(No Model.) 2 Sheets—Sheet 1.

H. L. MOULTON.

CARDING MACHINE.

No. 347,728. Patented Aug. 17, 1886.

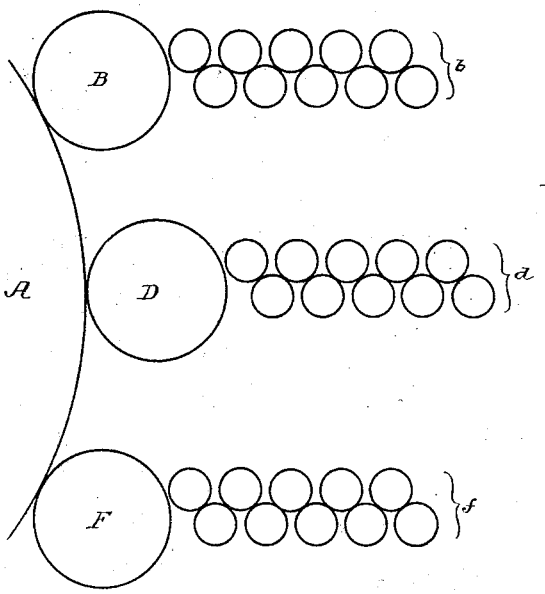

FIG. 1.

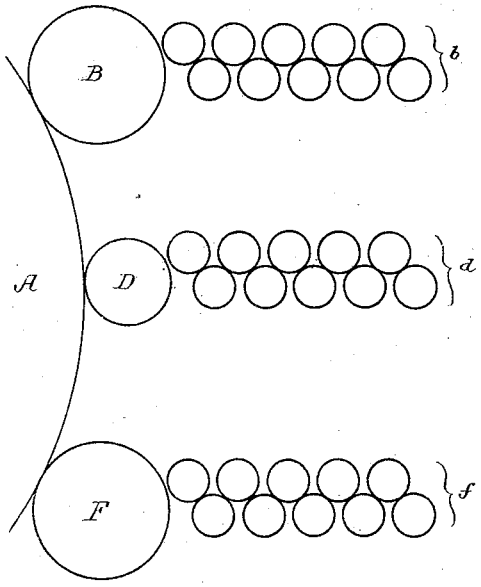

FIG. 2.

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Inventor:
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(No Model.) 2 Sheets—Sheet 2.

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FIG. 3.

