No. 820,957. PATENTED MAY 22, 1906.

R. DERDEYN.

DELINTING MACHINE.

APPLICATION FILED MAY 6, 1904.

3 SHEETS—SHEET 1.

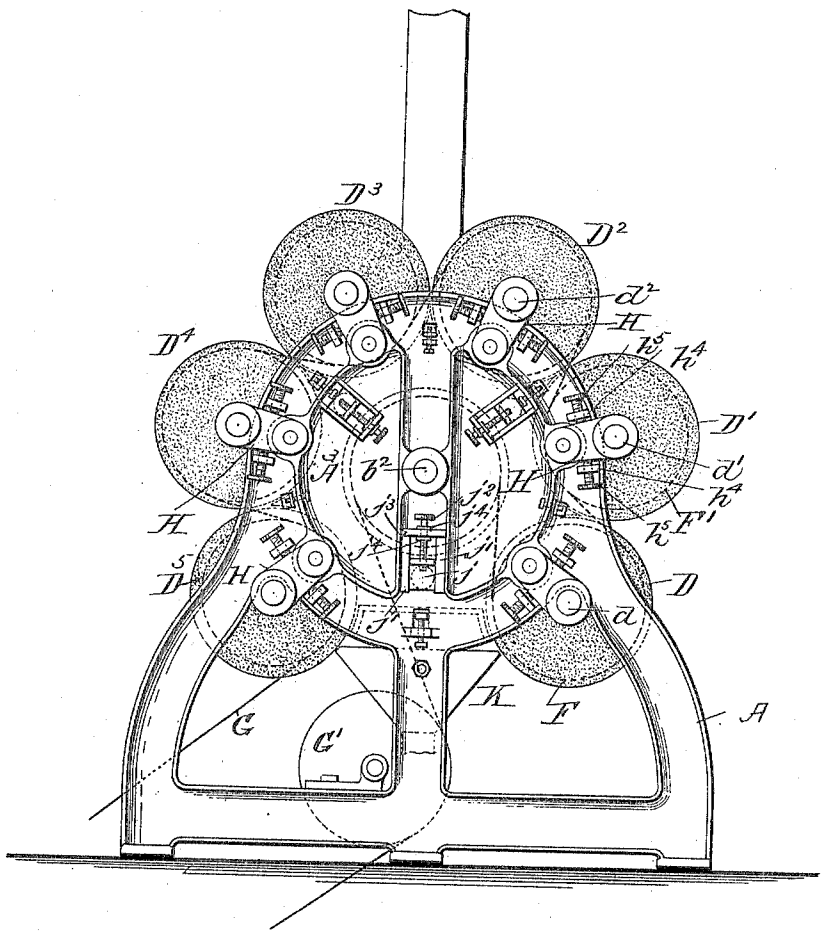

Fig. 1.

WITNESSES:

M. C. Flaherty.

M. V. Foley.

INVENTOR:

Roman Derdeyn

by Clarke, Raymond & Hoyt

his Attys.

