

No. 898,072.

PATENTED SEPT. 8, 1908.

J. M. SHEPPARD.
COTTON CLEANER AND GIN FEEDER.

APPLICATION FILED JUNE 15, 1907.

3 SHEETS—SHEET 1.

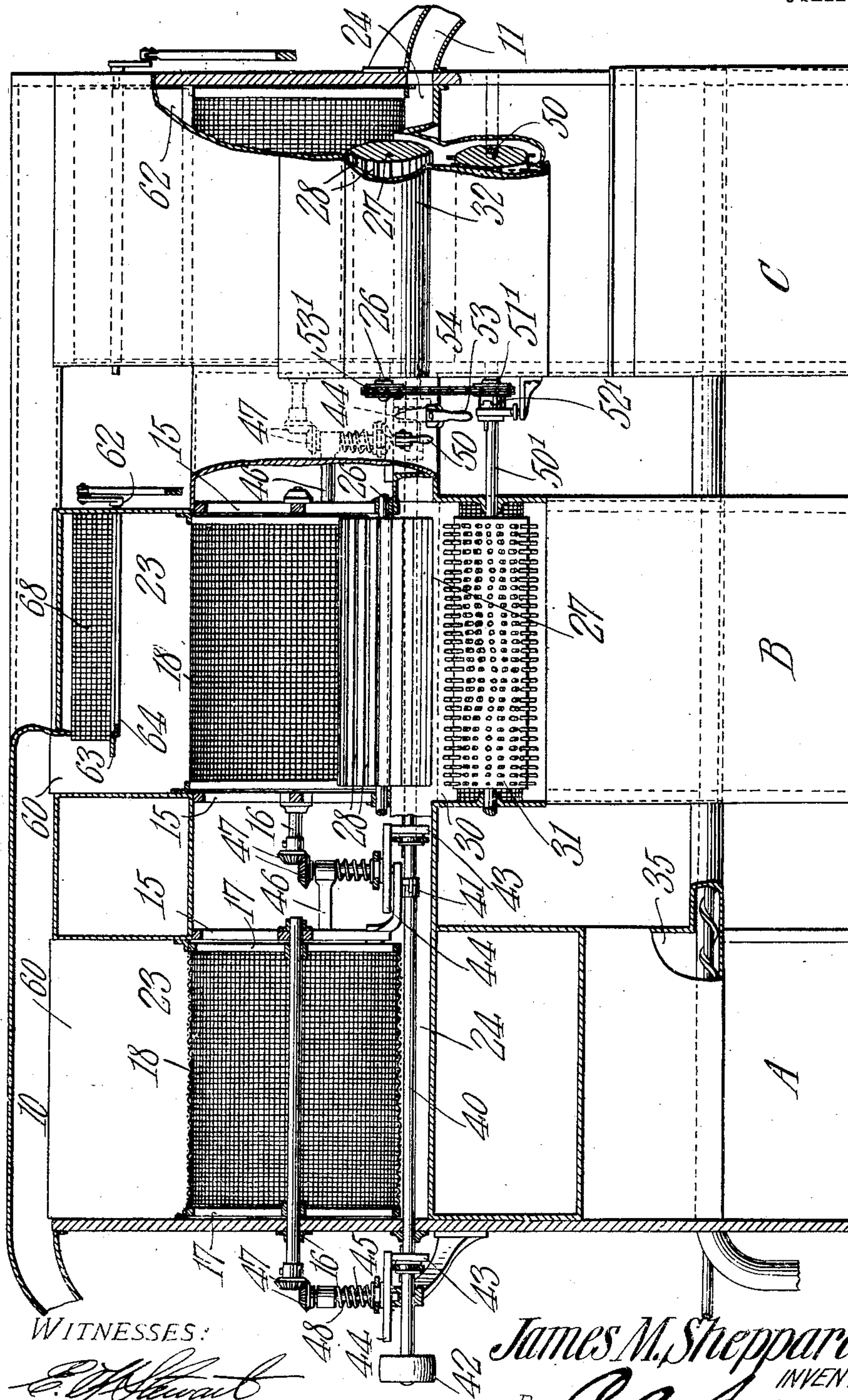


Fig. 1.

