

E. E. DICKERSON.
CLEANING COTTON DEVICE.
APPLICATION FILED JAN. 23, 1915.

1,149,253.

Patented Aug. 10, 1915.

3 SHEETS—SHEET 1.

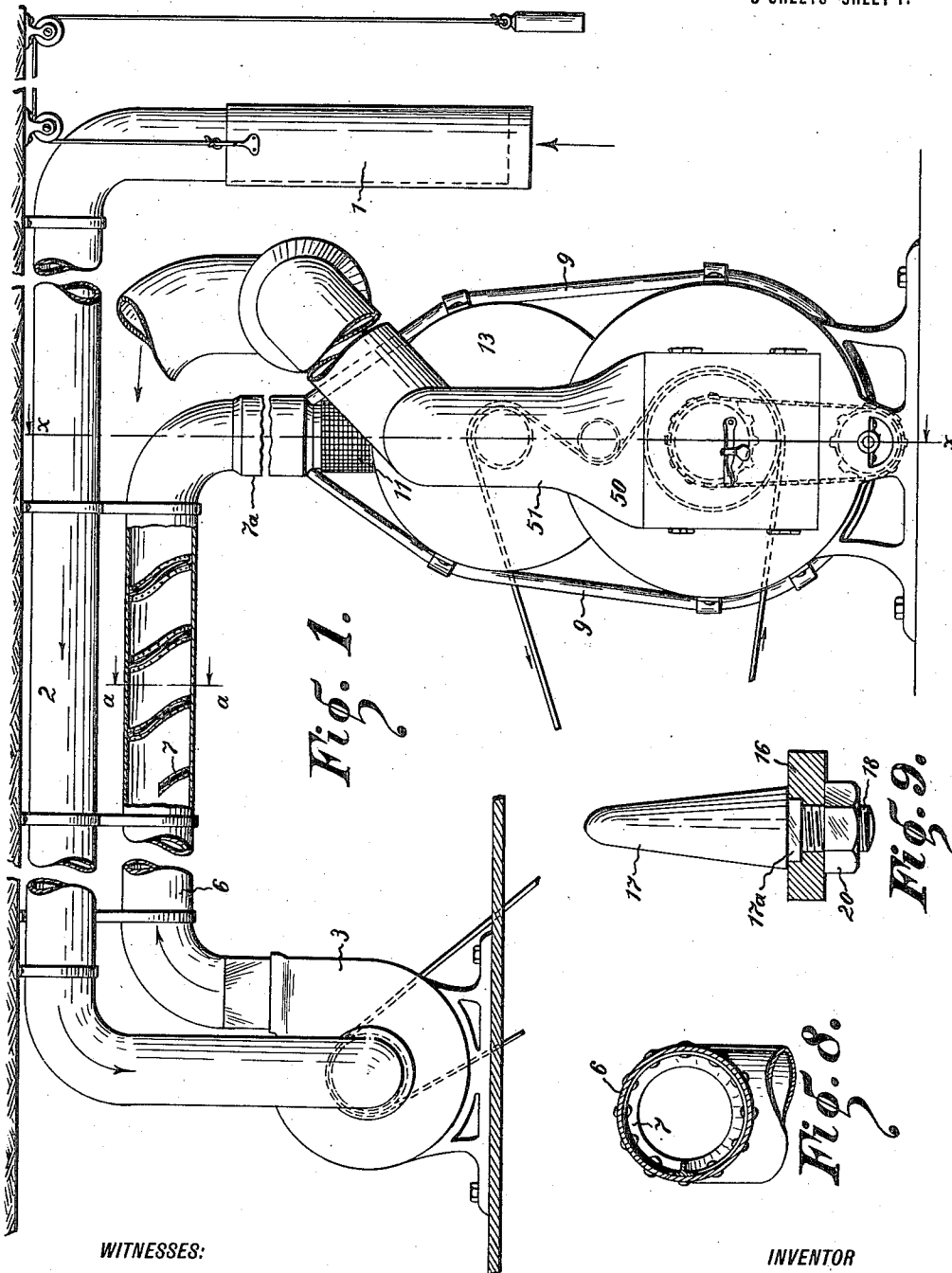


Fig. 1.