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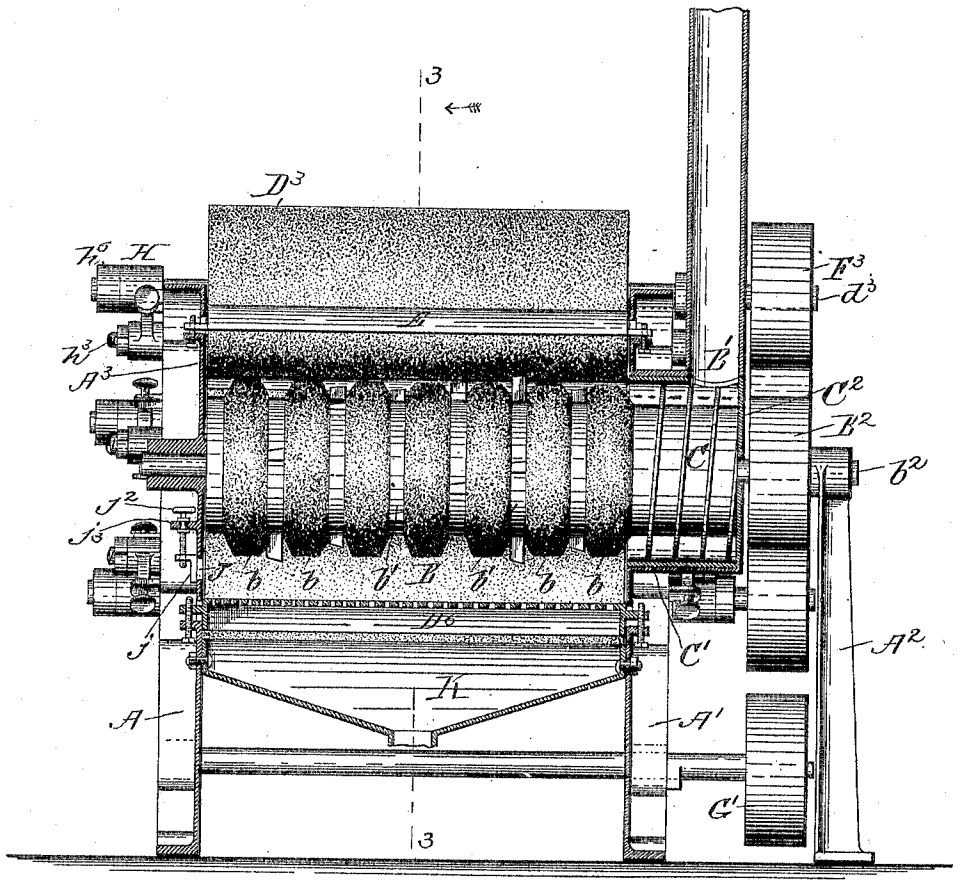

Fig. 2.

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3 SHEETS—SHEET 3.

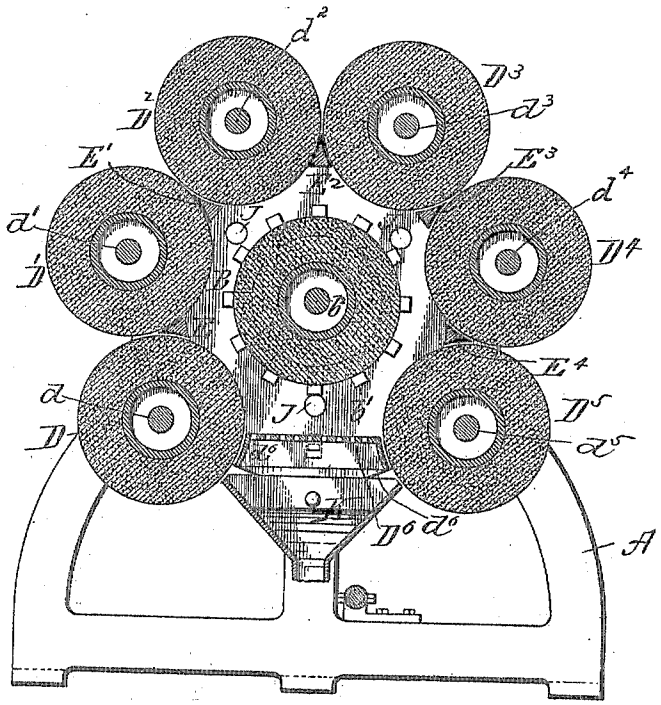

Fig. 3.

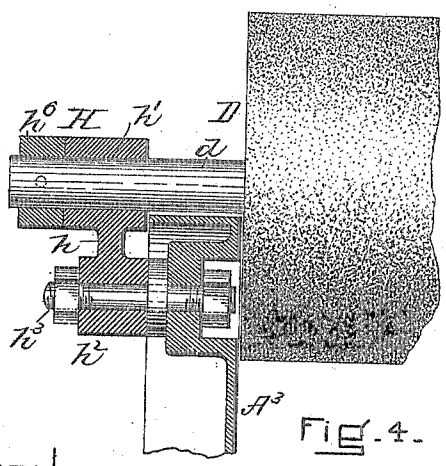

Fig. 4.

