No. 755,701. PATENTED MAR. 29, 1904.

J. L. ROLLINS.

COTTON SEPARATOR.

APPLICATION FILED JUNE 25, 1903.

NO MODEL.

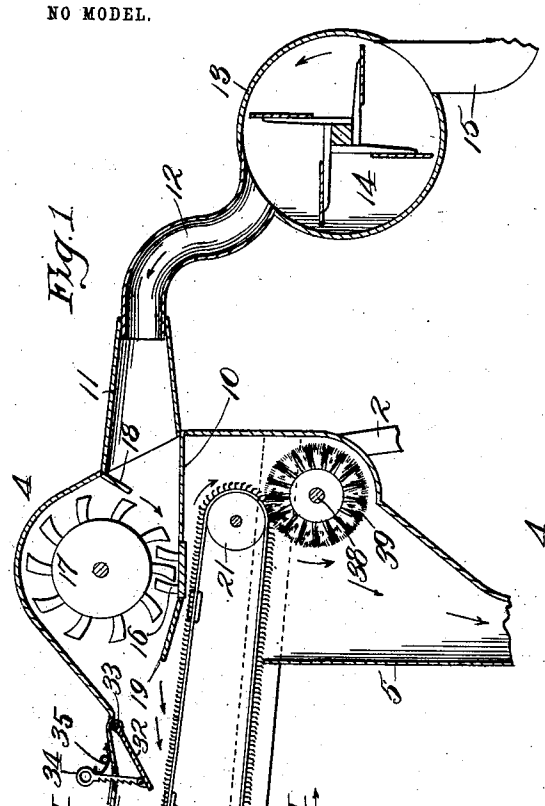


Fig. 1.

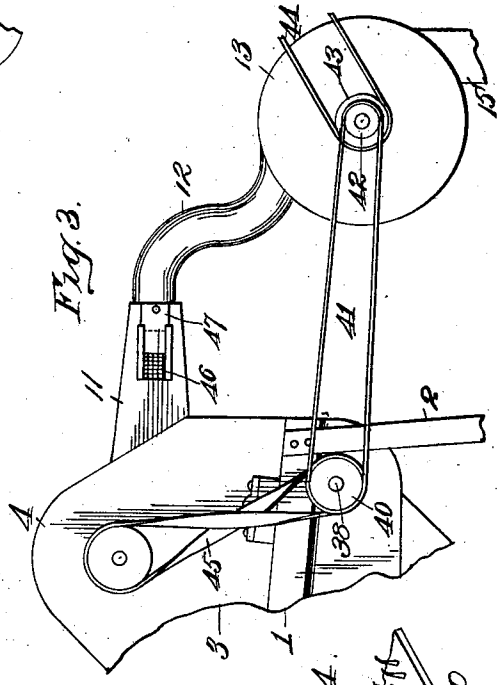


Fig. 3.

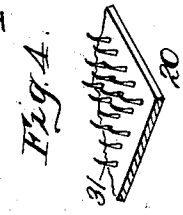


Fig. 4.

