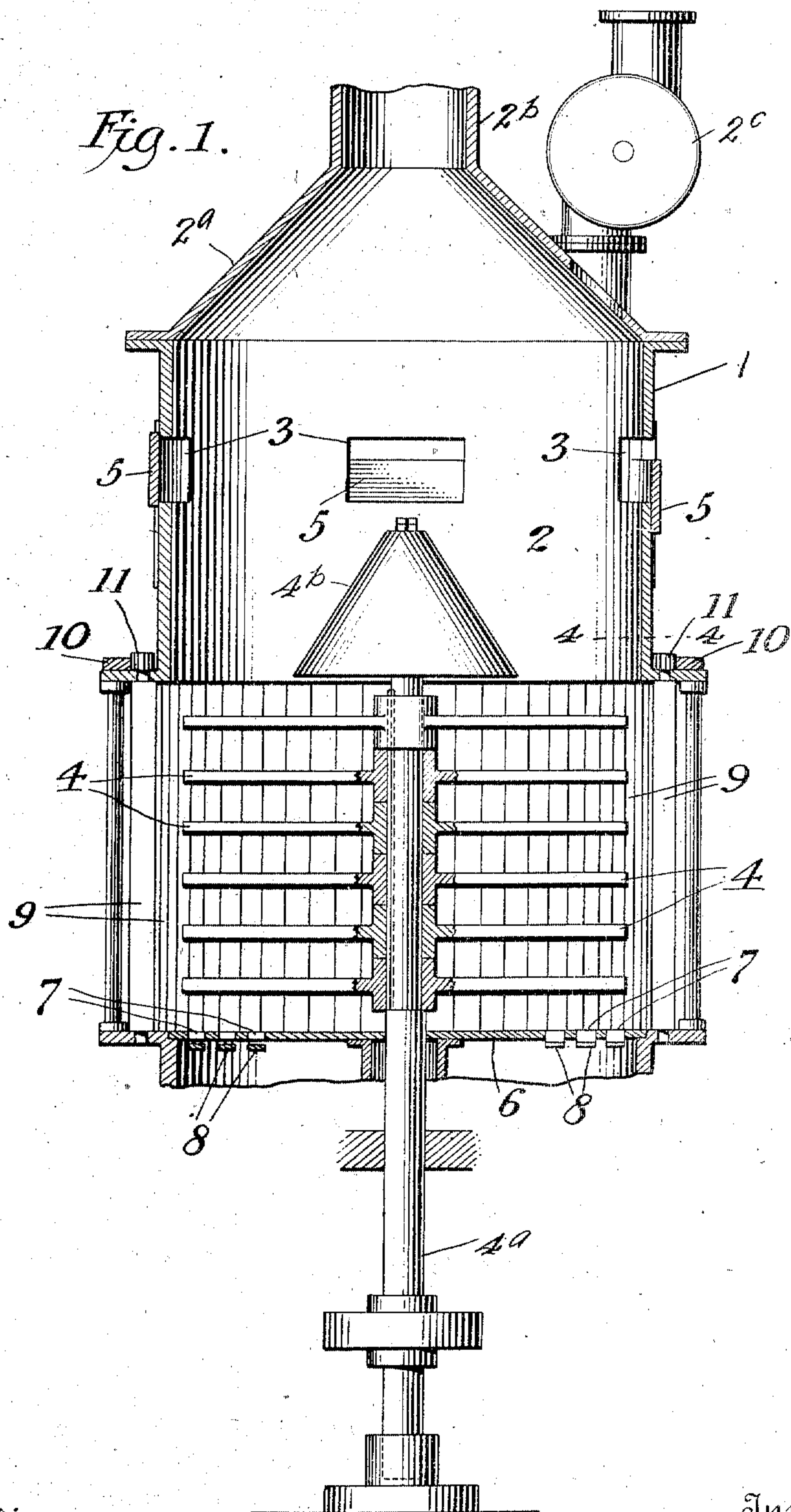


E. C. DE SEGUNDO.  
 APPARATUS FOR DETACHING AND SEPARATING FIBERS FROM COTTON HULLS.  
 APPLICATION FILED APR. 15, 1909.

980,349.

