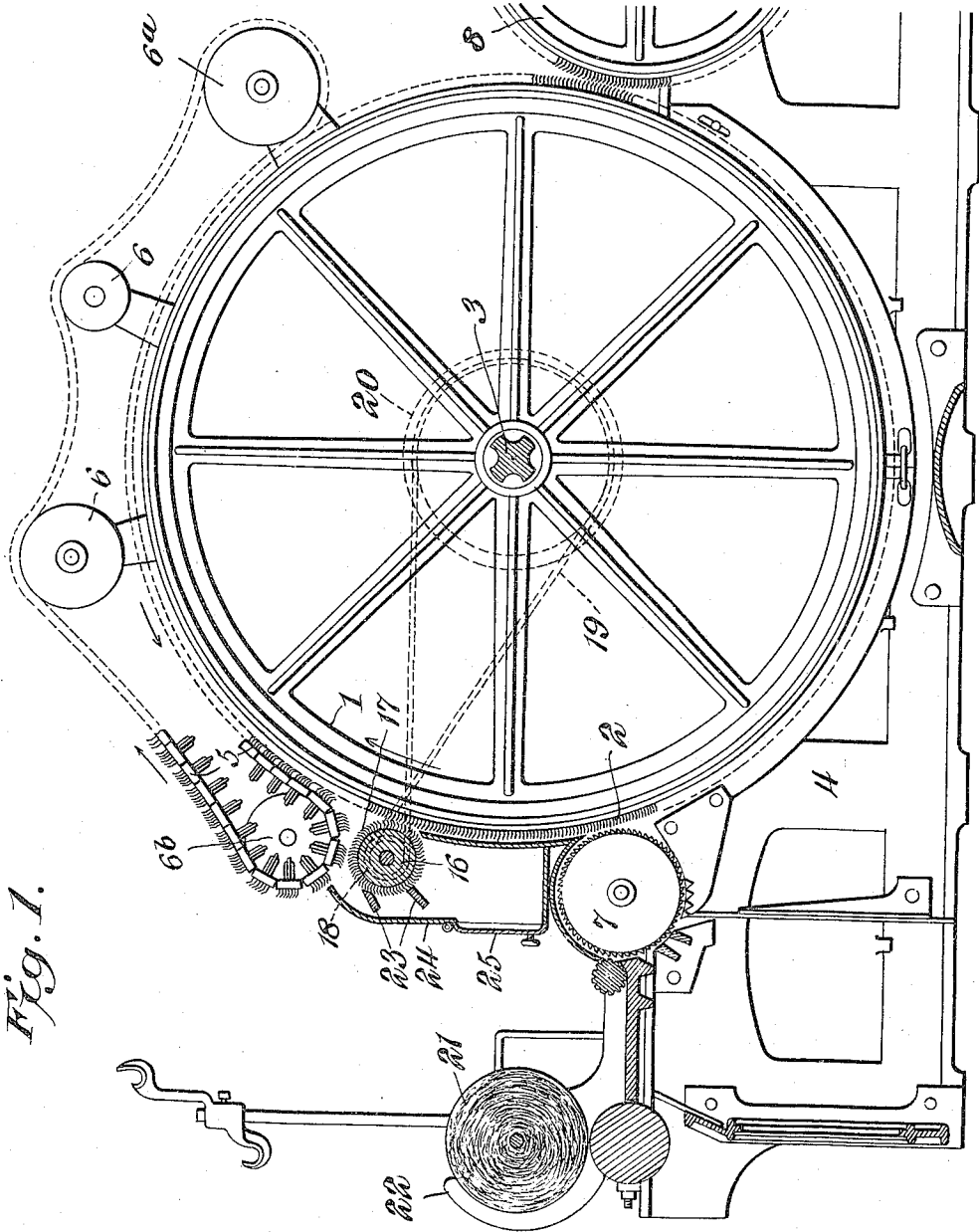


Fig. 1.

WITNESSES
Howard D. Cor.
F. J. Chapman.