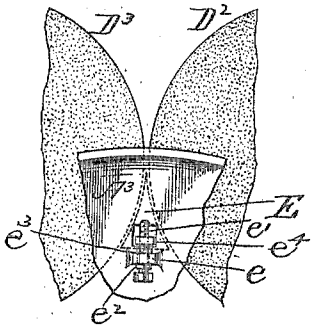

Fig. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ROMAN DERDEYN, OF VICKSBURG, MISSISSIPPI.

DELINTING-MACHINE.

No. 820,957. Specification of Letters Patent. Patented May 22, 1906.

Application filed May 6, 1904. Serial No. 206,616.

To all whom it may concern:

Be it known that I, ROMAN DERDEYN, a citizen of the United States, residing at Vicksburg, in the county of Warren and State of Mississippi, have invented a new and useful Improvement in Delinting-Machines, of which the following is a specification.

My invention relates to that class of machines in which there is a rotating grinding-roll provided with corundum disks separated by metallic disks carrying projecting arms which tend to stir and feed the seed, the roll also being provided with a positive feed whereby the seed is pushed from the inlet to the outlet of the casing surrounding the grinding-roll. In such machines it has been found that as the lint is ground off from the seed and is forced out from the seed-chamber within the casing the space required by the seed becomes less, and in order that the seed may be maintained under constant pressure during its entire passage through the seed-chamber it is desirable that the seed-chamber be slightly smaller at the outlet end than at the inlet end, and this is best accomplished by making the cylinder at the outlet end larger than at the inlet end.

In my present machine I have provided rolls which form the greater part of the outer wall of the casing and which as they rotate serve to add their grinding effect to that of the grinding-roll proper, and so are enabled to denude the seed to a larger extent than heretofore.

My invention will be understood by reference to the drawings, in which—

Figure 1 is an elevation of the discharge end of the machine. Fig. 2 is a longitudinal section. Fig. 3 is a vertical cross-section on line 3 3 of Fig. 2. Fig. 4 is a sectional detail showing the means by which the auxiliary rolls are adjusted, and Fig. 5 is a detail showing the means for adjusting the bars which close the openings between the rolls.

The rolls are mounted in a framework comprising two high frames A A′, and a lower frame A^2, these frames being strengthened by suitable cross-braces. The frame A carries the head A^3, which closes the outlet end of the seed-chamber. B is the grinding-roll, which is mounted in bearings in the frame A and the frame A^2. (See Fig. 2.) It comprises a series of disks *b*, preferably of corundum, separated by metallic disks *b′*, having stirring-arms preferably arranged spirally about the drum, as shown in Fig. 2, and shaped as shown, all of said disks being mounted on a shaft b^2, this construction being substantially that shown in Letters Patent to W. C. Baxter, No. 659,840, dated October 16, 1900. C is a feed-screw mounted on the same shaft with the grinding-roll B to turn therewith and located under the feed-opening B′. The feed-screw C is located in a cylindrical feed-chamber under the feed-opening B′ and extending from it to the end of the grinding-roll. The cylindrical wall C′ of the feed-chamber is mounted on the frame A′ and its end C^2 forms one of the bearings for the shaft b^2, carrying the grinding-roll.

To close in the space around the grinding-roll to form a chamber for the seed in which it shall be confined and brought in contact with the grinding-roll, I provide a series of auxiliary grinding-rolls, the machine shown in the drawings having six of such rolls, (marked D D′ D^2 D^3 D^4 D^5, respectively.) These six rolls, with a perforated plate D^6, completely surround the grinding-roll B, forming a chamber which is closed at each end by means of the head A^3 and the vertical wall C^2 of the feed-chamber.

Each auxiliary roll is mounted on a shaft *d d′*, &c. These auxiliary rolls are made of corundum, preferably, or some other grinding material, so that they may coöperate with the grinding-roll B to delint the seed, and as they are inclined to wear more or less it is therefore desirable that they be adjusted with relation to each other. It is also desirable that there may be no passage between them for the escape of seed or in which seed may be caught and crushed. For this reason I provide bars triangular in cross-section, which bars are lettered E E′ E^2 E^3 E^4, one bar being between each pair of auxiliary rolls and the bars being adjustable, so that they may substantially fill the space through which the seed might otherwise escape. In addition the gridiron D^6 is provided with adjustable means and with sides d^6 conforming to the space between the two lower rolls D and D^5, so that it may prevent any escape of the seed.

