2 Sheets—Sheet 1

R. F. BARKER.

CARDING-ENGINE.

No. 191,395. Patented May 29, 1877.

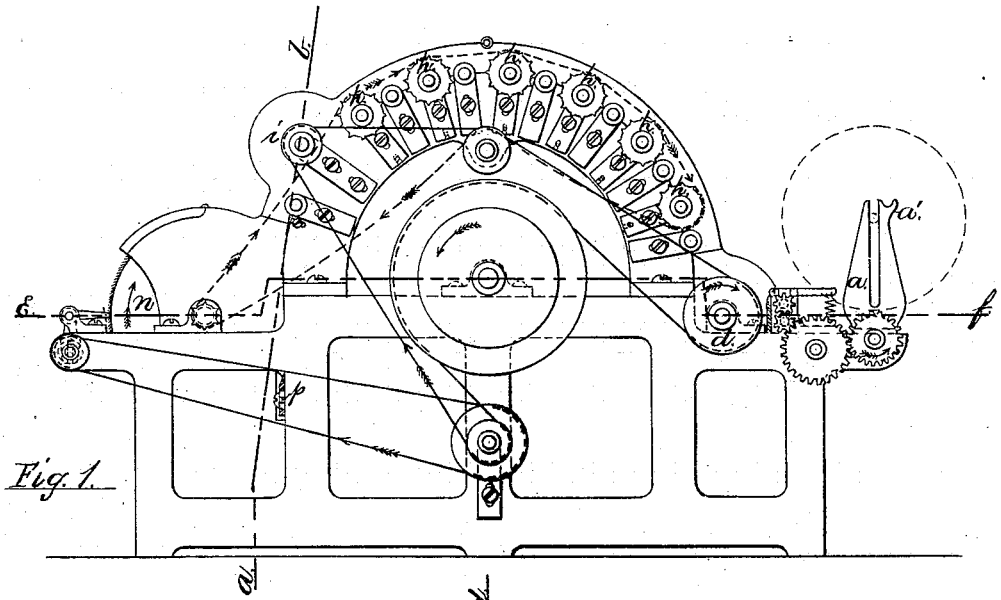

Fig. 1.

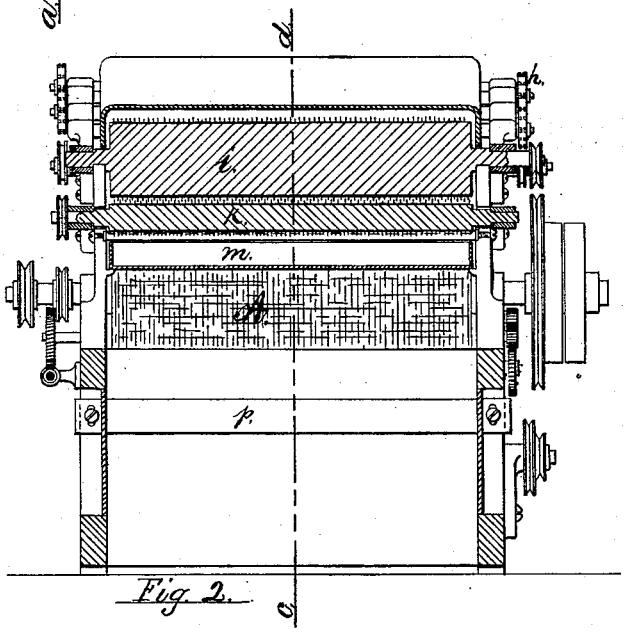

Fig. 2.

WITNESSES.

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2 Sheets—Sheet 2.