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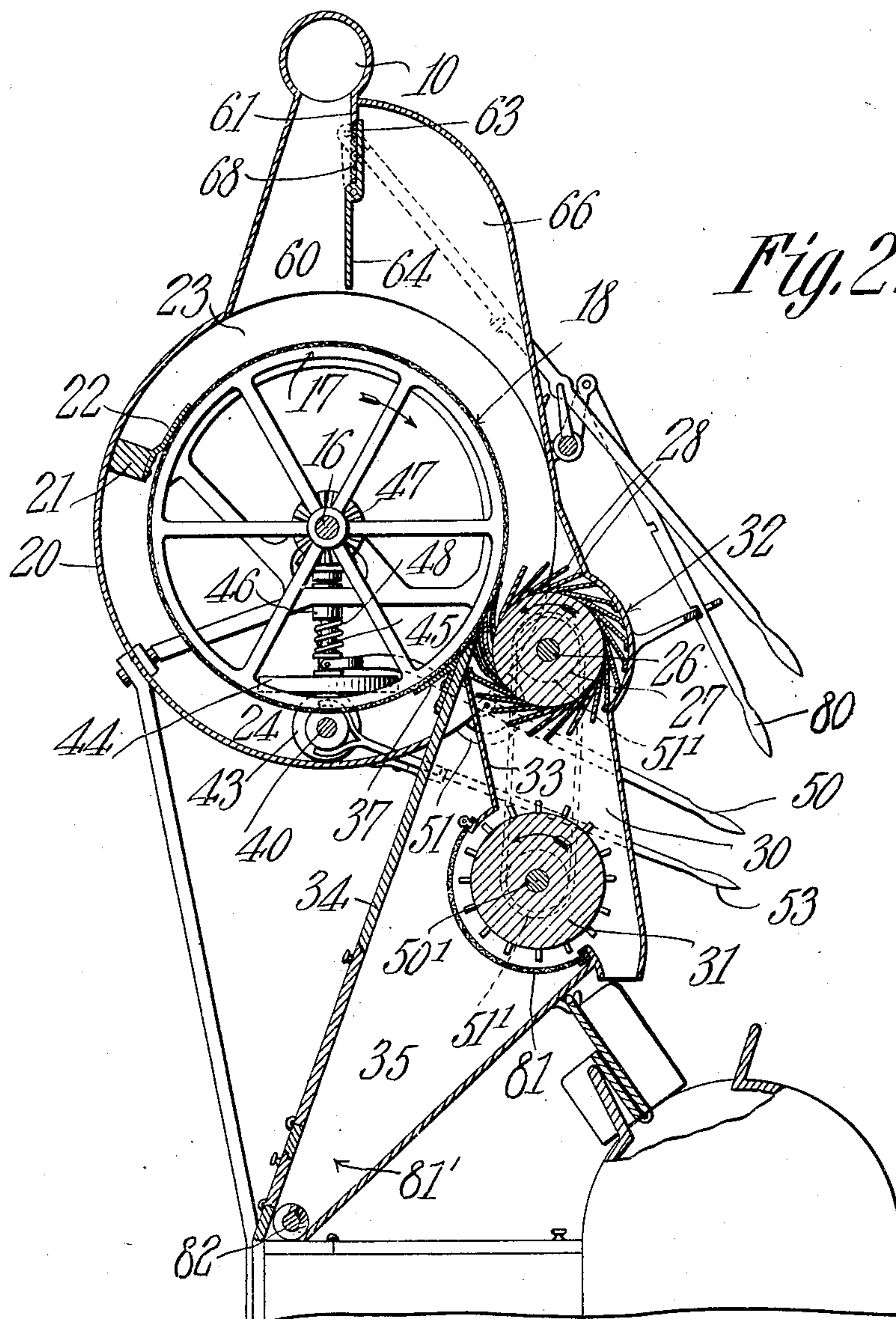
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