

No. 821,254.

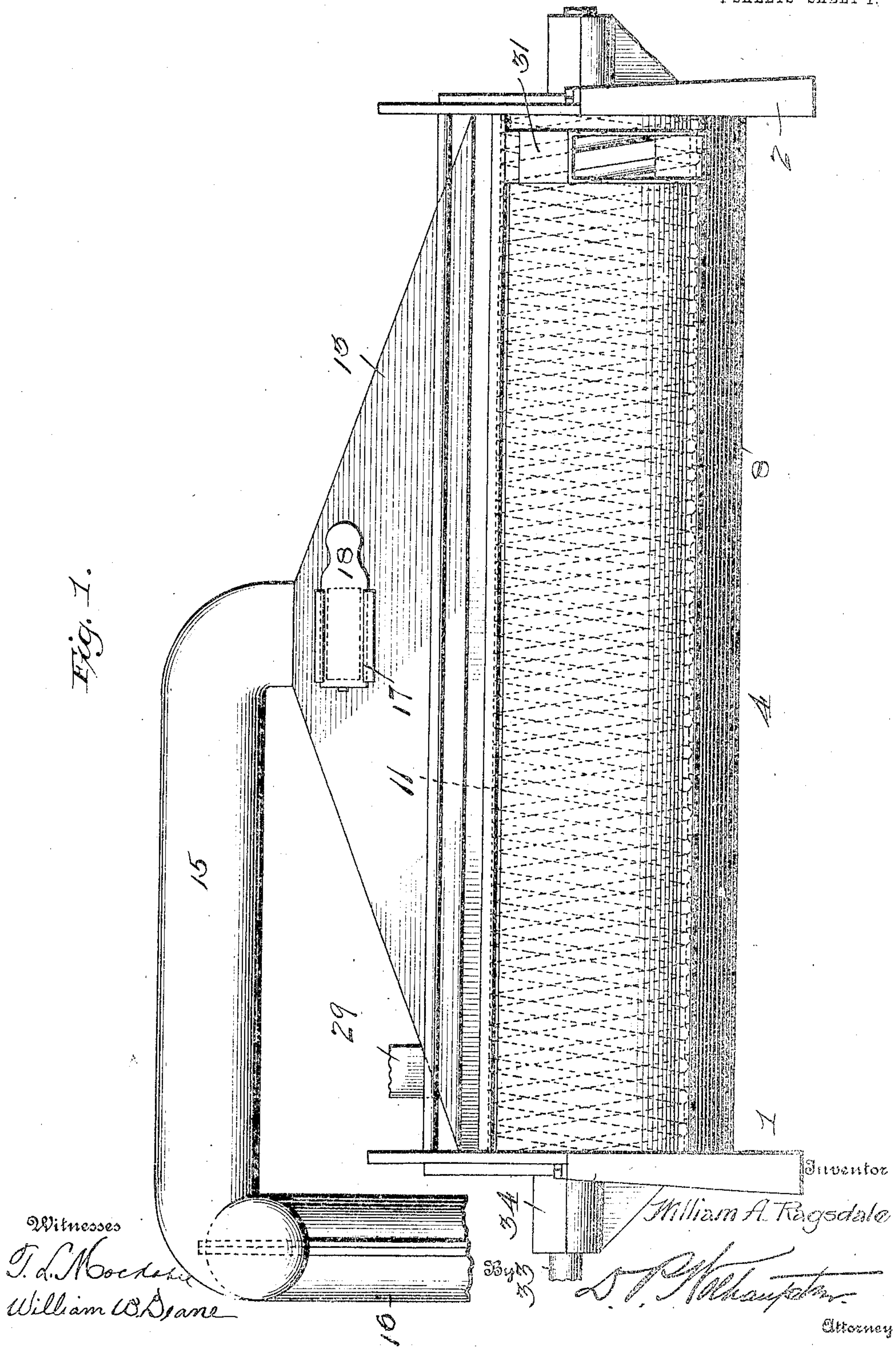
PATENTED MAY 22, 1906.

W. A. RAGSDALE.
COTTON SEED DELINTING MACHINE.

APPLICATION FILED OCT. 18, 1905.

4 SHEETS—SHEET 1.

Fig. 1.



