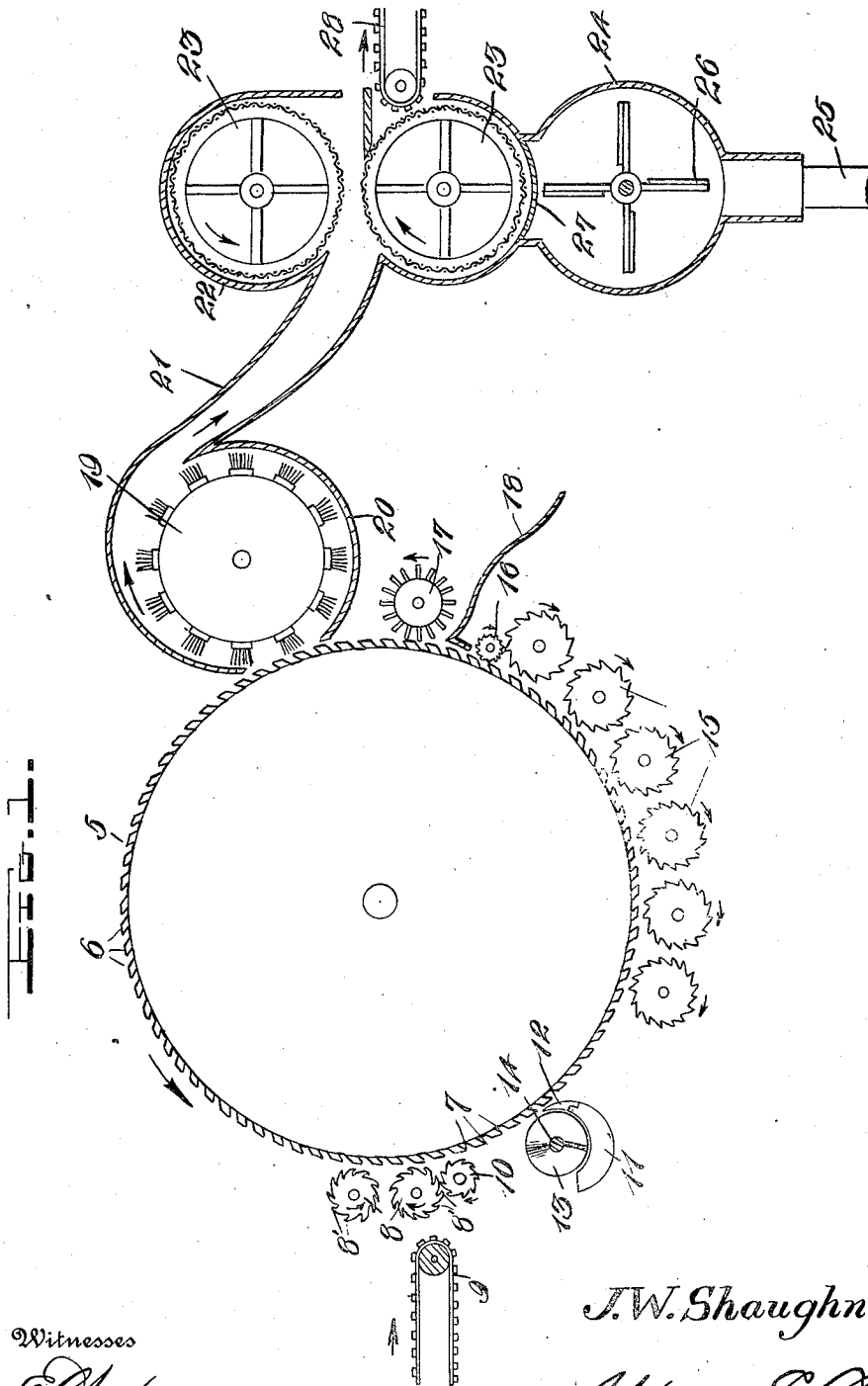


J. W. SHAUGHNESSY.
 APPARATUS FOR RECLAIMING WASTE COTTON.
 APPLICATION FILED AUG. 12, 1911.

1,037,340.

