(No Model.) 3 Sheets—Sheet 1.

W. A. RAGSDALE.

COTTON SEED DELINTING MACHINE.

No. 589,857. Patented Sept. 14, 1897.

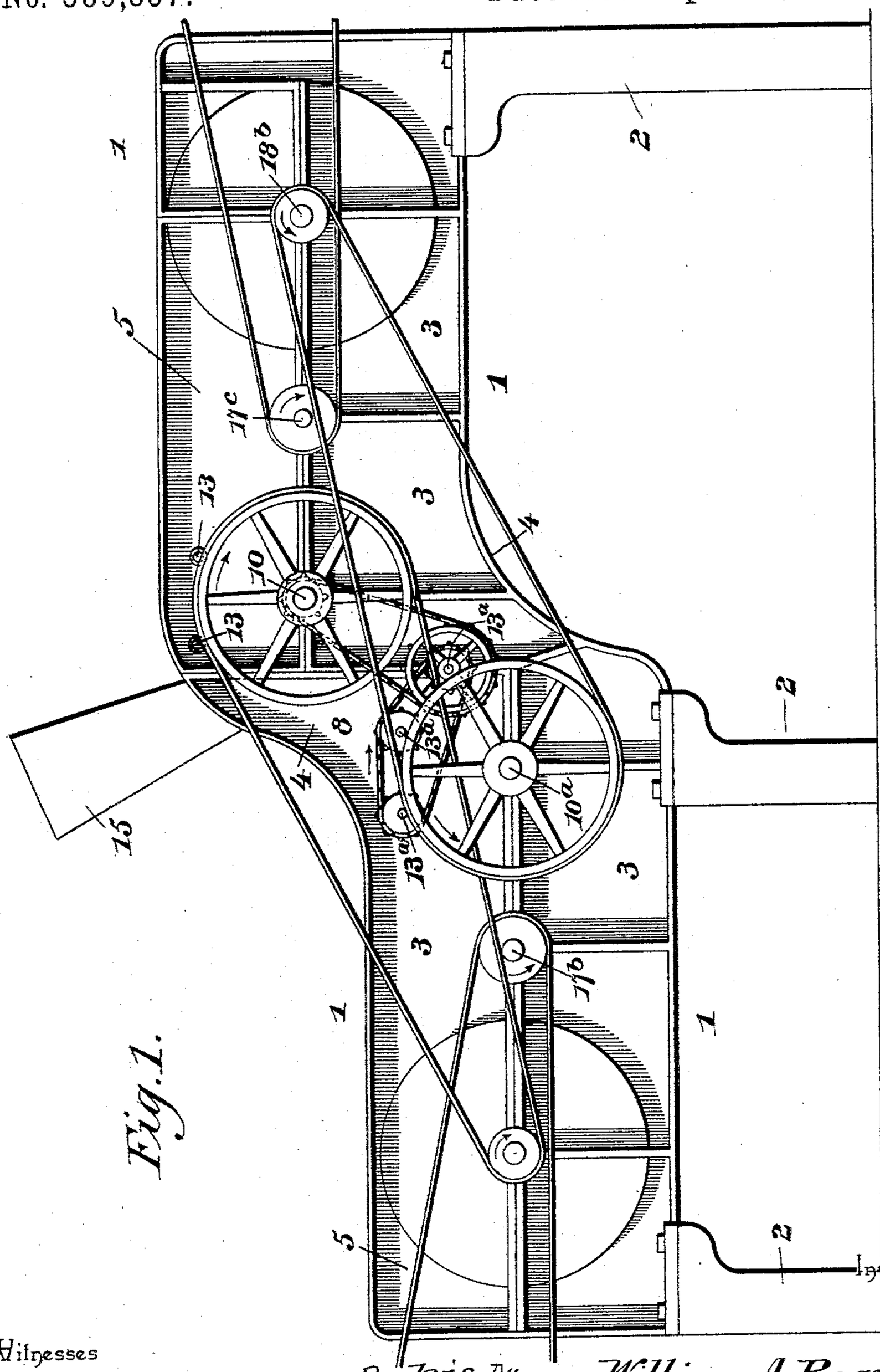

Fig. 1.

