

(No Model.)

2 Sheets—Sheet 1.

W. S. ARCHER.

MACHINE FOR CARDING OR SEPARATING FIBROUS MATERIAL.

No. 371,913.

Patented Oct. 25, 1887.

Fig. 1.

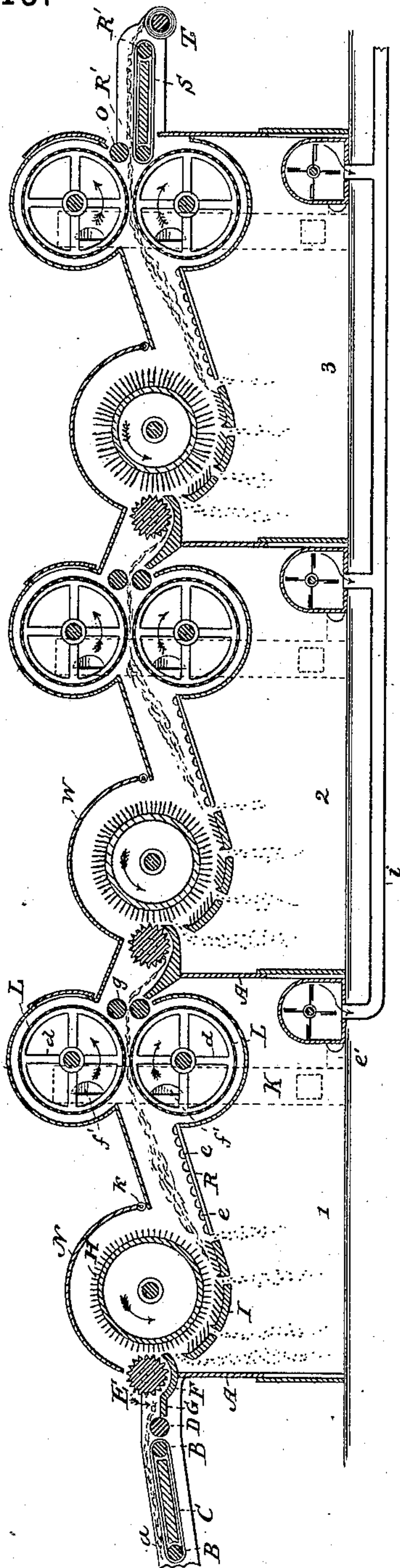


Fig. 3.

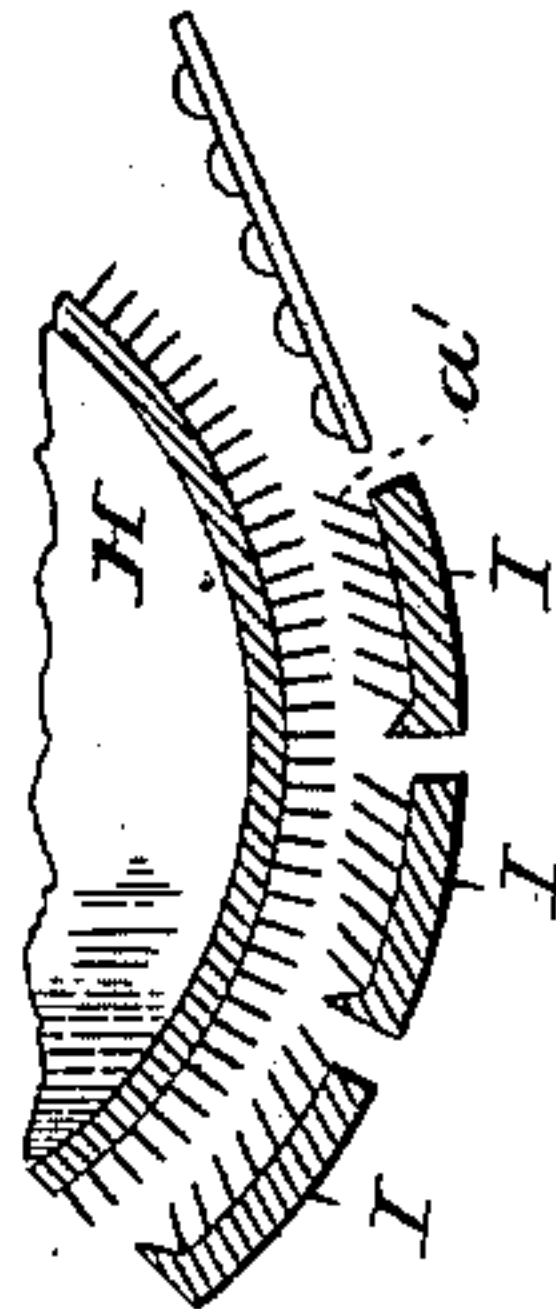


Fig. 4.

