

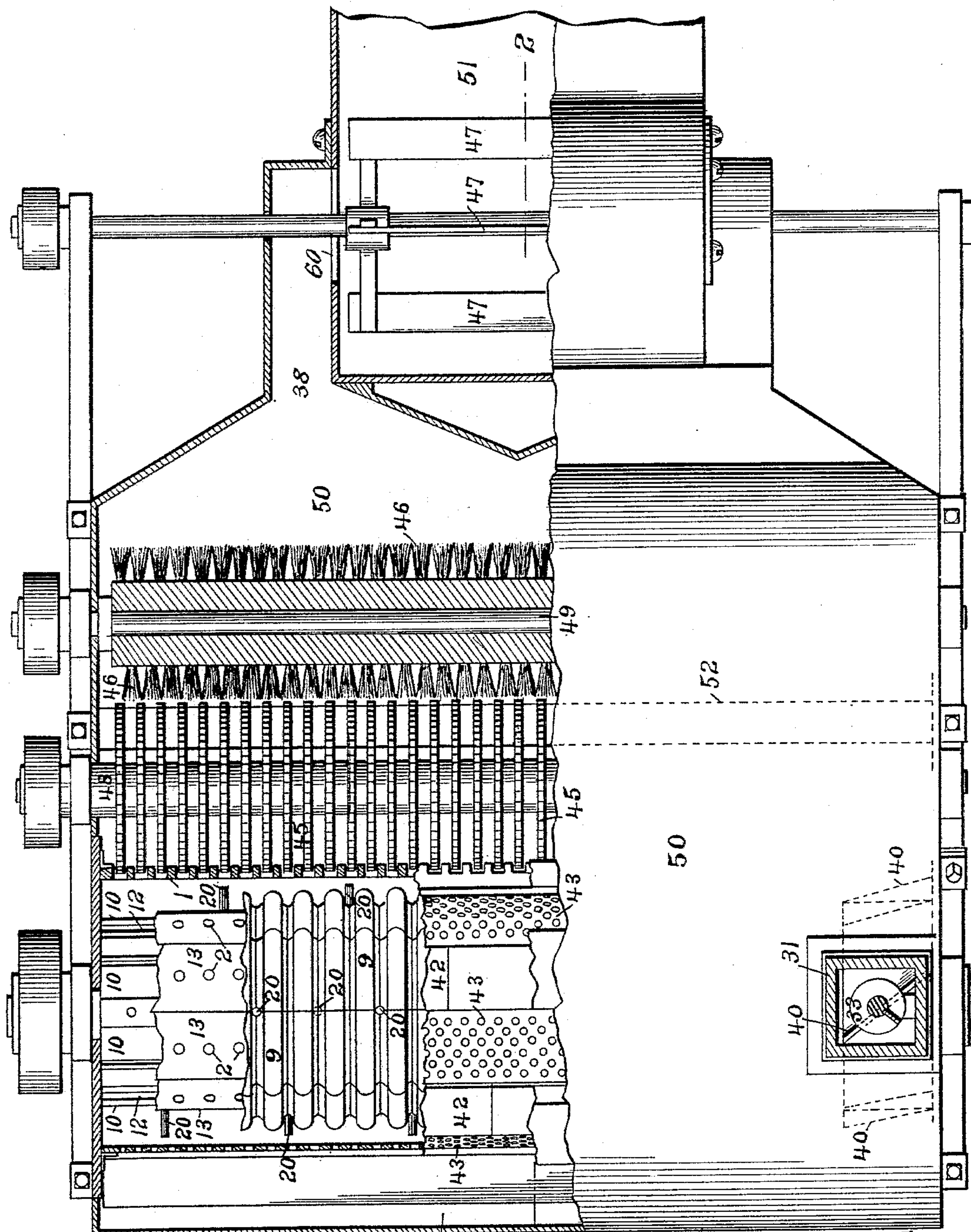
(No Model.)

3 Sheets—Sheet 1.

J. S. ROSAMOND.
COTTON SEED DELINTER.

No. 597,124.

Patented Jan. 11, 1898.



Attest:
Geo. H. Both
A. V. Bourke

Fig. 1.

