(No Model.)

2 Sheets—Sheet 1.

C. E. WHITWORTH.

CARDING MACHINE.

No. 265,901. Patented Oct. 10, 1882.

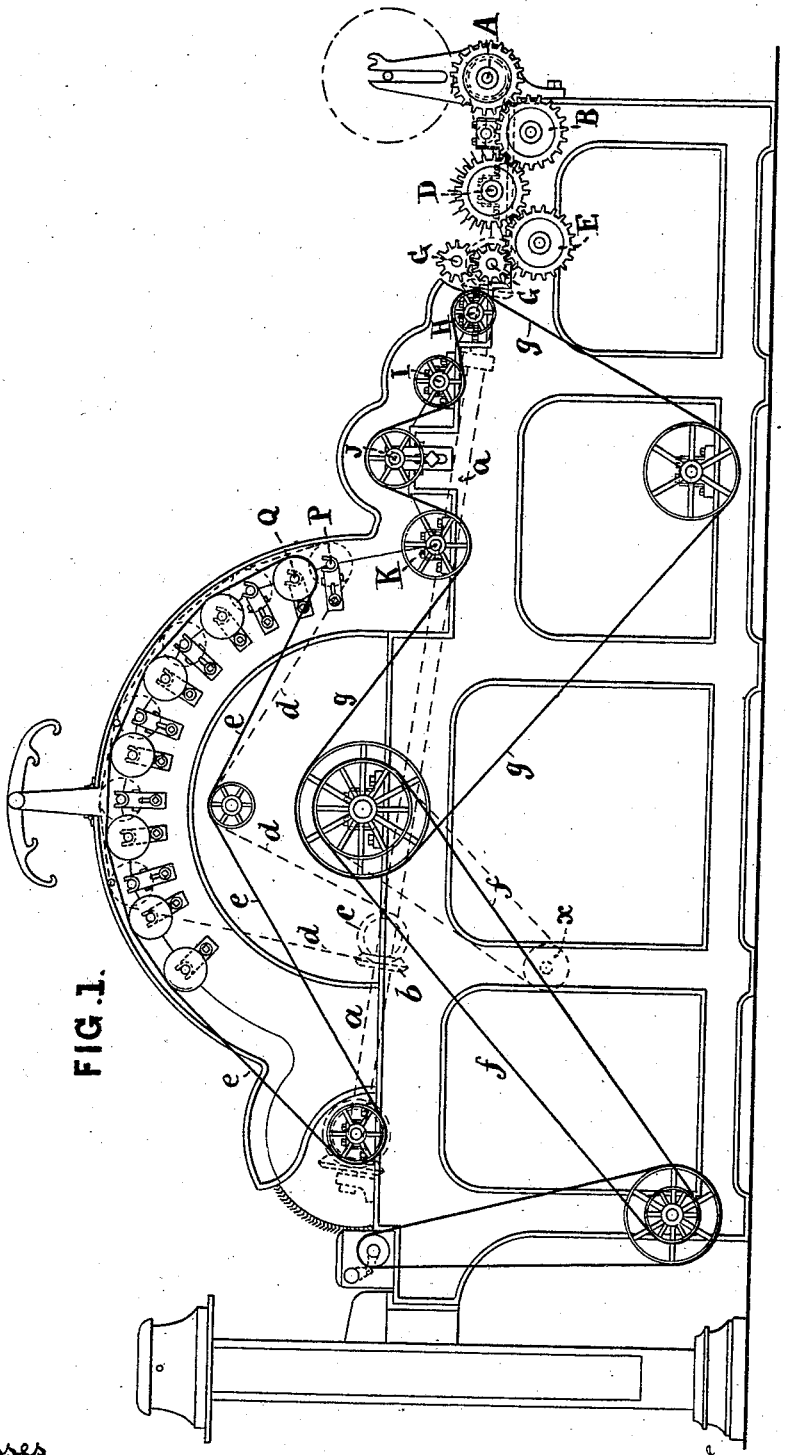

FIG. 1.

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(No Model.)

2 Sheets—Sheet 2.

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FIG. 4.

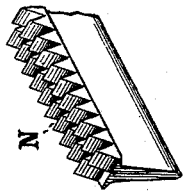

FIG. 3.

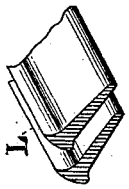

FIG. 2.

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UNITED STATES PATENT OFFICE.

CHARLES E. WHITWORTH, OF BOSTON, MASSACHUSETTS. ASSIGNOR TO J. CONRAD GERLACH, OF SAME PLACE.

CARDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 265,901, dated October 10, 1882.

Application filed February 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. WHITWORTH, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Carding-Machines, of which the following is a specification.

My invention relates to an improvement in carding-machines, whereby such machines are rendered equally applicable for carding cotton, wool, or other fiber; and the invention consists in certain novel devices, hereinafter fully described, by means of which the machine is rendered more effective for the rapid and thorough carding and cleaning of the fiber operated upon than any now known to me.

Referring to the accompanying drawings, Figure 1 is a side elevation of a machine embodying my improvements. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is an enlarged, view in detail, of a portion of the bars under the discharging-roller. Fig. 4 is an enlarged view of a portion of the saw-teeth bars under the carrier-roller.

The main features of the machine are similar to those of carding-machines in common use, and require no particular description, R being the main cylinder, and P Q the workers and strippers, respectively, in ordinary use.