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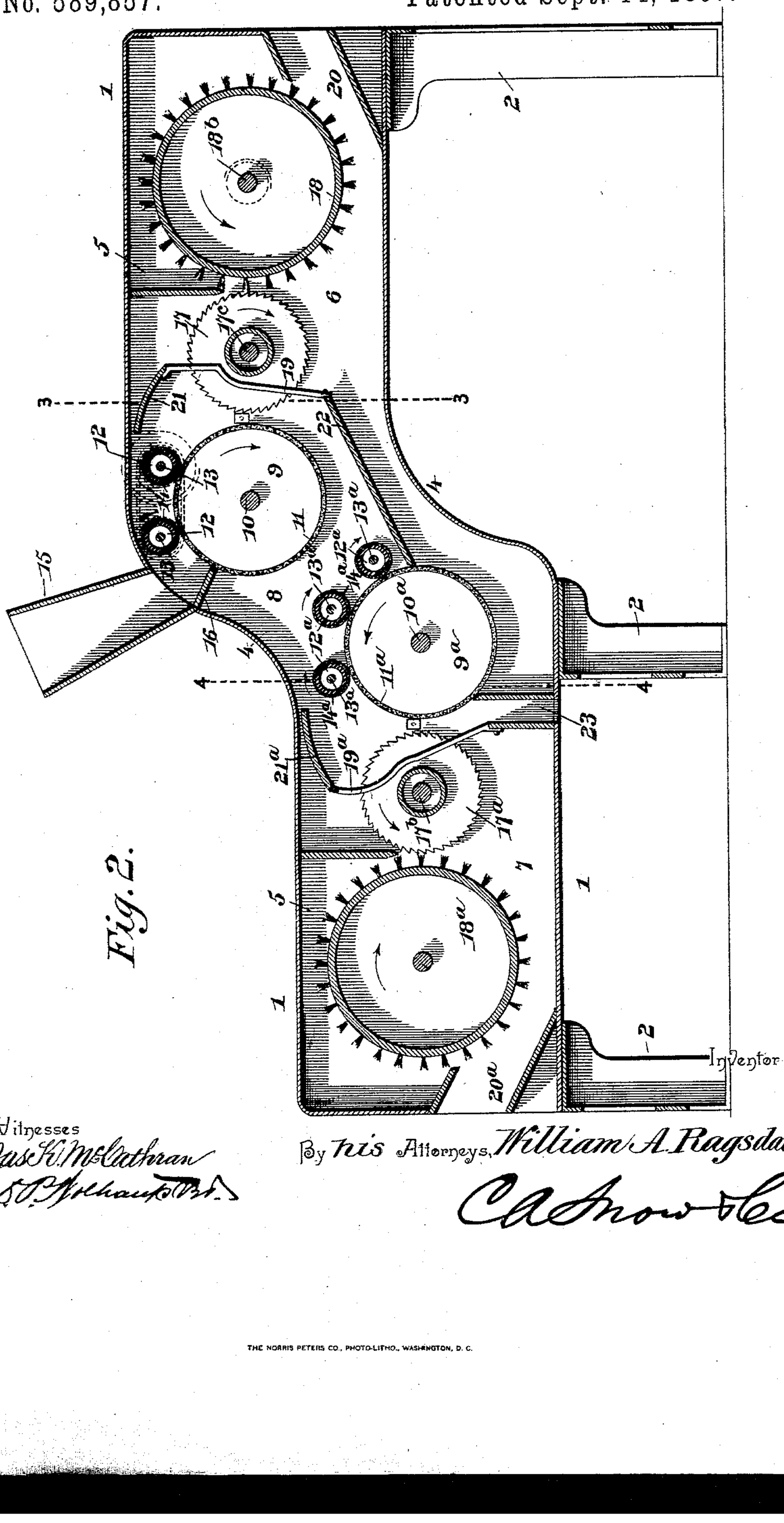

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

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COTTON SEED DELINTING MACHINE.

No. 589,857. Patented Sept. 14, 1897.

Fig. 3.