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Philip Munsom & Phelps
Attys

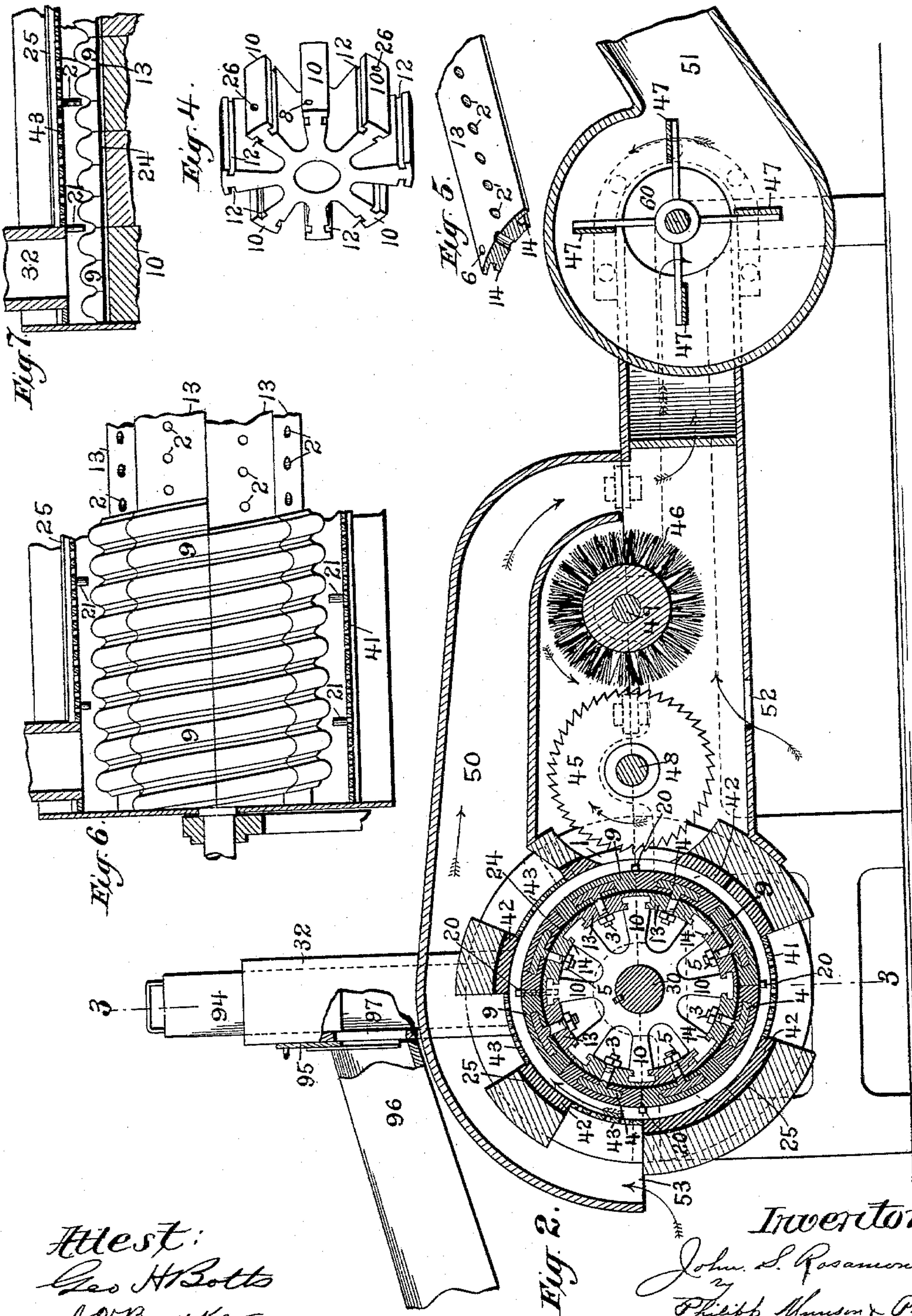
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3 Sheets—Sheet 2.

J. S. ROSAMOND.
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Phiepp Munson & Phelps,
Atty's

(No Model.)