Fig. 9.

Fig. 8.

WITNESSES:

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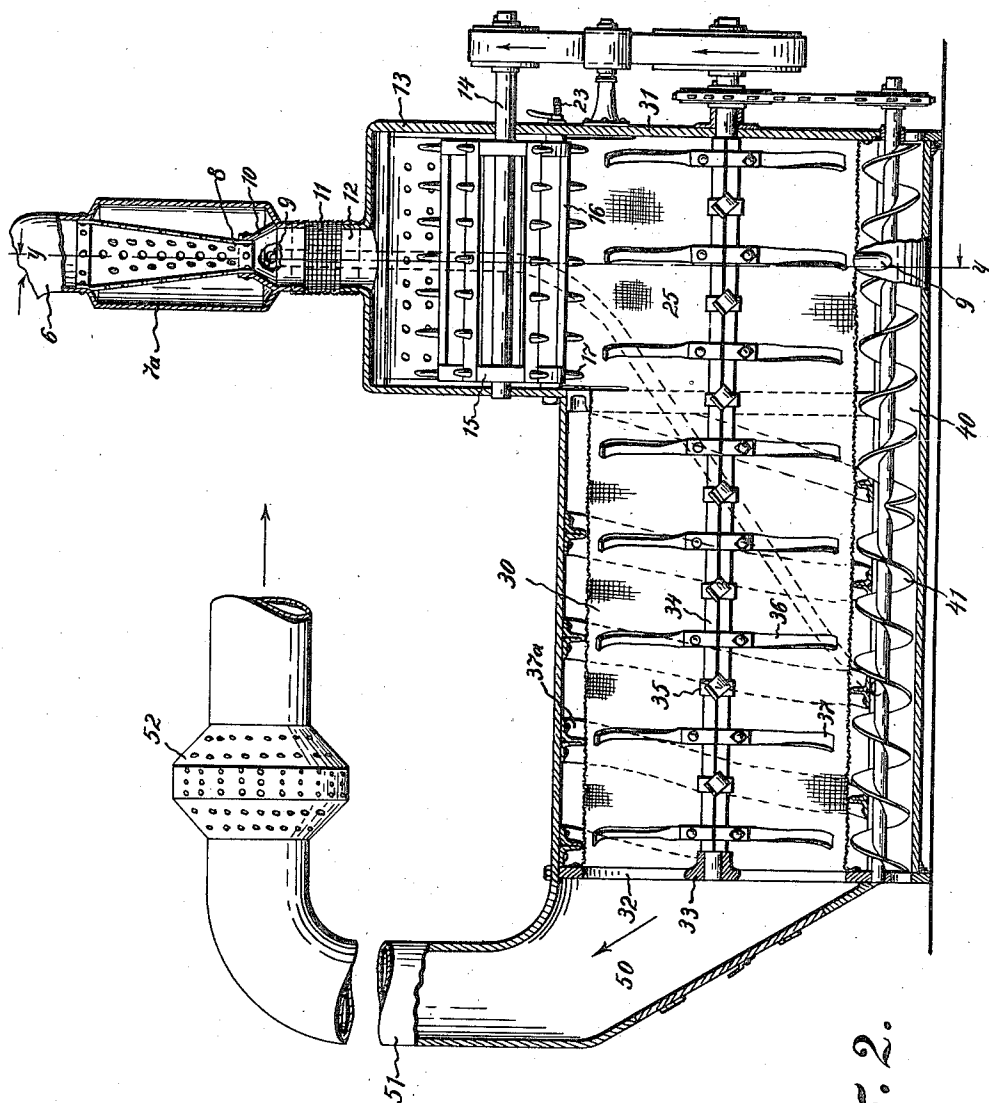


Fig. 2.

