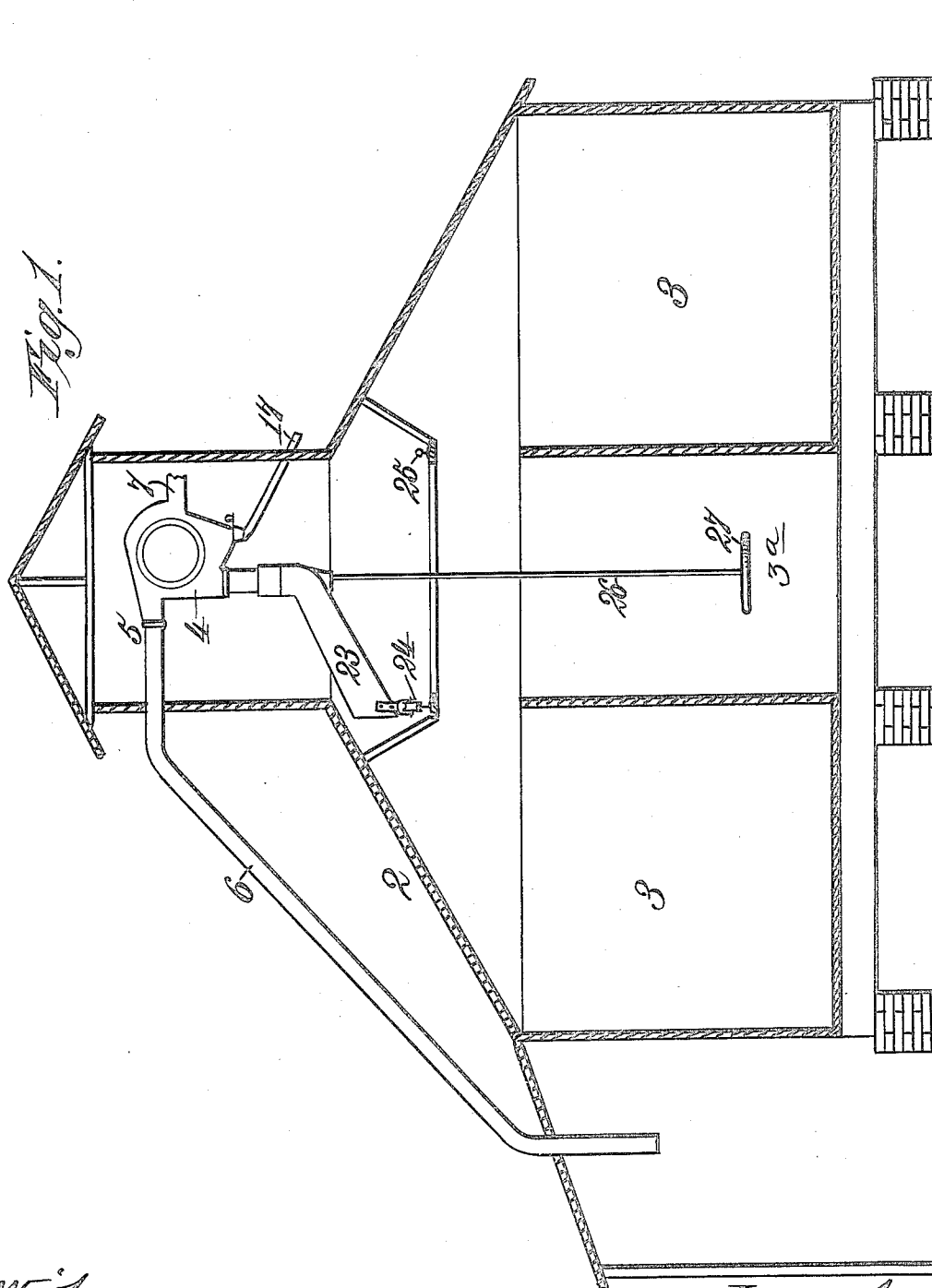


A. F. TIDWELL.  
COTTON HANDLING APPARATUS.  
APPLICATION FILED APR. 4, 1905.

4 SHEETS—SHEET 1.



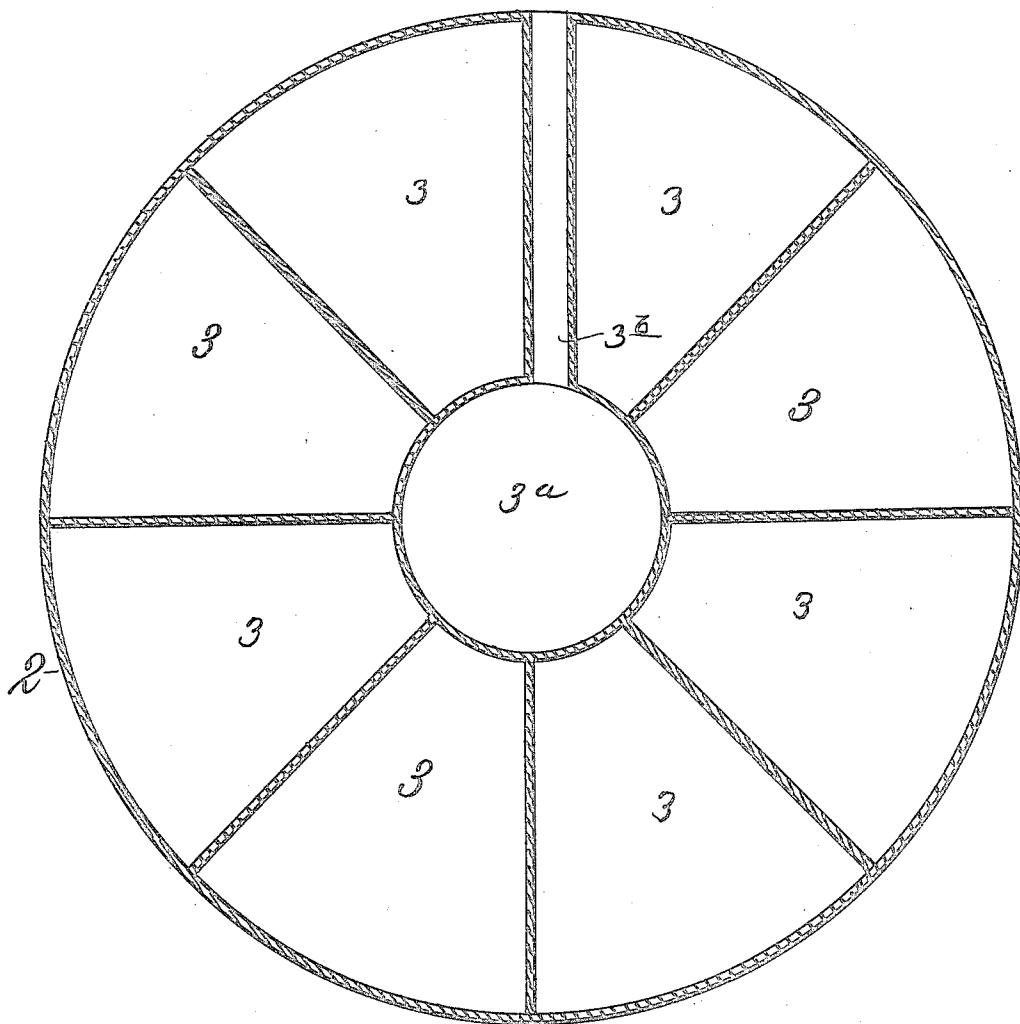
Witnesses.  
Robert C. Smith.  
James L. Morris Jr.

Inventor.  
Albert F. Tidwell.  
By James L. Norris  
Atty.

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4 SHEETS—SHEET 2.

*Fig. 2.*



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No. 812,618.