Patented Jan. 3, 1911

2 SHEETS—SHEET 1.



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 By his Attorneys.  
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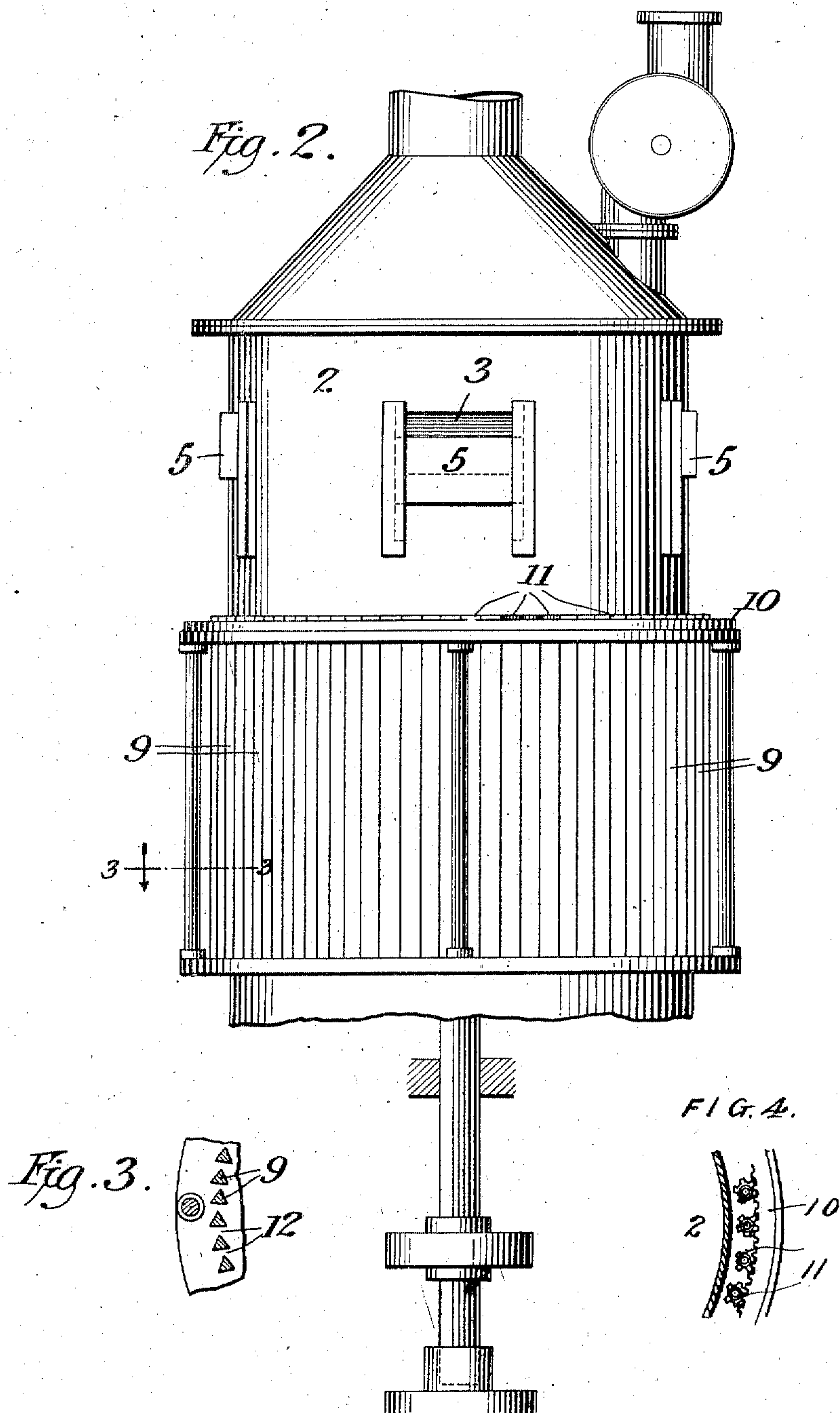
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Witnesses:  
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# UNITED STATES PATENT OFFICE.

EDWARD CARSTENSEN DE SEGUNDO, OF LONDON, ENGLAND.

APPARATUS FOR DETACHING AND SEPARATING FIBERS FROM COTTON-HULLS.

980,349.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed April 15, 1909. Serial No. 489,981.

*To all whom it may concern:*

Be it known that I, EDWARD CARSTENSEN DE SEGUNDO, a subject of the King of Great Britain, residing at No. 231 Dashwood House, New Broad street, in the city of London, England, have invented a new and useful Improvement in Apparatus for Detaching and Separating Fibers from Cotton-Hulls, of which the following is a specification.

The present invention relates to certain improvements on the structure disclosed in a co-pending application, Serial No. 419,942, filed March 9, 1908, and the primary object is to provide a machine having a greater output and more effective separating and segregating action, while requiring less power to operate.

In the machine disclosed in the above-entitled application, a vertical cylinder is employed having lower combined air inlet openings, which also constitute outlets for the defibrated hulls. Operating within the casing, are beaters that rotate on a vertical axis. Connected to the upper end of the casing is an uptake, to which is attached a suction fan that produces upward convergent streams of air within the casing from the lower inlet openings to the uptake. Feeding means is connected to the upper portion of the casing, and delivers the hulls to be operated on without admitting air at the feeding point.