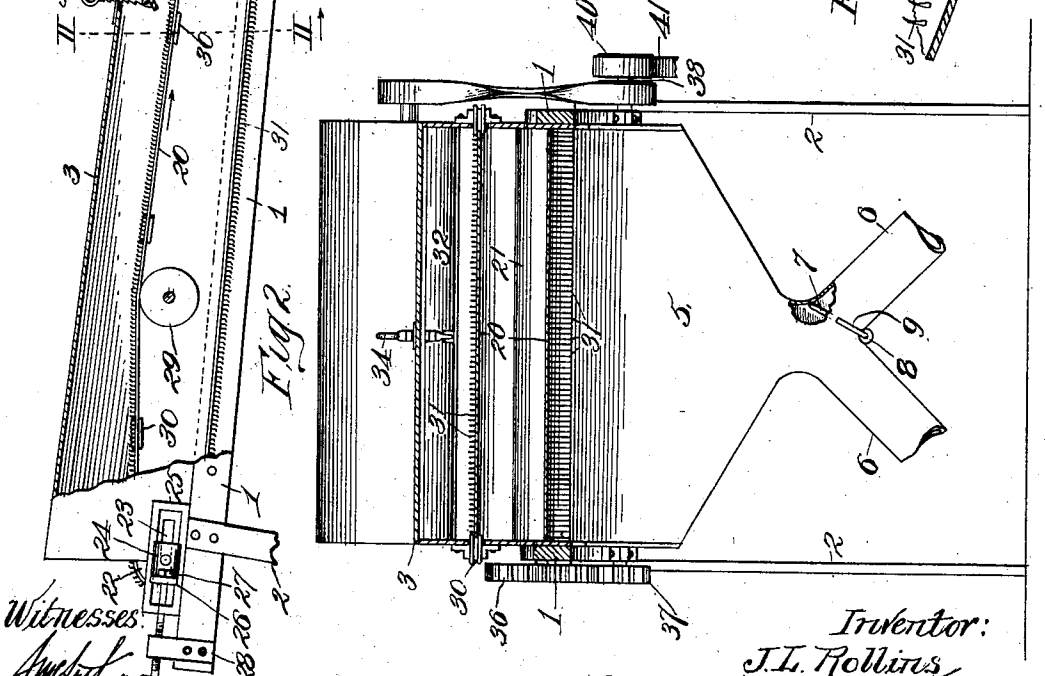


Fig. 2.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 755,701. Patented March 29, 1904.

# UNITED STATES PATENT OFFICE.

JOHN L. ROLLINS, OF NORMAN, OKLAHOMA TERRITORY.

## COTTON-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 755,701, dated March 29, 1904.

Application filed June 25, 1903. Serial No. 163,048. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN L. ROLLINS, a citizen of the United States, residing at Norman, in the county of Cleveland and Territory of Oklahoma, have invented certain new and useful Improvements in Cotton-Separators, of which the following is a specification.

This invention relates to cotton-separators, and has for its object to produce a machine of this character which efficiently and reliably separates cotton from twigs on which it grows or the twigs and dirt with which it may have become entangled before or during the picking process.

A further object is to produce a machine of this character which is simple, durable, compact, and inexpensive of construction.

To these ends the invention consists in certain novel and peculiar features of construction and combinations of parts, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 represents a central vertical longitudinal section of a cotton-separator embodying my invention, the rear end of the machine being shown in elevation. Fig. 2 is a cross-section taken on the line II II of Fig. 1. Fig. 3 is a side elevation of the front end of the machine. Fig. 4 is an enlarged detail perspective view of a portion of the endless conveyer.

Referring now to the drawings in detail, a skeleton support or frame comprises a pair of longitudinal sills 1, mounted by preference upon supporting-legs 2, where the separator is to be used as a stationary machine. Where it is to be used as a part of a cotton-picking machine, it may be otherwise supported upon the bed of such machine, though as such construction forms no part of the present invention, it is not deemed necessary to describe or illustrate it.

A longitudinal casing 3 of substantially inverted-U shape in cross-section is secured to the inner side of the sills 1 in any suitable or preferred manner and at its front end is arched, as at 4, for a purpose which hereinafter appears. At said end is formed a hopper 5, communicating at its lower end with the diverging tubes 6, a valve 7, pivoted at the junction of said tubes, as at 8, serving to cut off communication of either of the tubes with the hopper, a handle 9 being provided for convenient manipulation of the valve. Between the hopper and the arched portion 4 of the casing is a horizontal partition 10, and communicating with the interior of the casing at the front side of the arch at the upper side of said partition is a rearwardly-flaring tube 11 to receive at its front or small end the cotton (freshly picked or subsequently to such time) from the discharge-spout 12 of a fan-casing 13, containing a fan 14 of the usual or any preferred construction and provided with a tube 15, through which the supply of cotton above referred to passes.

At the rear edge of the partition 10 is a concave 16, consisting simply of a transverse bar equipped with the usual upwardly-projecting teeth, and above the concave is a toothed cylinder 17 of common and well-known construction, the teeth of which, in conjunction with the teeth of said concave, effectually tear the cotton and break the twigs and lumps of dirt, said cylinder operating in the direction indicated by the contiguous arrow by means hereinafter described. In order to properly direct the air and cotton to the bottom of the cylinder, a deflecting board or plate 18 extends downwardly and rearwardly from the upper rear end of distributing-tube 11, said distributing-tube being of the flaring type mentioned in order to aid in presenting the cotton to the cylinder and concave in a widely-distributed condition and in a layer of substantially uniform depth. As the cotton and foreign elements are thus completely and thoroughly separated and loosened by the cylinder and concave, it passes over the rearwardly-projecting and preferably upwardly-extending shelf 19, from which point the air-blast forces it in the direction indicated by the contiguous arrows down upon the endless conveyer 20, extending longitudinally of the machine. This conveyer 20 is in the form of an endless belt or apron, mounted at its front end below partition 10 upon a roller 21 or its equivalent and at its rear end upon a roller 22 or its equivalent. The shaft of roller 22 extends

