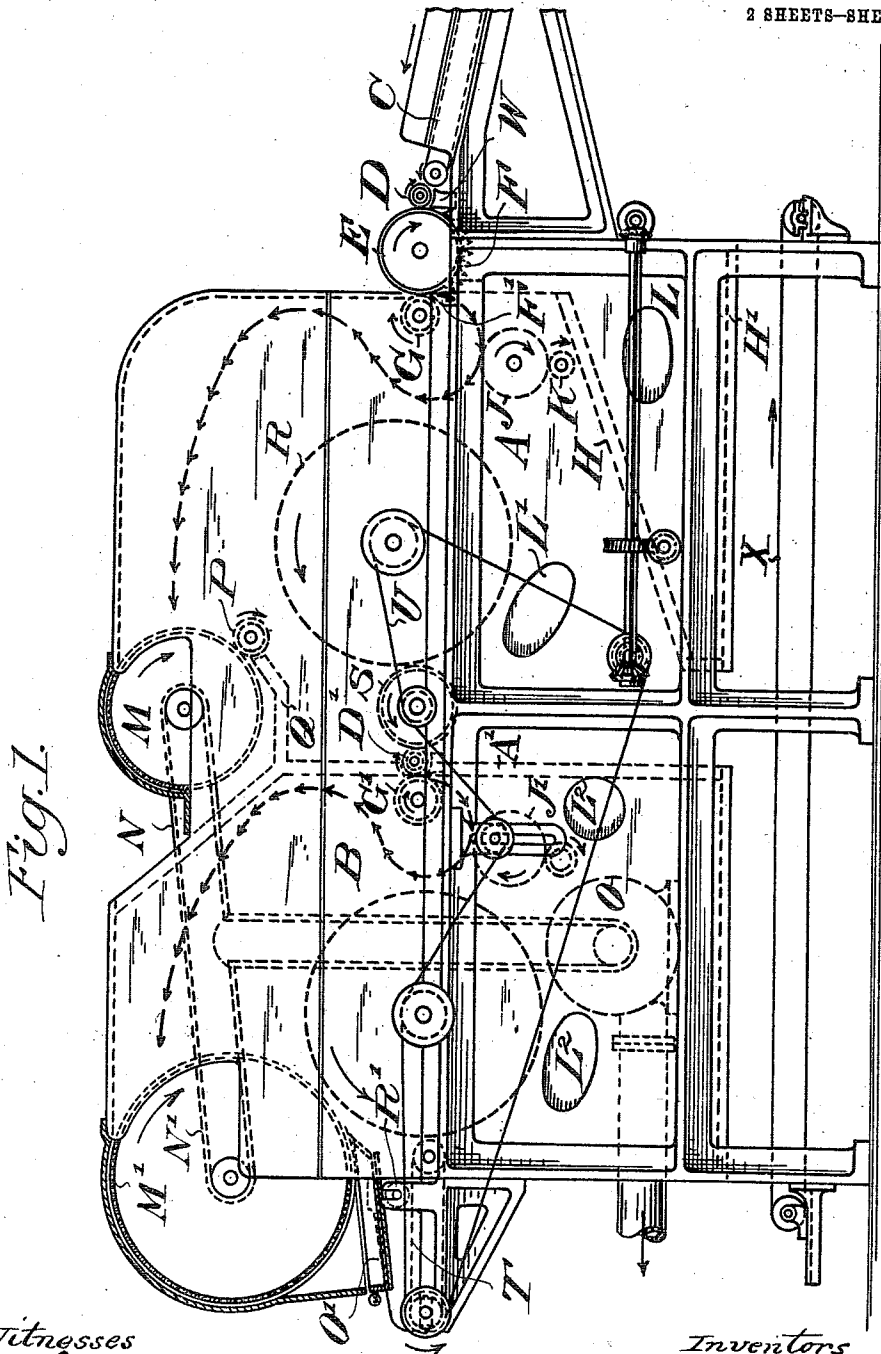


W. CUTTILL & J. D. BLACKWELL.
 APPARATUS FOR TREATING OR CLEANING COTTON WASTE OR THE LIKE.
 APPLICATION FILED MAY 12, 1910.

985,731.

Patented Feb. 28, 1911.

