

No. 801,809.

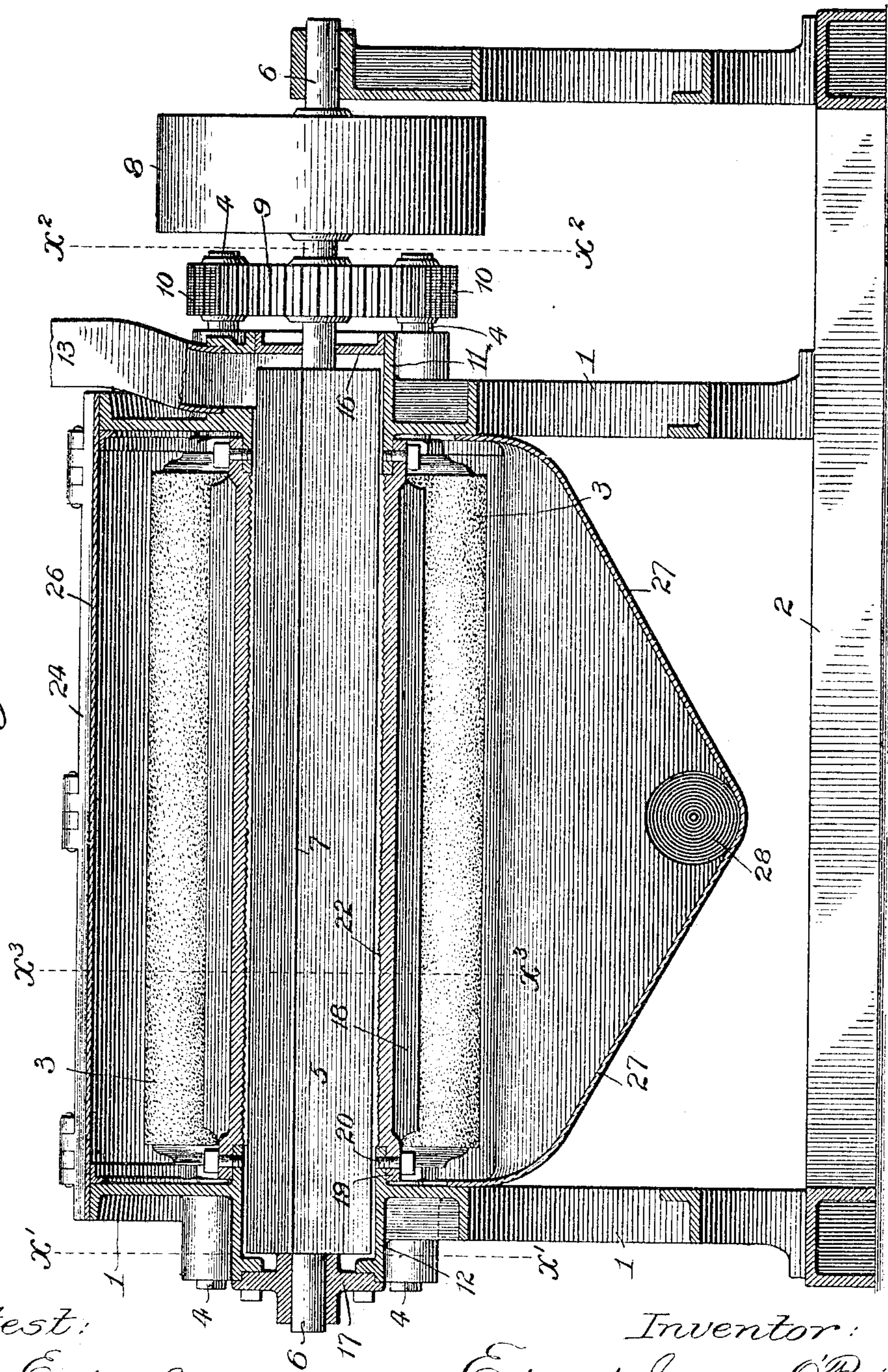
PATENTED OCT. 10, 1905.

E. J. O'BRIEN.
APPARATUS FOR DELINTING COTTON SEED.

APPLICATION FILED MAR. 19, 1903.

3 SHEETS—SHEET 1.

Fig. 1.