3 Sheets—Sheet 3.

J. S. ROSAMOND.
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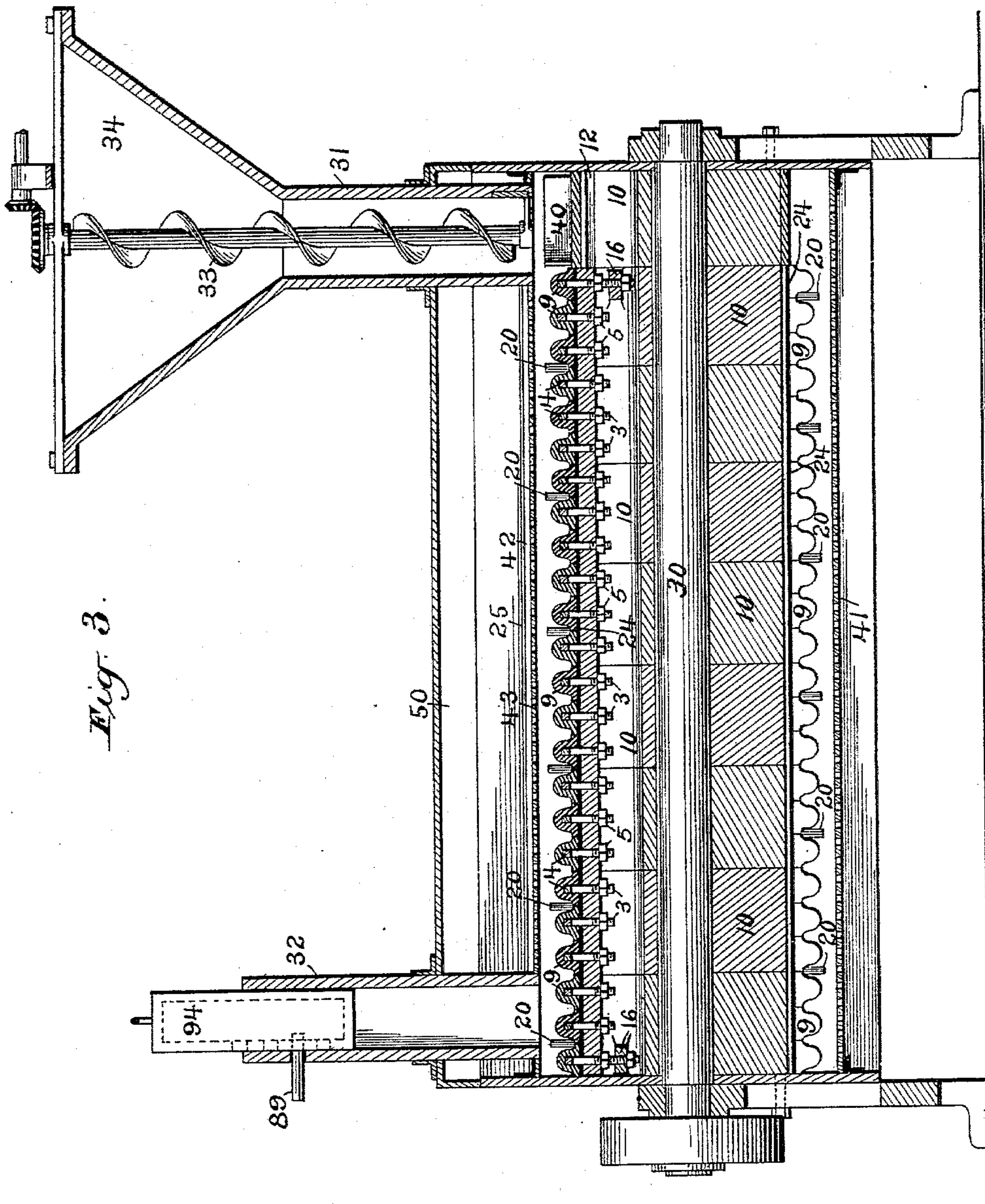


Fig. 3.

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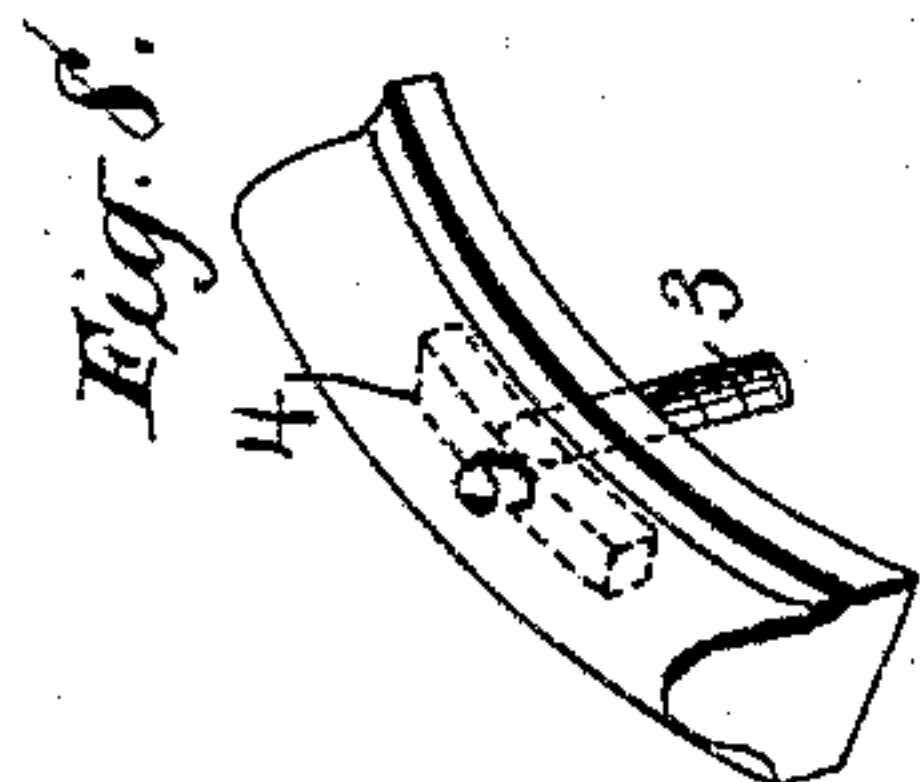