Each shaft *d d′*, &c., carrying an auxiliary roll, has thereon a pulley F F′, &c., around which runs an endless belt G, which belt also runs around the pulley B^2 on the shaft b^2, carrying the central grinding-roll, thus applying power to all these rolls from one driving-

pulley, G′ being an idler-roll for the purpose of properly directing the belt to the grinding-roll, as shown in Fig. 1. I prefer that each pair of rolls shall turn toward each other rather than that all the rolls should turn in the same direction, as by the means shown a more thorough movement is imparted to the seed.

The bearings for the auxiliary grinding-rollers, by means of which they may be adjusted with relation to each other and to a certain extent with relation to the central grinding-roll, is shown in detail in Fig. 4, which view may be examined in connection with Fig. 1. Similar bearings are provided at each end of the machine, being mounted at one end on the head A^3 and at the other on the frame A′, which is suitably shaped for the purpose. The bearing itself is lettered H and consists of a link h, having in one end a bearing h' for the shaft of the grinding-roll and in the other end an eye h^2, through which passes a bolt h^3, held by suitable nuts into and through a portion of the head of the frame. This head has two ears or projections h^4 for each roll, through which is a threaded opening which carries a screw h^5, this construction being such that upon turning the two screws h^5, one forward, the other back, the position of the roll with relation to the next roll will be adjusted, and to the extent that this shortens the radial distance between the shaft d and the shaft b^2 this roll is brought nearer to or farther from the grinding-roll. By adjusting all the rolls in or out the size of the delinting-chamber will be diminished or increased, as the case may be. h^6 is a collar pinned to the ends of each shaft to hold it from endwise motion.

The bars E E′, &c., are adjusted in place in a somewhat similar manner, as will be seen from Fig. 5, where the adjustment of one end of these bars is shown in detail. e is a projection from the head of the machine, and e' is a screw having a smooth surface (not shown) which lies in the said projection, e^2 and e^3 being collars pinned thereto to prevent it from moving longitudinally therein. e^4 is a projection from the bar E, having a threaded opening in which the screw e fits, so that by turning the screw in either direction the bar will be pushed in between the auxiliary rolls or withdrawn therefrom.

The chamber within the machine also has outlets for the seed, which are shown at J. There are three of these outlets, and each is provided with a sliding door j, sliding in ways j' on the head A^3 of the machine, the door itself being provided with a threaded portion in which runs the threaded end of a screw j^2, which passes through a projection j^3 from the head, in which projection the screw turns, but does not move longitudinally. Collars j^4, pinned to the screw on each side of the projection j^3, hold the screw in place. Thus by turning the screw the door may be either opened or closed, and hence the length of time which the seed is maintained in the chamber and subject to the action of the grinding-rolls may be regulated.

I prefer to provide the machine with a hood to receive the lint, and such a hood is shown at K, and by attaching to it an exhaust-fan the lint thrown off may be withdrawn from the machine. The details of construction of this machine may be changed somewhat, the purpose of the machine being to give to the seed all the grinding action which may be necessary to thoroughly delint it, and it is for this reason that I provide a number of auxiliary grinding-rolls about the central roll. The number of such rolls, however, may be changed and their arrangement with relation to the sheet-metal portion of the walls of the chamber may be altered, the invention not relating to the number of rolls or their exact arrangement, but to the use of a series of rolls forming with means to allow the escape of lint the walls of a chamber about a grinding-roll. A portion of the walls of the chamber may be smooth or perforated sheet metal, such as is shown in the prior Baxter patent, above referred to, or strips of corundum may be used with the auxiliary rolls for the purpose of closing in the chamber.

The distance between the grinding-roll and the nearest surface of the auxiliary rolls should not be more than an inch for the best results. By increasing the grinding-surface the machine may be made more compact and I believe will do its work better, faster, and with less expenditure of power than any other machine now known to me. Moreover, there is less waste of power, because during the stirring up of the seed wherever it comes in contact with either the grinding-roll or the auxiliary rolls it is acted upon by the grinding-surface of the rolls. Hence there is no useless friction, which only develops heat without in any way assisting in the delinting operation.