Patented Sept. 3, 1912.

3 SHEETS—SHEET 1.



Witnesses

W. B. Norton.
 A. B. Norton.

Inventor

J. W. Shaughnessy,

By

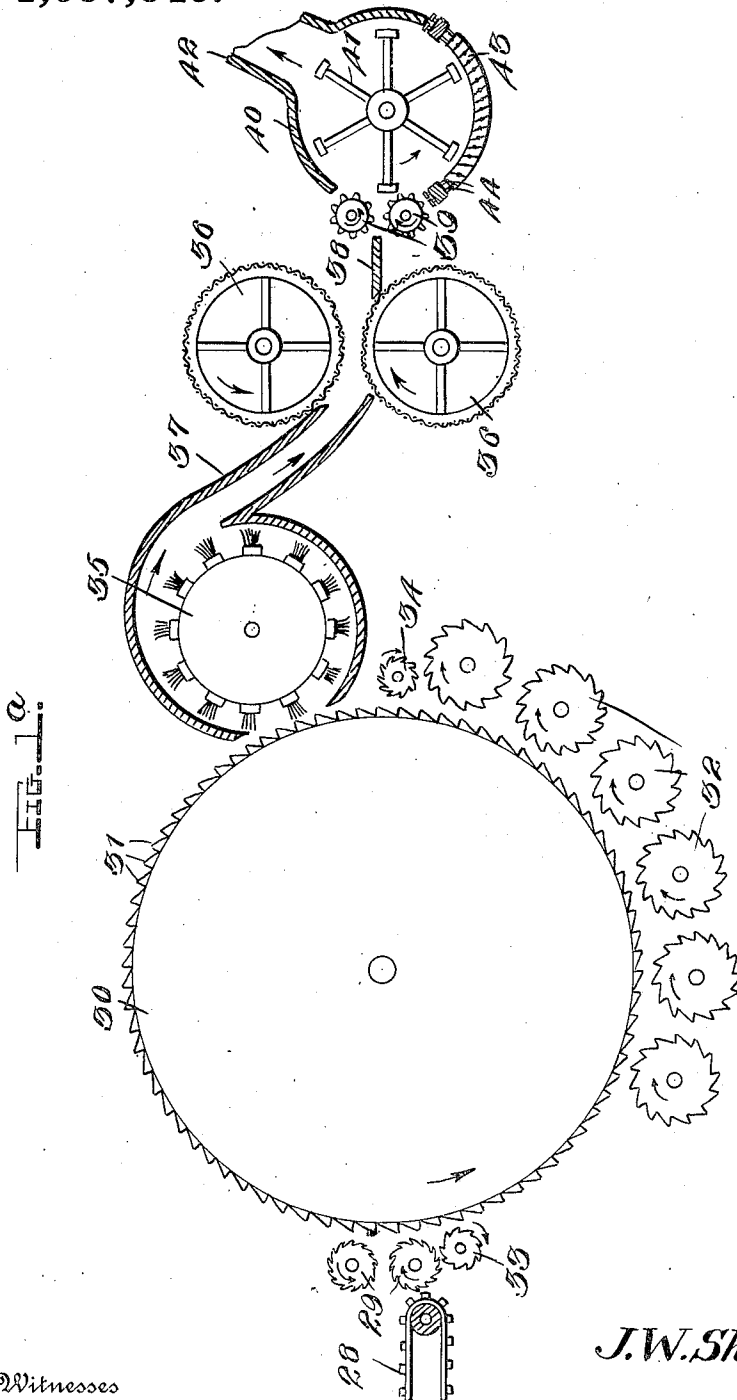
Watson & Coleman.
 Attorney

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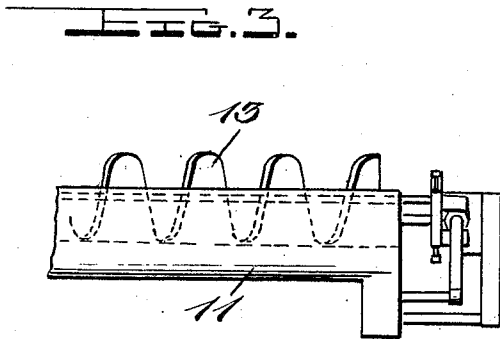
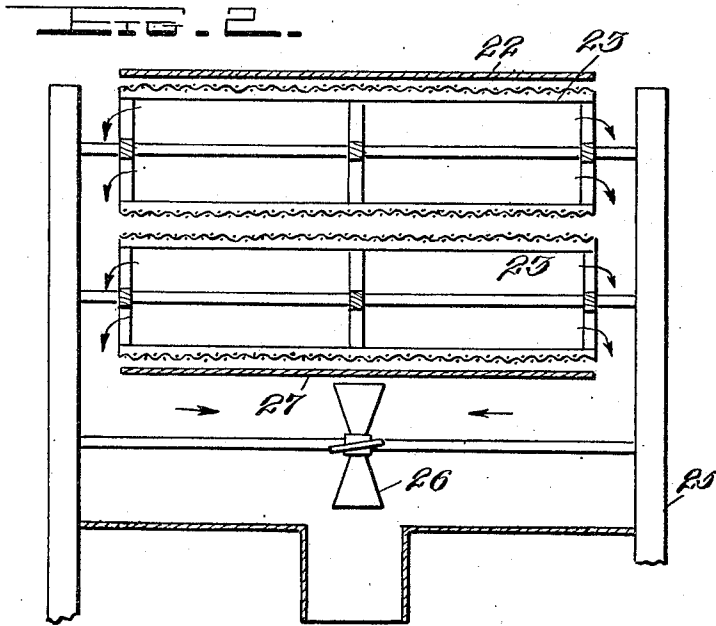
By *Watson E. Coleman,*
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN W. SHAUGHNESSY, OF CHARLOTTE, NORTH CAROLINA.

APPARATUS FOR RECLAIMING WASTE COTTON.

1,037,340.

Specification of Letters Patent.

Patented Sept. 3, 1912.

Application filed August 12, 1911. Serial No. 643,730.

To all whom it may concern:

Be it known that I, JOHN W. SHAUGHNESSY, a citizen of the United States, residing at Charlotte, in the county of Mecklenburg and State of North Carolina, have invented certain new and useful Improvements in Apparatus for Reclaiming Waste Cotton, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an apparatus for reclaiming the waste cotton of a cotton mill, which is unfit for use owing to the presence of large quantities of foreign matter in the stock.

My invention has for its primary object the provision of a simple, reliable and highly efficient apparatus of the above described character whereby such waste stock is thoroughly cleaned so that it may be utilized in the manufacture of cotton fabrics.

Another object of the invention is to provide an apparatus for cleaning the waste stock of a cotton mill consisting essentially of a cleaning mechanism and having arranged in combination therewith a stock opening or straightening mechanism which opens or separates the tufts of cotton.

A still further object of the invention is to provide a cleaning mechanism consisting of novel means for first removing the dead seed and larger particles of foreign matter which are present in the waste stock, and other means which acts upon the stock after such larger particles are removed therefrom, to relieve the cotton of the greater part of the remaining foreign matter.

Still another object of the invention resides in the provision of a stock carrying drum or roll having teeth of peculiar form whereby the cotton is held and carried to the picker rollers.

A still further and very important object of the invention is to provide a series of picker rollers arranged beneath the stock carrying drum whereby the stock may be more effectively cleaned than by the ordinary apparatus of this character wherein the rollers are arranged above the drum.

With the above and other objects in view, the invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings in which—

Figure 1 is a diagrammatic view illus-

trating the cleaning mechanism of my improved apparatus; Fig. 1^a is a similar view of the stock opening or straightening mechanism to which the stock is fed after it has been cleaned; Fig. 2 is a detail elevation of the compressor rolls illustrating the mounting of the suction fan; and Fig. 3 is a detail elevation of one end of the spiral blade and trough.