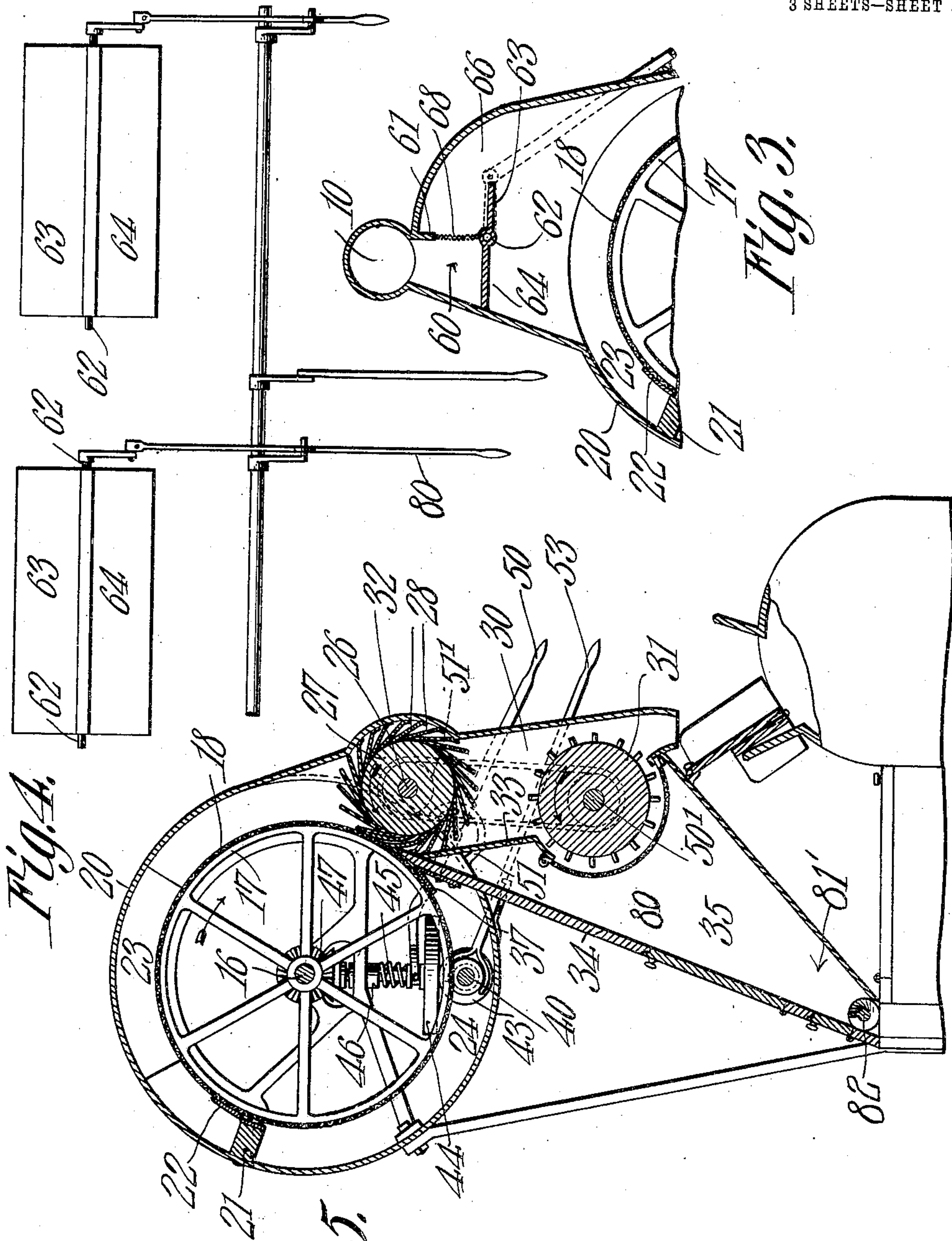
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3 SHEETS—SHEET 3.