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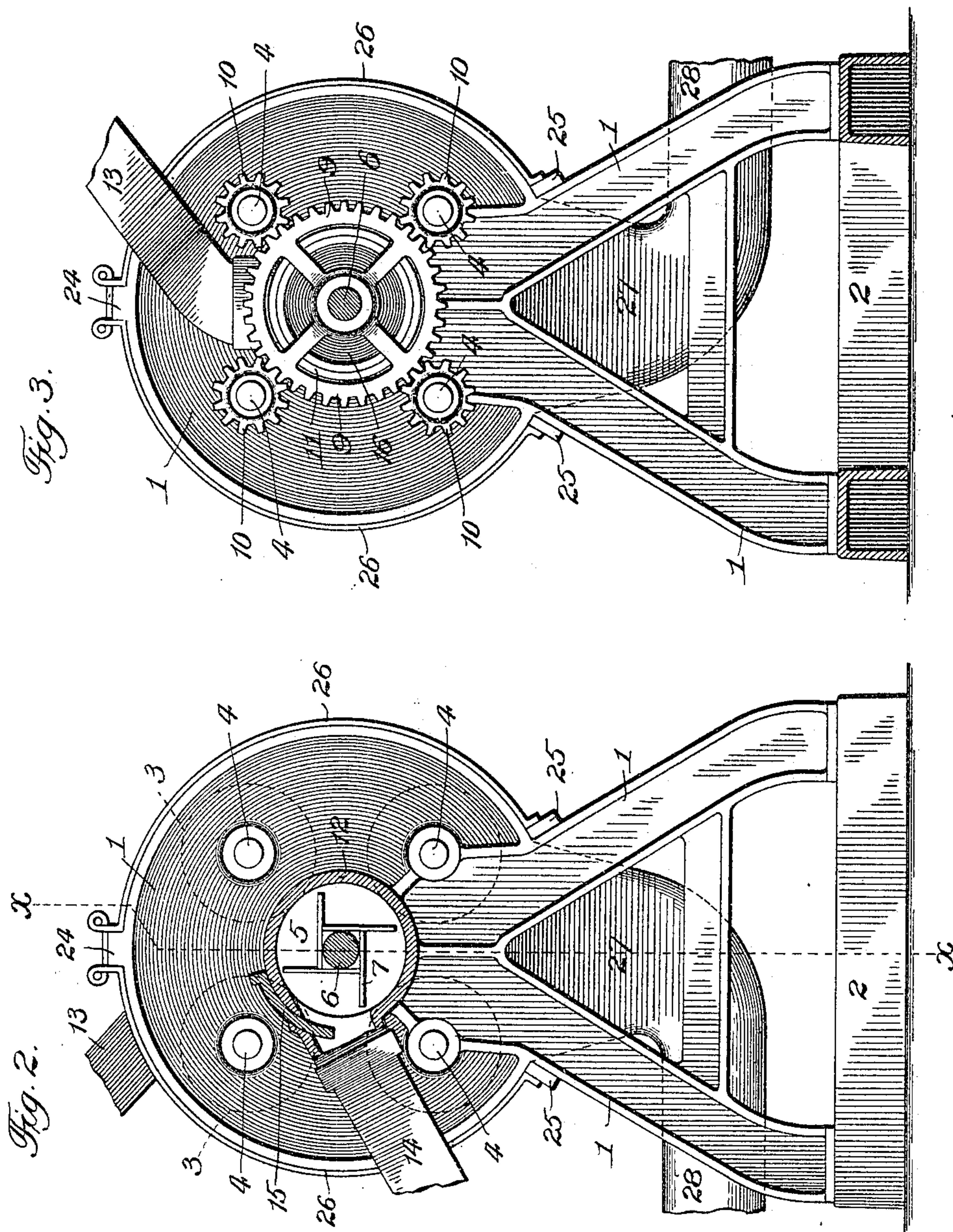
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