The gridiron D^6 may be either perforated or a plate having grate-bars. In either case the open space should be larger at the inlet than at the outlet of the machine in order to have a capacity to carry off more lint at the place where more lint is ground off from the seed.

While I have shown five bars E E′ E^2 E^3 E^4, in practice three of these bars, E, E^2, and E^4, may be omitted. The main purpose of these bars, as stated above, is to prevent the seed from escaping or being crushed, and as the seed is more liable to escape or be crushed between two rolls which are turning toward each other the chief need for such bars is between such rolls. In the machine shown in the drawings I have intended that the rolls D′ and D^2 should rotate toward

each other and that the rolls D^3 D^4 should also rotate toward each other, and hence the bars E′ and E^3 are more important than the others. By "rotating toward each other" I mean in such a manner that should any seed be caught between them it would be forced out from the seed-chamber. While I have shown the grinding-roll B as having corundum disks cylindrical on their exterior, they may be grooved, as shown in the said Baxter patent, or of some other shape, and in practice I should make these disks of considerably larger diameter, so that the space between the periphery of these disks and the auxiliary rolls should be slightly greater than the longest diameter of the seed—say approximately from five-eighths to three-fourths of an inch—the comparative dimensions in the drawings being simply indicative of the general construction of the machine and being of necessity somewhat out of proportion in order that the various parts may be clearly indicated.

What I claim as my invention is—

1. In a delinting-machine, in combination, a delinting-chamber formed by a series of auxiliary grinding-rolls, and a grinding-roll located within said delinting-chamber, as described.

2. In a delinting-machine, a grinding-roll, a series of auxiliary rolls located around said grinding-roll and provided with bars located between each pair of auxiliary rolls, as and for the purposes described.

3. In a delinting-machine, a grinding-roll, a plurality of auxiliary rolls located about said grinding-roll to form a portion of the walls of the seed-containing chamber, and means whereby the location of the axes of said auxiliary rolls may be adjusted with relation to each other, as and for the purposes described.

4. In a delinting-machine, a grinding-roll, a series of auxiliary rolls forming the walls of the grinding-chamber, adjustable means located between each pair of auxiliary rolls whereby the escape of seed between said rolls may be prevented.

5. In a delinting-machine, a grinding-roll, a seed-delinting chamber, the walls of which comprise auxiliary grinding-rolls, and means for preventing the escape of seed between a pair of such auxiliary rolls, comprising a bar arranged with relation thereto, as described.

6. In a delinting-machine, a grinding-roll, a seed-delinting chamber, the walls of which comprise a plurality of auxiliary grinding-rolls and means for the escape of the lint from said chamber, and means whereby the size of said chamber is adjusted, as described.

7. In a delinting-machine having a grinding-roll and a plurality of auxiliary rolls surrounding said grinding-roll, means for supporting one or more auxiliary rolls comprising a pair of links, each supporting a journal for such roll and pivotally mounted on the machine, and means whereby the position of such links may be adjusted comprising set-screws located on each side of said link and bearing against it, as described.

8. In a delinting-machine, in combination, a delinting-chamber formed by a series of auxiliary grinding-rolls, and a grinding-roll located centrally within said chamber, whereby an annular delinting-chamber is formed as shown.

9. In a delinting-machine, a grinding-roll and a seed-delinting chamber formed about said grinding-roll, the walls of which comprise one or more pairs of grinding-rolls, means for rotating each roll of each pair in a reverse direction from the other roll of the same pair, and means for the escape of lint from said chamber, as set forth.

10. In a delinting-machine, a series of auxiliary grinding-rolls arranged to form a delinting or seed-containing chamber, and a grinding-roll within said chamber.

11. In a delinting-machine, a grinding-roll and around said roll a series of auxiliary grinding-rolls arranged to form between the same and said interior grinding-roll an annular delinting or seed-containing chamber.

12. In a delinting-machine, a series of auxiliary grinding-rolls located in close proximity to one another and arranged to form within or between the same a delinting or seed-containing chamber, a grinding-roll within said chamber, and means for the escape of lint from said chamber, as described.

R. DERDEYN.

In presence of—
T. M. BLEAKLEY,
LOUIS V. RINDORF.