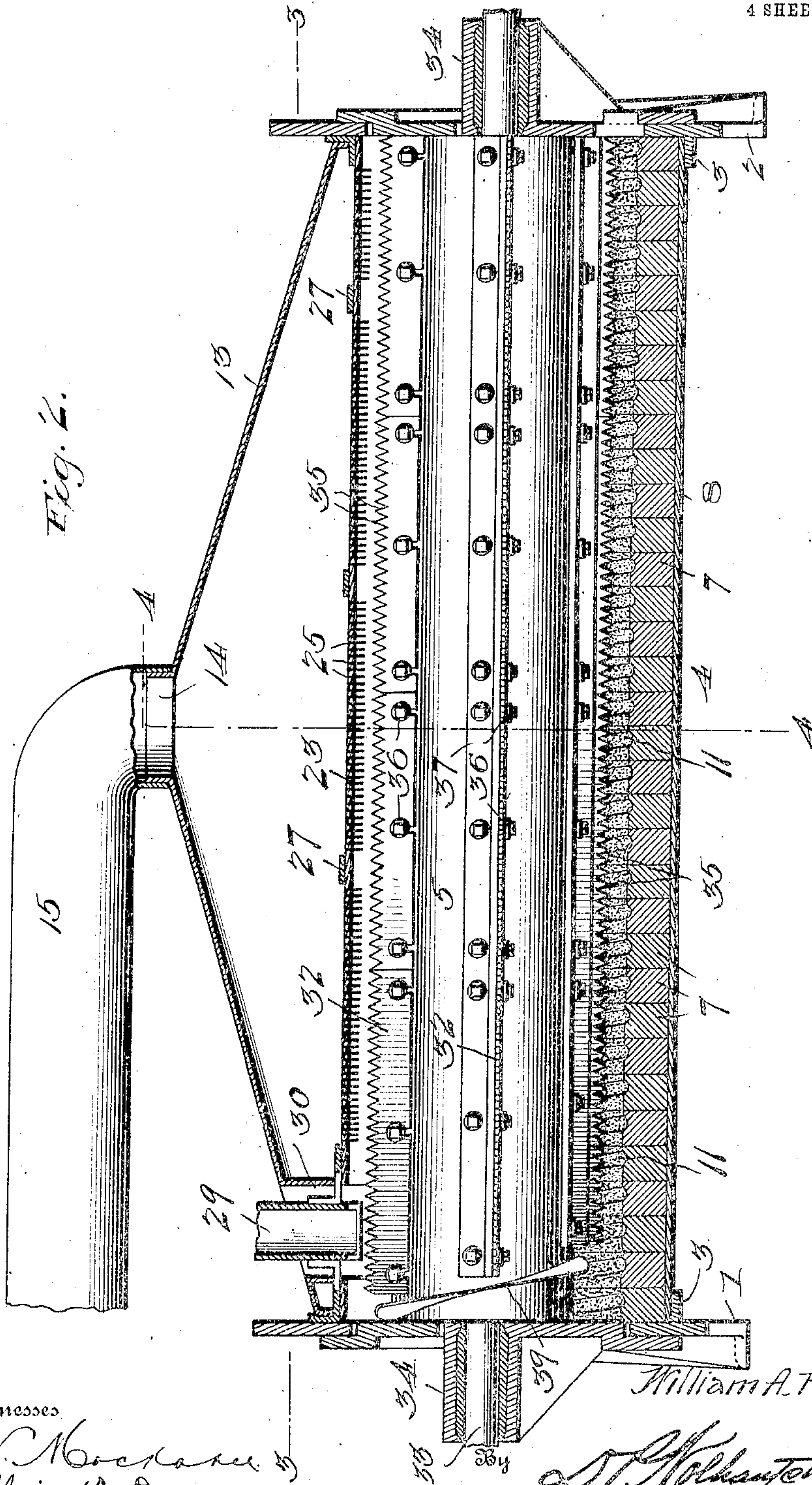
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