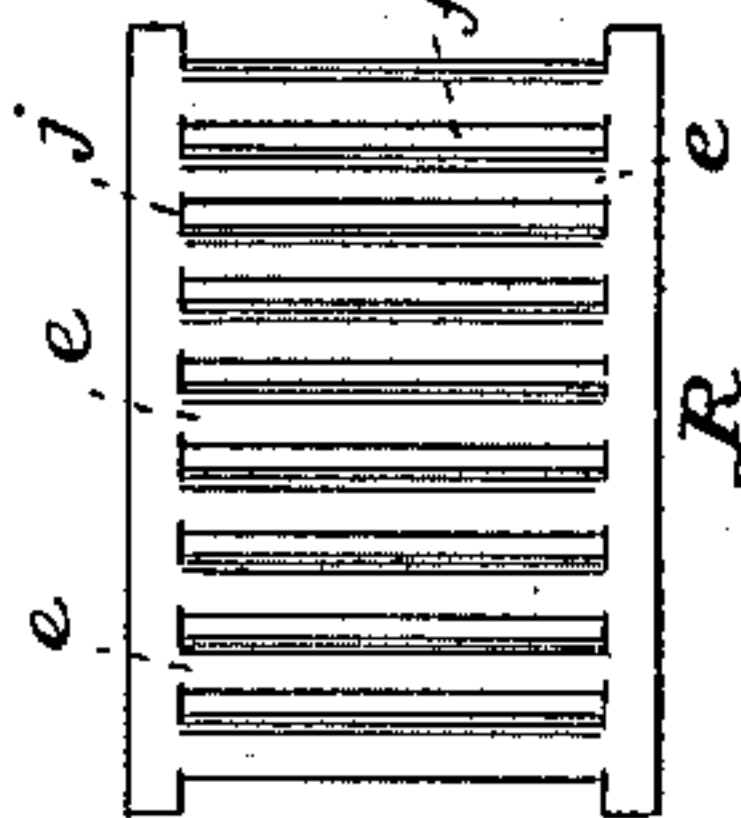


Fig. 5.

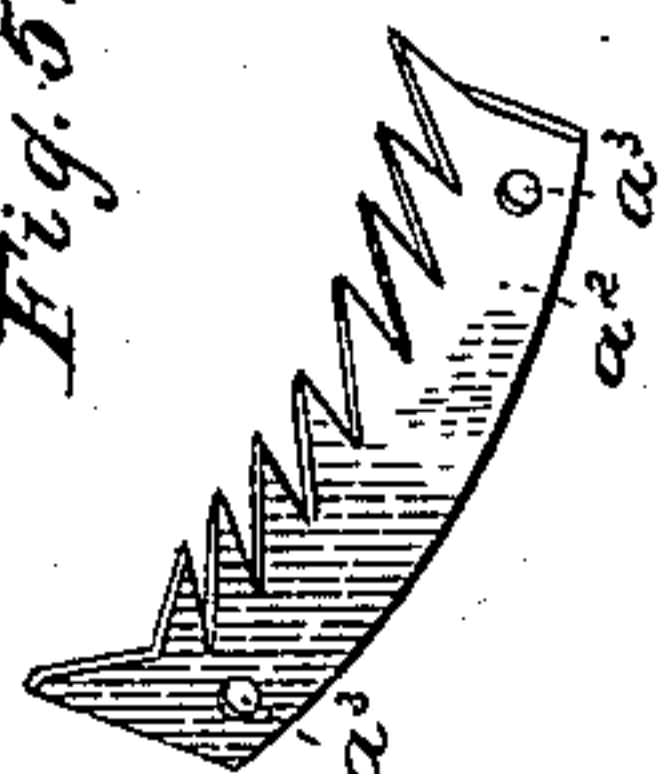
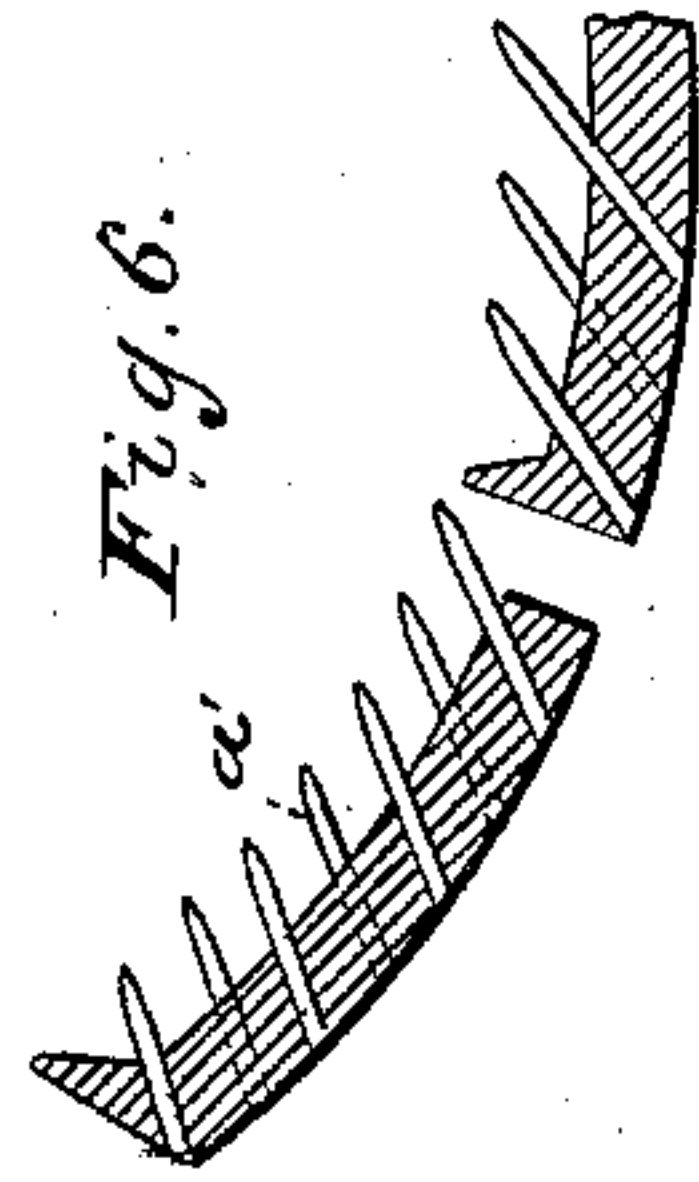