A is the lap-roller at the rear of the machine. In front of the lap-roller is a small metal roller, C, having a smooth surface, and is for the purpose of holding the fiber against the needle-roller D. The needle-roller D consists of a cylinder provided with long, straight, and stiff wires, like needles, which serve to loosen the fiber and keep the same straighter and more even than if said roller were not used, at the same time tending to facilitate the removal of the seeds, moths, or other refuse matter. Underneath the needle-roller D is arranged a concave brush, F, for the purpose of clearing the needles of dirt, &c., adhering to the same. The roller C is driven by a cord or band from the shaft of the lap-roller, as shown in dotted lines in Fig. 1.

G G are feed-rollers arranged in front of the needle-roller D, as shown, and in front of said feed-rolls is the breaker-roller H, the greater speed of revolution of which serves to shake out the heavy dirt and seed from the fiber, which dirt and seed fall into the space below.

In front of the roller H, and of larger diameter than the same, is a discharging-roller, I, and in front of roller I, and arranged somewhat higher than the same, is the carrier-roller J, in front of which, and on a lower level, is the licker-in K.

Under the roller I is a series of angularly-arranged bars, L, constructed as shown in Fig. 3, for the purpose of removing from roller I the seeds, neps, or other extraneous substance adhering to the same.

M is a curved sheet-metal plate arranged under a portion of roller I for preventing the admission of air to the roller. Under the licker-in K is a similar plate, O, for the same purpose as M.

Under the carrier-roller J is a series of saw-teeth bars or guides, N, (shown enlarged in Fig. 4,) extending across the machine, and arranged in double rows, as shown, and placed opposite the spaces formed by the arrangement of the wires or teeth on carrier-roller J, for the purpose of cleaning the wires of said roller of any dirt, leaves, &c., which may adhere to the same, and thus prevent such dirt, &c., from passing into the fiber again. Similar teeth may be placed in rear of roller K, instead of the ordinary grate, O′, as shown.

Motion is imparted to the rolls H I J and licker-in K by means of a belt or band, *g*, passing over a pulley on the shaft of the main cylinder R, as shown in Fig. 1.

At or near the front of the series of workers and strippers is a discharging-roller, S, below which is arranged a knife, T, placed at an angle, as shown, for the purpose of discharging all remaining seed, neps, or other refuse matter, which then falls into a box, U, below the knife T.

V is the doffer. W is the curved sheet-metal plate, extending from a point between the doffer and main cylinder to the casing of a stripping-roller, X, for preventing the air caused by the rotation of the main cylinder from disturbing the fiber on the doffer.

Under the main cylinder R is arranged a stripping-roller, X, for the purpose of taking off all the loose fiber and refuse matter from the main cylinder. Motion is imparted to the stripper X by means of a band on a pulley attached to the main shaft on the opposite side of the machine, as indicated by dotted lines in

Fig. 1. The shaft *a*, (shown in dotted lines in Fig. 1.) being on the opposite side of the machine, is driven from the doffer-shaft by means of bevel-gears, and on the shaft *a* is fixed a bevel-gear, *b*, which engages with a bevel-gear, *c*, attached to a shaft bearing a pulley, which carries the belt or chain *d*, that imparts motion to the workers P. The shaft *a* extends toward the rear of the machine, and is connected through bevel-gears with the lower feed-roller shaft, thus imparting motion to the feed-rollers and to the series of rollers at the rear, which are actuated by gears secured upon their outer ends and meshing together, and with a gear upon said lower feed-roll shaft. By means of the gear *b* on the shaft *a* engaging with the gear *c* a slow motion is imparted to the workers P through chain *d*. This arrangement is simple and dispenses with more complicated gearing, and tends to avoid the breaking of the fiber by too much straining, as is liable to occur in other cards. The fiber is taken off and laid on the main cylinder straight and evenly and without crossing the fibers. The strippers Q are actuated by means of a belt or band, *e*, passing over the same from a pulley on the doffer-shaft.

The operation is as follows: The fiber on entering the machine passes from the lap-roller A under the roller C, which serves to hold the fiber against the needle-roller D. The fiber is then carried over the needle-roller D, which serves to open and loosen the fiber, so as to facilitate the removal of seeds, &c. From the needle-roller D the fiber passes between the feed-rolls G G, and thence to and over the breaker-roll H, which acts still further to remove any remaining refuse substance. The fiber then passes to and under the discharging-roller I, and thence to and over the carrier-roll J, and then to and under the licker-in K to the main cylinder R, by which it is carried in the usual manner to and through the series of workers and strippers.

What I claim as my invention is—

1. The needle-roller D, constructed as described and shown, in combination with the brush F, smooth roller C, and lap-roller A, as specified.

2. The combination of the smooth roller C, needle-roller D, brush F, and feed-rollers G G, as shown and described.

3. The combination of the smooth roller C, needle-roller D, brush F, and feed-rollers G G with the breaker-roll H, the discharging-roller I, the carrier-roll J, licker-in K, and cylinder R, as shown and described.

4. The combination of roller C, needle-roller D, brush F, feed-rollers G G, breaker-roll H, discharging-roller I, carrier-roll J, licker-in K, the clearing-bars L, and the saw-teeth bars N, substantially as described.

5. The combination of the shaft *a*, the gear-wheels *b* and *c*, chain D, and workers P, as and for the purpose set forth.

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

CHARLES E. WHITWORTH.

Witnesses:

J. C. GERLACH,

JOS. H. ADAMS.