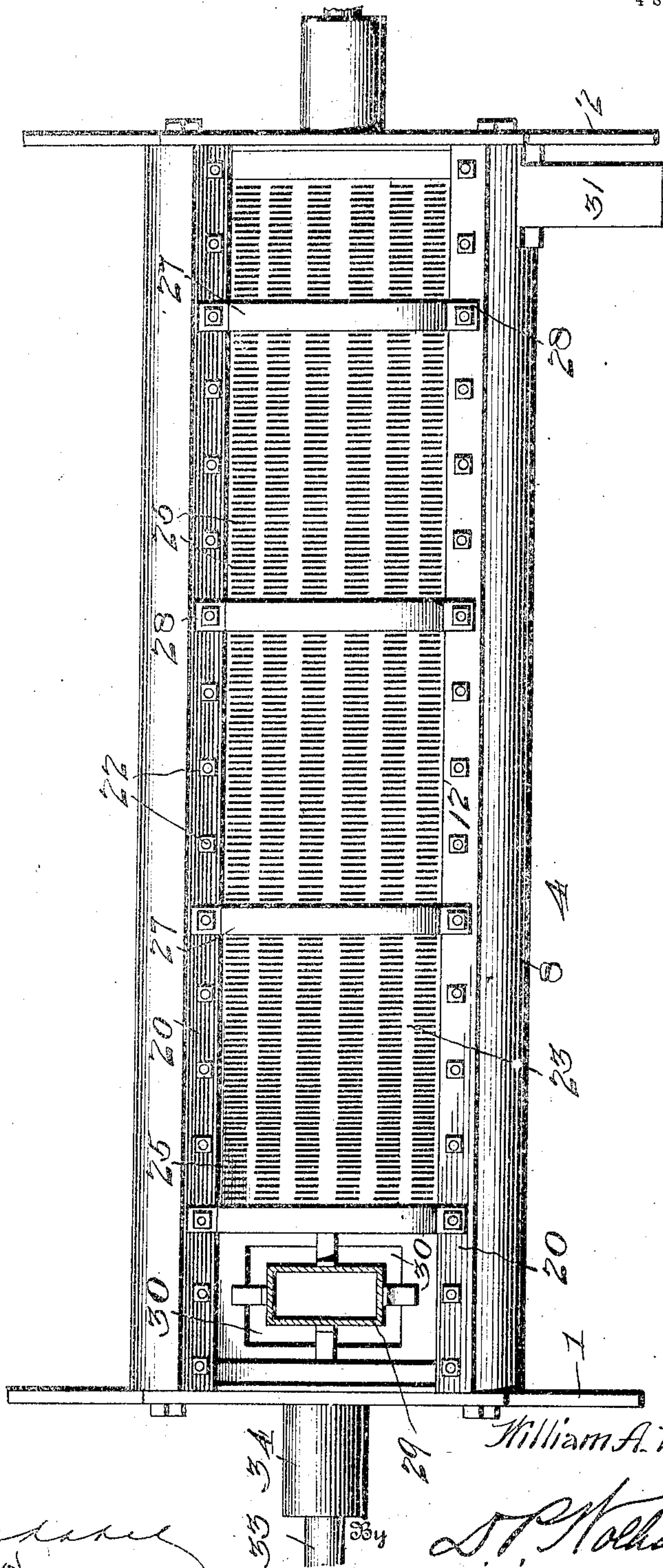