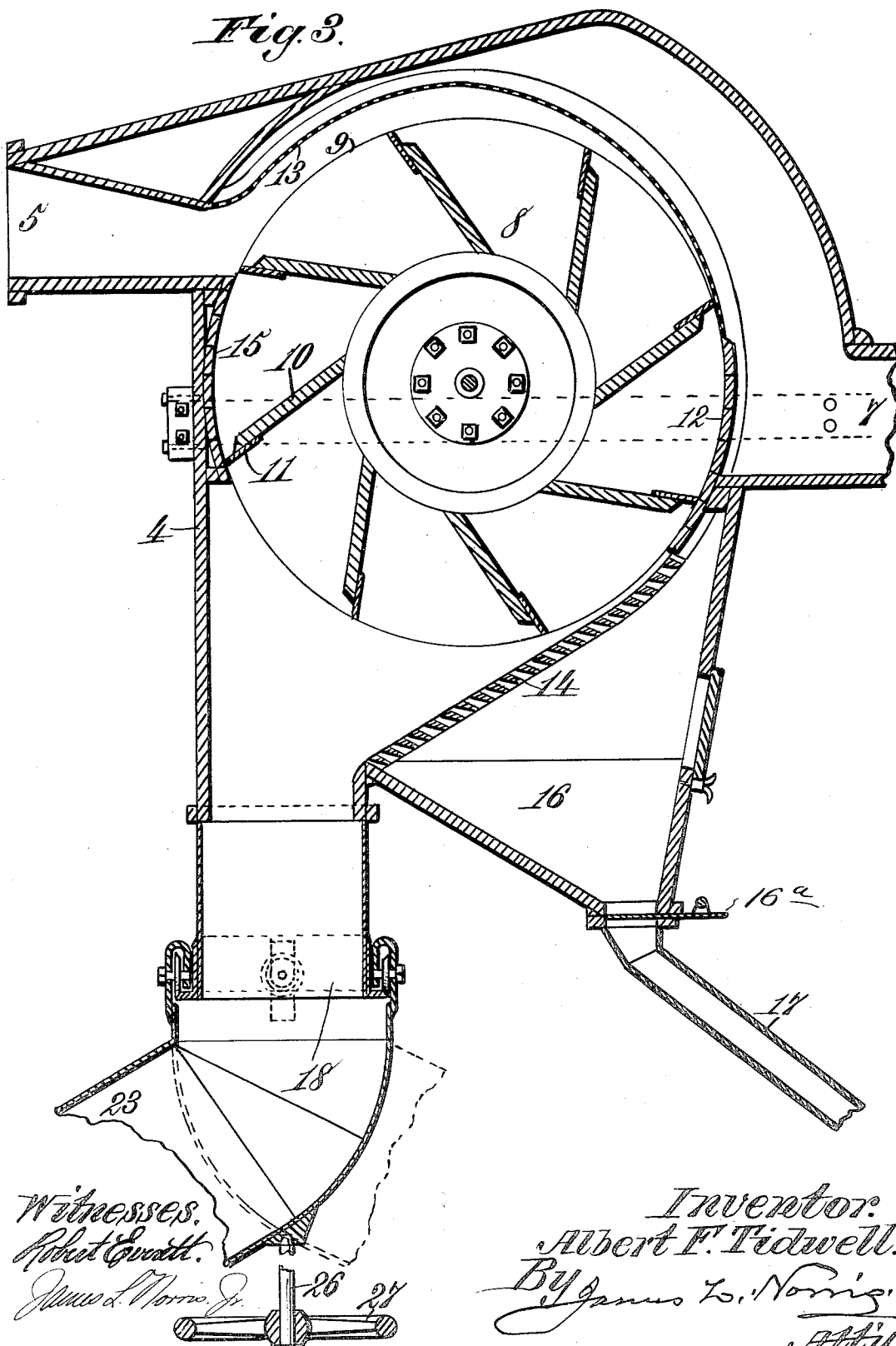
PATENTED FEB. 13, 1906.