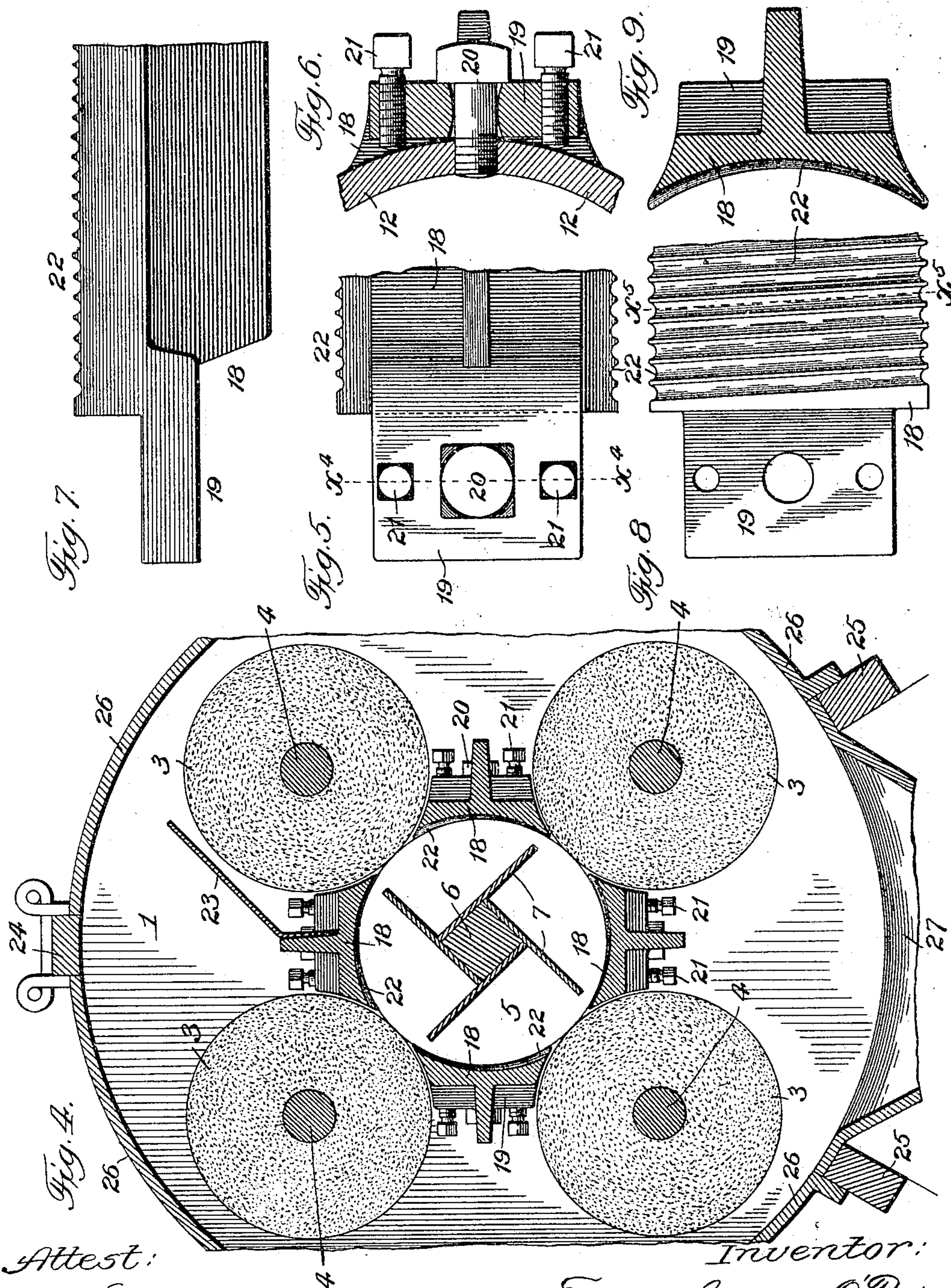
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

