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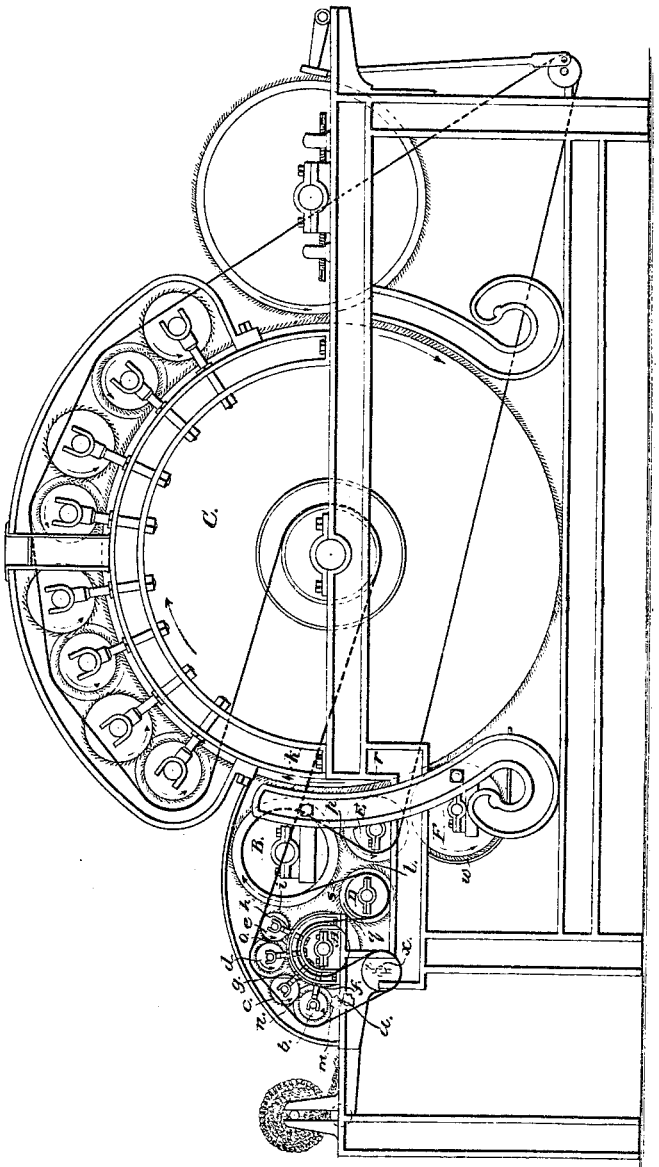
J. DYSON.

CARDING-ENGINE.

No. 182,995. Patented Oct. 10, 1876.

Fig. 1.