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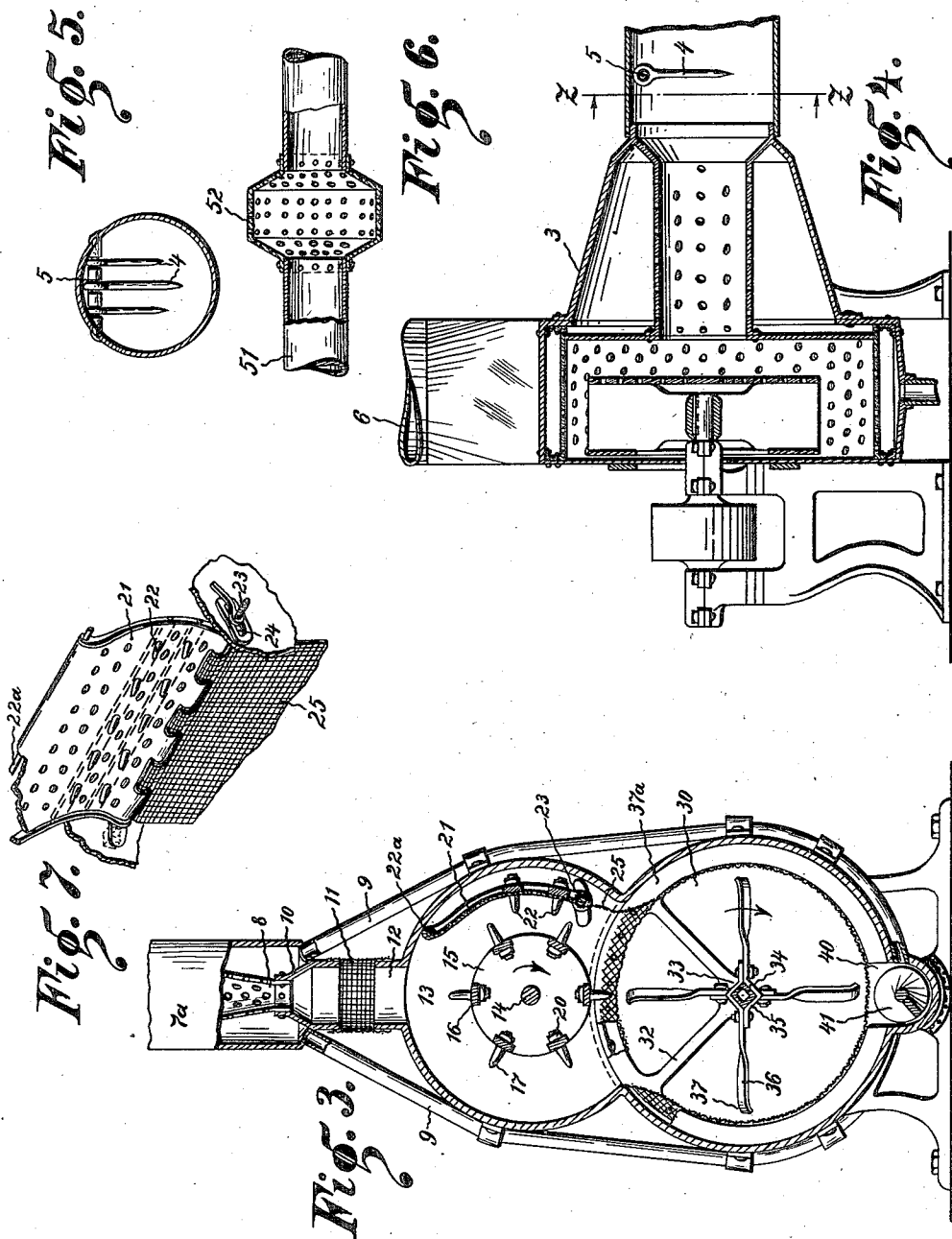
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WITNESSES:

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UNITED STATES PATENT OFFICE.

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CLEANING COTTON DEVICE.

1,149,253.

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To all whom it may concern:

Be it known that I, EUSTICE E. DICKERSON, a citizen of the United States, residing at Cleburne, in the county of Johnson and State of Texas, have invented certain new and useful Improvements in Cleaning Cotton Devices, of which the following is a specification.

My invention has relation to an apparatus for cleaning cotton and for feeding the same to the cotton gin and in such connection it relates more particularly to the construction and arrangement of parts constituting such an apparatus.

In the usual apparatus for conveying cotton from the wagon to the cotton gin there has been more or less provision for ridding the cotton of hulls, sand and motes but so far as I am aware there has not been devised a means whereby the cotton may be so cleansed in transit to the gin that its grade or quality has been considerably improved and its market value thereby increased.