Fig. 3.

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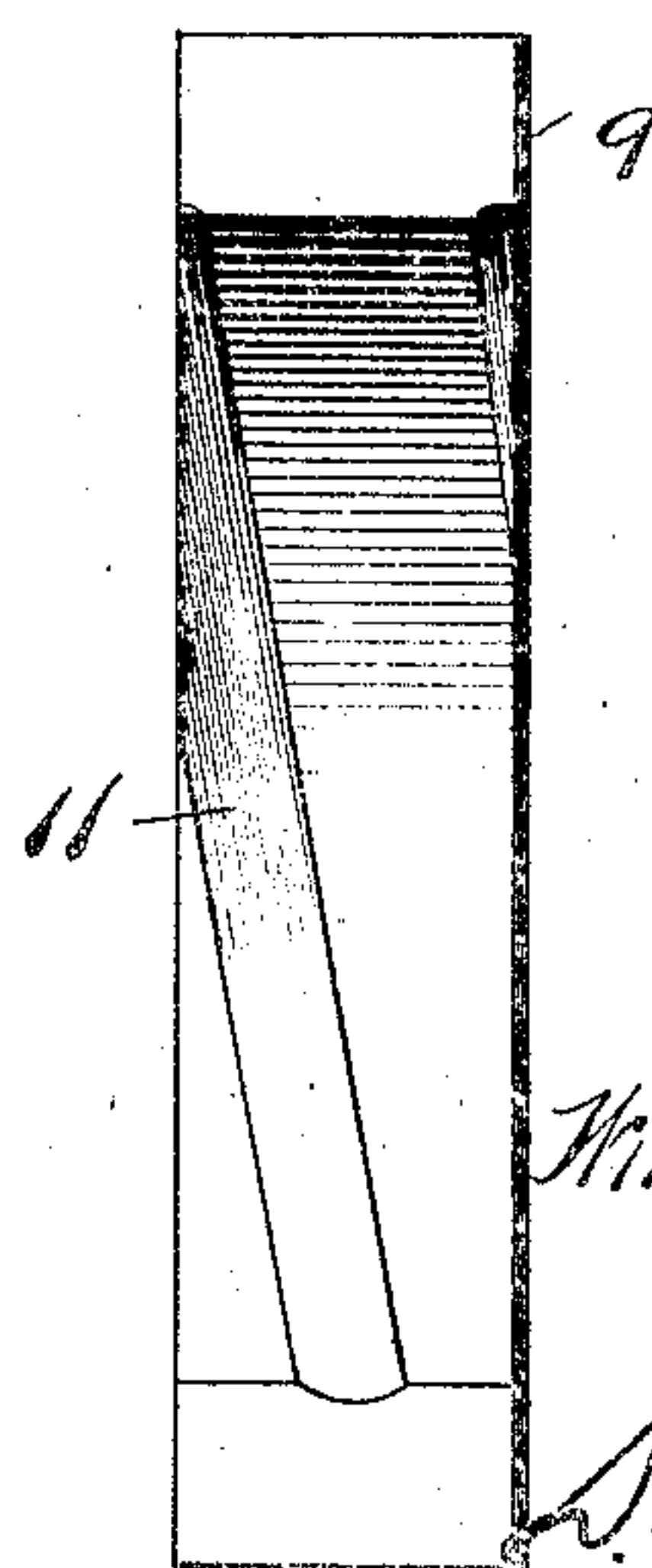
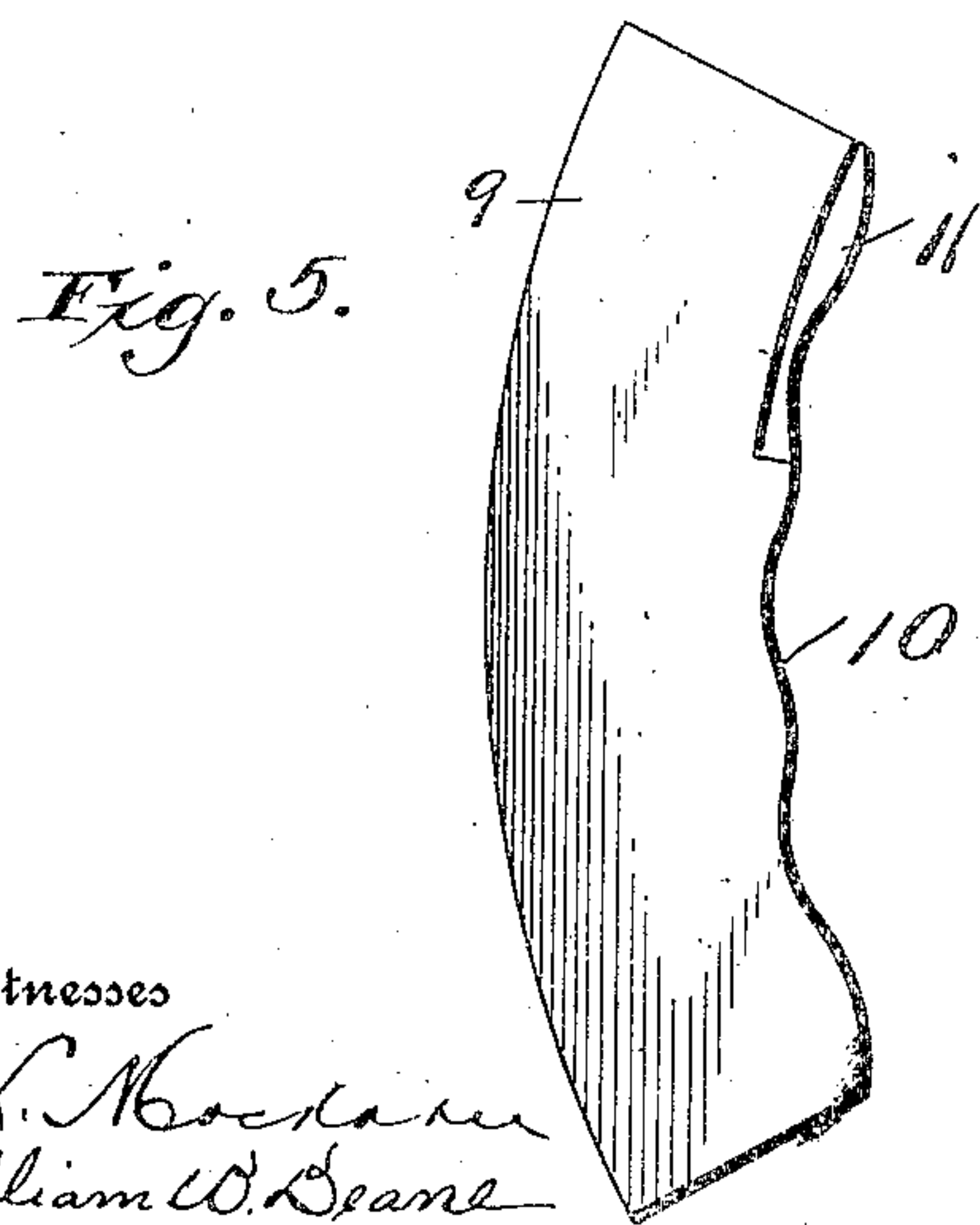
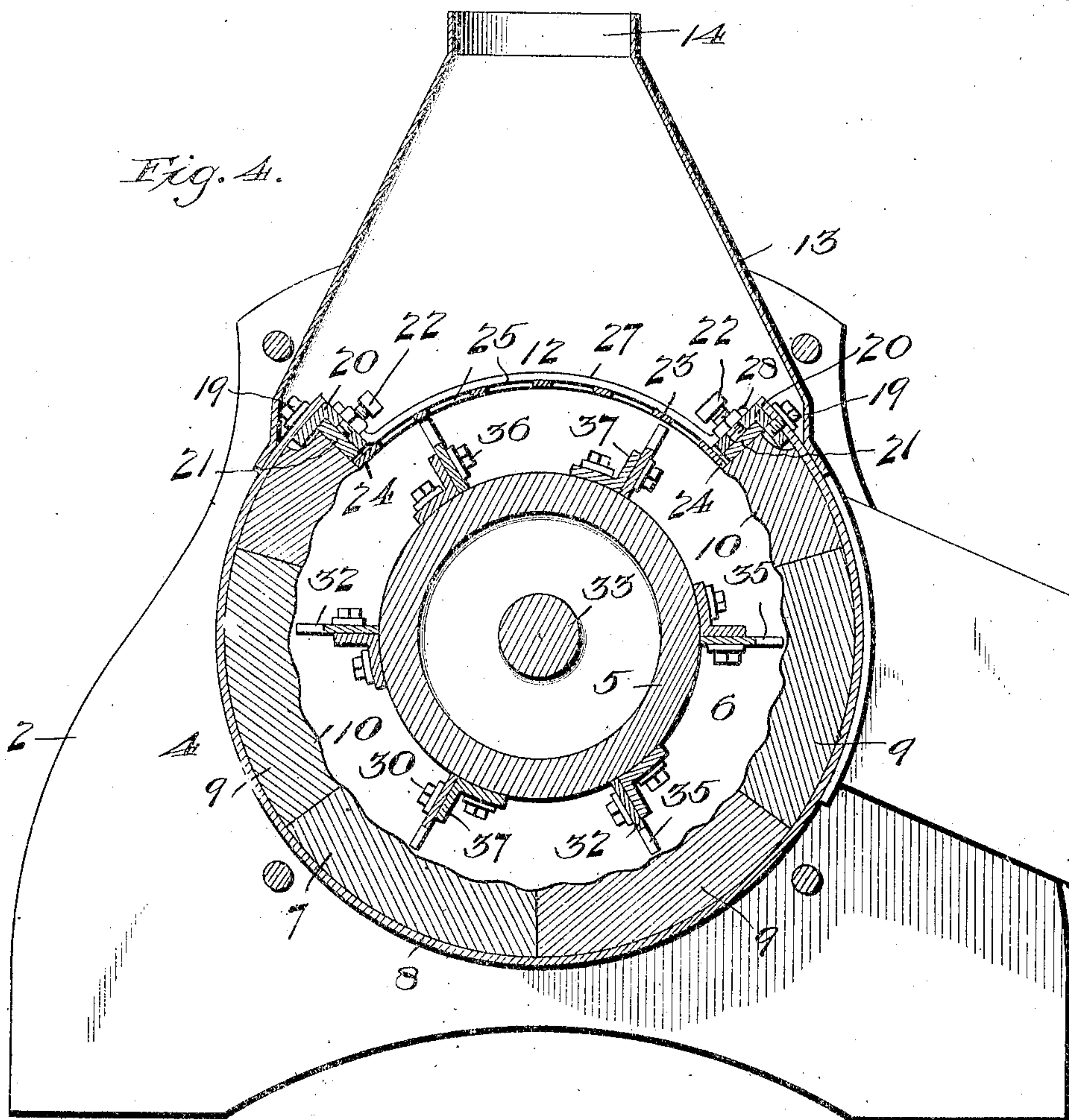
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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INGTON, DISTRICT OF COLUMBIA, A CORPORATION OF MAINE.