As hereinbefore stated, the present invention is devised with a view to reclaiming the waste stock of a cotton mill which cannot be used owing to the presence therein of large quantities of dead seed and other refuse material. No means has been heretofore provided for cheaply and thoroughly removing such foreign matter from the waste stock so that the same may be reclaimed and utilized in the manufacture of cotton materials. This deficiency is primarily due to the fact that in all apparatus of this character with which the applicant is acquainted, the stock opening or picker rolls have invariably been placed above the stock carrying drum, and much of the foreign matter contained in the cotton which is loosened by the action of the opening rolls fails to fall through the drum but remains in the stock. It is one of the principal objects of my invention to eliminate this difficulty by placing the picker or stock opening rolls beneath the carrying drum and to relieve said rolls of the greater portion of the cleaning action heretofore placed upon them by providing means in advance of the rolls and adjacent to the teeth of the carrying cylinder for first removing such dead seed and other large particles of foreign matter as may be contained in the stock.

With the above end in view, I provide a stock receiving and carrying cylinder or drum 5 which differs from the common drum usually employed in such apparatus in the peculiar form of the cotton receiving or take-up teeth which are provided upon the periphery thereof. These teeth, indicated at 6 are in the form of short burs which are arranged in spaced relation and are inclined with relation to the periphery of the cylinder. These teeth are preferably, though not necessarily, formed of wire, said wire being bent in any desired manner into the form of a parallelogram and so attached to the cylinder as to present the points to the feed rolls 8 in such manner that the stock is picked from the teeth 8' of said

feed rolls by the teeth of the carrying cylinder 5. The cotton enters the gullets or the spaces between the teeth on the cylinder and is held therein during the rotation of said cylinder. The stock is fed to the rolls 8 by means of a feed apron 9 which is of the common slat variety. Beneath the lowermost feed roll 8, a spur toothed roll 10 is arranged and this roll acts as a stripper for the lower feed roll, and removes such particles of stock as may remain upon the teeth of the feed roll after the stock has been delivered to the carrying cylinder.

Beneath the feed and stripping rolls a trough 11 is arranged, said trough extending the entire length of the stock carrying cylinder or drum 5. To the edge of said trough adjacent the cylinder, a removable steel plate 12 is secured and is adapted to co-act with a spiral cleaning blade 13 which is secured upon a shaft 14 suitably mounted at its ends and is concentrically located with relation to the face of the trough. In the operation of this portion of the apparatus, the stock, as it is carried by the cylinder 5 which rotates in the direction of the arrow, is caught between the edge of the plate 12 and the periphery of the spiral blade 13. The convolutions of the blade 13 are so spaced that as the periphery of the blade moves toward the edge of the plate 12, the dead seed or other large pieces of matter contained in the stock will be caught by said blade between its convolutions and the edge of the plate 12 and cut or removed from the stock and deposited in the trough 11 in which it is conveyed to one end thereof by the spiral blade and discharged into a suitable waste receiving receptacle.

After the cotton is carried past the spiral blade 13 it is engaged by the spur teeth of a series of stock opening rolls 15 which are adapted to loosen the cotton or separate its strands so that the finer particles of foreign matter may be removed in the manner which will appear from the following description. Any preferred number of these rolls may be employed but I preferably employ 6 as shown, each of said rolls rotating in the same direction and oppositely to the direction of rotation of the carrying cylinder 5. Suitable gearing is employed whereby each roll from right to left is rotated at twice the speed of the adjacent roll so that when the cotton reaches the uppermost roll on the right; the teeth of said roll engage the cotton with extreme rapidity and thoroughly separate or loosen the strands thereof. Adjacent to this upper stock opening roll a small toothed stripper roll 16 is mounted which removes such particles of the cotton from the teeth of the opening roll as may remain thereon. The cotton is now carried by the cylinder 5 into a position to be engaged by the