The underlying idea of my present invention is to provide an apparatus for cleaning and otherwise treating the cotton in transit from wagon or other source of raw cotton to the gin whereby the grade or quality of the cotton may be appreciably improved and its value measurably increased.

In the carrying out of my invention the cotton is sucked in from the source of raw supply to and through a suction fan or similar apparatus and from thence it is forced under pressure, with a whirling or spiral motion to the boll breaker. From the boll breaker the cotton still under pressure is forced through a main cleansing chamber wherein it is stirred by revolving paddles to fluff up the cotton and while in this fluffy state subjected to whirling or spiral air currents which assist in the conveying of the fluffy cotton through the cleansing chamber to a distributor pipe through which the thoroughly cleansed cotton is forced, under air pressure, to the gin.

My invention comprises essentially, first, a means, located in the pipe for conveying the cotton under air pressure to the boll breaker, whereby the air and cotton are both given a spiral or whirling motion, said means consisting preferably of spiral ribs formed on the interior of said pipe. Second,

a means, located at the inlet to the boll breaker, for increasing the air pressure upon the cotton and for permitting the escape of shale and sand from the cotton prior to its entrance to the boll chamber, said means consisting preferably of a contracted perforated nozzle leading from the exit end of the cotton pipe to the entrance pipe for the boll breaker, said nozzle surrounded by an enlarged compartment having solid walls to receive the shale, etc., and the compartment provided with discharge pipes for the refuse, and the entrance pipe for the boll breaker having a screen like section through which fine dust, sand, etc., are forced from the boll cotton prior to its delivery to the breaker roll, and third, a means, located below the outlet from the boll breaker, for stirring up the cotton to a fluffy state and for subjecting the cotton to a whirling air current while being so stirred or fluffed to thereby assist the cotton in its passage through the stirring operation as well as to assist in cleansing the cotton during said operation, said means consisting preferably of a chamber having closed walls provided internally with spiral ribs and a shaft traversing the chamber longitudinally and provided with radiating blades or paddles for stirring the cotton, said blades revolving in a screened compartment, the perforated walls of which are arranged within the chamber between the spiral ribs and the stirring blades.

The nature and scope of my invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof, in which,—

Figure 1 is a view partly in end elevation and partly in section designed to illustrate diagrammatically the arrangement and operation of an apparatus embodying main features of my invention. Fig. 2 is a longitudinal sectional view of the boll breaker and stirring chamber with auxiliary parts and connections, the line of section being shown at $x-x$, of Fig. 1; Fig. 3 is a vertical sectional view taken in line $y-y$ of Fig. 2. Fig. 4 is a longitudinal sectional view enlarged of the blower or suction apparatus. Fig. 5 is a cross sectional view taken on line $z-z$ of Fig. 4 and illustrating the damper on the suction pipe. Fig. 6 is a detail view illus-

trating in section the vacuum pocket on the pipe leading to the gin. Fig. 7 is a detail perspective view of the breast for the boll breaking mechanism. Fig. 8 is a cross-sectional view taken on line *a-a* of Fig. 1, and Fig. 9 is a detail view partly sectioned of one of the breaker roll pins, or teeth.

Referring to the drawings 1 represents the telescopic vertical leg of a conveyer pipe leading from a wagon or other source of cotton supply not shown and 2 represents the horizontal portion of the conveyer pipe leading to the inlet of a suction fan or blower 3. The pipe 2 has near the inlet to the suction fan 3 a check or brake for the passage of the cotton, the check being a series of fingers 4 projecting from and loosely supported by a rod 5 as clearly shown in Figs. 4 and 5.