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and J. A. Greer, INVENTORS,
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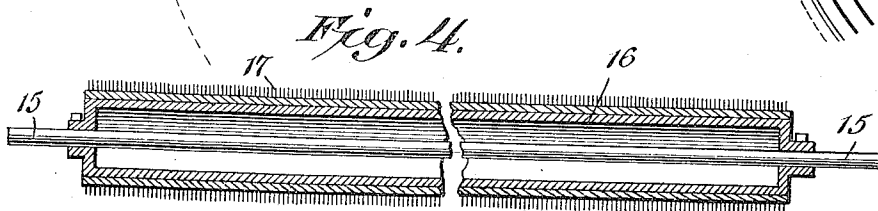
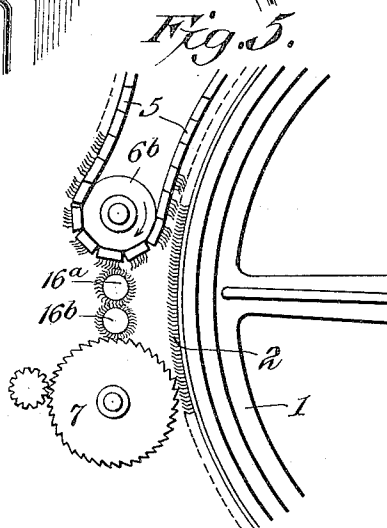
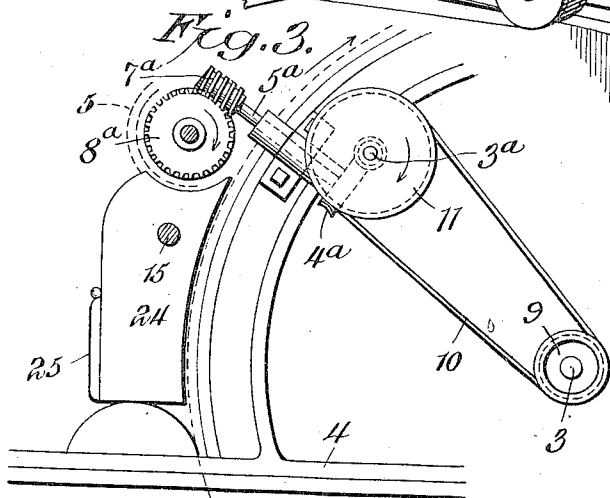
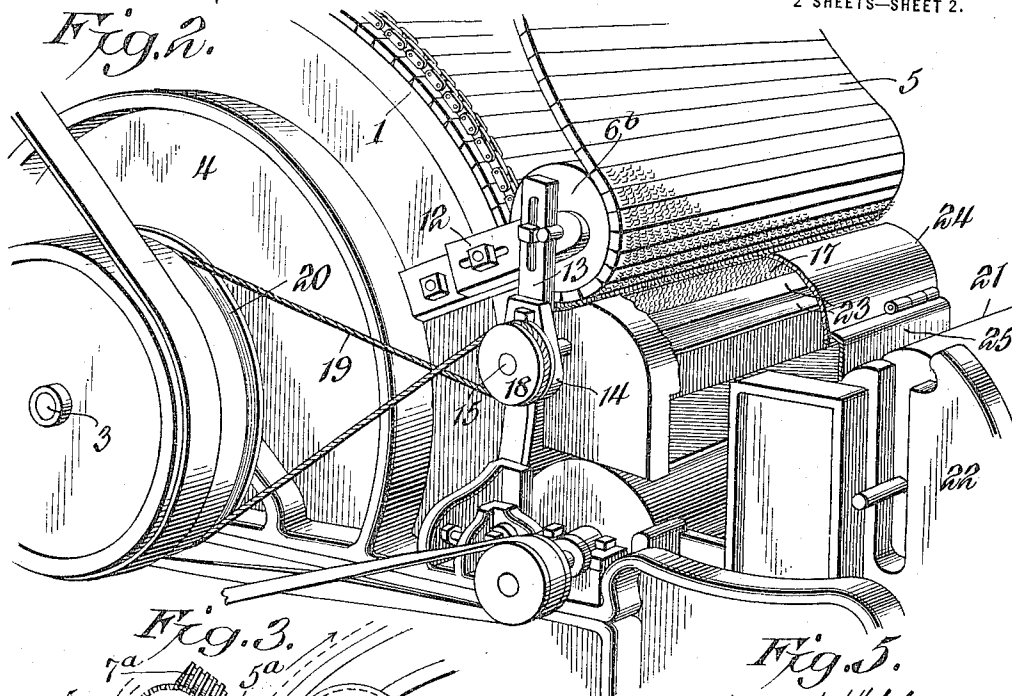
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2 SHEETS—SHEET 2.