cleaning blades of the final dirt removing cylinder 17, and said blades as they contact with the loosened or opened stock dislodge the finer particles of seed and other extraneous matter contained in the stock and discharge the same upon a directing plate 18 which is arranged between the rolls 16 and 17, and has its upper end disposed closely adjacent to the cylinder 5. The cotton after being thus relieved of the foreign materials is carried by the cylinder to a brush cylinder 19 which is mounted in a suitable casing 20. The brushes of this cylinder remove the cotton from the teeth of the cylinder 5 and discharge the same into a conducting chute 21. This chute is connected to a suitable casing or housing 22 in which the pressure or condensing rolls 23 are arranged. The peripheries of these rolls are slightly spaced and the cotton is adapted to enter between them and be compressed after which it is conducted to the stock opening mechanism to be later described. The casing 24 is supported between the uprights or standards 25 and in these standards the ends of the shafts of the condensing rolls 23 are mounted. Within the casing 24 and beneath the lowermost roll 23 a fan 26 is mounted and driven from any suitable source of power. The rolls 23 are constructed from wire mesh or other reticulated material and the air is drawn through the same in the direction of the arrow shown in Fig. 3, a plate 27 being arranged between said fan and the periphery of the lower compressor roll. The rolls 23 are open at their ends and the suction created by the fan 26 draws the stock through the chute 21 into the space between said rolls where the stock is compressed.

The stock is delivered from between the pressure rolls 23 upon an endless apron 28 which conveys the same to the feed rolls 29 of similar form to the rolls 8 previously described. These feed rolls are arranged adjacent to the cylinder 30 which is provided upon its periphery with the saw teeth 31. These saw teeth receive the stock from the feeding rolls 29 and carry the same to a plurality of opening or loosening rolls 32 which are also provided with saw teeth upon their peripheries. A stripping roll 33 is also arranged adjacent to the lower feed roll 29 and relieves said feed roll of the excess stock which remains thereon. Another stripping roll 34 is located above and adjacent to the uppermost roll of the series of opening rolls 32. A brush cylinder 35 is mounted above the series of rolls 32 and adjacent to the cylinder 30 and removes the stock from said cylinder after it has passed over the opening rolls. This brush delivers the stock to the condensing rolls 36 through a conducting chute or passage 37. After the stock has been again condensed or compressed it is delivered upon a platform 38 from whence

it passes between the straightening rolls 39. These straightening rolls are longitudinally fluted or corrugated and as the stock enters between them, it is separated or straightened out into longitudinal strands which lie in the corrugations of the lower roll. These rolls rotate in opposite directions and discharge the straightened stock into the fan case 40 where it is cut by the blades of a fan 41 and conveyed to the discharge spout 42 which is connected to the fan case and discharges the straightened stock into a suitable receiving receptacle. In the lower wall of the fan case a sieve or grid 43 is arranged and this grid is made up of a plurality of plates which are pivotally mounted at their ends in the end walls of the case 40. In the operation of the apparatus these grid plates are inclined as shown in the drawing and the adjusting screws 44 are provided whereby the direction of inclination of said grid plates may be reversed. By adjusting the screws 44 against the end plate of the grid, said plate may be moved and engaged with the next adjacent plate, and as said plates are loosely mounted in the fan case, the engagement of one plate with the next adjacent plate will cause said plates to turn until they are disposed at the desired angle. Through this grid 43 any other particles of dirt which may be separated from the cotton by its passage through the straightening rolls and its engagement by the fan blades will be discharged from the fan case.

From the foregoing it is thought that the operation of my improved apparatus will be readily understood. Cotton which has heretofore been unfit for use in a cotton mill, may be quickly and thoroughly cleaned and all seeds, dirt or other foreign matter removed therefrom. The trough 12 and the spiral plate 13 are adapted to be adjusted with relation to the tooth carrying cylinder 5 in accordance with the condition of the stock which is to be fed to the machine.

My improved apparatus is comparatively simple in construction, positive and reliable in its operation and may be manufactured and installed at comparatively small cost.

While I have shown and described the preferred construction and arrangement of the various parts, it will be understood that the invention is susceptible of considerable modification without departing from the essential feature or sacrificing any of the advantages thereof.