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Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES M. SHEPPARD, OF CROWELL, TEXAS.

COTTON-CLEANER AND GIN-FEEDER.

No. 898,072.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Application filed June 15, 1907. Serial No. 379,204.

To all whom it may concern:

Be it known that I, JAMES M. SHEPPARD, a citizen of the United States, residing at Crowell, in the county of Foard and State of Texas, have invented a new and useful Cotton-Cleaner and Gin-Feeder, of which the following is a specification.

This invention relates to cotton cleaners to be employed in advance of cotton gins and like machines, and has for its principal object to provide a novel form of device for removing the impurities from the cotton and delivering the same at a uniform rate of speed and in uniform quantity to the gin.

A further object of the invention is to provide a mechanism of this type in which a revoluble screen is employed to receive the cotton to be cleaned, the cotton being allowed to accumulate on but a small portion of the outer surface of the screen drum, and the impurities being drawn through the screen by suction while the clean cotton is delivered from the screen to the gin.

A still further object of the invention is to provide a revoluble screen drum, the periphery of which is mounted in two separate compartments, one of which receives the cotton to be cleaned, while the other communicates with an air exhausting means, care being taken to prevent communication between the chambers except through the meshes of the screen.

A still further object of the invention is to provide an apparatus of this class in which a series of cleaners are employed, all fed from a common source, the feeders being so arranged that any one or more may be stopped in case the gin or gins which it supplies are stopped, while the others continue in operation.

A still further object of the invention is to provide means whereby a quantity of cotton may be accumulated in advance of each cleaner which is stopped, so that when the cleaner is again started into operation, there will be a mass of cotton ready to supply it.

A still further object of the invention is to provide a cotton accumulating means which will insure the retention of approximately the same quantity of cotton at each stoppage of the machine without regard to the length of time for which the machine is out of operation.

With these and other objects in view, as will more fully hereinafter appear, the inven-

tion consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings:—Figure 1 is a front elevation, partly in section of a cotton cleaning and gin feeding apparatus constructed in accordance with the invention. Fig. 2 is a sectional elevation through one of the feeders on the line 2—2 of Fig. 1, the view being on an enlarged scale. Fig. 3 is a view similar to Fig. 2, illustrating a modification. Fig. 4 is a detail view showing the arrangement of the valves and their connections. Fig. 5 is a view corresponding to Fig. 2 illustrating a modification.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The apparatus as at present shown is designed for use in connection with three separate gins, as A, B and C, the number of gins, and the number of cleaners used being immaterial, and the construction being such that additional gins and feeders may be added from time to time, as required.

Mounted above, and in alinement with each gin is a feeder and cleaner, to which the cotton is supplied through an inlet pipe from the wagon or other source of supply, the cotton entering in a horizontal line over the tops of the feeders, and being fed along by a current of air which is induced through the pipe by suction force exerted through a discharge pipe at the opposite end of the apparatus, this pipe being connected in any suitable manner by a suction fan or like machine.

Above each gin are two frames serving as bearings for a horizontally disposed shaft, and each shaft carries spoked disks to which are secured cylindrical screens. The cylindrical screen drum is surrounded by a cylindrical casing that is concentric with the periphery of the drum and extending across the annular space between the casing and the screen is a

partition 21 carrying a strip 22 of flexible material, such as leather, which is pressed against the surface of the screen by the pressure of air in the upper portion of the chamber, and thus serves to prevent communication between the feed compartment 23 at the top of the casing and the suction compartment 24 at the bottom of the casing.

At a point diametrically opposite the partition 21 is mounted a shaft 26 that is disposed parallel with the shaft 16, and this shaft 26 carries a rotary valve in the form of a drum 27 to which are secured a number of flexible valves 28 which successively engage with the periphery of the screen cylinder, and one or more of which are always in engagement with the cylinder for the purpose of closing the discharge side of the feed chamber. This rotary valve member 27 serves further as a doffer for removing the cotton from the surface of the screen and allowing the same to drop through the delivery chute 30 to the spiked drum 31. The outer wall of the delivery chute is approximately tangential with respect to the casing 20, and the wall is slightly bulged, as indicated at 32, to accommodate the rotary valve. The opposite wall 33 of the delivery chute is connected to the rear wall 34 of a dirt hopper 35, and at the junction of these two walls is arranged a flexible strip 37 that bears against the surface of the rotary screen for the purpose of preventing leakage of air and the passage of cotton into the suction compartment 24.

Arranged below the entire set of screens is a shaft 40 that preferably is formed in sections united by couplings 41 so that additional screens and gins may be coupled on as desired. This shaft 40 is mounted in suitable bearings disposed at different points throughout the length of the structure and is provided at one end with a driven pulley 42. Feathered on each section of the shaft 40 is a friction disk 43 that engages with a friction disk 44 that is carried by a vertically disposed shaft 45, the latter being mounted in a suitable bearing bracket 46 and being connected at its upper end to the drum shaft 16 by miter gears 47. The two friction disks are normally held in engagement with each other by a spring 48 that surrounds the vertical shaft 45 and the hub of disk 44 is grooved for the reception of a bifurcated end of a lever 50 that extends out to the front of the machine, and which may be locked by a rack 51, this lever serving as a means for separating the disks in case the operation of any of the cleaners and feeders is to be stopped, and this operation may be accomplished without disturbing the operation of the remaining devices. The hub of the smaller friction disk 43 is grooved for the reception of the bifurcated end of a lever 53 that, also, extends out to the front of the machine, and this lever 53 may be adjusted for the purpose

of varying the distance of the friction disk 42 from the center of the shaft 45, and thus varying the speed of rotation of the drum.