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4 SHEETS—SHEET 3.

*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

ALBERT F. TIDWELL, OF CELINA, TEXAS.

## COTTON-HANDLING APPARATUS.

No. 812,618.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed April 4, 1905. Serial No. 253,886.

*To all whom it may concern:*

Be it known that I, ALBERT F. TIDWELL, a citizen of the United States, residing at Celina, in the county of Collin and State of Texas, have invented new and useful Improvements in Cotton-Handling Apparatus, of which the following is a specification.

This invention relates to a cotton-handling apparatus.

The apparatus involves as a part thereof means for cleaning seed-cotton or for removing dust, leafy trash, and other foreign substances therefrom before the cotton is led to bins in a storage-house.

It is one of the objects of my invention to provide a cleaning mechanism of a simple construction and which can be readily operated.

The cleaning mechanism has as a part thereof a force-feeder. Heretofore these force-feeders have been operated by power in the form of belting or something of a similar positive nature. While I effect the proper action of the force-feeder, I do not have to rely upon belting to do so, for the feeder in the organization illustrated in the accompanying drawings, forming a part of this specification, is operated pneumatically from the suction produced in elevating the cotton from a wagon or such device. The elimination of belting not only effects a saving in expense, but is of particular advantage when the cleaning mechanism is employed in connection with a storage-house, for it can be put upon the roofing of a house or upon the dome thereof and operated successfully. As is understood, when the cleaning mechanism is mounted upon the roof or dome of a storage-house it is not ordinarily practicable to drive a force-feeder.

Constituting a part of the apparatus is a storage-house, within which is arranged a series of bins in annular order, and it is one of the objects of the invention to provide for the direction of the cleaned seed-cotton from the cleaning mechanism to any one of these bins, so that, for example, when one of them is filled the supply of cleaned cotton can be diverted to the next one.

I will set forth in detail the structure represented in the accompanying drawings; but I do not limit myself to the precise character of parts nor their disposition in the manner now to be described, for as to these and other features of detail material variations may be

made within the scope of my invention included within my claims.

Referring to the drawings, Figure 1 is a vertical sectional elevation of an apparatus involving my invention. Fig. 2 is a horizontal sectional top plan view of the same. Fig. 3 is an enlarged vertical sectional elevation of the cleaning mechanism. Fig. 4 is a horizontal section of the parts represented in Fig. 3, the section being taken in a plane corresponding substantially with the axis of the force-feeder. Fig. 5 is a side elevation of the seed-cleaning mechanism.

Like characters refer to like parts throughout the different views.

The apparatus, as will be understood from what has been hereinbefore stated, includes in its make up a storage-house. The construction of the house forms no part of the invention, and therefore a detailed description of the same is unnecessary. Respecting the shape of the house, this is immaterial. It is represented as being circular.

The storage-house 2 contains interiorly thereof a plurality of bins, each denoted by 3 and into which the cleaned seed-cotton is alternately delivered, as will hereinafter more particularly appear. The bins for convenience are arranged in annular order. This order need not, as shown, be circular. The arrangement of the bins side by side or in annular order provides for the ready delivery of cotton into desired bins.

The cleaning mechanism involves a casing, as 4, into which an inlet-conduit, or, as it is known in the art, a "pneumatic conveyer," as 5, leads. Connected with the inlet-conduit outside of the storage-house 2 is a pipe, as 6, constituting practically a continuation of the said conveyer 5 and the receiving end of which is arranged to be placed within a wagon to draw therefrom a supply of seed-cotton for delivery by way of the pipe and conveyer to the casing 4, wherein the said cotton is freed of objectionable matter therein. From the casing 4 a suction conduit or flue 7 leads, the suction in which is created by a fan of some ordinary construction. I do not deem it necessary to illustrate the fan nor describe it in detail.