EDWARD J. O'BRIEN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO E. J. O'BRIEN
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APPARATUS FOR DELINTING COTTON-SEED.

No. 801,809.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed March 19, 1903. Serial No. 148,474.

To all whom it may concern:

Be it known that I, EDWARD J. O'BRIEN, a citizen of the United States of America, and a resident of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Apparatus for Delinting Cotton-Seed, of which the following is a specification.

The present invention relates to an apparatus for removing the lint from cotton-seeds, and has for its object to provide a simple, durable, and efficient apparatus in which the lint is removed in a rapid and perfect manner from the seeds without injury to the hull portions thereof, all as will hereinafter more fully appear and be more particularly pointed out in the claims.

In the accompanying drawings, illustrative of the present invention, Figure 1 is a longitudinal sectional elevation at line $x x$, Fig. 2, of a delinting apparatus embodying the present invention. Fig. 2 is a transverse sectional elevation of the apparatus at line $x' x'$, Fig. 1; Fig. 3, a transverse sectional elevation of the same at line $x^2 x^2$, Fig. 1. Fig. 4 is an enlarged detail transverse section at line $x^3 x^3$, Fig. 1; Fig. 5, an enlarged detail elevation of the back of one of the stationary guide-staves of the present invention, illustrating the means of attachment for the same. Fig. 6 is a transverse sectional elevation of the same at line $x^4 x^4$, Fig. 5. Fig. 7 is a detail plan view of said stave. Fig. 8 is a detail face view of the same. Fig. 9 is a detail transverse section of the same at line $x^5 x^5$, Fig. 8.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 represents substantially counterpart stationary heads or standards secured in separated relation upon a horizontal base 2 to constitute the supporting-frame of the present mechanism, and each of said heads or standards comprises in detail an upper disk-like portion from which depend supporting-legs, as shown in Figs. 1, 2, and 3 of the drawings.

3 is a cluster of horizontal abrading-cylinders journaled in symmetrical relation to each other by means of their carrying-shafts 4 in suitable bearings therefor in the respective heads or standards 1. Such cluster of abrading-cylinders, in conjunction with the series of stationary and intermediate guide staves or

bars hereinafter described, forms a central horizontal and substantially circular delinting inclosure or chamber 5, in and through which the cotton-seeds to be delinted are contained and passed during the delinting operation of the present apparatus.

6 is a horizontal shaft arranged centrally and longitudinally in the delinting-chamber 5 and supported at its ends in bearings carried by the heads or standards 1 of the supporting-frame of the apparatus.

7 represents a series of longitudinal blades secured to the shaft 6 and adapted to constitute a series of longitudinal seed-holding pockets within the delinting-chamber 5, as illustrated in Figs. 1, 2, and 4 of the drawings.

8 is a belt-pulley secured to the shaft 6 and adapted for driving connection with a suitable source of power.

9 is a spur-gear secured to the shaft 6 and meshing with and driving a series of pinions 10, secured to the carrying-shafts 4 of the series of abrading-cylinders 3, and the arrangement is such that said series of abrading-cylinders will receive increased speed of revolution over that of the shaft 6 and its longitudinal blades or flights 7 and in an opposite direction for purpose hereinafter stated.

11 and 12 are central tubular extensions or hubs on the respective heads or standards 1 in line with the delinting-chamber 5 and as so arranged will form at one end of the apparatus a receiving-throat for the seeds to be delinted and at the other end a discharge-throat for the delinted seeds after their passage through the delinting operation of the present apparatus.

The end chambers or throats formed by the extensions or hubs 11 and 12 are of substantially the same diameter as the delinting-chamber 5, and in the preferred construction of the present invention, as illustrated in the accompanying drawings, the respective ends of the blades or flights 7 will extend into said end chambers with a view to attain a better feed and discharge of the cotton-seed in the practical operation of the mechanism.

13 is a supply-trunk connected laterally with the tubular hub 11 at the receiving end of the apparatus and adapted to conduct the seeds to be delinted into the receiving-throat aforesaid of the apparatus.

14 is a discharge-trunk connected laterally

with the tubular hub 12 at the discharging end of the apparatus and adapted to conduct the delinted seeds away from the discharge-throat aforesaid of the apparatus.

15 is an adjustable gate for regulating the discharge of the delinted seeds from the discharge-throat of the apparatus.

16 and 17 are heads closing the outer ends of the respective end chambers aforesaid and which will preferably constitute bearings for the shaft 6 to maintain the same in proper central position within the delinting-chamber 5.

18 represents the stationary intermediate guide staves or bars of the present invention arranged intermediate of the cluster of abrading-cylinders 3 and constituting in connection with the inner peripheral portions of such cylinders the horizontal delinting-chamber 5, heretofore described.

19 represents end extensions of the respective staves 18 through which attaching-bolts pass to secure the said staves in an adjustable manner to the inner portions of the heretofore-described tubular hubs 11 and 12 of the main frame, and with a view to a ready and accurate adjustment of said staves a main central attaching-bolt 20 and a pair of side bolts 21 will be employed, as more clearly shown in Figs. 5 and 6. The arrangement is such that by a varied adjustment of said series of bolts a corresponding adjustment of the stave or bar 18 can be attained.