Fig. 8.

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UNITED STATES PATENT OFFICE.

JOHN S. ROSAMOND, OF MEMPHIS, TENNESSEE, ASSIGNOR TO THE
CONTINENTAL COTTON SEED COMPANY, OF SAME PLACE.

COTTON-SEED DELINTER.

SPECIFICATION forming part of Letters Patent No. 597,124, dated January 11, 1898.

Application filed June 5, 1895. Serial No. 561,723. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. ROSAMOND, a citizen of the United States, residing at Memphis, county of Shelby, and State of Tennessee, have invented certain new and useful Improvements in Cotton-Seed Delinters, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to that class of machinery known as "cotton-seed delinters," the purpose of which is the treatment of cotton-seed in the condition in which it is produced by the ginning operation—that is, with short fibers or lint adhering to its surface and forming a bulky mass composed of two useful materials which require to be separated—the projecting lint for fiber and the seed itself for planting or the manufacture of oil.

The invention, briefly stated, consists in a novel construction of casing combined with means for removing the fibers or lint therefrom; in a novel construction of delinting-cylinder in respect to its body portion, its abrading or scouring devices, and means for securing such scouring or abrading devices to the body portion of the cylinder; in a delinting-cylinder the abrading devices whereof are insulated from the body thereof by non-heat-conducting material; in a casing provided with abrading devices similarly insulated, and in other features which, with those above referred to, will be so fully hereinafter pointed out as to render further preliminary description unnecessary.

An apparatus embodying these improvements is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view. Fig. 2 is a longitudinal sectional elevation taken through the machine on the section-line 2 of Fig. 1. Fig. 3 is a longitudinal elevation taken through the delinting-cylinder on the line 3 of Fig. 2. Fig. 4 is a perspective view of a portion of the center core or body of the delinting-cylinder. Fig. 5 is a perspective view of a portion of one of the carriers for the scouring-blocks. Fig. 6 is a perspective view of a modification of the delinting-cylinder, its surrounding casing being in section. Fig. 7 is a sectional elevation of a portion of the de-

linting-cylinder shown in Fig. 1, introduced to show one arrangement of the stirring-pins therewith. Fig. 8 is a perspective view of one of the sectional emery blocks.

To facilitate an understanding of these improvements, a general description of the apparatus will first be given.

It consists of a scouring-cylinder arranged to rotate at high speed upon a horizontal shaft 30, suitably journaled in a framework, said scouring-cylinder being inclosed within a casing having on its interior surface scouring or abrading material 42, secured thereon or attached thereto in any suitable manner. A preferable way of providing this scouring-surface 42 is to cast the same in sections and secure them to a wooden backing, though it is practical, of course, to form the casing proper of metal, if desired. At one end this casing is provided with a feeding-chute 31, connected with its upper surface, through which the seed to be treated are introduced within the casing for treatment, preferably under pressure, and at the opposite end of the apparatus the casing is provided with a discharging opening or chute 32, through which the denuded seed are discharged, and which chute will preferably be provided with a means for controlling the discharging movement of the seed. At its bottom this casing is provided with a grating 41, through which dirt and similar impurities are discharged, as is common in this class of machinery. As a means for discharging the detached lint from this apparatus there is provided at one side thereof a gang of saws 45, set on a common shaft 48, preferably about three-quarters of an inch apart and arranged to revolve within an opening in the casing at one side of the cylinder, said opening being provided with breast-bars 1, between which the saws play. The lint liberated by the scouring or delinting action of the apparatus is, when brought within the range of action of this gang of saws, dragged outward thereby through the grating for discharge. In order to liberate this lint from the saws, there is provided for coaction therewith a gang of brushes 46, mounted on a shaft 49 and arranged to sweep the lint from out of the saw-teeth to enable its discharge from the apparatus. To accomplish this dis-

charge, the apparatus is provided with a fan of ordinary construction consisting, as shown, of suitable wings 47, mounted upon a shaft and inclosed within a casing that has induction-openings 60 at its ends around the shaft and an eduction-opening through its breast, which communicates with the discharging-chute 51.