through slots 23 in the side of the casing (one slot only appearing) and is journaled at each end in a sliding box 24 of slotted bracket 25 upon the contiguous sill 1, and each of said boxes is provided with a lateral flange 26, in which a longitudinal bolt 27 is journaled, said bolt being mounted in a bracket 28, secured to the contiguous sill. Adjustment of this bolt obviously acts to increase or diminish the tension of the conveyer. The upper portion of the latter is also mounted upon an idle roller 29, mounted in the casing at a suitable distance from its rear end, the arrangement of said roller being such that rearward thereof the upper portion of the conveyer is pitched downward with relation to the tube and casing for the purpose of giving a freer and more uninterrupted discharge of the elements, such as dirt and twigs, separated from the cotton. To prevent wear at the margins of the conveyer, due to its creeping laterally on the rollers and bearing against the sides of the casing, I have provided a number of grooved antifriction-rollers 30, which are journaled as shown or in any other suitable manner on the casing and projecting through openings therein engage the edges of the upper portion of the conveyer. For the purpose of catching and holding the cotton the conveyer-belt has its exterior surface almost completely covered with fine teeth 31, these teeth being sharpened and bent forwardly, so as to present when approaching the cylinder a perfect hedge of spears on which the cotton is impaled as forced rearward by the blast, the impaling process taking place at about the point of junction of the casing with its arch, which point is some distance rearward of the shelf 19, for a purpose which hereinafter appears. At the point where the cotton strikes the conveyer, which point may be termed the "throat" of the casing, is located an adjustable valve 32, pivoted at its front edge, as at 33, to the casing and at its rear edge to a toothed lift-bar 34, the latter extending up through an opening in the casing and held by spring 35 in yielding engagement with the casing at one edge of said opening. When it is desired to widen the throat, so as to accommodate a larger volume of cotton, the operator simply grasps lift-bar 34 and disengaging it from said edge of the casing draws it upward the required distance, the spring 35 serving to effect its automatic reëngagement with the casing, so as to lock the valve in its new position. This valve, located at the point described, practically insures the contact of all of the cotton with the conveyer, and as soon as such cotton, loosely mixed with dirt and twigs, passes said valve the blast, which is a very powerful one, blows the dirt and twigs out of the rear end of the conveyer, the air-pressure serving at the same time to secure the cotton more reliably in place by impaling it more tightly on the teeth of the conveyer.

The conveyer-shaft at one end is provided with a cog-wheel 36, meshing with a cog-wheel 37 of a shaft 38 of a rotary brush 39, located below and slightly forward of roller 21 and of such diameter that it is frictionally engaged with the conveyer and scrapes the cotton therefrom, as hereinafter explained. Shaft 38 is equipped with a pulley 40, driven by a belt 41 from pulley 42 on the fan-shaft, said fan-shaft having a pulley 43 engaged by a drive-belt 44, operated by a suitable motor. (Not shown.) Pulley 40 is also belted, as at 45, to the shaft of the cylinder, the connection being preferably a cross-belt one in order that the cylinder and brush may be driven in opposite directions.

In practice as the cotton mixed with twigs, dirt, and other foreign elements is withdrawn from the point of supply and forced by the fan into the casing deflector 18 directs it toward the concave at the lower side of the cylinder, where the dirt and twigs are crushed and the cotton is torn apart and finely shredded, and under the action of the blast, assisted by the cylinder revolved at a high speed, passes on and over the shelf 19. From this point it is blown in substantially the direction indicated by the arrows upon the conveyer, and the major portion or bulk of the cotton is impaled thereon, as hereinbefore explained, the twigs and dirt being blown past the valve 32 and through the rear and open end of the casing, the little lint or cotton which may pass the valve being caught by the conveyer at some point between the valve and the roller 29. As fast as the cotton is thus cleaned of all twigs and dirt, but not of the heavy cotton-seed which embeds itself in the cotton or drops down through the same on the body of the belt or conveyer, it is carried forward by the continuously-operating conveyer and as it nears and passes under the shelf 19 is protected from the unclean cotton driven rearward off said shelf. The conveyer, with the cotton impaled thereon, as it rounds the lower side of pulley 21 is next engaged by the brush, driven at an exceeding high speed in the direction indicated by the contiguous arrow, Fig. 1, so as to efficiently and reliably withdraw or sweep the impaled cotton off the conveyer and drop it into the hopper 5, from whence it is drawn through one of the branch tubes 6, the position of valve 7 determining through which it must pass, it being understood that the cotton is preferably drawn through said tubes by a fan or blower. (Not shown.) The cotton-seed is also brushed or drops from the conveyer into the hopper and is withdrawn therefrom with the cotton, after which it is seperated in any suitable manner therefrom.