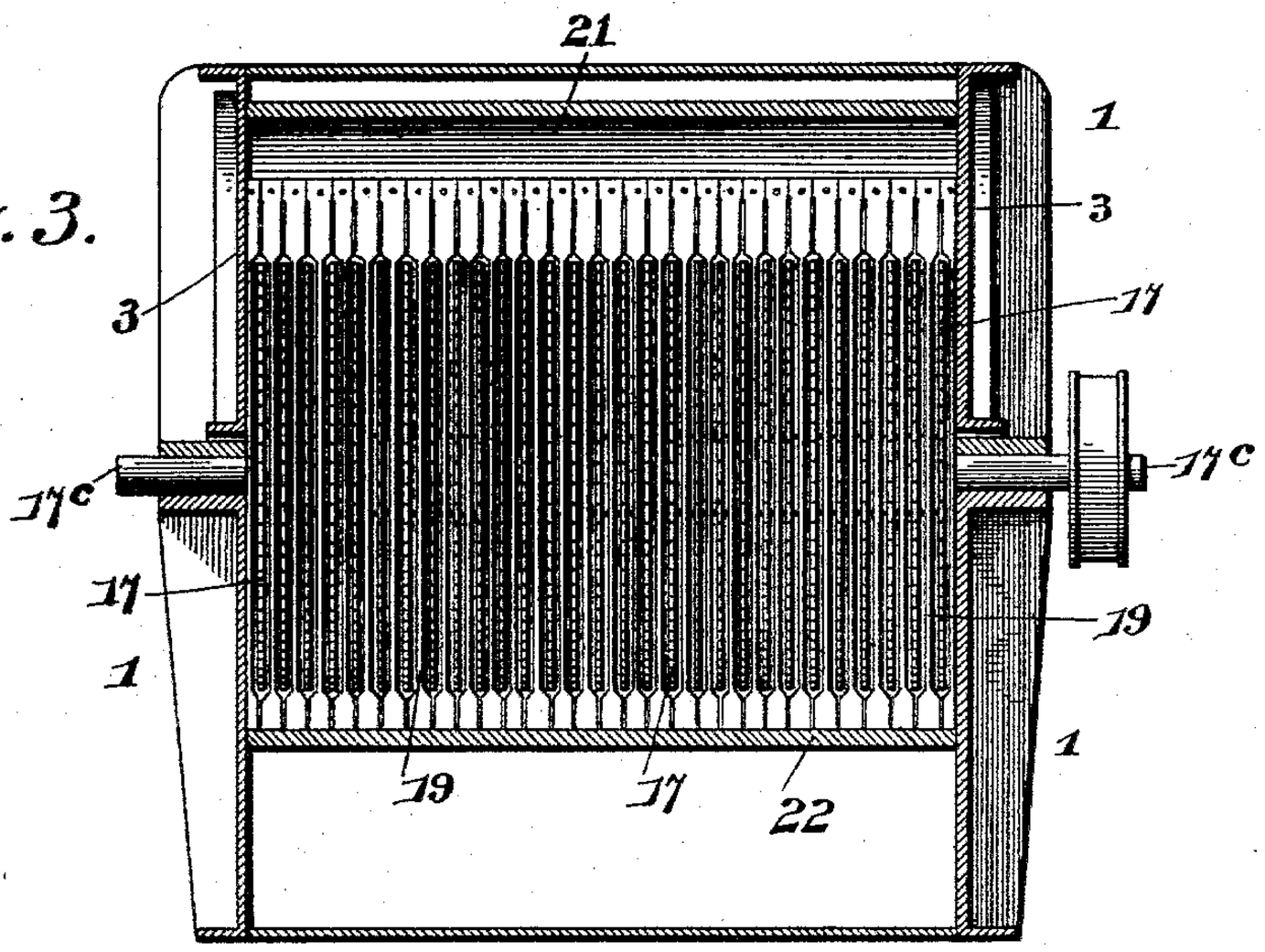