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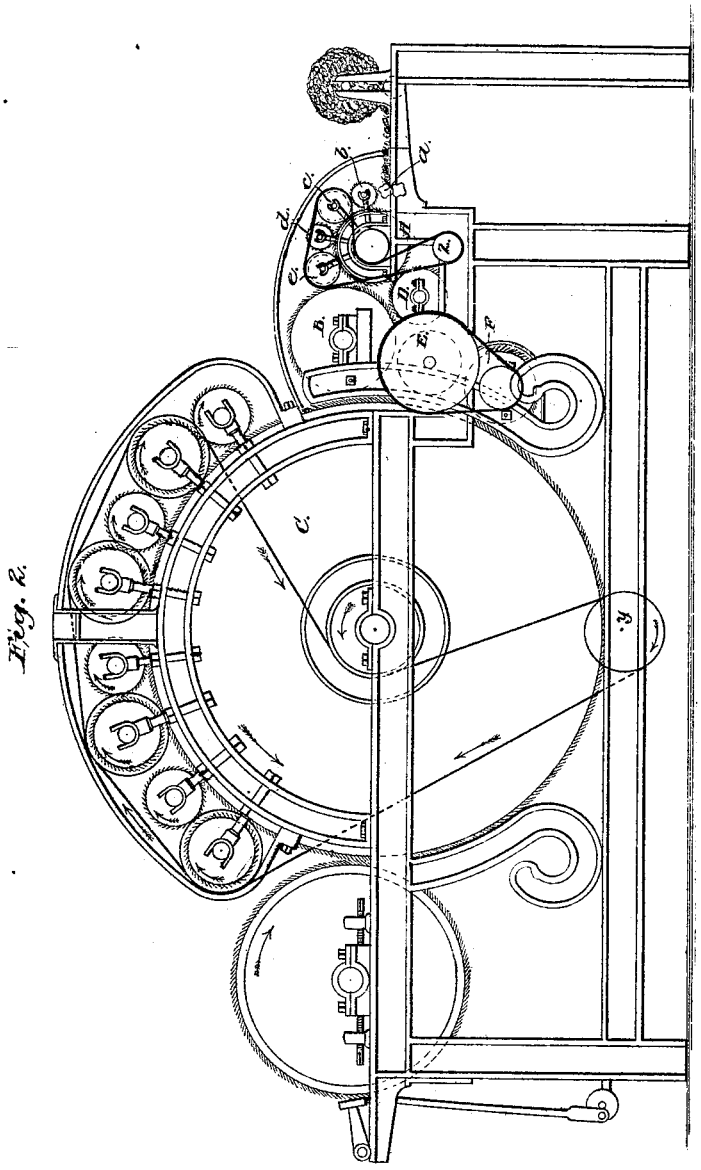

Fig. 2.

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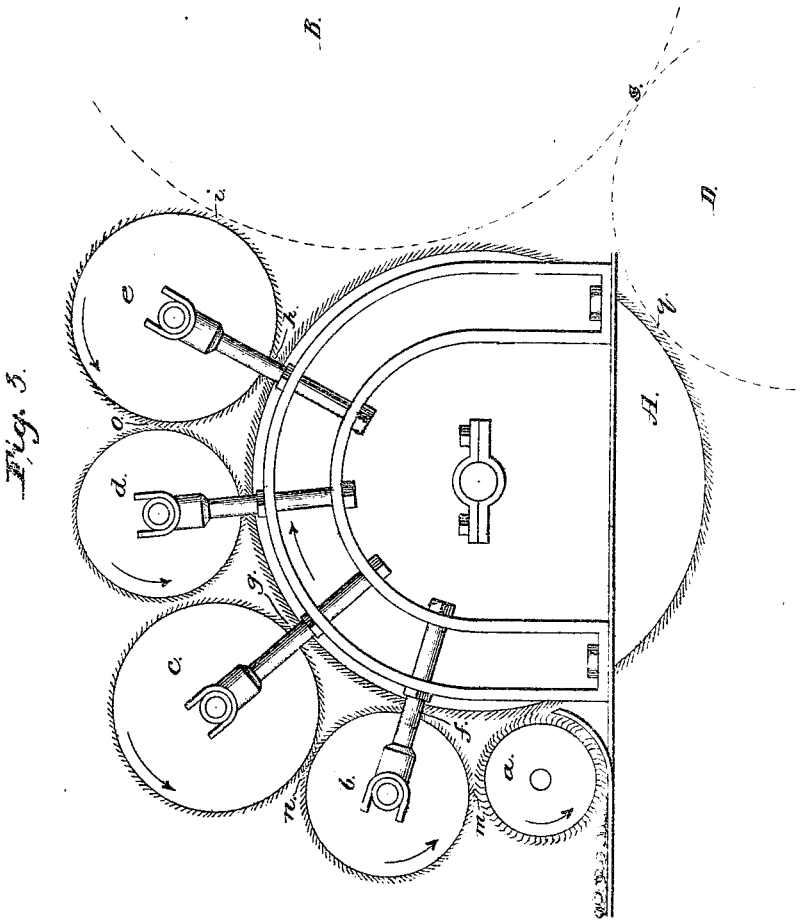
Fig. 3.



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UNITED STATES PATENT OFFICE.