Briefly described, when the machine is in operation, and the upwardly moving currents of air are produced, the beaters cause a whirl of such air within said casing, and the hulls operated on, are threshed by said beaters. As a result of the centrifugal force, the defibrated hulls locate themselves against the inner walls of the casing, while the lighter material, such as the lint, is nearer the axis of rotation of the beaters. Now an important feature of this machine resides in the fact that said beaters do not have any grinding action, but merely thresh the hulls, and though said hulls are broken up, they are so much heavier than the lint that they gradually move downwardly against the inner wall of the casing and pass through the bottom openings, while the lighter particles and lint is carried upwardly by the above described current of air, and discharge through the uptake. The above described machine is entirely successful, but its output is comparatively limited, because when a

stronger blast is put upon the uptake, some of the broken hulls will be carried out therewith.

The principal object therefore of the present invention is to provide means, whereby such hulls are hindered from going upwardly, and will consequently more readily gravitate out of the lower end of the machine. At the same time, the upward movement of the lint is not interfered with, and the result is a machine having a decidedly greater output.

In the drawings:—Figure 1 is a vertical longitudinal section through an improved machine constructed in accordance with the present invention. Fig. 2 is a side elevation of the same. Fig. 3 is a detail cross sectional view on the line 3—3 of Fig. 2. Fig. 4 is a detail cross sectional view on the line 4—4 of Fig. 1.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, a cylindrical casing is employed, designated generally by the reference numeral 1, said casing comprising an upper section 2, and a lower section, on which said upper section is mounted. The lower section comprises a bottom 6 having in its marginal portion a plurality of circular series of openings 7, which constitute air inlets and also outlets for the defibrated hulls. These openings are preferably formed by cutting from the bottom, tongues 8 that are turned downwardly at an inclination, as fully described in the co-pending application already referred to. The cylindrical wall of the lower section may, as disclosed, be made up of a plurality of rotatable bars 9, that are triangular in cross section and carry at their upper ends, pinions 11 engaged by a rotary gear ring 10. It will be obvious that by rotating this ring, the pinions 11 will be turned and the bars 9 can consequently be disposed in different relations. Rotatably mounted in the lower section of the casing, are a plurality of beaters 4, the ends of said beaters being spaced from the bars 9, and said beaters being carried by a vertical shaft 4<sup>a</sup> that can be rotated by any suitable means. The upper end of this shaft preferably carries a cap 4<sup>b</sup> that is in the form of a cone.

Mounted upon the lower section, as already described, is the upper section 2, which is cylindrical in form, and is provided



with a tapered top 2<sup>a</sup> having a central uptake 2<sup>b</sup>, to which can be connected an ordinary exhaust fan. Any suitable means for feeding the hulls to be defibrated, to the inferior of the casing, may be employed. This means is shown generally at 2<sup>c</sup>. The walls of the casing section 2, above the beaters are provided with a plurality of air inlet openings 3, and operating across these openings are adjustable closures 5.

Briefly described, the operation of the machine is as follows: If the beaters 4 are rotated, the exhaust fan connected to the uptake is placed in operation, and the hulls to be defibrated, are fed to the interior of the casing, the said hulls will be given a threshing action by the beaters, and at the same time subjected to upwardly flowing currents of air from the openings 7. As already explained, the heavier hulls under centrifugal action, will assume outermost positions, against the bars 9, and will gradually move down said bars toward the openings 7, while the lighter fiber will be drawn upwardly by the currents of air into the uptake. If now the inlet openings 3 are entirely closed by the shutters 5 and a heavy draft of air is produced in the uptake, some of the broken hulls, particularly the smaller fragments will be drawn into said uptake. If, however, the shutters 5 are opened a predetermined degree, lateral currents of air will enter the casing and be caused to impinge against the upwardly flowing currents of air that are moving to the uptake. The intrusion of the lateral currents of air through the openings 3, upon the uprising spiral of the products, which have been detached from each other and which are to be separated or segregated, arrests the further uprising of the hull particles and causes a deflection of the air currents, carrying the lighter fiber, inwardly and upwardly toward the central uptake. Therefore the hulls will not pass above the openings 3 into the uptake, but will gravitate to the bottom of the casing, and finally escape through the openings 7. As a result, by properly adjusting the size of the openings 3 to the strength of the exhaust, not only can the machine be run at higher speed with a consequent great increase in the output, but there is not as much power required for the reason that the suction fan is not operating against as great a vacuum in the upper portion of the casing.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim as new, and desire to secure by Letters Patent, is:—

1. In a machine for defibrating the hulls of cotton seed, the combination with a casing, of means for creating a draft of air longitudinally through the casing, rotary means in the casing for threshing the hulls without grinding and for causing the draft of air to whirl through the casing, and means for admitting a lateral indraft of air transversely into the casing and into said whirl to stop the outflow of hulls therewith, while permitting the passage of the fiber.