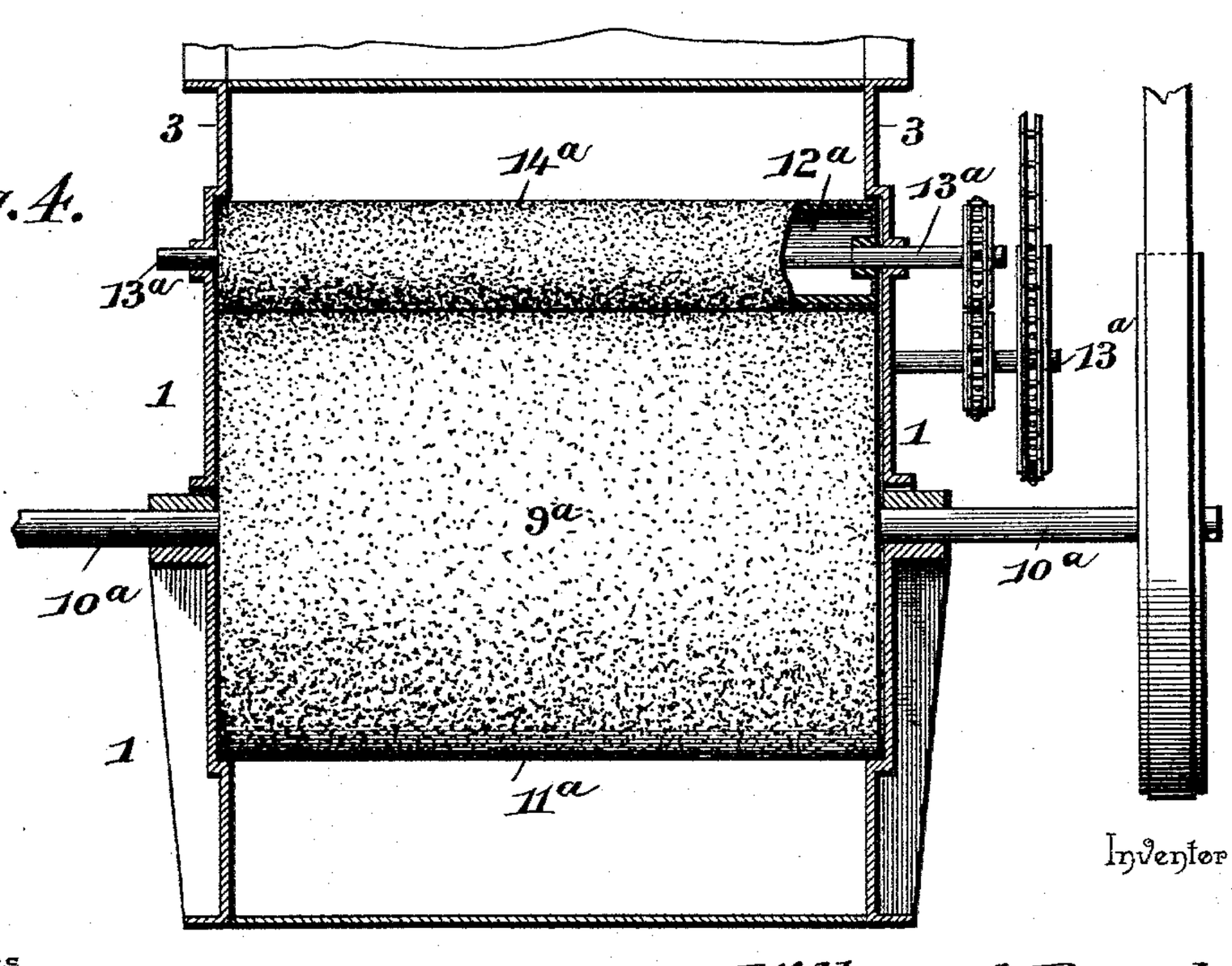