Fig. 6.



WITNESSES:

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Herman Gustow,

INVENTOR

William S. Archer

(No Model.)

2 Sheets—Sheet 2.

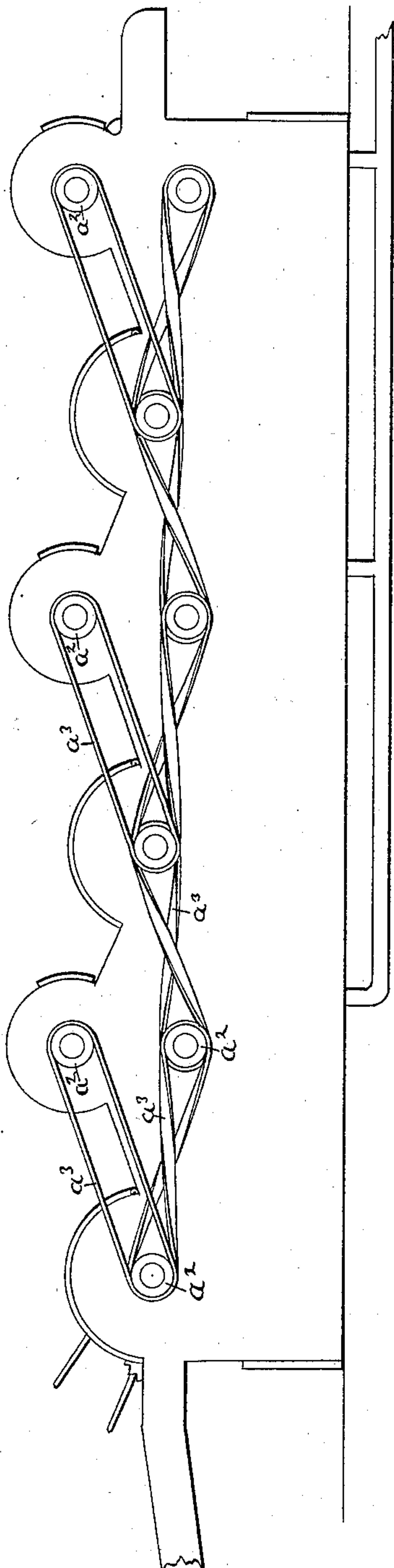
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FIG-2-



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM S. ARCHER, OF NEW YORK, N. Y.

MACHINE FOR CARDING OR SEPARATING FIBROUS MATERIAL.

SPECIFICATION forming part of Letters Patent No. 371,913, dated October 25, 1887.