In the preferred form of the present invention the inner faces of the staves or bars 18 and which comprise portions of the inclosing wall of the delinting-chamber 5 will be formed with a series of grooves 22, extending transverse to the length of the staves and preferably in a slightly oblique direction, as shown, and with a view to aid in the gradual passage of the seed to be delinted from the receiving to the discharging end of the apparatus. Another feature of the present invention consists in forming the grooves 22 aforesaid of a gradually-decreasing depth, with the greatest depth at the seed-receiving end of the groove, as shown in Figs. 4 and 9, as it has been found in practical use that such form of groove in the gradual circular and longitudinal travel of the seed through the delinting-chamber of the present construction is adapted to cause a rolling or turning movement of such seeds and present all lint-covered portions of the same to the action of the abrading-cylinders to materially aid in the attainment of a very effective and perfect delinting operation.

23 is a longitudinal deflector-plate secured to the uppermost stave or bar 18 of the series and which is adapted to deflect the lint thrown off by the adjacent abrading-cylinder to the left away from the next adjacent abrading-cylinder to the right, as illustrated in Fig. 4.

24 is a longitudinal ridge-bar extending horizontally between the vertical standards or heads 1 of the main frame, and 25 represents

longitudinal bars extending in a similar manner between said standards at the mid-height of the same, as shown in Figs. 2, 3, and 4.

26 represents substantially counterpart curved plates pivoted at their upper ends to the longitudinal ridge-bar 24 and at their lower ends adapted to rest against the respective lower longitudinal bars 25. Such plates extend from one vertical head 1 to the other and when not raised to afford access to the delinter mechanism constitute, in connection with the end heads or standards 1, an inclosing casing for such delinter mechanism, as most clearly represented in Fig. 4.

27 is a lint-receiving hopper or chamber secured at the lower portion of the apparatus to the vertical heads or standards 1 and to the lower longitudinal bars 25 to entirely inclose the lower or bottom portion of the delinting mechanism. 28 is a suction-trunk connected to said hopper or chamber 27 and adapted to draw away the lint from the interior of the apparatus as fast as removed by the abrading-cylinders. The air to keep up the draft enters the apparatus through the heretofore-described supply and discharge trunks 13 and 14 of the apparatus.

While in the present invention abrading-cylinders of corundum or like material are preferred on the ground of affording the more rapid and effective results, it is, however, within the province of the present invention to employ any other usual and suitable form of abrading or delinting cylinders where a particular use or circumstance may indicate such substitution. Similarly, while the horizontal arrangement of the delinting mechanism, as shown in the accompanying drawings, is preferred as affording a very perfect operation, it is within the general scope of the present invention to employ a vertical or other usual arrangement of such mechanism when so desired.

In the operation of the present delinting mechanism the cotton or other seeds to be treated will receive a positive circular travel within the delinting-chamber 5 through the instrumentality of the blades or flights 7, carried by the positively-rotated shaft 6 and in such circular travel will be presented repeatedly to the abrading or delinting cylinders, the action of which will be to remove the lint particle by particle. During such circular travel of the seed the stationary intermediate guide staves or bars 18 are adapted to impart the heretofore-described turning or rolling motion to the seed and at the same time assist in a longitudinal movement of such seed through the delinting-chamber, and it has been found from extended practical use of the present apparatus that the entire body of the seed in its passage in the manner described through the delinting-chamber will be exposed to the action of the abrading or delinting cylinders and that the seeds as they come

from said chamber have been delimited in a very perfect manner.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus of the character herein described, the combination of a central chamber, a series of abrading-cylinders forming a portion of the wall of said chamber, means for imparting a circular travel to the contents of said chamber, and means for imparting rotation to said abrading-cylinders, substantially as set forth.

2. In an apparatus of the character herein described, the combination of a central chamber, a series of abrading-cylinders forming a portion of the wall of said chamber, means for imparting a circular travel to the contents of said chamber, and means for imparting rotation to said abrading-cylinders in a direction opposite to the travel of the contents of the central chamber, substantially as set forth.

3. In an apparatus of the character herein described, the combination of a central chamber, a series of abrading-cylinders forming a portion of the wall of said chamber, means for imparting a circular travel to the contents of said chamber, and means for imparting an increased rotation to said abrading-cylinders, substantially as set forth.

4. In an apparatus of the character herein described, the combination of a central chamber, a series of abrading-cylinders forming a portion of the wall of said chamber, means for imparting a circular travel to the contents of said chamber, and means for imparting an increased rotation to said abrading-cylinders in a direction opposite to the travel of the contents of the central chamber, substantially as set forth.