WITNESSES
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Fig. 6.



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UNITED STATES PATENT OFFICE.

ANDREW W. GREER, SR., AND JAMES A. GREER, OF GRIFFIN, GEORGIA; SAID ANDREW W. GREER, SR., ASSIGNOR TO SAID JAMES A. GREER.

CARDING-MACHINE.

1,146,065.

Specification of Letters Patent.

Patented July 13, 1915.

Application filed August 20, 1913. Serial No. 785,753.

To all whom it may concern:

Be it known that we, ANDREW W. GREER, Sr., and JAMES A. GREER, citizens of the United States, residing at Griffin, in the county of Spalding and State of Georgia, have invented certain new and useful Improvements in Carding-Machines, of which the following is a specification.

This invention has reference to improvements in carding machines, and its object is to effect a saving in cotton, as well as improve the quality thereof.

It is the customary practice in carding machines to run the carding cylinder and the flats in the same direction where they engage, wherefore the flats become progressively more contaminated with refuse taken from the cotton as the cotton approaches the doffer.

In accordance with the present invention the flats are caused to travel with the run adjacent to the cylinder moving in a direction the reverse of that of the card cylinder, so that the cotton is acted upon during its progress through the carding machine by successively cleaner portions of the flats and consequently when finally delivered to the doffer the cotton is markedly better and freer from refuse than has heretofore been the case.

Moreover, the invention includes an additional roller covered with carding cloth and located between the licker-in and the corresponding end of the web of flats, the arrangement of this roller being such as to be active to the flats and to the carding cylinder. The added roller is for the purpose of removing the cotton strips from the flats as they leave the carding cylinder close to the licker-in and after these cotton strips are cleaned the cotton is replaced upon the card cylinder. The result is that there is a saving of from seven to ten per cent., more or less, of the cotton and practice has shown that the resultant carding is superior to that obtained in a carding machine without the presence of the additional roller. The refuse removed from the cotton in a day's run is almost free from cotton instead of this refuse containing a material portion of the cotton treated by the carding machine.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming a part

of this specification, with the further understanding that while the drawings show a practical form of the invention, the latter is not confined to any strict conformity with the showing of the drawings, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention.

In the drawings:—Figure 1 is a front to rear vertical section of a portion of a carding machine embodying the present invention. Fig. 2 is a perspective view of a portion of a carding machine embodying the present invention. Fig. 3 is an elevation of a portion of the opposite side of the machine from that shown in Fig. 2, and showing driving mechanism for the flats. Fig. 4 is a longitudinal diametric section of the additional roller. Fig. 5 is a fragmentary view of a carding machine showing a somewhat modified construction. Fig. 6 is an elevation of a detail of Fig. 5.

While the present invention is not limited to any special type of carding machine, it can be and has been used in connection with a carding machine, such as illustrated in Patent No. 623,094, granted to C. Mills and L. W. Penney, April 11, 1899, and a reference to said patent will be sufficient to disclose parts of the carding machine or engine which have not been illustrated in the annexed drawings because deemed unnecessary for the understanding of the present invention.