Application filed December 29, 1885. Serial No. 186,983. (No model.) Patented in England June 23, 1885, No. 7,650; in France June 27, 1885, No. 169,826; in Belgium June 29, 1885, No. 69,442, and in Canada July 3, 1885, No. 21,994.

To all whom it may concern:

Be it known that I, WILLIAM S. ARCHER, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Carding or Separating Fibrous Material, (for which I have obtained Letters Patent of Great Britain, No. 7,650, dated June 23, 1885; of Belgium, No. 69,442, dated June 29, 1885; of Canada, No. 21,994, dated July 3, 1885, and of France, No. 169,826, dated June 27, 1885,) of which the following is a specification.

This invention relates to machines for carding cotton waste, wool, hair, and other fibrous materials, but is more especially designed for the treatment of cotton waste. Heretofore this material has for the greater part been discarded and thrown away, as it was found impracticable to thoroughly clean it and render it fit for use; but by the employment of my improved machine I am enabled to produce a good quality of cotton therefrom, the dust and dirt being entirely removed, and the fiber, as has been found by actual test, being in no wise torn or injured, thereby rendering the cotton capable of use for many of the purposes for which the higher grades of cotton are employed, the distinctive novelty of my invention consisting in a machine having one or more sections, each section being provided with a picker and cylinders, toothed boards located below the picker, and an open-work grate or platform for conveying the material to the cylinder.

My invention further consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described, and set forth in the claims.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of a machine embodying my invention. Fig. 2 is a view in elevation thereof. Fig. 3 is an enlarged sectional view of a portion of the picker-roller and the toothed boards located beneath the same. Fig. 4 is a detached plan view of the platform or grate adapted to convey the stock from the picker-cylinder to the condensing-cylinder. Fig. 5 is a modification of the teeth secured to the boards located below the picker, and Fig. 6 is a detached sectional view of the

boards located below the picker, showing the arrangement of the pins or teeth secured thereto.

A represents the outer casing or frame of the separator, in the sides of which are journaled the ends of the two rollers or drums B, one of which is connected to a band-wheel and receives its motion therefrom. Around these rollers travels an endless apron or carrier, C, constructed of any suitable material, preferably of wire-gauze, and adapted to deliver the cotton, hair, or other stock in its crude form to the machine. By constructing this apron of the material mentioned it allows the sand or other foreign substances contained in the stock to fall or sift through it prior to the entrance of the latter into the machine. On either side of this apron the frame extends upwardly, forming the sides *a*, which prevent the stock from accidentally falling or dropping from the apron C during transmission to the picker.

Immediately in the rear of the inner roller, B, is journaled a roller, D, adapted to assist in transferring the stock to the picker and to prevent the same from falling or dropping in its passage from the apron C to the horizontal ledge G, formed on the forward end of the trough F, extending across the separator and upwardly between the feed-roller E and picker H. The said feed-roller E is journaled in the frame, is provided with teeth, and, moving in the direction indicated by the arrow, tends to draw the stock from the ledge G down between the roller E and trough F. The axle of the picker H is journaled in suitable bearings secured to the frame A, and is revolved in the direction of the arrows at a very rapid speed, the roller being provided with pins or teeth, to which the cotton or stock clings. By extending the trough F up between this picker and the roller E the stock, when received by the picker, will strike the edge of said trough, and the dirt or other foreign substances contained in the stock will be thereby loosened and allowed to fall in the lower forward corner of the machine. Below this picker are situated horizontal boards or strips I, placed in close proximity to the picker H and slightly curved in cross-section.

Instead of employing two or more boards,

as shown, I might use a single board; but by constructing it in sections narrow openings are left between them, through which the dirt contained in the stock may fall during the passage of said stock over them. These boards I are each provided with picker teeth or pins a' , arranged in rows, the teeth in one row being opposite the spaces between the teeth in the adjacent rows, as shown in Fig. 5. The teeth are preferably constructed with their upper ends pointed, and are set at an incline leading in the direction in which the stock travels, whereby the latter in its passage over the teeth is prevented from catching and becoming torn and the fiber thereby injured, the incline of the pins allowing the stock to easily pass over them and at the same time to be loosened to permit of the escape of the dirt and other foreign substances mixed therewith.

Instead of securing pins a' to the boards I, the teeth a'' might be employed, which latter are formed substantially like the teeth of a saw, being beveled, as shown, and secured in position by means of rods passing through the holes, a^3 , formed therein. By means of these toothed boards all danger of the stock passing the picker without being separated is entirely obviated, the teeth of the cylinder and those of the boards tending to separate or pull the stock apart and allowing the foreign matter to escape therefrom.