2. In a machine for defibrating the hulls of cotton seed, the combination with a casing, of means for creating a draft of air longitudinally through the casing, rotary means in the casing for threshing the hulls without grinding them, and for causing the draft of air to whirl through the casing, means for feeding hulls to be threshed into the casing, and means other than said feeding means for admitting lateral indrafts of air to impinge against the whirl and thereby stop the outflow of hulls therewith, while permitting the passage of the fiber.

3. In a machine for defibrating the hulls of cotton seed, the combination with an upright casing having outlet means at its upper end for creating an upward draft through said casing, rotary means located in the lower portion of the casing for threshing the hulls without grinding them, and for causing the upward draft to whirl within the casing, and means disposed between said threshing means and outlet for admitting inward drafts of air into the upper portion of said casing to impinge against the whirl and stop the upward passage of hulls while permitting the outflow of the fiber.

4. In a machine for defibrating the hulls of cotton seed, the combination with an upright casing having a bottom provided with common air inlet and hull outlet openings, said casing having at its upper end a central tapered outlet for causing an upward draft of air through the casing, rotary beaters operating in the lower portion of the casing to thresh the hulls without grinding and also cause the upward draft to assume a whirling motion, means for feeding hulls to be threshed into the casing, said casing having inlet openings in its upper portion for permitting indrafts of air to impinge against the whirling updraft, and prevent the egress of hulls with the latter, and means for regulating the size of the openings.

5. In a machine for defibrating the hulls of cotton seed, the combination with an upright casing having a bottom provided with common air inlet and hull outlet openings, said casing having at its upper end a central tapered outlet for causing an upward draft of air through the casing, rotary beaters operating in the lower portion of the cas-



ing to thresh the hulls without grinding and also cause the upward draft to assume a whirling motion, means for feeding hulls to be threshed into the casing, said casing having inlet openings in its upper portion for permitting indrafts of air to impinge against the whirling updraft and prevent the egress of hulls with the latter, and sliding gates for regulating the size of the openings.

6. Apparatus for defibrating the hulls of cotton seed, comprising a separating chamber having a series of air passages in the upper portion thereof, means for regulating the admission of air thereinto in combination with a series of vertically disposed rods triangular in cross section, and providing a series of openings between them in the lower part of the chamber said rods being adapted to be rotated so as to regulate the supply of air passing therebetween, means for creating a current of air through the chamber, and means for threshing the hulls and giving them a whirling motion within the said chamber.

7. In a machine for defibrating the hulls of cotton seed, the combination with a casing, of means for creating a draft of air longitudinally through the casing, rotary means in the casing for threshing the hulls without grinding and for causing the draft of air to whirl the separated products through the casing, and means for admitting a lateral indraft of air transversely into the casing and against the whirl thereby assisting the longitudinal uprising air currents in carrying off the fiber and at the same time arresting or hindering the upward progress of the hulls.

8. In a machine for defibrating the hulls of cotton seed, the combination with a casing, of means for creating a draft of air therethrough, means for threshing the hulls

without grinding and causing such draft to whirl, and means for admitting lateral indrafts of air transversely into the casing above the threshing means for hindering the progress of hulls therewith.

9. In apparatus for defibrating cotton seed hulls, the combination with a casing having a bottom wall provided with an air inlet opening and a downwardly inclined lip disposed at one side of the opening, of means connected to the casing for creating an inward current of air through the opening alongside the lip, rotary hull-threshing means operating in the casing contiguous to and over the opening, and rotating in a direction to move across the inlet opening from the side not having the lip toward the lip, and means for feeding hulls to be treated into said casing.

10. In apparatus for defibrating cotton seed hulls, the combination with an upright casing having a bottom provided with a plurality of openings that constitute air inlets and outlets for defibrated hulls, said bottom having on the rear side of each opening, an outwardly and downwardly inclined lip, of rotary beater arms arranged within the casing and operating in a direction to move across the openings from the sides not having the lips, toward the lips, means connected to the upper end of the casing for creating an upward current of air there-through, from the bottom openings, and means for feeding hulls to be defibrated into the upper portion of said casing.

In testimony whereof, I have hereunto set my hand.

EDWARD CARSTENSEN DE SEGUNDO.

Witnesses:

J. W. JENKINS,

EUGENE H. MURPHY.