Having thus described the invention what is claimed is:—

1. An apparatus for the purpose set forth comprising in combination, a toothed cylinder, means for feeding the stock to the teeth of said cylinder, and means acting upon the stock to cut out large particles of foreign matter therefrom and convey the same to a suitable discharge point, said latter means

including a trough having one of its edges disposed in close proximity to the teeth of the cylinder, and a movable member co-acting with the edge of said trough.

2. An apparatus for the purpose set forth comprising in combination, a toothed stock carrying cylinder, means for feeding the stock thereto, a rotatable spiral blade arranged adjacent to said cylinder, and means co-acting with said blade to cut out and remove particles of foreign matter from the stock.

3. An apparatus for the purpose set forth comprising in combination, a toothed cylinder, means for feeding the stock to the teeth of said cylinder, a trough having one edge disposed closely adjacent to the cylinder teeth, and a spiral blade mounted in said trough and co-acting with the edge thereof to remove particles of foreign matter from the stock in the rotation of said cylinder.

4. An apparatus of the character described comprising in combination, a toothed cylinder, means for feeding the stock to the cylinder, a trough having a removable edge plate disposed closely adjacent to the teeth of the cylinder and extending the entire length of said cylinder, and a spiral blade rotatably mounted in said trough and co-acting with said edge plate to remove particles of foreign matter from the stock in the rotation of said cylinder.

5. An apparatus for the purpose set forth comprising in combination, a toothed rotary cylinder, means for feeding the stock to the teeth of said cylinder, means arranged adjacent to the cylinder including a rotatable blade, a trough having a cutting edge with which said blade co-acts upon the stock in the rotation of the cylinder to remove particles of foreign matter therefrom, a series of stock opening rolls arranged beneath said toothed cylinder and in concentric relation thereto, and a cleaning cylinder arranged adjacent said toothed cylinder and adapted to act upon the stock after its passage over said opening rolls to remove other particles of foreign matter therefrom.

6. An apparatus for the purpose set forth comprising in combination, a rotary toothed cylinder, means for feeding the stock to the teeth of said cylinder, a series of stock opening rolls arranged beneath said cylinder and in concentric relation thereto, said rolls rotating in a direction opposite to the rotation of said cylinder and adapted to open the stock to permit the finer particles of foreign matter to fall therefrom, and means arranged between said stock opening rolls and the feeding means to remove the larger particles of foreign matter from the stock before the same is acted upon by said opening rolls.

7. An apparatus of the character described comprising in combination, a toothed rotary

cylinder, means for feeding the stock to the teeth of the cylinder, means arranged adjacent to the cylinder to act upon the stock during the cylinder's rotation and remove
5 particles of foreign matter therefrom, means arranged beneath the cylinder and acting upon the stock to open the same, a cleaning cylinder to engage the opened stock and remove other particles of foreign matter there-
10 from, a pair of pressure rolls, means for removing the clean stock from the toothed cylinder and delivering the same to said pressure rolls, a second toothed cylinder and means for feeding the compressed stock
15 thereto, a second series of stock opening rolls arranged beneath the latter cylinder and acting on the stock to again open the same, a second set of pressure rolls, means for delivering the stock from the second cyl-
20 inder to said rolls, and a pair of corrugated straightening rolls arranged adjacent to the latter pressure rolls to receive the stock therefrom and straighten the same.
25 8. An apparatus of the character described comprising in combination means for re-

moving the greater portion of the foreign material from the stock, a stock receiving toothed cylinder and means for feeding the cleaned stock thereto, a series of stock opening rolls arranged beneath said cylinder and
30 in concentric relation to the same to engage and open the stock in the rotation of the cylinder, a set of pressure rolls, means for feeding the opened stock to said rolls where-
35 by the same is compressed, a pair of straightening rolls to which the stock is delivered from the pressure rolls, a discharge fan to receive the straightened stock, said fan in-
40 cluding a case having a reversible grid in its bottom wall through which the remaining particles of foreign matter which are ejected from the stock by contact with the fan blades are deposited.

In testimony whereof I hereunto affix my signature in the presence of two witnesses. 45

JOHN W. SHAUGHNESSY.

Witnesses:

M. C. LYDDANE,
GEO. S. LIVINGSTON.