The suction fan or blower 3 forms but an incidental part of the present invention. In a companion application for patent for the construction and arrangement of the fan or blower 3, the same is described in detail. For the proper understanding of the present invention it is only necessary to state that the fan 3 sucks in the cotton through pipe 2 and delivers it under air pressure to the pipe 6. The pipe 6 has on its interior wall a spiral rib 7 (see Figs. 1 and 8) designed to give the air current passing through said pipe 6 as well as the cotton propelled there-through a whirling motion. The pipe 6 is provided with a box or enlargement at its discharge end as at 7^a at the point where the pipe 6 communicates with the inlet pipe for the boll breaking mechanism. Within said box or enlargement 7^a the pipe tapers to a nozzle 8 the conoidal walls of which are perforated to form passages for surface dirt, shale, etc., from the cotton within the nozzle 8 to the interior of compartment 7^a. The bottom of compartment 7^a opens into conveyer pipes 9 leading to the shale conveyer tube. By contracting the pipe 6 into the perforated nozzle 8 the pressure upon the cotton in its passage from pipe 6 to the boll breaking mechanism is considerably increased. The lower end of perforated nozzle 8 is connected within box 7^a to the downwardly flaring end 10 of a pipe having outside the box 7^a an annular section 11 of wire mesh serving as a screen through which sand, etc., may be blown from the cotton to the exterior of the apparatus. The screen section 11 connects flaring pipe 10 directly with the inlet opening 12 to the boll breaker chamber 13.

In the preferred form of construction the chamber 13 is cylindrical and is traversed axially by a shaft 14 carrying a frame or spider 15 from the longitudinal ribs 16 of which the conoidal fingers or teeth 17 project radially of the shaft 14. In Fig. 9 there is shown one means of connecting

these fingers to the longitudinal ribs or slats 16. The shank 18 of the finger 17 is formed like a bolt with a square head 17^a locking in a correspondingly shaped recess in the outer face of a slat 16 and having its screw threaded end traversing the slat 16 and locked to the inner face of said slat by the nut 20.

To one side of and substantially concentric with the periphery of the breaker roll is arranged a perforated breast or concave 21 carrying conical fingers 22 coöperating with the fingers 17 of the roll. The breast or concave 21 is pivotally connected at its top to the end frames of chamber 13 so that it may be adjusted toward or away from the breaker roll, a rod 22^a reinforcing the top of the breast 21 serving as the fulcrum for the breast. The bottom of the concave or breast 21 carries a rod 23 projecting through either end wall of chamber 13 and working in curved slots 24 in said walls.

The base or bottom of the concave 21 is secured to a screen 25 made of wire mesh. This screen 25 extends annularly to form an inner perforated wall for the stirring or agitating chamber 30 located below the boll breaker chamber 13. In the preferred form of apparatus both boll breaker chamber 13 and stirring chamber 30 are cylindrical and of unequal diameters, the lower or stirring chamber 30 being larger. In length the lower chamber 30 is the longer. The shorter cylinder 13 is superposed upon one end of the longer cylinder 30 with portions of the periphery of each cut away to form between the cylinders a substantially rectangular opening for the passage of the cotton from boll breaking chamber 13 to the front end of chamber 30. As clearly shown in Fig. 2 this opening extends substantially the entire length of the smaller cylinder 13, and the inner or right hand end of each chamber is closed by a single frame or standard 31 on which is supported the driving mechanism for operating the breaker roll and the stirring mechanism within chamber 30.

At the opposite or left hand end of chamber 30 is secured an open frame or spider 32 having a central bearing 33 for a shaft 34 traversing the longitudinal axis of the chamber 30 and having a second bearing in the frame 31, which said shaft 34 traverses. On the shaft 34 is provided at predetermined intervals a series of offsets 35 from which beater arms 36 radially project. The free end of each arm 36 is preferably spoon shaped or downwardly and outwardly curved as at 37. The beater arms 36 rotate within a cylinder the walls of which are perforated being formed preferably of the wire screen 25 which is bent or shaped into cylindrical or tubular form after it passes from the breast or concave 21 into the chamber 30. On the interior of the wall of the casing for the chamber 30 is arranged a spiral

rib 37^a extending from the interior of the wall or casing for chamber 30 to the exterior of the screen cylinder 25 and spirally thereabout. The blades 36 in revolving stir the cotton in the screen cylinder 25 and the rib 37^a serves to impart a whirling motion to the air current entering the entire chamber 30 from the boll breaker chamber 13, both inside and outside the screen 25 within said chamber 30.

In the base of the chamber 30 and extending longitudinally thereof below the rib 37 is a trough 40 in which a right and left hand screw conveyer 41 is adapted to revolve.