The spiked drums 31 are mounted on a shaft 50', and on each shaft is arranged a loose pulley or sprocket wheel 51' which may be engaged with the shaft by a clutch sleeve 52'. The pulley or sprocket wheel 51' is connected to a pulley or sprocket wheel 53' by a belt 54, and said pulley or sprocket wheel 53' is secured to the shaft 26, so that the revoluble valve will be constantly rotated at the same time as the spiked drum. The clutch 52' permits the stopping and starting of the rotatable valve to correspond with the starting and stopping of the screen 18.

The feed pipe or flue 10 is connected to the feed compartments by individual chutes 60 through which the cotton may fall on to the upper surface of the screen drum. In one of the side walls 61 of the chute is formed an opening that is normally closed by a valve pivoted on a rod 62. The valve is formed with upper and lower wings 63 and 64, which may move into alinement with and form a part of the wall 61. This wall 61 serves to divide the chute from a by-pass 66 that leads to the suction flue.

In operation, the cotton entering the feed compartments will be evenly distributed throughout the set of screens, the uniformity of feed being due to the fact that when the exposed surface of the screen 18 nearest the entrance of the pipe 10 has become covered with a layer of cotton, the suction force through the screen is diminished, and the bulk of the cotton will then pass to the second screen, which in turn will become covered to reduce or minimize the suction, while the mass of cotton then goes on to the third, fourth, or fifth screen as the case may be, it being understood that the screen drums are revolved at comparatively low speed, so that all of the drums may gather equal quantities of cotton for delivery to the gins. The web of cotton clinging to the upper surface of the drum is carried around in the direction of the arrow indicated in Fig. 2 as the drum revolves, and is brought into contact with the revoluble valve 27 which latter acts as the lower or side wall of the feed compartment, and as the flaps or strips 28 are carried around by the valve they will successively engage against the layer or bat of cotton carried by the drum and will disengage the same therefrom, so that the cotton will fall down through the chute 30 and be caught by the spiked drum.

Should it be desired to stop the operation of any one of the gins, it is necessary to, also, stop the operation of its feeder, and for this purpose the lever 50 is manipulated, so that the friction disk 44 of the screen to be stopped is raised from the driving disk 43. The valve 63—64 is then moved to the position shown

in Fig. 3, the wing 63 then assuming a horizontal position across the chute at a point below the level of the feed pipe or flue 10, thus forming a pocket in which a quantity of cotton may accumulate. The cotton is drawn into this pocket by the draft of air through the by-pass, the movement of the valve wing 64 to open position uncovering a screen plate 68 which is normally covered by the upper wing of the valve. This screen plate allows the passage of a current of air, and this current of air will carry cotton into the pocket until the latter is filled and the screen plate is covered by a layer of cotton of such thickness as to prevent any further passage of air, so that precisely the same quantity of cotton is accumulated, no matter how long the valve may remain in the closed position. When the gin and feeder are again started there will be a mass of cotton in readiness to drop on to the screen drum of the cleaner, so that the gin may be started into operation very quickly.

In the modified construction, the upper feed flue 10 as a separate member is dispensed with, and all of the feed compartments are connected throughout, so that the cotton entering at one end of the series of compartments will be carried through and evenly distributed to all of them, that is to say, the screen drum nearest the entrance end will first be covered, and then the second drum from the end, and so on until all have received a layer of cotton, and then as the screen drums rotate and successively fresh portions of the screen are brought into the feed compartments, they will be covered by layers of cotton as fast as the fresh surfaces are exposed. In this case the valves 63—64 may be dispensed with and when any one of the screen drums is stopped, the cotton will accumulate on top of the stationary screen drum until a layer is formed of such thickness that no further air can pass through the drum, and then the layer of cotton will act as a valve, while the remaining cotton will pass over the drum to be caught by the other drums which are in operation.