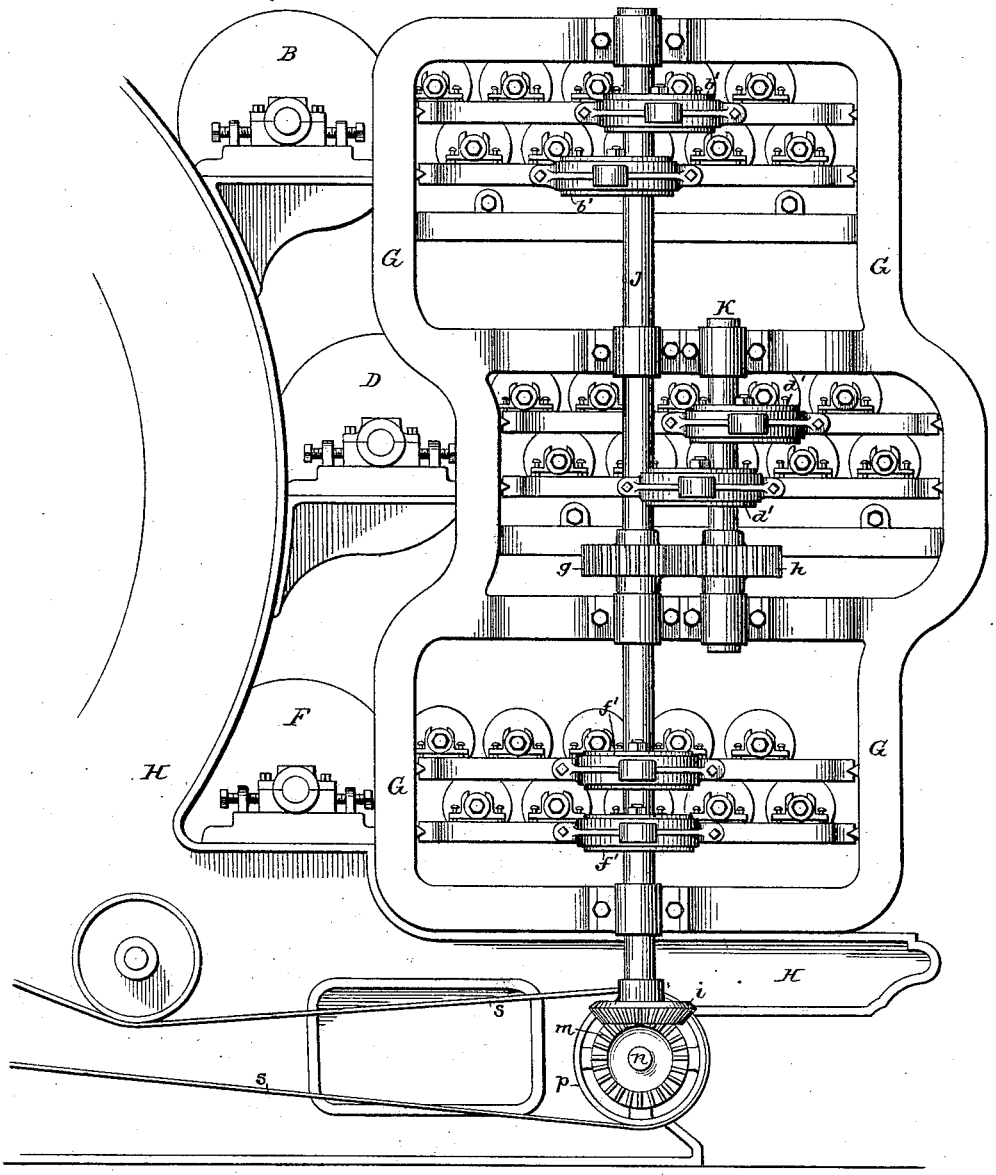
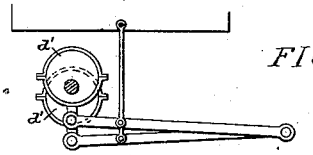


FIG. 4.



Witnesses:
John E. Parker
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Inventor:
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by his Attorneys
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UNITED STATES PATENT OFFICE.

HAMILTON L. MOULTON, OF PHILADELPHIA, PENNSYLVANIA.

CARDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 347,728, dated August 17, 1886.

Application filed May 3, 1886. Serial No. 200,944. (No model.)

To all whom it may concern:

Be it known that I, HAMILTON L. MOULTON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Carding-Machines, of which the following is a specification.

My invention relates to that class of carding-machines in which more than two doffer-cylinders and more than two sets of rub-rolls are used, the intermediate set or sets of rub-rolls being offset in respect to the upper and lower sets; and the object of my invention is to provide means for the proper reciprocation of rub-rolls so disposed.

In the accompanying drawings, Figure 1 is a diagram showing the arrangement of doffing-cylinders and rub-rolls in connection with which my invention is used. Fig. 2 is a diagram showing the arrangement of doffing-cylinders and rub-rolls now generally employed. Fig. 3 is a side view of sufficient of the delivery end of the carding-machine to illustrate one form of mechanism which I employ for reciprocating the rub-rolls as arranged in Fig. 1, and Fig. 4 is a view showing a modified form of part of the mechanism.

In Figs. 1 and 2, A represents part of the main cylinder of a carding-machine, and B, D, and F respectively the upper, intermediate, and lower doffing-cylinders, *b*, *d*, and *f* respectively representing the upper, intermediate, and lower series of rub-rolls.