This trough 40 is for the reception of shale and motes beaten out of the cotton during the fluffing operation in chamber 30 and it connects by pipes 9 with the base of the box 7^a above the boll breaking device. The trough

40 bears an outlet at either end, a portion of the refuse being conveyed to one end of the trough by the right handed screw of conveyer 41 while the remainder is conveyed to the opposite end of the trough 40 by the left hand screw portion of said conveyer 41.

The cotton in its passage from chamber 30 enters the contracted horn shaped chamber 50 connecting the outlet end of chamber 30 with a pipe 51. This pipe 51 is a distributor pipe and leads to the gins. In the pipe 51 is formed an air release chamber 52, having ends and body both perforated, the body being cylindrical and each end being frusto-conical. This pocket or chamber 52 permits the air blast to escape from the distributor pipe 51 should the cotton clog or stop the pipe.

Having thus described the nature and objects of my invention what I claim as new and desire to secure by Letters Patent, is,—

1. In an apparatus of the character described, in combination with a blower, an air pipe leading therefrom and a boll breaker connected by said pipe with said blower, of means located at the inlet to the boll breaker for increasing the pressure of the air entering said breaker from said pipe, said means being perforated to permit the escape of extraneous matter from the cotton and air prior to their entrance to the boll breaker.

2. In an apparatus of the character described, in combination with a blower, an air pipe leading therefrom and a boll breaker connected by said pipe with said blower, of a contracted perforated nozzle formed on said pipe at the inlet to the boll breaker.

3. In an apparatus of the character described, in combination with a blower, an air pipe leading therefrom and a boll breaker connected by said pipe with said blower, of a contracted perforated nozzle formed on said pipe at the inlet to the boll breaker and an enlarged compartment having solid walls surrounding said perforated nozzle.

4. In an apparatus of the character de-

scribed, in combination with a blower, an air pipe leading therefrom and a boll breaker connected by said pipe with said blower of a contracted perforated nozzle formed on said pipe at the inlet to said boll breaker, an enlarged compartment having solid walls surrounding said nozzle, and screen section of air piping connecting the perforated nozzle to the boll breaker, said screen section located outside said enlarged compartment.

5. In an apparatus of the character described, a cleaning chamber to which air and cotton under pressure are delivered, combined with means, located within the cleaning chamber, for stirring up the cotton into a fluffy condition and means for subjecting the cotton during the fluffing operation to a whirling air current.

6. In an apparatus of the character described, a cleaning chamber having a screen wall, a means for delivering cotton and air under pressure to the chamber within said screen wall, combined with means located within the chamber for stirring up the cotton into a fluffy condition and means for subjecting the fluffed cotton internally of the screen to a whirling air current to blow the dirt therefrom through said screen.

7. In an apparatus of the character described, a boll breaking chamber to which air and cotton under pressure are delivered, a second chamber leading from the outlet of the boll breaking chamber combined with means, located in said second chamber, for stirring up the cotton into a fluffy condition and with means for subjecting the cotton, during the operation of fluffing, to a whirling air current.

8. In an apparatus of the character described, a boll breaking chamber to which air and cotton under pressure are delivered, a second chamber having closed walls in open communication at one end with the outlet from the boll breaking chamber, spiral ribs formed on the interior of the walls of the second chamber, a screened compartment within and formed concentric with the ribbed walls of said second chamber, a shaft traversing the second chamber longitudinally and a series of blades projecting radially of the shaft, said blades revolving with the shaft within said screened compartment, the perforated walls of said compartment being arranged between said blades and the ribbed interior wall of the compartment.

9. In an apparatus of the character described, a blower, a boll breaker and a stirring chamber combined with a means for conveying cotton under suction to the blower, a means for discharging cotton from the blower to the boll breaker under pressure of a whirling air current, a screen means for increasing the pressure of air upon the cotton as it enters the boll breaker an outlet

from said breaker to the stirring chamber a means for screening the cotton in its passage through the stirring chamber, and a means for subjecting the cotton to whirling
5 air currents during its passage through said stirring chamber.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

EUSTICE E. DICKERSON.

Witnesses:

G. C. WALDROP,

G. SCHUMM.