A conveying-trunk 50, suitably connected with the casing of the delinting-cylinder, embraces the saws and brushes and connects with the fan by means of branching passages 38, that envelop the ends of the fan-case sufficiently to communicate with the induction-openings 60 thereof. The trunk 50 is provided with a vent-opening 52 at a suitable point near the saws and brushes, so as to provide for the practical action of the fan in carrying the fibers or lint outward and discharging the same through the fan and its chute 51. In addition to the saws and brushes the trunk 50 also embraces nearly one-half of the casing of the delinting-cylinder and terminates at the side opposite the saws with a vent-opening 54, and the upper portion of the casing for the delinting-cylinder is shown as constructed in alternate metal sections 43 and scouring-sections 42, the metal sections being attached to the wooden portions of the casing and finely perforated, so as to prevent the egress of seed while permitting the passage of lint. The air-inlet opening 53 being in advance of the perforated sections 43 causes a current of air through the trunk passing the perforated sections 43, thereby augmenting the current of air which is drawn through the sections 43 and supplying a volume thereof which will envelop the lint thus drawn from the casing and carry the same outward from off the perforated portions and deliver the same.

The delinting-cylinder consists of a body portion of spider-like construction (see Fig. 4)—that is, the central support is a hub through which the shaft 30 passes and from which hub radiating arms 10 10 10 form a support for the scouring or delinting block carriers. This spider-like structure may of course be a continuous one from end to end of the cylinder when the size of the apparatus renders that structure practical; but a preferred construction is making the same in short sections, as is indicated in Fig. 3, where several such sections are shown as strung on the shaft 30 and secured thereto by a spline, screws, or in any other suitable manner.

Each of the radial arms 10 is provided with a longitudinal groove 12, cut sufficiently distant from its outer end to provide suitable strength, in facing pairs of which longitudinal grooves 12 a scouring-block carrier 13 is held by means of its projecting flanges 14, which are formed to snugly fit said grooves as the carrier is slid therein.

Each block-carrier 13 is provided at suitable distances apart with holes 2 to enable the blocks 9 to be fastened thereto. The

blocks 9 are cast out of emery molded in a common manner while plastic and baked to properly harden them. In order to avoid weakening their structure by perforating them for the reception of fastening devices, which has heretofore been productive of evil results in their practical use, they are molded about a metallic holder consisting of a fastening-bolt 3 and a holding-head 4, projecting therefrom, the general form of this device being T-shaped, the arms branching from the bolt 3 being long enough to impart strength longitudinally to the cast emery block and being arched to conform with the curvature it is required to have to fit the cylinder circumferentially. In securing these blocks to the surface of the delinting-cylinder the bolts 3 are passed through the openings 2 of the block-carrier 13, and nuts 5 are screwed upon their tapped inner ends until they bear solidly against the under side of the carrier 13, whereupon the block, no matter what its specific shape is, will be securely held upon the carrier 13. Of course a jam-nut may be added to nut 5, if desired, to prevent loosening of the block after long use. The desired number of blocks of suitable shape having been thus secured upon the carrier 13 in any desired position, such as that shown herein, or in any other correlation, said blocks being in contact or separated, as may be desired, said carrier is inserted in its place as one of the segmental members constituting the whole periphery of the delinting-cylinder by sliding its flanges 14 in the grooves 12 of the arms 10. When all of the segmental block-carriers 13 are thus inserted in place, the delinting-cylinder will have a continuous peripheral surface clothed with delinting-blocks securely held in place by detachable means, so that should any one or more of the said blocks be injured so as to have their usefulness impaired the same may be readily removed by sliding the segmental carrier 13 outward sufficiently to remove a particular block and replace the same, the carrier being returned in the manner described with respect to its first adjustment. Inasmuch as this delinting-cylinder is required to rotate at a high rate of speed and produce an abrading action upon a mass of material, it is obvious that there will be or may be a tendency for the segmental carriers 13 to move or creep lengthwise and thus tend to injure the machine. It is therefore required that they shall be fastened to the spider-like core in order to prevent this, which securing may be accomplished in various ways. Thus the end of the carrier 13 may be provided with a hole, as 6, over one of the arms 10 and the latter have a tapped hole 8 beneath, so that a fastening-screw may be inserted to hold the carrier 13 in place, and this may be done at both ends of the carrier 13 and such a screw be inserted in each of the arms 10. This of course will be accomplished before the outer block 9 is attached, and the attachment of the outer block 9 can be read-