5. In an apparatus of the character herein described, the combination of a series of abrading-cylinders forming a portion of the wall of a chamber, stationary guide-staves intermediate of said cylinders and constituting another portion of the wall of said chamber, means for imparting a circular travel to the contents of said chamber, and means for imparting rotation to said abrading-cylinders, substantially as set forth.

6. In an apparatus of the character herein described, the combination of a central chamber extending horizontally of the apparatus, a series of horizontal abrading-cylinders forming a portion of the wall of said chamber, means for imparting a circular travel to the contents of said chamber, and means for imparting rotation to said abrading-cylinders, substantially as set forth.

7. In an apparatus of the character herein described, the combination of a central chamber extending horizontally of the apparatus, a series of horizontal abrading-cylinders forming a portion of the wall of said chamber, stationary guide-staves intermediate of said cyl-

inders and constituting another portion of the wall of said chamber, means for imparting a circular travel to the contents of said chamber, and means for imparting rotation to said abrading-cylinders, substantially as set forth.

8. In an apparatus of the character herein described, the combination of a central chamber, a series of abrading-cylinders forming a portion of the wall of said chamber, stationary guide-staves intermediate of said cylinders and constituting another portion of the walls of said chamber said staves having grooves across their inner faces, means for imparting a circular travel to the contents of said chamber, and means for imparting rotation to said abrading-cylinders, substantially as set forth.

9. In an apparatus of the character herein described, the combination of a central chamber, a series of abrading-cylinders forming a portion of the wall of said chamber, stationary guide-staves intermediate of said cylinders and constituting another portion of the wall of said chamber, said staves having grooves of a gradually-decreasing depth across their inner faces, means for imparting a circular travel to the contents of said chamber, and means for imparting rotation to said abrading-cylinders, substantially as set forth.

10. In an apparatus of the character herein described, the combination of a central chamber, a series of abrading-cylinders forming a portion of the wall of said chamber, stationary guide-staves intermediate of said cylinders and constituting another portion of the wall of said chamber said staves having grooves of a gradually-decreasing depth extending obliquely across their inner faces, means for imparting a circular travel to the contents of said chamber, and means for imparting rotation to said abrading-cylinders, substantially as set forth.

11. In an apparatus of the character herein described, the combination of a pair of vertical heads arranged in separated relation, a cluster of horizontal abrading-cylinders, a series of intermediate staves, said cylinders and staves adapted to form a central containing-chamber, end-receiving chambers formed in the heads in line with the containing-chamber, supply and discharge trunks connected to the respective end chambers, a seed-moving shaft arranged within the containing-chamber, and means for imparting rotation to said shaft and to the abrading-cylinders, substantially as set forth.

12. In an apparatus of the character herein described, the combination of a pair of vertical heads arranged in separated relation, a cluster of horizontal abrading-cylinders, a series of intermediate staves, said cylinders and staves adapted to form a central containing-chamber, a longitudinal deflecting-plate secured to the uppermost stave, a seed-moving shaft arranged within the containing-chamber, and means for imparting rotation to said shaft and

to the abrading-cylinders, substantially as set forth.

13. In an apparatus of the character herein described, the combination of a pair of vertical
5 heads arranged in separated relation, a cluster of horizontal abrading-cylinders, a series of intermediate guide-staves, means for adjusting said staves the same comprising necks on the inner faces of the end heads, and adjust-
10 ing-bolts connecting the ends of the staves to such necks, a seed-moving shaft arranged within a central chamber formed by the cylinders and staves aforesaid, and means for imparting rotation to said shaft and the abrad-
15 ing-cylinders, substantially as set forth.

14. In an apparatus of the character herein described, the combination of a pair of vertical heads arranged in separated relation, a cluster of abrading-cylinders, a series of intermediate

guide-staves, said cylinders and staves adapt- 20
ed to form a central containing-chamber, end-receiving chambers formed in the heads in line with said central chamber, supply and discharge trunks connected to the respective
end chambers, an adjustable gate in the dis- 25
charge-trunk adapted to regulate the time of exposure of the material to the abrading-cylinders, a seed-moving shaft arranged within the containing-chamber, and means for im-
parting rotation to said shaft and to the abrad- 30
ing-cylinders, substantially as set forth.

Signed at Chicago, Illinois, this 14th day of March, 1903.

E. J. O'BRIEN.

Witnesses:

ROBERT BURNS,
HENRY A. NOTT.