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM ADRON RAGSDALE, OF GREENVILLE, MISSISSIPPI.

COTTON-SEED-DELINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 589,857, dated September 14, 1897.

Application filed June 6, 1896. Serial No. 594,601. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ADRON RAGSDALE, a citizen of the United States, residing at Greenville, in the county of Washington and State of Mississippi, have invented a new and useful Cotton-Seed-Delinting Machine, of which the following is a specification.

This invention relates to cotton-seed-delinting machines.

The object of the present invention is to provide a new and useful construction of cotton-seed-delinting machine having positive and efficient means for thoroughly removing the lint or fiber from the cotton-seed after ginning without cracking or otherwise injuring the seed, and in the accomplishment of this result the invention also contemplates a novel arrangement of the delinting mechanism to provide for a double cleaning of the seed and a separation of the long and short lint or fiber.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

Figure 1 is a side view of a cotton-seed-delinting machine constructed in accordance with this invention. Fig. 2 is a central vertical longitudinal sectional view thereof. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 2. Fig. 4 is a similar view on the line 4 4 of Fig. 2.

Referring to the accompanying drawings, 1 designates the machine-casing, preferably supported on suitable legs or standards 2 and having opposite continuous sides 3, provided with intermediate inclined portions 4. The intermediate inclined portions 4 of the casing sides 3 provide such sides with separate upper and lower horizontal portions 5, disposed in different parallel horizontal planes, as plainly illustrated in Fig. 2 of the drawings. The construction of the casing sides 3 forms the casing into separate horizontal upper and lower delinting-compartments 6 and 7, respectively, communicating with each other through the central inclined or angled portion 8 of the casing formed between the intermediate inclined or angled portions 4 of the opposite continuous casing sides 3.

The machine-casing 1 is made in suitable sizes to suit the required capacity of the machine, and in the present invention the casing has arranged at the inner end of the upper horizontal compartment 6 thereof a horizontal rotating delinting-roll 9.

The horizontal delinting-roll 9 is mounted on a roll-shaft 10, journaled transversely within the casing 1 and having a suitable driving connection therewith exterior to the casing to provide for imparting to the roll 9 a positive rotation in the fixed direction indicated by the arrow. The roll 9 is mounted to rotate transversely within the casing 1 at a point between the upper and lower sides of the casing, and within the upper part of the central inclined portion 8 at the inner end of the compartment 6, and said roll is provided with an abrasive surface 11, preferably formed by a covering of emery-cloth or similar material that will exert an abrading action on the cotton-seed, so as to loosen up the fiber or lint clinging thereto. The horizontal rotating delinting-roll 9 has arranged directly thereabove and in contact with the same a plurality of hollow pneumatic cushion-rollers 12, which are arranged on the arc of a circle to form a concave for the top portion of the roll 9 as the same rotates.

The pneumatic cushion-rollers 12 are spaced at suitable distance apart and are mounted on the transverse roller-shafts 13, journaled transversely within the casing above the roll 9 and having their shaft extremities outside of the casing connected with suitable gearing to provide for positively rotating the rollers 12 in an opposite direction to the rotation of the roll 9, whereby the adjacent contacting surfaces of the roll 9 and the rollers 12 will move in the same direction. The rollers 12 essentially consist of cylindrical shells, of rubber or similar inflatable material, and are designed to be inflated with air, so as to be given a true cylindrical form to enable them to perform every function of a roller, and said rollers are provided with peripheral abrasive surfaces 14, preferably formed by a covering of emery-cloth or similar material that will exert a similar action to the abrasive peripheral surface 11 of the roller 9 immediately below the rollers 12, and at this point it is to be noted that the gear-

ing or driving connections for the rollers 12 provide for imparting to the said rollers a slower rotation than the roll 9 in order to retard and drag the seed between the roll 9 and rollers 12 during the delinting action while the machine is in operation.

The casing 1 has fitted in the top side thereof at a point intermediate of its ends a feed-hopper 15, communicating with the interior of the casing and having extended therefrom within the casing a feed-board 16, which projects in close proximity to one side of the roll 9 and forms a cut-off board to prevent the seed fed into the machine from falling down through the central inclined or angled portion 8 of the casing. The feed-hopper 15 and the board 16 are disposed above the roll 9 and at one side of its vertical center to provide for feeding the undelinted cotton-seed onto the abrasive peripheral surface of the roll 9 at one side of the plurality of pneumatic cushion-rollers 12, so that as the roll 9 rotates the same will carry the seed under the rollers 12, which, in conjunction with the roll 9, will loosen up the clinging fiber or lint from the seed.