It has been the general practice hitherto in this class of machines to arrange the three sets of rub-rolls vertically in line with each other, as shown in Fig. 2, the eccentrics for driving the different sets being carried by one vertical shaft, and the eccentric-straps being connected directly to the rub-roll frames; but this plan is objectionable, because it necessitates the use of an intermediate doffing-cylinder considerably less in diameter than the upper and lower doffing-cylinders.

It is well known that the toothed card-clothing with which the doffing-cylinders are provided is effective in proportion to the radius of the arc presented by the periphery of the cylinder, the rule being that the flatter the arc the better will be the duty performed by the card-teeth, as the points of the latter are not spread apart to the same extent as when the card-clothing is bent sharply round a cylinder of small diameter; hence there is less tendency for the fiber to become packed in around the roots of the teeth, and less liability of the doffer to become clogged. It is much preferable, therefore, to employ doffing-cylinders all of which are of the same or substantially the same diameter, and to offset the intermediate series of rub-rolls to the same or about the same extent that the center of the intermediaie doffing-cylinder is offset beyond a line drawn through the centers of the upper and lower doffing-cylinders, as shown in Fig. 1, for by this means the uniform action of each doffer and the production of uniform work are insured. This construction and arrangement of doffing-cylinders and rub-rolls, however, owing to the lateral offsetting of the intermediate set of rub-rolls, precludes the use of direct connections between all of the rub-roll frames and eccentrics on a single vertical driving-shaft; hence I employ reciprocating mechanism, the preferable form of which is shown in Fig. 3, in which G represents a frame mounted upon and secured to the fixed frame, and having bearings for the vertical shaft J, which has the usual eccentrics, *b'* and *f'*, for reciprocating the frames carrying the upper and lower sets of rub-rolls, *b* and *f*. The eccentrics *d'*, which effect the reciprocation of the frames carrying the intermediate set of rub-rolls, *d*, are carried by a short counter-shaft, K, also adapted to bearings on the frame G, said shaft being driven from the shaft J by means of spur-wheels *g* and *h*. The object of using this counter-shaft is to effect the location of the eccentrics as nearly as possible in a central position laterally in respect to the frames carrying the intermediate set of rub-rolls, so that the application of power to reciprocate said frames will not throw them out of balance or cause uneven wear of the eccentrics, frames, or bearings, it being understood that the strap of each of the eccentrics *b'*, *d'*, and *f'* has a rod connected directly to a pin located midway, or thereabout, of the width of the rub-roll frame operated by said eccentric.

Other means within the scope of my invention for reciprocating the intermediate set of rub-rolls will, however, readily suggest themselves to those familiar with the class of machinery to which my invention relates. For

instance, the shaft J may have intermediate eccentrics, the straps of which are connected to levers pivoted to the frame G, and connected to the frames of the intermediate set of rub-rolls, such a modification being shown in Fig. 4.

The shaft J may be driven in any desirable manner, the shaft in the present instance having a bevel-wheel, *i*, which gears with a pinion, *m*, on a shaft, *n*, a pulley, *p*, on which receives a belt, *s*, from a pulley on any available rotating shaft of the machine.

I claim as my invention—

1. The combination of the cylinder of a carding-machine, upper, lower, and intermediate doffing-cylinders of substantially uniform diameter, upper, lower, and intermediate series of rub-rolls, the intermediate series being offset in respect to the upper and lower series, frames for said rub-rolls, eccentrics for reciprocating the rub-roll frames, devices connecting each eccentric-strap to its rub-roll frame at a central point on the latter, and mechanism for rotating the eccentrics, all substantially as specified.

2. The combination of the main cylinder, the upper, lower, and intermediate doffing-cylinders of substantially uniform diameter, the upper, lower, and intermediate series of rub-rolls and their frames, a shaft having eccentrics for reciprocating the upper and lower series of rub-rolls, a counter-shaft having eccentrics for reciprocating the intermediate series of rub-rolls, and mechanism whereby the shafts are rotated in unison, all substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HAMILTON L. MOULTON.

Witnesses:

WILLIAM D. CONNER,

HARRY SMITH.