The carding machine or engine includes a carding cylinder 1 covered with the usual wire or carding clothing 2, and this cylinder is mounted upon a shaft 3 supported in suitable bearings in a frame 4 and driven in any appropriate manner. Crowning the cylinder 1 is an endless chain of wire clothed flats 5 carried by rollers 6, and this web of flats extends from a point near the licker-in 7 to a point near the doffer 8 all similar to the arrangement shown in the aforesaid Letters Patent. There is, however, a material difference between the arrangement shown in the said Letters Patent and a carding machine or engine constructed in accordance with the present invention, and one of these points of difference relates to the course of travel of the flats. It is customary with a machine such as shown in the said Letters Patent to drive the flats by power imparted to the end

roller of the series of rollers supporting the flats and indicated in Fig. 1 at 6^a, the direction of travel of the run of the belt or web of flats next to the carding cylinder being in the same direction as the carding cylinder, and in the structure as viewed in Fig. 1 where the direction of travel of the cylinder 1 is clockwise the direction of travel of the run of the flats next to the cylinder would also be clockwise, but in accordance with the present invention motion is imparted to the flats by power applied to the other end roller 6^b of the series, so that the active run of the flats is counterclockwise as viewed in Fig. 1, or the reverse of the direction of travel of the peripheral portion of the cylinder 1. It is customary to run the flats by a belt driven by a pulley 9 mounted on the shaft 3, and in a machine constructed in accordance with the present invention this pulley drives a belt 10 leading to another pulley 11 on a stub shaft 3^a driving a worm gear 4^a on another shaft 5^a carrying a worm 7^a in engagement with a worm gear 8^a fast to the shaft or journal of the roller 6^b and so arranged that the surface of the carding cylinder and the adjacent run of the flats move in opposite directions and, furthermore, the parts are so related that the movements are at such relative speeds as practice demands.

The roller 6^b has journaled bearings in brackets 12 carried by a suitable portion of the frame, and these brackets have other brackets 13 secured thereto and so located that they carry journal bearings 14 for the journal ends 15 of a roller 16, which latter is covered with card clothing 17 and is situated between that portion of the flats passing about the roller 6^b and the lick-in 7, the card clothing of the roller 16 being so related to the card clothing of the cylinder 1 and flats 5 as to nearly touch that of the flats on one side and the cylinder on the other.

The roller 16 is provided with a pulley 18 which may be mounted on one of the journals 15, and this pulley is driven by a belt 19 coming from an appropriate pulley 20 on the shaft 3, the parts being proportioned to impart to the roller 16 an appropriate speed of rotation which may be relatively high with respect to the speed of rotation of the cylinder 1 and the linear speed of the web of flats 5. The roller 16 is so connected up to the shaft 3 that its direction of movement where adjacent to the cylinder 1 and where adjacent to the flats 5 is the same as the corresponding surfaces of the cylinder and flats, although the roller itself rotates upon its axis in a counterclockwise direction in the view of the structure as seen in Fig. 1.

The lap indicated at 21 is fed from the lap stand 22 to the lick-in 7 in the usual manner and to the cylinder 1 where it is acted upon by the flats 5 first by the loaded end of the web of flats and later by the cleaner

portion of the web of flats until as the sliver approaches the doffer 8 it is subjected to the action of the cleanest portion of the flats, wherefore when the sliver approaches the doffer it is in far better condition than is the case where the flats and the cylinder 1 have their adjacent portion moving in the same direction. 70

The loaded top flats leave the cylinder 1 close to the lick-in and are there acted upon by the roller 16 which removes the strippings from the flats and replaces them upon the cylinder 1, which at this point has a greater peripheral speed than the roller 16, thus keeping the latter clean. Between the point where the roller 16 takes off the strippings from the flats and the point where it replaces these strippings upon the cylinder 1 a suitable number of mote knives 23 are located to knock out the motes, dirt and other trash, which trash falls into a mote box 24 inclosing the roller 16. 75 80 85