To the rear end of the picker are located two condensing-cylinders, L, the shafts of which are journaled in the bearings in the sides of the frame. These cylinders are made of wire-gauze, or of equivalent material, secured to rings, which latter are connected to the shaft by the arms d . To the lower of these cylinders L leads an inclined platform or grate, R, preferably constructed of the strips or bars e , spaces f being left between said bars to permit the sand and dirt to fall through during the passage of the stock over the platform.

Outside of the frame A, and against either side thereof, are located the hollow posts K, connected with a suction-blower by means of the pipe e' and provided with openings f' , registering with openings formed in the frame. The ends of the cylinders are preferably set in recesses formed in the frame, the said openings in the latter being formed at those points, and thereby registering with the open ends of the cylinders. By setting the ends of the cylinders within recesses and inserting a leather or other gasket, but little air, if any, will pass through the frame into the post, excepting that which is drawn through the cylinders. By means of this construction the stock is drawn onto the cylinders, and the fine dust remaining in the said stock is drawn therein through the posts K and out of the machine through the pipe i , connected with a suction-blower. After passing through the cylinders, the stock passes between the rollers g and into a second section of the machine, numbered 2 in the drawings, and constructed substantially the same as that above described, with the excep-

tion that the apron C or carrier is not used in the sections following the first, and that the picker is made slightly smaller than that shown in section 1 and travels at a correspondingly greater rate of speed to prevent the machine from choking. The machine may consist of as many sections as desired, the number employed depending somewhat upon the character of the stock to be treated.

R' R' represent two smaller rollers or drums, the ends of which are journaled in the frame, and which are adapted to carry the endless apron S, onto which the stock falls after passing between the cylinders. At the rear end of the apron is journaled the lap-roller P, the upper surface of which is in the same horizontal plane with the apron S, and onto which roller the apron delivers the cotton. Above the end of the apron is journaled the smaller roller o , onto which the stock passes, and by means of which it is flattened and spread out to be lapped on the roller T. The cotton as it comes from the separator is wound on said roller until a lap of suitable size is formed, whereupon the roller T is removed and another substituted. The several rollers and cylinders are revolved by means of suitable belts arranged as shown in Fig. 2 of the drawings.

Over the picker and the cylinders L fits a hood or cover, N, preferably constructed of sheet-iron and extending across the separator to the sides of the frame. The forward portion of each section of this hood is pivoted, as shown at k , allowing it to be raised and the picker exposed. The rear portions of the hood are buttoned or otherwise detachably secured to the upper portion, thereby allowing it to be removed and the upper cylinder exposed. If desired, this hood may be provided with glass slides, for the purpose of inspecting the stock after it has left the picker. Instead of employing two cylinders L, as above described, but one cylinder may be employed, the hood in such case fitting down close to it. Again, if desired, the outer sides of the posts K may be provided with doors or slides, for the purpose of inspecting the interior thereof.

The ends of the shafts of the rollers and condensing-cylinders are each provided on one end with a pulley, a^2 , the sizes of which may be varied at will, in accordance with the velocity at which it is desired the several parts should travel, the said pulleys a^2 being connected with each other by means of the belts a^3 , as shown in Fig. 2 of the drawings; but this arrangement of belts may be changed in accordance with the dictates of circumstances.

I do not limit my invention to the treatment of cotton waste, since other fibrous materials may be successfully manipulated, according to the method and by means of the apparatus hereinbefore described; nor do I limit myself to the exact construction or arrangement of parts as shown and described, as many slight changes might be made therein without involving a departure from the nature of my invention.

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

5 1. The combination, with the covering-frame of the machine, of the toothed cylinder H and the board I, having pins inclined in the direction in which the cylinder H revolves, substantially as set forth.

10 2. The combination, with the closed covering-frame, of the toothed cylinder H, toothed boards I, and condensing cylinders L, substantially as set forth.

15 3. The combination, with the closed covering-frame, of the cylinder H, the toothed boards I, and open-work platform or grating R, substantially as set forth.

4. The combination, with a blower, of the closed covering, boards I, having pins inclined in the direction of the revolution of the cylin-

der H, and the toothed roller E, substantially 20 as set forth.

5. In a machine for separating fiber, the combination, with a picker, of toothed boards located below the same and having their teeth inclined in the direction in which the 25 material travels, open-work condensing-cylinders connected with an air-exhaust, and an open-work platform or grate, R, located between the picker and condensing-cylinders for supporting the material in its travel from the 30 former to the latter, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 26th day of December, A. D. 1885.

WILLIAM S. ARCHER.

Witnesses:

HERMAN GUSTOW,

FREDERICK C. RUCKERS.