ily accomplished, as is apparent, by reason of its being accessible at the end of the delinting-cylinder. Among other ways for accomplishing this securing of the segments 13, especially when the body of the delinting-cylinder is made up of sections, the outermost spider-like section may be provided with bridges 16, connecting pairs of arms 10, and provided with a hole coinciding with the hole 2 in the carrier 13. Thus by providing the outermost delinting-block 9 with a bolt 3 of extra length said bolt may not only extend through the hole 2, but project through the bridge 16 and be clamped thereto, thus anchoring the carrier 13 in place. Other constructions for anchoring these carriers 13 may be adopted, but I have described the preferable ways. It has been indicated that various arrangements of these delinting or scouring blocks may be made upon the surface of the delinting-cylinder. This has been stated in order that it may appear that the method herein set forth of securing said blocks is not limited in any sense by their disposition with respect to each other.

The practical usefulness of a delinting-machine depends largely upon the surface area, facial structure, and relative disposition of the delinting or scouring blocks, and I have consequently shown the same herein of such a structure and so arranged as to attain the best possible scouring action. As shown in Fig. 2 by a longitudinal section, these emery blocks are cast lengthwise in a curved form with radial ends, so as to fit circumferentially upon the delinting-cylinder. Transversely these blocks are preferably of a curved form with basic flanges, whereby they are separated widthwise from each other by a curved channel, as shown in Fig. 3, the whole structure being such that when the delinting-cylinder is clothed with these blocks it presents circumferentially in the preferred form substantially parallel ribs having curved faces, as shown in Fig. 1, affording an extended area of scouring-surface over which the seed must travel. At suitable points and separated a considerable distance from each other such a delinting-cylinder is provided with stirring-pins 20, which project radially and operate to break up and scatter the material operated upon, so that it shall not only be prevented from matting and clogging the machine, but, on the contrary, be loosened up and caused to travel onward, being tumbled over and presented to the abrading-surfaces of the blocks and casing.

Where the scouring-blocks are arranged so as to provide parallel ribs, there will be provided at one end of the delinting-cylinder propeller-wings 40 to cause the travel of the material operated upon through the machine, and this construction is illustrated to indicate one way of using the improved structure of emery blocks shown herein. Another form of this improved scouring-block is shown in Fig. 6, wherein its projecting portion or rib

is so related to its flanged base that when the cylinder is covered therewith the projecting rib will form a serpentine course about the cylinder with intervening curved channels or recesses. This structure has the same advantages of securing and removal, presents the same extent and form of scouring-surface, and, operating to propel the seed onward, enables the omission of the wings 40, the stirring-pins being applied as before described.

As an auxiliary device for breaking up and stirring the seed to be treated the casing is provided with stirring-pins 21, which are arranged widely separated and so as to project toward the delinting-cylinder. In the case of the arrangement of the scouring-blocks shown in Fig. 7 said pins project somewhat between the rows of blocks, and in the case of the spiral arrangement of said block shown in Fig. 6 the pins 21 will be short enough to clear the blocks.

It is not essential that the stirring-pins shall be used on the cylinder when they are provided upon the casing, and vice versa, but in the treatment of some qualities of seed it is desirable that they shall be used on both the cylinder and the casing, notably when treating that character of seed called "woolly."

As it is well known in this art that the delinting operation is a frictional or abrading action carried on at high speed, whereby great heat is developed, which heat, if absorbed by the core or body of the delinting-cylinder or the backing for the casing thereof, will operate to contract the parts if made of wood or both expand and contract them if made of iron, and thus cause the thinner or frangible parts of the emery blocks carried by the cylinder or the segmental emery blocks lining the casing to break and necessitate the stoppage and repair of the machine. In order to prevent this action, the block-carriers 13 and the surfaces of the backing of the casing, against which the emery lining bears, are clothed with a non-heat-conducting material, as asbestos, preferably applied in the form of sheets 24 25, which thus isolates the abrading or scouring devices from their supports and prevents the conduction of heat generated by the scouring action to such supports, whereby their normal condition would be affected and cause breakage of the scouring devices.