JEPTHA DYSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CARDING-ENGINES.

Specification forming part of Letters Patent No. **182,995**, dated October 10, 1876; application filed January 19, 1876.

To all whom it may concern:

Be it known that I, JEPTHA DYSON, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Carding-Engines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, forming a part of the specification, in which—

Figure 1 is a side elevation embodying my system of double carding. Fig. 2 is a side elevation of the same, taken on the side opposite to that shown in Fig. 1. Fig. 3 is an enlarged view of a portion of my machine.

Similar letters in each of the figures indicate corresponding parts of the description.

The object of this improvement is not limited merely to an alteration in the form and structure of the carding-engine by a change of or an addition to its parts, nor to change essentially its form of operation in those parts which have been retained; but, by the addition of a new combination of well-known devices, for the most part in general use, so arranged and varied in their functions and operation as to form a double-carding engine, or rather two distinct systems of carding and clearing, for the purpose of making the machine better adapted to the preparation of the material in the manufacture of the finer and higher class of cotton fabrics than can be attained by any system of single carding heretofore in use; and by a regular alternate system of carding and clearing, which constitute the true basis of the art, thereby expedite the process, save time and expense, economize room and power, with a considerable saving of waste of material, while realizing the full benefit of superior preparation usually effected by passing the cotton through two separate carding-engines.

To enable others skilled in the art to make and use my improvement, I offer the following description, reference being had to the drawings accompanying the same.

The drawings represent a longitudinal and vertical section of the proposed improvement, with other parts constituting the entire machine, the sides being supposed removed, so as to give an accurate end view of all the devices forming the combinations of the said improvement, in connection with the other parts of the machine, exhibiting the forms and proportions thereof by letters referring to each, with the method of driving, as indicated by the belting represented by solid black lines, showing the position and direction of the same.

The cotton, after being formed into a roll or lap by the picker and lap machine, and placed on the stand, is first passed under the feed-roller *a*—a small cylinder clothed with narrow card-fillet one-half or three-fourths of an inch wide—of strong diamond-pointed card-teeth, revolving slowly as a feeder, in a concave surface of polished metal, fitted accurately to about one-fourth of the periphery of the said feed-roller, the angle of the card-teeth being reversed, and moving forward in advance of the line of motion, as shown in the drawing, and made to press the lap sufficiently firm to the concave surface by weighting the journals, or otherwise, so as to hold and reduce the thickness of the lap sufficiently for the advantageous action of the carding-cylinder A, to which the cotton is delivered at the first carding-point, *f*. Or, as a substitute for the feed-roller, a pair of fluted iron or steel rollers of the usual size and form, and operated in the usual way, may be employed as a feeder. The cotton is thence taken from the lap at the said feed roller or rollers *a*, and carried by the carding-cylinder A to the second carding-point, *g*, under the small carding-cylinder *c*, while the small clearing-cylinder *b* not only clears the carded cotton from the surface of *c* at the second clearing-point, *n*, but also that remaining on the surface of the feed-roller *a* at the first clearing-point *m*, and returns the cotton from both clearing-points to the carding-cylinder A, to be thence carried to and carded at the third carding-point, *h*, under the small carding-cylinder *e*, when another small clearing-cylinder, *d*, at the third clearing-point, *o*, clears the cotton from *e* and returns it to the carding-cylinder A, to be carried to and carded at the fourth carding-point, *i*, on the large carding and clearing cylinder B, when one-half or a portion of the cotton taken from A by B is carried by the latter to and carded at the fifth carding-point,

k, on the large main cylinder C, while the other remaining on B is carried down to the fourth clearing-point, *p*, where it is cleared by the carding and clearing cylinder E. At the same time, the cotton remaining on the first carding-cylinder, A, is carried down to the fifth clearing-point, *q*, where it is cleared by the carding and clearing cylinder D, and from thence the cotton cleared from A is carried by D to the sixth carding-point, *l*, at which point also the cylinder E, at the same time, brings the cotton cleared from the cylinder B down to the same point, where both are carded together.