The upper horizontal delinting-compartment 6 of the casing 1 has arranged therein lint-removing mechanism essentially comprising a cylinder of closely-arranged circular lint-removing saws 17 and a rotating lint-brush 18 at one side of the cylinder of saws. The cylinder of saws 17 is mounted on the transverse saw-shaft 17^c, journaled at opposite sides of the casing and having a suitable driving connection therewith for imparting to the gang or cylinder of saws the necessary rapid rotation. The gang or cylinder of saws 17 correspond to ordinary gin-saws and are of the same construction, but in the present invention the saws are arranged sufficiently close together to prevent ordinary sizes of seed from falling therebetween. The saws 17 project at one side of the saw-shaft 17^c through the intervals between the upright series of saw-ribs 19, said ribs being of the usual construction and arranged between every pair of saws to close the spaces between the saws and disposed sufficiently close together to prevent seed from passing therebetween, while at the same time allowing the saws to pull or drag the lint through the spaces therebetween in the usual way.

The rotating lint-brush 18 of the lint-removing mechanism is illustrated as being of a greater diameter than the roll 9 and the cylinder of saws 17 to insure the thorough cleaning of the saws and delivery of the long lint out of one end of the casing, and said brush 18 is mounted on a brush-shaft 18^b, journaled transversely within the casing 1 and driven by suitable belt connections at a much higher rate of speed than the saws 17 to insure the brush performing its function in a positive and efficient manner. The rotating brush 18 is mounted directly at one side of the saws 17 and rotates in an opposite direction to said saws adjacent to the outer end of the upper delinting-compartment 6 and at the inner end of a short discharge-flue 20, built within one end of the machine-casing and designed to carry off from the machine the lint impelled therethrough by the draft of the brush.

The saw-ribs 19 are connected at their upper ends with an inwardly-curved breast-board extension 21, which is extended in a direction above and toward the roll 9 and serves to inclose in the roll-box formed in the interval between and above the adjacent rotating delinting-roll 9 and lint-removing saws 17, it being noted at this point that said roll 9 and saw 17 rotate in sufficiently-close proximity to each other to support in the crotch therebetween a roll or bat of the seed and loosened lint or fiber, as illustrated in the drawings. The lower ends of the saw-ribs 19, which are slightly inclined, connect with the upper end of an inclined seed-board 22, which is arranged below the delinting-cylinder 9 and declines to a point directly at one side of the lower second delinting-roll 9^a.

The second delinting-roll 9^a is mounted on a roll-shaft 10^a, journaled transversely within the casing 1 and having suitable driving connections therewith, and the said roll 9^a is supported by the shaft 10^a to rotate horizontally within the casing 1 at a point below the roll 9 within the lower part of the central inclined portion 8 at the inner end of the lower delinting-compartment 7, but the said roll 9^a rotates in an opposite direction to the rotation of the upper delinting-roll 9. The lower delinting-roll 9^a is also provided with an abrasive surface 11^a, corresponding to the abrasive surface 11 of the roll 9, and directly above the roll 9^a is arranged a plurality of pneumatic cushion-rollers 12^a, identical in construction to the rollers 12 and mounted on transverse roller-shafts 13^a and provided with peripheral abrasive surfaces 14^a, which rotate in contact with the peripheral abrasive surface of the roll 9^a therebelow. The series of pneumatic cushion-rollers 12^a are duplicates of the rollers 12 in construction and operation and have the same relative arrangement above the roller 9^a as the rollers 12 above the roll 9.

The lower delinting-roll 9^a operates in connection with a lint-removing mechanism similar to the lint-removing mechanism for the upper delinting-roll, said lint-removing mechanism for the lower delinting-roll comprising the cylinder or gang of closely-arranged saws 17^a, the rotating lint-brush 18^a at one side of the saws 17^a, and the upright series of saw-ribs 19^a, arranged between the saws 17^a at the side of the saw-shaft 17^b next to the lower delinting-roll 9^a. The brush 18^a works at the inner end of a short discharge-flue 20^a, built within the end of the machine-casing opposite the flue 20 and designed to carry off from the machine the short lint impelled therethrough by the draft of the brush 18^a. The saw-ribs 19^a have extended from their upper ends an inwardly-curved breast-board exten-

sion 21ª, serving to inclose the roll-box formed in the interval between and above the closely-adjacent rotating roll 9ª and lint-removing saws 17ª, and directly below the interval between the lower delinting-roll and the adjacent lint-removing saws is arranged a seed-discharge chute 23, disposed below and in line with the lower ends of the saw-ribs 19ª and serving to carry off the completely-delinted seed after the same has been subjected to the delinting action of both the upper and lower delinting mechanism within the casing.