For the purpose of diminishing the force of the air-blast entering the front end of the casing, should such result be desired, without varying the speed of the fan or its cylinder the tube 11 is provided with a screen-covered

opening 46 and a slide-door 47, by which such opening may be partially or wholly closed.

From the above description it will be apparent that I have produced a cotton-separator which embodies the features of advantage enumerated as desirable in the statement of invention, and while I have illustrated and described the preferred embodiment of the same it is to be understood that I reserve the right to make such changes in the form, proportion, detail, construction, and arrangement of the parts as properly fall within its spirit and scope.

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

1. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, means to force unclean cotton into the casing and upon the conveyer in a direction opposite to that in which the latter is moving, to separate foreign elements, such as dirt and twigs, from the cotton on the conveyer, and means for removing the cotton from said conveyer.

2. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means to introduce unclean cotton into the casing and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs and foreign elements from the impaled cotton, and means for removing the cotton from said conveyer.

3. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means to introduce unclean cotton into the casing and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs and foreign elements from the impaled cotton, means for removing the cotton from said conveyer, and an adjustable valve in the casing at the point where the cotton is impaled on the conveyer, for the purpose of widening or narrowing the casing at such point and insuring the engagement of practically all of the cotton with the conveyer-teeth.

4. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means to introduce unclean cotton into the casing and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs and foreign elements from the impaled cotton, and a revolving brush for sweeping the cleaned cotton off the conveyer at its front end.

5. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means to introduce unclean cotton into the casing and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs and foreign elements from the impaled cotton, means for removing the cotton from said conveyer, and a hopper to receive the cleaned cotton as it is removed from the conveyer.

6. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, means above the conveyer for thoroughly shredding the cotton and loosening it from foreign elements, means for forcing such unclean cotton into the casing and into engagement with said shredding or loosening means, and assisted by the latter, for forcing such shredded cotton upon the conveyer and separating such foreign elements therefrom, and means for removing the cotton from the conveyer.

7. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, a concave and a driven cylinder for thoroughly shredding the cotton and loosening it from the foreign elements, means for forcing such unclean cotton into the casing and into engagement with said shredding or loosening means, and assisted by the latter for forcing such shredded cotton upon the conveyer and separating such foreign elements therefrom, and means for removing the cotton from the conveyer.

8. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, means above the conveyer for thoroughly shredding the cotton and loosening it from foreign elements, means for forcing such unclean cotton into the casing and into engagement with said shredding or loosening means, and assisted by the latter, for forcing such shredded cotton upon the conveyer and separating such foreign elements therefrom, an adjustable valve in the throat of the casing for deflecting the shredded cotton down upon the conveyer, and means for removing the cotton from the conveyer.

9. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, a concave and a driven cylinder for thoroughly shredding the cotton and loosening it from the foreign elements, a shelf over the conveyer and extending rearwardly from the concave, means for forcing such unclean cotton into the casing and into engagement with said shredding or loosening means, and assisted by the latter for forcing such shredded cotton upon the conveyer and separating such foreign elements therefrom, and means for removing the cotton from the conveyer.

10. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means for shredding the cotton and loosening it from foreign elements, a fan to force unclean cotton into the casing and into engagement with said shredding means, and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs,

and foreign elements from the impaled cotton, and means for removing the cotton from said conveyer.

11. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means for shredding the cotton and loosening it from foreign elements, a fan to force unclean cotton into the casing and into engagement with said shredding means, and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs, and foreign elements from the impaled cotton, means for removing the cotton from said conveyer, a screened opening in the air-blast tube to admit air to the casing rearward of the fan to check the force of the blast from the latter, and a door to partially or wholly close said opening.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN L. ROLLINS.

Witnesses:
T. E. CLEMENT,
J. N. BURTON.