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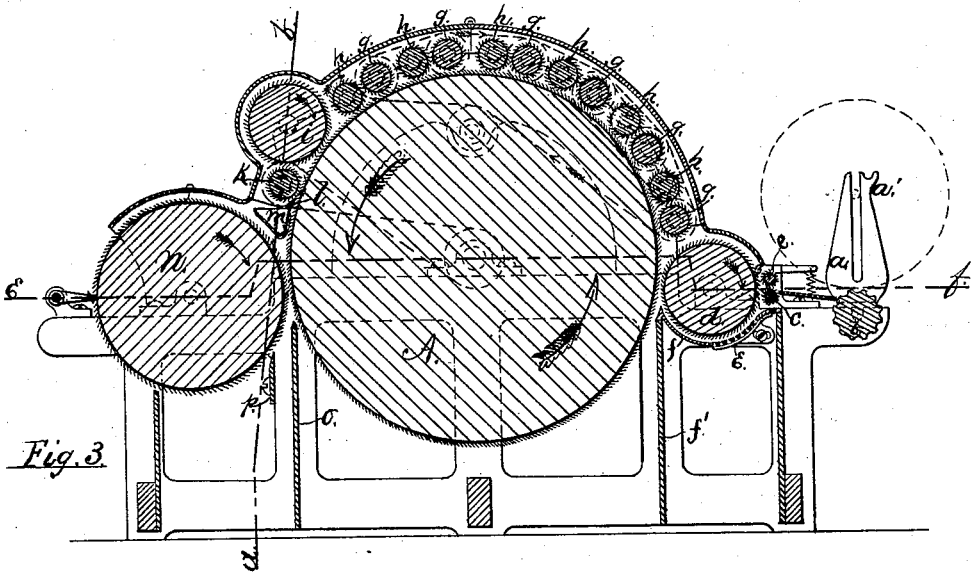

Fig. 3.

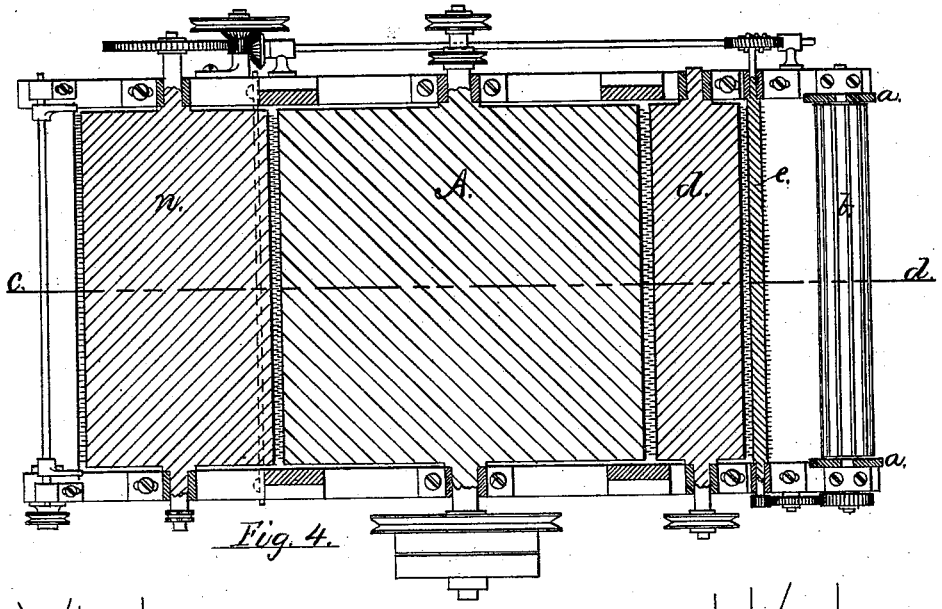

Fig. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

ROBERT F. BARKER, OF PROVIDENCE, R. I., ASSIGNOR OF FIVE-EIGHTHS OF HIS RIGHT TO GAYTON P. LORING AND THEODORE VOELCKER, OF BOSTON, MASS., AND HENRY A. STEARNS, OF PAWTUCKET, R. I.

IMPROVEMENT IN CARDING-ENGINES.

Specification forming part of Letters Patent No. **191,395**, dated May 29, 1877; application filed December 18, 1876.

To all whom it may concern:

Be it known that I, ROBERT F. BARKER, of the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Carding-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation of my improved carding-engine, showing the connections and the means whereby the relative speeds, at which the different parts are run, are produced. Fig. 2 is a vertical section through the line *a b* in Fig. 1. Fig. 3 is a vertical longitudinal section through the line *c d*, and shows the relative positions of all the parts, the needles or wire hooks being all shown arranged in their proper direction to perform their proper functions. Fig. 4 is a horizontal section through the center of the main cylinder, the doffer, and the licker-in on the line *e f*.

Similar letters of reference indicate corresponding parts in all the figures.

My invention relates to improvements in carding-engines; and consists in providing the same with alternate combing and cleaning rolls, a raising-cylinder, and impurity-roll, arranged to raise and clean the fiber after the latter has passed the combing-rolls, the whole operating in connection with the main cylinder of a carding-engine.