Although any suitable means may be employed for feeding the machine with material to be operated upon, an improved feeding mechanism is illustrated herein for this purpose. This consists of a vertical feeding-screw 33, mounted within the feeding-chute 31 and provided with means for revolving it, a hopper 34 being connected with said feeding-chute 31 to receive and conduct the mass of seed to the vertical feeding-screw or its equivalent spirally-armed conveyer. The speed of rotation of the vertical feeding-screw must be regulated so as to control the quantity of seed delivered into the apparatus, and

this form of feeding device is introduced as typical of any propelling device for moving onward the seed into the apparatus, some propelling device being requisite to carry a sufficient quantity of seed into the apparatus to practically carry on the scouring operation.

The discharging-chute 32 has an opening or passage 97, which is controlled by a sliding gate 95, and this opening 97 communicates with a chute 96, by which the denuded seed discharged from the apparatus may be delivered to a bin or otherwise, as is required. Within the vertical discharge-chute 32 there is provided a sliding plug 94, which may be adjusted to a given height by means of a holding-pin 89, that slides in a hole in the casing and coöperates with a series of holes in the plug 94. This plug acts as a regulator of the pressure exerted upon the body of the seed within the apparatus, the delivery of which is through the opening 97, said pressure being greater or less according as the plug is lowered or raised, and consequently the duration of time in which the passage of the material is made through the machine is lessened or increased, resulting in a more or less thorough denuding of the seed of the lint it carries.

The operation is as follows: The cotton-seed carrying adhering fibers or lint, or in the condition in which it leaves the gin, is conveyed in bulk into the hopper 34, and passing through the chute 31 enters within the casing and fills the space between the delinting-cylinder and the casing, being carried through this space and pressed through the discharging-chute 32 by means of the feeding-screw 33, the carrying-wings 40, or the spiral arrangement shown in Fig. 6. During this transit the seed will travel between surfaces that are continuously covered with emery clothing, and by the undulating form of the scouring-blocks upon the delinting-cylinder be carried radially toward and from the opposed abrading-surfaces, and as it progresses through the machine meet and be acted upon by the stirring-pins 20 and 21, and thus be turned over and over and carried onward, so that all portions of the surface of the seed will, in making the transit, be scoured, and thus cleaned of the adhering fiber, said seed when thoroughly cleaned being discharged through the chute 32 in a condition to be used either for planting or for the production of oil. As the scouring action thereon effects the detachment of the lint from the seed the released fibers will, under the centrifugal action induced by the cylinder and the stirring action effected by the pins, be carried against the bars 1 within the range of action of the saws 45 and be stripped therefrom by the teeth of the rapidly-revolving saws, the fibers thus caught by these teeth being carried to the brushes 46, which act to whip the fibers from off the teeth, and the fibers thus detached are carried outward by the air-currents produced by the fan, said fibers being

conveyed through the openings 60 to the fan and discharged therefrom through the chute 51, passing thence onto a condenser or into a lint-room or other means of storage, as may be desired.

In the foregoing description of the operation of the machine it has been assumed that the trunk 50 only incloses the gang of saws and brushes, because a machine so constructed is a practical one and highly effective in its operation. In order, however, to increase the speed of the machine by removing the fibers as rapidly as they are detached from the seed being treated, so as to provide room for fresh seed, a large portion of the casing is provided with perforated plates 43, and said perforated plates are embraced within the area covered by the trunk 50, as is shown in Fig. 2, the result of which is that the air drawn through the opening 53 and producing currents outside these perforated plates 43 acts to draw whatever fibers reach these plates without necessitating the onward travel of said detached fibers to a single discharging-point, as at the saws 45—in other words, providing a multiplicity of fiber-discharging orifices in the casing adjacent to the scouring-surfaces thereof, so that the fibers may, when first separated from the seed, be immediately delivered into the trunk 50 and provide additional space within the casing for the incoming seed.

The improved mechanism heretofore described for feeding the machine with material to be acted upon, as well as the mechanism for controlling the discharge of the material from the machine after being operated upon, and also the arrangement shown of stirring-pins between the circumferential ribs of abrading material on the cylinder are not claimed herein, as the same form the subject-matter of another application filed by me June 3, 1895, Serial No. 551,480, for cotton-seed delinters.