COTTON-SEED-DELINTING MACHINE.

No. 821,254.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed October 18, 1905. Serial No. 283,357.

To all whom it may concern:

Be it known that I, WILLIAM ADRON RAGSDALE, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Cotton-Seed-Delinting Machines, of which the following is a specification.

This invention relates to an improved construction of cotton-seed-delinting machine for removing the lint from the seed and leaving the latter in a cleaned condition without removing or damaging the hull.

To this end the invention has particularly in view a practical construction of machine which in its use as a delinter subjects the cotton-seed to a thorough scouring action without cracking or otherwise damaging the seed, thus providing for placing the same in the best marketable condition.

A further object of the invention is to provide a delinting-machine so constructed as to not only accomplish the thorough scouring of the seed to thoroughly delint the same, but also providing for the complete separation and removal of dust, trash, and other foreign matter.

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

The essential features of the invention involved in carrying out the objects above indicated are susceptible to structural modification without departing from the scope thereof; but a preferred embodiment of the invention is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of a delinting and hulling machine constructed in accordance with the present invention. Fig. 2 is a vertical longitudinal sectional view thereof. Fig. 3 is a horizontal sectional view on the line 3 3 of Fig. 2. Fig. 4 is an enlarged vertical cross-sectional view of the machine on the line 4 4 of Fig. 2. Figs. 5 and 6 are side and face elevations, respectively, of a section or block of one of the abrasive elements or rings.

Like references designate corresponding parts in the several figures of the drawings.

The machine embodies in its general organization the oppositely-arranged end heads or castings 1 and 2, constituting supporting members and provided upon their inner sides with the inwardly-projecting concentric holding-flanges 3, which receive and support the opposite ends of an elongated scouring-cylinder, (designated in its entirety by the reference-numeral 4.) This scouring-cylinder accommodates therein an agitator-drum 5, so arranged as to provide between the same and the inner wall of the scouring-cylinder a working space 6, which receives the material or seed to be treated. To secure the necessary agitation and scouring of the seed, it is necessary that a relative rotation be maintained between the interior scouring-cylinder and the agitator-drum. Hence the rotation of either of these elements of the machine would effect the desired result. However, for the purposes of this application there is illustrated a preferred embodiment of the invention—that is, to have the scouring-cylinder held stationary and the agitator-drum mounted for rotation. The drum is designed to rotate at a very high rate of speed within the scouring-cylinder to cause the working of the seed against and over the inner scouring-surface of the scouring-cylinder.

Referring more particularly to the construction of the scouring-cylinder 4, the same is preferably of a general cylindrical shape and is provided with an inner scouring-surface made up of a plurality of abrasive rings 7, arranged side by side to provide an abrasive surface throughout the entire extent of the scouring-cylinder and held in position by suitable supporting means. The preferable supporting means for the abrasive rings consists of an imperforate sheet-metal shell 8, the ends of which are received on the holding-flanges 3 of the end heads and which therefore extend longitudinally the full length of the machine from one end to the other.

There are a plurality of abrasive rings 7, arranged in close-fitting relation side by side within the supporting-shell 8, as plainly shown in Fig. 2 of the drawings, and provide

practically a continuous abrasive scouring-surface throughout the scouring-cylinder. It is also preferable in constructing this scouring-surface to form each abrasive ring of a plurality of matching segmental blocks or sections 9, thus providing a construction in which every portion of the entire abrasive scouring-surface of the cylinder is individually removable and replaceable without disturbing other unimpaired portions of the scouring-surface. The individual abrasive blocks 9 of each ring 7 are constructed of any substance suitable for delinting and hulling purposes, although it is preferable to employ carborundum for this purpose.

The inner cylindrical scouring-surface of the scouring-cylinder is rendered more positive in its action by providing each of the abrasive rings 7 with a corrugated or scalloped working face 10, which not only increases the area of the active scouring-surface, but also has a retarding effect upon the seed. Furthermore, the inner working face of the scouring-surface of the scouring-cylinder has formed therein a spiral conveyer-groove 11. Each individual abrasive block 9 has the working face thereof diagonally crossed by a section of the groove 11, so that when all of the individual blocks 9 of the abrasive rings 7 are assembled the different sections of the groove will match and provide continuous spiral grooves, such as indicated in Fig. 1 of the drawings, and which, in connection to the agitator-drum, serve to provide a uniform and positive screw-like feed of the seed from one end of the machine to the other.