The cotton held by E is carried to and cleared by the large main cylinder C, with the strippings cleared from the latter by the strippers F, at the sixth clearing-point, *r*, and carried to the carding-point *k*, where both remnants are carded together, while B clears the remnant on D, at the seventh clearing-point, *s*, carries it round by *i* and to *k*, and is finally delivered to the main cylinder C, and passed with other cotton to the doffer-cylinder.

All the cotton delivered by the feed roller or rollers to the first carding-cylinder, A, is thus passed through an alternate system of carding and clearing, embracing six carding-points and seven clearing-points, until it is delivered in conjunction with the strippings taken from the large main cylinder and returned to the same, and from thence passed through the remaining carding and clearing points, and finally delivered and discharged from the doffer-cylinder.

Each and every carding and clearing cylinder embraced in the combination of devices claimed in this improvement is constructed from materials of iron, wood, and leather, on the same principle and in like manner as card-cylinders are generally constructed in cotton-mills in this country.

The operation by which the results above described are effected commences by means of a belt leading from a line of shafting driven by the power employed in the mill to a fast and loose pulley on the end of the shaft of the large main cylinder, of a diameter to give it generally about one hundred and twenty revolutions per minute. From a pulley behind this on the same shaft, of about ten inches diameter, more or less, according to the diameter of the pulleys driven by the same belt, (shown by a solid black line in Fig. 1,) is made to pass over two pulleys, fitted on the ends of the shafts of the small clearing-cylinders *b* and *d;* thence under the stud-pulley *x;* thence over the pulley of the cylinder A; thence under the pulley of D; next up and over the pulley of the cylinder B; thence down and under the pulley of E; thence under the comb-pulley; thence up to and over the four pulleys of the clearing-cylinder, operated in connection with the main cylinder; thence down to the first driving-pulley on the main-cylinder shaft.

If it is preferred to drive the comb-pulley otherwise, the belt may be made to pass under a stud-pulley on the side of the card-frame.

The belt for driving the remaining cylinders of the engine on the opposite side thereof, as shown in Fig. 2, are indicated, first, by a solid black line passing from the pulley, fitted on the opposite end of the shaft of the card-cylinder A; thence down and beneath the stud-pulley *z;* thence up and over the two pulleys on the shaft of the two small carding-cylinders *e* and *c;* thence down to the aforesaid driving-pulley on the end of the shaft of the said carding-cylinder A.

The stripper F may be driven by a pulley three and three-fourths or four inches in diameter, fitted on the opposite end of the stripper-shaft, from a pulley somewhat over double the diameter of that last named, fitted on the opposite end of the shaft of the cylinder E, so as to give the stripper about seven hundred or seven hundred and twenty revolutions per minute.

The four carding-cylinders operated over the main cylinder C are driven by a belt, represented by a solid black line, (shown in Fig. 2,) passing from a pulley, fitted on the end of the main cylinder, about six inches in diameter, down and under the stud-pulley *y;* thence up and over a five or six inch pulley, fitted on the end of each of the four shafts of the four carding-cylinders aforesaid, and thence down to the aforesaid pulley on the end of the main-cylinder shaft.

If the diameter of the main cylinder be increased or diminished, and the number of its revolutions be proportionably varied, and if the number of the revolutions of the carding and clearing cylinders be proportionably varied, the success of the operation will not be impaired; but in such case it is essential that the relative proportions in the sizes and diameters of all the cylinders, and especially the relative proportions of the surface velocities of the driving-cylinders, be preserved.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination and arrangement of the feed roller or rollers *a*, the carding-cylinder A, the small carding-cylinders *c* and *e*, the small clearing-cylinders *b* and *d*, the large carding and clearing cylinder B, the carding and clearing cylinders D and E, and the stripper-cylinder F, all operated in connection, substantially as described, and for the purposes set forth.

Philadelphia, January 17, 1876.

JEPTHA DYSON.

Witnesses:

ALBERT VINCENT,

S. TWICHELL.