In the drawings, *a* is the fiddle-stand, in the slot of which the shaft of the lap-roll is placed. The fiddle-stand is provided with a bracket, *a'*, arranged to receive the shaft when first placed on the stand, and enable the operative to place the lap-roll into the slot without injuring the lap.

b is the supporting-roll on which the lap-roll rests, and by which the lap is unrolled and fed to the carding-engine.

c c are the feed-rollers, which feed the fiber to the licker-in roll.

E is an open grate, made up of bars arranged so as to allow the loose dirt and impurities to pass between them.

f is a concave plate, fitting closely to the licker-in roll, and connected with the vertical partition *f'*. This concave plate protects the licker-in from the blast of the main cylinder A, whose surface, moving at a high speed, produces a strong blast of air, which, being exerted against the licker-in, has a tendency to force the fiber between the needles, so that only a portion can be taken up by the cylinder A, and the licker-in returns to the feed-rollers *c e* partially filled, and thus prevents the free action of the needles or wires.

g g g are the carding or combing rolls, by which the fiber on the cylinder A is retained and combed or carded. The surface of the combing-rolls *g g* rotates in the same direction as the surface of the main cylinder A, but much slower.

The fiber thus raised off the cylinder A by the combing-rolls is carried to, or nearly to, a point opposite the center of the combing-roll, and is taken off from the same and again brought in contact with the main cylinder A by the comb-cleaner rolls *h h h*, each combing-roll being followed by a comb-cleaner roll, *h*.

Any number of combing and cleaning rollers may be used, each pair repeating the operation.

The combing and clearer rolls must be of the same, or nearly the same, diameter. They both turn in the same direction; but the wires or needles are bent, "keened," or set in opposite directions, as will be seen in the drawings.

By thus raising the fiber off the main cylinder by the combing-roller and returning the same to the main cylinder by the comb-cleaner, of the same or nearly the same diameter as the combing-roller, all tendency to roll the fiber is avoided, and the fiber is at each operation straightened and evened, and when it has passed through the successive operations a straight even fiber is produced.

As the fiber is prevented from passing around the combing-roller, and is always returned to the cylinder, a carding-engine will produce a larger quantity of work and still

have a much smaller quantity of fiber operated upon at any point, thus producing a better quality of work with less power, and also preventing all waste.

The fiber being now in the best possible condition, straight and loose, all leaf and impurities being but feebly retained, the same may be easily separated, and to accomplish this I place the raising-cylinder *i* close to the main cylinder A, and rotate the same at a greater surface-speed than the main cylinder, and thus raise the fiber off the main cylinder.

k is the impurity-extractor, which separates all leaf, dirt, and neps or small balls of tangled fiber, and delivers a portion of the same into the receptacle or box *m*. Above the box *m*, and between the dirt or impurity roll *k* and the main cylinder A, I place the adjustable knife *l*.

The main cylinder, taking hold of the fiber, draws the same over the knife-edge, and lays the same straight and even on the cylinder A, and in this condition it leaves the cylinder, and is taken up by the doffer *n*.

To prevent atmospheric suction the partition *o* is made to extend upward between the main cylinder and the doffer.

The main cylinder, perfectly clean now, passes onto the licker-in to repeat the operation. Some of the light leaves will still adhere loosely to the under side of the fiber, and to separate this I place the adjustable knife-plate *p*, as shown, which separates all the loose leaves and deposits the same in the leaf-box. The fiber passes onto the front of the doffer, and is taken off by the comb-stock straight and even, free from leaf and other impurities, and without having lost a particle in waste.

When properly built and proportioned, this carding-engine may be used for all kinds of fiber, and most of the improvements may be connected with carding-engines now built.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the cylinder *i* and impurity-roll *k*, of the receptacle *m*, arranged to receive and collect the impurities, substantially as specified.

2. A carding-engine provided with alternate combing and cleaning rolls, a raising-cylinder, and impurity-roll, arranged to raise and clean the fiber after the same has passed the combing-rolls, the whole operating in connection with the main cylinder, as and for the purpose described.

In testimony that I claim the foregoing as my own I have affixed my signature in presence of two witnesses.

ROBT. F. BARKER.

Witnesses:

JOSEPH A. MILLER,

DANL. R. BALLOU.