From the foregoing description it will be understood that the machine-casing has mounted therein two separate duplicate sets of delinting mechanism, the upper of which sets of mechanism performs a primary delinting action and removes long lint or fiber from the seed and discharges such lint or fiber out at one end of the casing, while the lower of said sets of delinting mechanism completes the delinting of any seed not completely delinted by the primary mechanism, and necessarily removes nothing but short lint or fiber from the seed, but which is discharged from the end of the machine-casing opposite the end from which the long lint or fiber is discharged, thereby providing a machine not only capable of completely delinting the ginned cotton-seed, but also capable of positively separating the long and short lint and discharging the same at different points.

In the operation of the machine the ginned cotton-seed is introduced through the hopper 15 onto the upper delinting-roll 9, the rotation of which roll carries the seed under and against the pneumatic abrasive cushion-rollers 12, which rotate in an opposite direction to the roll 9 and slower than the same, so as to exert a retarding and dragging influence on the seed and assisting to tear and loosen the lint or fiber from the seed. A roll or bat of the seed and lint accumulates within the roll-box above the roll 9 and saws 17 and is supported and rotated in the space between said roll and saws, during which rotation of the roll or bat referred to the saws 17 constantly separate the lint from the seed by dragging the lint between the ribs 19, and the lint is removed from the saws by the brush 18 and discharged through the flues 20. The seed which is freed from the roll-box above the roll 9 and saws 17 falls onto the upper end of the inclined seed-board 22 and is delivered onto and against the lower delinting-roll 9ª, which in turn carries the delinted and partly-delinted seed under and against the pneumatic abrasive cushion-rollers 12ª, which have a similar action to the rollers 12, before referred to, and in connection with the action of these pneumatic rollers it is to be observed that the same not only exert a retarding and abrasive action on the seed, but also yield sufficiently to prevent any injury whatever to the seed. The lint is separated from the seed in the roll-box between the roll 9ª and the saws 17ª by the said saws, and is discharged out through the flue 20ª by the brush 18ª, the completely-delinted and cleaned seed falling through the seed-discharge chute 23.

The essential features of the machine have been particularly referred to, but it is to be understood that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a delinting-machine, a delinting-roll having an abrasive surface, a hollow roller formed with a cylindrical thin yielding shell having a peripheral roughened or abrasive surface similar to the corresponding surface of the delinting-roll and normally contacting therewith, means for rotating the delinting-roll in one direction, and means for rotating the hollow roller in an opposite direction to the delinting-roll and at a slower speed, substantially as set forth.

2. In a delinting-machine, the casing, a horizontal delinting-roll mounted within the casing and having a roughened or abrasive surface, a plurality of cushion-rollers arranged on the arc of a circle above and in contact with the delinting-roll and provided with cylindrical thin rubber shells having roughened or abrasive surfaces, means for rotating said rollers in an opposite direction to the delinting-roll and slower than the latter, and lint-removing mechanism arranged at one side of the delinting-roll, substantially as set forth.

3. In a delinting-machine, the casing provided with a lint-flue at each end, upper and lower separate adjacent sets of delinting mechanism mounted within the casing, independent lint-removing mechanism arranged within each end of the casing at one side of each set of delinting mechanism, and a seed-board arranged between the two sets of delinting mechanism for delivering seed from one to the other, substantially as set forth.

4. In a delinting-machine, the casing provided with a central inclined portion, separate upper and lower horizontal delinting-compartments and a lint-discharge flue at each end, two separate sets of delinting mechanism arranged one above the other within the central inclined part of the casing, lint-removing mechanism arranged at one side of each set of delinting mechanism and adjacent to each lint-flue, and an inclined seed-board arranged within the casing below the upper set of delinting mechanism, substantially as set forth.

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

WILLIAM ADRON RAGSDALE.

Witnesses:
GEORGE WHEATLEY,
THOMAS P. CUMMINGS.