The mote box has a door 25 for the convenient removal of collected trash at suitable intervals. By this means almost the entire amount of cotton fiber heretofore allowed to waste is replaced upon the carding cylinder to be ultimately removed therefrom by the doffer 8, and practice has demonstrated that the resultant sliver is particularly clean, while the output of the machine is increased from seven to ten per cent., more or less, due to the saving of the strippings which are taken directly from the flats and at once replaced upon the carding cylinder, while in the interim between the removal of the strippings from the flats and the replacing of them upon the carding cylinder all motes, dirt and trash found in the strippings are removed. The operation is wholly automatic and requires but the presence of one small additional roller which places no appreciable load upon the machine and requires no attention. The cost therefore of recovering the strippings from the flats is wholly negligible, and this recovery represents a material saving amounting to ten to thirteen pounds of cotton, more or less, per card, per day of ten hours, while the resultant carding is noticeably improved. 90 95 100 105 110 115

In the arrangement shown in Fig. 1 the cotton strippings are taken from the flats and replaced directly upon the carding cylinder. Instead of such an arrangement the arrangement shown in Fig. 5 may be employed where there is indicated a roller 16^a and another roller 16^b between the delivery end of the web of flats and the lick-in 7. These two rollers 16^a and 16^b are connected as by gearing 18^a to rotate in opposite directions, the roller 16^a rotating with respect to the flats in the same direction as the roller 16, while the roller 16^b rotates in the opposite direction. Neither roller 16^a nor 16^b delivers upon the cylinder 1 in the structure shown 120 125 130

in Fig. 4, but the roller 16^a strips the flats 5 and delivers upon the roller 16^b which in turn delivers upon the licker-in 7 and the strippings are by the licker-in delivered to the cylinder 1, the motes and dirt and trash being removed from the strippings before they reach the cylinder 1.

In either structure shown in the drawings the flats travel in the opposite direction to the travel of the cylinder 1 so as to deliver close to the receiving portion of the cylinder, while the roller 16, or the pair of rollers 16^a, 16^b strip the flats of adhering cotton and restore this cotton to the cylinder 1, the trash accompanying the strippings being removed before such strippings again reach the cylinder 1.

In the actual operation of the machine the waste is made up almost exclusively of motes and dirt and trash with hardly any noticeable quantity of cotton fiber, while the waste of a carding machine lacking the features of the present invention represents a very material amount of the cotton fiber which has heretofore been saved only at a material cost.

What is claimed is:—

1. In a carding machine or engine, a rotatable carding cylinder, a web of flats in superposed relation to the cylinder, means for driving the active run of the flats in a direction opposite to the movement of the corresponding portion of the cylinder, and a stripping roller for removing strippings from the delivery end of the web of flats and related to the cylinder to return the strippings thereto at the receiving end of the cylinder, said stripping roller being provided with means for removing the trash from the strippings on the stripping roller before the strippings are returned to the cylinder.

2. In a carding machine or engine, a rotatable carding cylinder, a web of flats in superposed relation to the cylinder, means for driving the active run of the flats in a direction opposite to the movement of the corresponding portion of the cylinder, and a stripping roller for removing strippings from the delivery end of the web of flats and related to the cylinder to return the strippings thereto at the receiving end of the cylinder, said stripping roller being provided with means for removing the trash from the strippings on the stripping roller before the strippings are returned to the cylinder, the trash removing means comprising mote knives and a mote box inclosing the mote knives and provided with a receptacle for trash and also provided with a door for access to the interior of the box.

3. In a carding machine or engine, the combination with a rotatable carding cylinder, a licker-in, a web of flats in superposed relation to the cylinder, and means for driving the active run of the flats in a direction opposite to the movement of the corresponding portion of the cylinder, of stripping means at and for removing strippings from the delivery end of the web of flats and constructed and arranged to cause the strippings to be replaced upon the cylinder to be again fed to the flats along with fresh or untreated material, said stripping means having means associated therewith for removing trash from the strippings before the latter again reach the cylinder.

In testimony whereof we affix our signatures in presence of two witnesses.

ANDREW W. GREER, Sr.,
JAMES A. GREER.

Witnesses:

W. F. LANIER,
GEO. C. IMES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."