The casing or housing 4 is mounted within the dome of the storage-house 2 and contains interiorly a force-feeder, which I will denote in a general way by 8. The force-feeder is represented as comprising two end disks, each

designated by 9 and alike in construction. Between these disks the blades 10, angular to the force feeder or wheel 8, are suitably fixed. The outer edges of the blades extend short of the peripheries of the complementary disks 9 and carry flexible strips, as 11, which may be conveniently made from leather, the strips extending each from one disk 9 to the other.

10 Within the casing or housing 4 and extending from the upper side of the delivery end of the inlet conduit or conveyer 5 to the upper edge of the board 12 is a segmental screen 13, of a mesh sufficient to freely provide for the  
15 passage therethrough of air-currents from the pneumatic conveyer to the suction pipe or conduit, but not sufficient to permit the seed-cotton to be projected therethrough. The upper edge of the board 12 extends above to the  
20 top of the suction conduit or flue 7, while its lower edge is located below the bottom of said flue or conduit, its inner face being adapted to be traversed by the flexible strips 11. This board 12, and although I have termed it a  
25 "board" it need not necessarily be made from wood, is of such extent that there will always be in contact with its curved surface one of the flexible strips 11, so as to prevent backward suction of the cotton from the cleaning-screen 14, hereinafter more particularly described, to the suction conduit or flue 7. In  
30 other words, the flexible strips provide for air-tight contact between the blades or wings 10 and the board or guard 12. There is substantially a duplicate of the board or guard 12 at the opposite side of the casing interiorly thereof, the duplicate board or guard being  
35 denoted by 15 and its working face, which is curved, being arranged for engagement by the flexible strips 11 as the force-feeder 8 turns. The board extends downward from the inlet of the casing 4, and, as has been  
40 stated, its curved face is of such an extent that there will always be in contact therewith at least one flexible strip 11. This prevents dropping of unclean cotton into the space of the casing in which the cleaning-screen 14 is directly located. I do not provide for the  
45 power operation of the force-feeder 18, but rely simply and solely on suction developed in the apparatus to cause its rotation to an extent sufficient to insure the feed of cotton positively toward the cleaning-screen and along the same.

55 It will be evident that the blades or wings of the force-feeder are so located that a blast of air entering the casing 4 from the pneumatic conveyer can act against said blades with a force sufficient to cause the proper turning motion of the force-feeder or drum 8.

60 Depending from and practically forming a part of the casing 4 is a hopper 16, of which the inclined and practically segmental screen 14 forms the top. The seed-cotton in a dirty  
65 condition is advanced by suction and by the

action of the rotating force-feeder to the screen and is then caused to travel along said screen, and as it does so the objectionable matter therein is caused to pass through the openings in the screen into the hopper 16, from  
70 which it is conveyed out of the building by way of the discharge-pipe 17, extending from the bottom of said hopper. The cleaning-screen may be either of slatted construction or metallic mesh, as deemed desirable.

75 Motion being imparted to the fan (not shown) connected with the suction pipe or flue 7, the pipe 6 will be dipped into a wagon containing cotton, so that the cotton will be sucked through said pipe 6 and into the inlet-  
80 conduit or pneumatic conveyer 5, from which latter the cotton passes into the casing 4 and strikes with the air-blast against the blades or wings of the wheel or feeder 8, whereby the  
85 feeder will be caused to rotate, the blades or wings of the feeder taking the cotton therewith. The cotton as it travels around passes against the screen 13 and then against the board or guard 12 and finally onto the inclined cleaning-screen 14. While on the  
90 screen 14 the cotton is cleaned, the leafy matter, sticks, dirt, and other foreign substances passing through the meshes of the screen into the hopper 16, where they are conducted out of the building by way of the discharge-pipe  
95 17. The cleaned cotton passes from off the screen 14 and into the tube 18 pendent from the casing or housing 4.

In connection with the force-feeder I provide a governor to prevent abnormal speed  
100 thereof, and I will now describe the form of governor shown for securing the result in question.