What is claimed is—

1. In a delinting-machine, the combination with a delinting-cylinder, of an inclosing casing therefor provided with alternate sections composed respectively of an open grating and an emery-clothed surface, a trunk extended partially around said casing to cover said gratings and provided with an air-inlet in advance thereof, an air-inlet to the interior of said casing independent of the trunk, and a blower connected with said trunk whereby the detached fibers are removed and discharged, substantially as described.

2. In a delinting-machine, the combination with a delinting-cylinder, of an inclosing casing therefor provided with alternate sections composed respectively of an open grating and an emery-clothed surface, a trunk extended partially around said casing to cover said gratings and provided with an air-inlet in advance thereof, an air-inlet to the interior of said casing extending longitudinally thereof, and a fan connected with said trunk, whereby a current of air is drawn through the casing

and said gratings and, augmented, is swept circumferentially over said gratings, to detach and discharge the lint, substantially as described.

3. In a delinting-machine, a delinting-cylinder constructed of emery blocks having bodies curved transversely, arched longitudinally and provided with radial abutting ends, whereby a multiplicity of continuous ribs are formed circumferentially about the cylinder and provide it longitudinally with an undulating scouring-surface, substantially as described.

4. In a delinting-machine, the combination with a casing therefor, and a delinting-cylinder clothed with emery blocks having their ends abutting and forming continuous ribs around the cylinder the bodies whereof are curved transversely and provide an undulating abrading or scouring surface for contact with the seed, of means for propelling the seed over the same, substantially as described.

5. In a delinting-machine, a delinting-cylinder clothed with scouring-blocks secured thereto by means of a detachable carrier, whereby damage thereto may be readily repaired, substantially as described.

6. In a delinting-machine, the combination with a casing therefor, of a delinting-cylinder clothed with emery ribs formed of blocks which have their ends abutting and thereby form continuous ribs about the cylinders and provide longitudinally of the cylinder an undulating abrading or scouring surface for contact with the seed, and stirring-pins co-operating therewith, substantially as described.

7. In a delinting-machine, the combination with a delinting-cylinder clothed with emery ribs formed of blocks which have their ends abutting and thereby form continuous ribs about the cylinder and provide longitudinally of the cylinder an undulating abrading or scouring surface for contact with the seed, and means whereby segmental sections of said ribs are removable, substantially as described.

8. In a delinting-machine, the combination with a casing therefor, of a delinting-cylinder clothed with emery blocks which have their ends abutting, forming continuous ribs extending spirally around the cylinder and shaped to provide longitudinally of the cylinder an undulating abrading or scouring surface for contact with the seed, and co-operating stirring-pins, substantially as described.

9. In a delinting-machine, the combination with a casing therefor, of a delinting-cylinder clothed with emery blocks forming continuous emery ribs extending spirally around the cylinder and shaped to provide longitudinally

nally of the cylinder an undulating abrading or scouring surface for contact with the seed, and removable segmental carriers for said blocks whereby segmental sections of the surface formed by said ribs are removable, substantially as described.

10. In a delinting apparatus, a delinting-cylinder composed of a spider-like body having radiating arms provided with facing grooves therefor, of scouring-block carriers adapted to slide in said grooves, substantially as described.

11. In a delinting apparatus, the combination with segmental carriers independently removable from the cylinder, of independent sectional scouring-blocks supported by said carriers, substantially as described.

12. In a delinting-machine, the combination with independently-removable carriers, of scouring-blocks formed from a plastic abrading material cast about a metal holder and having stems by which they are secured to the carriers, substantially as described.

13. The combination with the segmental carrier, of the end segment blocks, their fastening-shanks and the bridge, substantially as described.

14. In a delinting-machine, a delinting-cylinder provided with abrading devices secured thereto and insulated from the core or body of the cylinder by means of an interposed non-heat-conducting material, substantially as described.

15. In a delinting-machine, a casing inclosing the delinting-cylinder and provided with scouring or abrading devices secured and insulated from their support by means of an interposed non-heat-conducting material, substantially as described.

16. In a delinting-machine, the combination with a delinting-cylinder, of a casing inclosing the same and provided with sections of open grating and an opening in which a gang of saws operate to remove the lint, a trunk inclosing said saws, a fan connected with said trunk, a vent in said trunk whereby a current is induced outside the casing of the cylinder to carry off said fibers, an auxiliary trunk extending past the grating-sections of said casing, a vent in said auxiliary trunk and an air-inlet to the interior of said casing, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN S. ROSAMOND.

Witnesses:

H. T. MUNSON,
A. L. KENT.