The abrasive rings 7, made up of the blocks 9, have been designated as "rings" on account of their circular shape within the cylindrical shell 8 therefor, although the said elements 7 are not complete rings in view of the provision of the scouring-cylinder 4 in the top side thereof with a longitudinal suction discharge-opening 12. This suction discharge-opening 12 extends the full length of the cylinder and provides communication between the interior working space 6 and a suction-hood 13, mounted on top of the scouring-cylinder. The suction-hood 13 is of a downwardly-flaring form, so as to extend over the side and end edges of the suction discharge-opening 12. The said hood 13 is therefore of a slightly-greater width at its base than the opening 12 and is also coextensive in length with the scouring-cylinder. The said hood 13 has the side and end walls thereof converged upwardly to the central outlet-neck 14, with which is suitably connected one end of an air-suction pipe 15, leading to the inlet of a suitable exhaust-fan 16, which provides for maintaining a suction of sufficient intensity to draw out and discharge from the machine loose lint, trash, and any other foreign matter worked from the seed

within the working space 6. Furthermore, the said suction-hood 13, which is arranged over the suction discharge-opening 12, is provided in one side thereof with an auxiliary air-inlet 17, designed to be covered and uncovered by the regulating damper or gate 18, which may be manipulated to feed more or less air into the suction-hood to thereby increase or diminish the suction at will. Hence through the medium of the regulating damper or gate 18 the entire delinting action and rapidity of discharge of the delinted seed may be controlled.

At the opposite side edges of the suction discharge-opening 12 the edges of the cylindrical supporting-shell 8 have bolted or otherwise fastened thereto, as at 19, the angled retaining-plates 20. These plates extend longitudinally the full length of the shell 8, and beneath the inwardly-projecting flanges thereof are arranged longitudinal holding-bars 21, bearing against the terminal abrasive blocks 9 next to the opening 12 and clamped against the same through the medium of the clamping-screws 22, thus providing simple and practical means for fastening all of the abrasive blocks of the entire scouring-surface detachably in position within the supporting-shell.

The suction discharge-opening 12 is covered by a segmental separating-screen 23. This screen 23 constitutes a segment of the scouring-cylinder, and the longitudinal side edges thereof, as at 24, abut against the terminal edges of the abrasive rings next to the inner edges of the holding-bars 21, so as to form a continuation of the inner surface of the scouring-cylinder, as plainly shown in Fig. 4 of the drawings. The said screen 23 extends the full length and width of the suction discharge-opening and essentially consists of a sheet-metal plate or plates provided therein with continuous parallel rows of transversely-disposed discharge slits or perforations 25, thus making the screen perforate throughout the entire extent thereof.

The screen 23 not only constitutes a complete closure for the opening 12, but is also designed to be used as a door to permit access to the interior of the machine whenever it may be necessary. Hence the screen 23 is removable, and to provide for the proper support and removal of said screen the perforate plate or plates constituting the same are suitably screwed to a skeleton carrying-frame essentially consisting of a plurality of the curved cross-bars 27, the ends of which may be conveniently formed with angled attaching-feet 28, bolted or otherwise detachably fastened to the inwardly-projecting flanges of the angle plates or irons 20. At this point it may be noted that the preferable manner of feeding and discharging seed and of admitting air to the working space 6 is shown in the drawings. These means in-

clude the provision of a feed-spout 29 for the seed, arranged at one end thereof and extending through the suction-hood and the separating-screen at that end. The feed-spout 29 is illustrated as being concentrically supported within and spaced from the edges of the air-inlet neck or spout 30, which therefore provides for admitting air into the scouring-cylinder about the feed-spout for the seed. By reason of thus drawing air into and about the entering seed an initial separation of dust and trash and other foreign material assists in the delinting action. Also at the end of the machine opposite the feed-spout 29 and the air-inlet neck 30 the scouring-shell is provided with an end seed-discharge spout 31, from which the delinted seed are delivered. This seed-discharge spout 31 also constitutes an extra air-inlet from that end of the scouring-cylinder, and consequently a uniform draft and suction is provided for throughout the entire machine, so that the seed which are discharged through the spout 31 are perfectly free from lint and trash, and hence in the best marketable condition.

Referring now to the construction of the agitator-drum 5, the same essentially consists of a cylindrical body carrying a multiplicity of radially-projecting and longitudinally-arranged rigid pressure blades or wings 32. The drum-body is of a length coextensive with the scouring-cylinder and is mounted upon a longitudinal drive-shaft 33, journaled at its ends in bearings 34, carried upon the end heads or castings 1 and 2, and the drive-shaft is intended to be driven by any suitable source of power.

A distinctive feature of the present invention resides in the peculiar form of the pressure-blades 32. These blades are constructed of flat strips of steel or equivalent metal and are non-resilient. Also the said blades or wings are of a width nearly equal to the width of the working space 6, so as to operate in close proximity with the working face 10 of the scouring-surface. The prominent mechanical feature of the rigid pressure-blades 32 is that the same are of a saw-tooth construction—that is, provided along their outer working edges with a continuous series of angular teeth 35, which provide alternating points and notches, as plainly shown in Fig. 2 of the drawings.

The best results have been obtained by arranging the rigid toothed blades or wings 32 in regular longitudinal rows extending from end to end of the drum-body, and by reason of projecting radially over the drum-body the same will be rotated flatwise and present their flat sides to the seed.