Upon one of the disks are mounted two opposite pivoted weights 21, coöperative with  
105 a stationary brake-wheel 21<sup>a</sup>, surrounding the weights. The latter are held in their ineffective positions by coiled springs, as 22, connected therewith and with the disk 9, that carries the weights. The weights are  
110 adapted when the speed of the force-feeder passes beyond a certain limit to engage the inner face of the brake wheel or ring 21<sup>a</sup> to check such speed, it being understood that the weights or shoes are thrown outward by  
115 centrifugal force. When the speed of the force-feeder is lowered, the springs 22 simultaneously draw the weights or shoes away from the brake wheel or ring. The two weights are operatively connected together  
120 in such a manner as to secure their action in unison and to also overcome the force of gravity. To bring about the result in question, links, as 21<sup>b</sup>, between the said weights can be employed. In practice brackets,  
125 which may be of the kind illustrated, may be provided for holding the governor-weights in place. The cotton as it passes through the casing 4 travels at a high speed and at all times strikes the screening means at a con-  
130

siderable angle to prevent the cotton from webbing or sticking. The cotton passes in close contact with the screening means, so that its thorough cleaning is assured.

5 The cotton-cleaning screen 14 is represented as consisting of a plurality of elongated slats spaced to provide therebetween slots, and as the cotton passes over these slots sticks, nails, bolts, and screws that cannot  
10 ordinarily be removed from the cotton will pass through the slots.

The cotton dropper or cleaner need not necessarily be used in connection with a storage-house, although its use in such connection is advantageous for the reason hereinbefore set forth. It may be employed successfully to drop cotton onto a belt distributor or anything of an equivalent nature.

15 The cleaned cotton passes by gravity from off the screen 14 into the tube 18 and from thence into a chute, as 23. It will be seen that the cleaning-screen 14 is arranged at a steep angle in order to insure the cotton passing by its own weight from off the same and  
25 from thence into the tube and chute just alluded to for delivery by the chute to any one of the bins 3. I rely, therefore, simply upon gravity to cause the conduct of the cotton from the cleaning-screen to any one of the  
30 bins.

The chute is movably mounted, so that it can be shifted to direct the cleaned cotton into any one of the series of bins 3. In the present case the chute is revolvably mounted,  
35 it being supported for turning motion in some suitable manner by the pendent tube 18. To uphold the chute in a substantial manner, it may be provided with an antifriction-wheel 24 near its free end to travel upon the annular track 25, supported by suitable frame-  
40 work in the house 2 above the bins. Extending downward from the head of the chute 23 is an elongated spindle 26, having a hand-wheel or analogous actuating device, as 27, at its lower end. The hand-wheel is arranged  
45 in proximity to the floor of the storage-house, so that it can be readily reached by a person standing upon said floor in order to turn the chute 23. The spindle 26 is coaxial with the  
50 chute 23, and it will be evident that when it is turned the chute can be revolved.

The apparatus hereinbefore described is simple in construction, effective in operation, and thoroughly cleanses the cotton and dis-  
55 poses of it when cleaned in a satisfactory manner, while at the same time means are provided for carrying out the trash from the building. I am enabled to operate the force-feeder without the use of belting or analogous  
60 mechanical devices. It will be understood that the curved surfaces of the two boards or guards 12 and 15 are concentric with the force-feeder 8. They, in connection with two oppositely-disposed blades 10, with the  
65 flexible strips 11 on the latter, serve, in effect,

to divide the interior of the casing into two chambers, the upper one being a suction-chamber, while there is no suction in the lower chamber. The cleaned cotton is delivered into this lower chamber, and as there is  
70 no suction in the same there is no possibility of the cleaned cotton being drawn up into the upper portion of the casing.

It will be understood that when the cotton strikes the screen 13 it does so with considerable force, and in this way I am enabled initially to remove foreign matter from the mass, which passes through the meshes of  
75 said screen and out into the suction-pipe 7.