It will be noted that the flexible strip 37 rests against the periphery of the cylindrical screen at a point beyond the upper edge of the wall of the discharge chute. The edge of the wall is tapered to assist the doffing action, so that all of the cotton will be removed from the drum and allowed to drop through the discharge chute in the direction of the feeder or gin.

The apparatus shown in Figs. 1 and 2 may be advantageously employed where cotton belonging to different persons is to be ginned. After all of the cotton of one person has been sucked through the feed tube 10, the valves may be closed until the cotton is ginned, and during this period the feeders and gins may continue to operate, while the feed pipe is

connected to another source of supply, and the second mass of cotton may be fed in through the pipe and into the chute and deposited on top of the valves, so that the next cotton will accumulate to permit the feeders to instantly start into operation as soon as the first quantity is delivered.

In order to accomplish this the several valves are preferably connected to a single operating lever 80, so that they may all be open or closed simultaneously.

It is obvious that the spiked drum may be dispensed with and either of the above described apparatus placed directly above any class of feeder for the purpose of evenly distributing the cotton.

Around the lower rear portion of the spiked roller is arranged a screen 80 through which any dirt separated from the cotton may pass, this dirt falling through a chute 81 at the bottom of which is a conveyer 82 by which the dirt may be removed to any suitable point.

I claim:—

1. In a cotton cleaner, and gin feeder, a plurality of cleaners, a feed flue common to all of such cleaners, means for stopping each of said cleaners independently of the others, there being means to permit an accumulation of cotton at each cleaner when the latter is stopped, and a suction means for conveying the cotton through the feed flue while the cleaners are operating, and when one or more of them are idle.

2. In apparatus of the class described, a plurality of cotton cleaners, means for stopping each of said cleaners independently of the others, a feed flue common to all of such cleaners, means for permitting an accumulation of cotton at each cleaner while stopped, and a suction means common to all of such cleaners and serving to continue the feed when one or more of the cleaners are idle.

3. In apparatus of the class described, a plurality of cleaners each including a revolvable screen, a feed flue common to all of the cleaners, means for stopping each of said cleaners independently of the others, means for permitting an accumulation of cotton above each cylinder when the latter is stopped, and a continuously operable suction means common to all of the cleaners.

4. In apparatus of the class described, a plurality of cleaners, each including a revolvable screen, a feed flue common to all of the cleaners, a suction means common to all of the cleaners, and independently operable means for stopping one or more of the cleaners without stopping the feed.

5. In apparatus of the class described, a plurality of cotton cleaners, a feed pipe or flue common to all of the cleaners, individual chutes leading from the flue to the cleaner, valves arranged in said chute for cutting off the passage of cotton to the cleaners, said

valves serving to permit an accumulation of cotton when the cleaners are idle, and independently operable means for stopping one or more of the cleaners without stopping the feed.

6. In apparatus of the class described, a plurality of cotton cleaners, a feed pipe or flue common to all of the cleaners, individual chutes leading from the flue to the cleaners, a suction means, by-pass connections from the chutes to the suction means, and valves for controlling the flow of a current of air through the chutes and by-pass connections.

7. In apparatus of the class described, a cotton cleaner, a feed chute leading thereto, a valve in said chute and movable thereacross to form a pocket in which cotton may accumulate when the valve is closed, a suction means, a by-pass leading from the chute to the suction means and under the control of the valve, and a screen for preventing the passage of cotton into the by-pass.

8. In apparatus of the class described, a cotton cleaner, a feed chute leading thereto, a suction means, a by-pass between the chute and the suction means, one wall of the chute

being provided with an opening which communicates with the by-pass, a screen covering a portion of the opening, and a valve normally closing the opening and cutting off communication between the chute and by-pass, said valve being movable to closed position across the chute to form a receiving pocket for the cotton, one of the side walls of such pocket being formed by said screen.

9. In a cotton cleaner, a cylindrical screen drum, a casing surrounding the drum and divided into feed and suction compartments, a discharge flue adjacent to the discharge side of the feed compartment, and having a tapered upper edge to act as a doffer for the cotton, and a rotary valve at the discharge side of the feed compartment, said valve co-acting with said tapered edge to discharge the cotton from the drum.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES M. SHEPPARD.

Witnesses:

E. HUME TALBERT,
JNO. E. PARKER.