Various means may be resorted to for fastening the pressure blades or wings to the drum-body, although a preferable construc-

tion is shown in the drawings and consists in bolting the blades of each row, by means of the bolt or equivalent fastenings 36, to the angled holding-irons 37, rigidly bolted directly on the surface of the drum-body.

In the operation of the machine the pressure-blades 32 cooperate with the abrasive scouring-surface to work off the fiber and loosen up the trash mingled with the seed; all of which is drawn through the separating-screen 23 and carried off by the fan. The pressure-blades act, primarily, in the capacity of what may properly be termed "unabrasive" members to press the seed in firm contact with the inner abrasive surface of the scouring-cylinder, and while the points of the toothed edges of the blades serve to move the seed against the scouring-surface it will be obvious that the seed will freely roll in and out of the notches of the toothed edges, and hence will be prevented from cracking or mashing, while at the same time being held up to the abrasive elements, thus insuring a very effective delinting action which takes the lint off of the ends as well as the sides of the seed.

To assist the feeding action through the machine, the agitator-drum has fitted on the end thereof operating beneath the seed-feed spout 29 a spiral starting-flight 39, which immediately starts off the incoming seed in the direction of the seed-outlet.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be readily apparent without further description.

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

1. A cotton-seed-delinting machine comprising a scouring-cylinder having an inner abrasive surface provided therein with conveying means, an agitator having a plurality of longitudinal pressure-blades provided with toothed edges operating in proximity to said surface and the conveying means thereof, an air-supply for the cylinder and a suction discharge-outlet.

2. In a cotton-seed-delinting machine, a scouring-cylinder having a lint-discharge, an agitator carrying a plurality of longitudinal pressure-blades each having continuously-toothed edges, and means for maintaining a relative rotation of the cylinder and agitator.

3. In a machine of the class described, a scouring-cylinder having an inner abrasive surface, conveying means for the seed, said scouring-cylinder also having oppositely-located seed-inlet and seed-outlet, a suction-chamber in communication with the working space of the scouring-cylinder and provided with a damper-controlled inlet providing means for regulating the speed of travel of

the seed provided for by the conveying means, an independent air-inlet for the cylinder, and an agitator arranged within the cylinder.

5 4. In a cotton-seed-delinting machine, a scouring-cylinder having an inner solid abrasive surface, an agitator carrying a plurality of longitudinal rigid pressure-blades having saw-toothed edges operating in proximity to
10 the abrasive surface, and a suction lint-discharge for the cylinder.

5. In a cotton-seed-delinting machine, a scouring-shell consisting of a plurality of matching abrasive blocks having sections of
15 a spiral groove therein, and an agitator having toothed pressure-blades.

6. In a cotton-seed-delinting machine, a scouring-cylinder having an inner solid abrasive surface, and provided with a screened
20 suction discharge-opening interrupting the abrasive surface and forming a continuation thereof, a suction-hood arranged over the screened discharge-opening and provided with a damper-controlled auxiliary air-inlet,
25 and an independent air-inlet arranged about the seed-inlet for the scouring-cylinder.

7. In a machine of the class described, a scouring-cylinder, having a longitudinally-arranged screened suction discharge-opening,
30 ing, said cylinder being also provided at one end with an air-inlet in communication with the outer air and with a seed-feed spout centered within and spaced from the edges of said air-inlet, a seed-discharge opening arranged at the end opposite the feed-spout
35 and also affording an air-inlet, an upwardly-convergent suction-hood arranged over the screened discharge-opening and having a fan

connection therewith, and a rotary agitator arranged within the cylinder.

8. In a machine of the class described, a scouring-cylinder provided with a longitudinal suction discharge-opening interrupting its scouring-surface, a screen arranged to
40 cover said opening and forming a continuation of said scouring-surface, a carrying-frame for said screen having a detachable support upon the scouring-cylinder, an agitator within the cylinder, and means for maintaining a draft through the screen.

9. In a machine of the class described, a scouring-cylinder having spirally-disposed grooves formed in the working face of its scouring-surface, and a rotating drum carrying
55 blades working in proximity to said grooved surface.

10. In a machine of the class described, a scouring-cylinder having spirally-disposed grooves formed in the working face of its scouring-surface, and a rotating drum carrying
60 ing toothed blades working in proximity to said grooved surface.

11. In a machine of the class described, a scouring-cylinder composed of a multiplicity of abrasive blocks and provided in one side
65 with a suction discharge-opening, block-retaining means fitted to the cylinder at the edges of the opening, and a screen for said opening having a detachable support upon the block-retaining means.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM ADRON RAGSDALE.

Witnesses:

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