In practice I prefer to arrange a sliding cut-off, as 16<sup>a</sup>, between the hopper 16 and discharge-pipe 17, which may be closed or open, as desired, as in neither case will the action of the apparatus be affected.

The disks 9 are overlapped exteriorly and marginally by flexible strips which cover the joints between the disks and casing in an air-tight manner. The strips are denoted by  
85 9<sup>a</sup> and may be of any form, although they ordinarily are annular.

The annularly-arranged bins 3 surround an open space 3<sup>a</sup>, (shown as circular,) a passage-way or aisle 3<sup>b</sup> leading into the said open space 3<sup>a</sup> at a point outside of the bin. An attendant can enter the open circular  
90 space 3<sup>a</sup> by way of the passage-way or aisle 3<sup>b</sup>, so as to obtain access to the hand-wheel 27, located in said circular open space.

Having thus described the invention, what I claim is—

100 1. In a cotton-handling apparatus, a casing, a pneumatic conveyer opening into the casing, a suction-flue, and a discharge-chute for cleaned cotton, leading from the casing, a screen between the conveyer and the suction-flue, a cleaning-screen between the suction-flue and the discharge-chute, for screening the cotton before it reaches said chute, and a force-feeder in the casing to positively  
105 move the cotton from the conveyer to the cleaning-screen and operable solely by the blast of air entering the casing from said pneumatic conveyer.

2. In a cotton-handling apparatus, a casing, a pneumatic conveyer opening into the casing, a suction-flue, and a discharge-chute for cleaned cotton, leading from the casing, a screen between the conveyer and the suction-flue, a cleaning-screen between the suction-flue and the discharge-chute, for screening the cotton before it reaches said chute, and a force-feeder in the casing, arranged to be operated solely by the blast of air entering the casing from said pneumatic conveyer and comprising a plurality of blades.  
115 120 125

3. In a cotton-handling apparatus, a casing, a pneumatic conveyer opening into the casing, a suction-flue, and a discharge-chute for cleaned cotton, leading from the casing, a screen between the conveyer and the suc-  
130

tion-flue, a cleaning-screen between the suction-flue and the discharge-chute, for screening cotton before it reaches said chute, a force-feeder in the casing, arranged for operation solely by the air-blast entering the casing from said pneumatic conveyer, said force-feeder involving a plurality of blades provided with flexible strips at their outer edges, and curved members in the casing, arranged to be traversed by said flexible strips, the extent of each curved member being such that at least one flexible strip will be always in contact with one of them.

4. In a cotton-handling apparatus, a casing, a fan in the casing having blades, means in the casing to be traversed by the blades and coöperative with the latter to divide the casing into independent chambers, a screen in one of the chambers, and means for drawing air through the screen-chamber and through the screen to effect the cleaning of cotton, and to also turn the fan.

5. In a cotton-handling apparatus, a casing, a fan in the casing having blades, means in the casing to be traversed by the blades and coöperative with the latter to divide the casing into independent chambers, a screen in one of the chambers, means for drawing air through the screen-chamber and through the screen to effect the cleaning of cotton,

and to also turn the fan, and a screen in the other chamber of the casing, said blades serving to carry the cotton in succession against the screens.

6. In a cotton-handling apparatus, the combination of a cotton-cleaning casing, a force-feeder for the cotton in the casing, and a suction-pipe communicating with the casing, the suction through the pipe serving as the sole means for rotating the said force-feeder.

7. A cotton-handling apparatus having a storage-house, cotton-cleaning mechanism, a plurality of bins arranged in annular order in the storage-house, there being an open space surrounded by the bins, a discharge-chute leading from the cotton-cleaning mechanism and mounted for revolving movement to deliver cleaned cotton in any one of said bins, a passage-way between two of the bins leading into said open space, and means situated in said open space for revolving said discharge-chute.

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

ALBERT F. TIDWELL.

Witnesses:

JAMES M. DRAKE,

H. L. WEEMS.