2 SHEETS—SHEET 1.



Witnesses
John W. Tucker
Richard H. Tucker

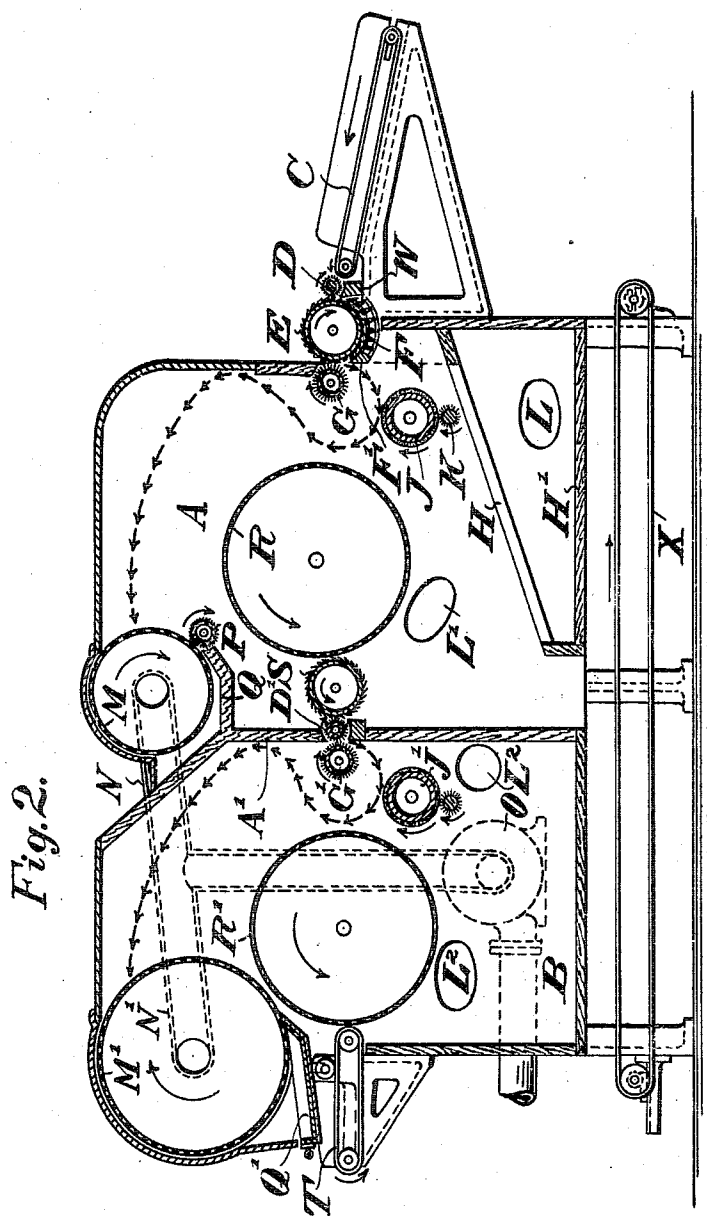
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William Cuttill and
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Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM CUTTILL AND JOHN DUNCAN BLACKWELL, OF HYDE, ENGLAND.

APPARATUS FOR TREATING OR CLEANING COTTON-WASTE OR THE LIKE.

985,731.

Specification of Letters Patent. Patented Feb. 28, 1911.

Application filed May 12, 1910. Serial No. 560,903.

To all whom it may concern:

Be it known that we, WILLIAM CUTTILL and JOHN DUNCAN BLACKWELL, both subjects of the King of Great Britain and Ireland, and both residents of Hyde, in the county of Chester, England, have invented new and useful Improved Apparatus for Treating or Cleaning Cotton-Waste or the Like, of which the following is a specification.

This invention relates to a process of and apparatus for treating fibrous cotton waste such as cotton droppings or strips and other fibrous material in such a manner that it is cleaned of any dust, lumps, or like impurities and so that the seeds or the like may be stripped and the stripped fibrous matter recovered for use.

In its essential features the apparatus comprises a combing roller by means of which the fibrous matter is drawn into a suitable closed compartment over a closely adjacent grid through which the larger and heavier impurities may fall. From this combing roller the fibrous material is taken off by another card covered roller rotating in the same direction and closely against the combing roller within the closed compartment and so disposed and rotating at such a speed that the material it takes from the combing roller is dashed down against an upward air current passing through a grid or equivalent openings, the air current being of such strength that seed or other heavy impurities contained in the fibrous material will fall downward and pass through the grid or the like or remain thereon or be otherwise collected, while the fibrous material will be uplifted within the compartment by the air current and be carried against and lodged upon the finely perforated periphery or the like peripheries of a hollow rotating cylinder or of hollow rotating cylinders, the interior or the interiors of which is or are connected to an air exhausting device. This air exhausting device draws air through the grid or its equivalent, through the closed compartment and through the perforated cylinder or cylinders. The perforations of the cylinders are not of sufficient size nor is the air blast intense enough to permit or cause the passage through the perforations of the fibrous material, but they permit or cause the passage of air and the removal of dust or the like impurities through and from the sheet or fleece of fibrous matters which is

caused by the air current to adhere to the perforated cylinder during such dust removal. The fibrous matters thus lodged and dusted on a rotating perforated cylinder may be delivered and taken off in any suitable manner and by any suitable appliances and be at once removed or be subjected to a second series of operations similar to those to which it has already been subjected, or to a series of somewhat similar operations without the use of the preliminary combing roller.

In the accompanying drawing to which reference will now be made Figure 1 is a side elevation of one form of apparatus constructed to embody our improvements, and Fig. 2 is a longitudinal vertical section of the same.

It is divided into two compartments closed except for the air openings necessary to admit the air required for the execution of the different operations and the openings necessary for the passage of the fibrous material under treatment. The two compartments or chambers are indicated by the letters A and B.

The fibrous material to be cleaned is fed into the machine along the tray or table or traveling belt C and is delivered to a card covered taker-in roller D. This taker-in roller D delivers the fibrous material to a combing roller E which draws it over a closely adjacent grid F through and between the bars of which the larger and heavier impurities fall, and during the passage over which the fibrous material is combed. From the combing roller the fibrous material is taken off by a card covered taker-off or picker roller G rotating in the direction shown and at such a high speed that the fibrous material is taken off the combing roller and dashed downward in the direction of the line of arrows. On so being dashed down it meets with a current of air which is passing upward through the grid or equivalent H, the current of air being of such strength that although it does not prevent the passage downward of any seeds or the like contained in the finely distributed fibrous material being dashed downward, it will carry such fibrous matter upward. Conveniently the fibrous matter dashed downward by the taker-off roller G may be thrown downward with such force as will just cause it to reach a felt or like covered roller J before the ascending air current

gets hold of it and lifts it. The seeds and other impurities adhere to the covering of the roller J and are finally removed by a brush roller K rotating as shown and by means of which the seeds, "droppings" or the like are deposited upon the grid H which will permit the passage of dirt to a tray H¹, or in any other suitable place. The interior of the chamber A is so arranged and the air inlets (either through the grid H or through additional openings L L¹) are so disposed that the air (under the influence of an exhausting device to be presently described) passing through the chamber follows the direction and compels the fibrous material to follow the direction indicated by the line of arrows. This brings the fibrous material upon the periphery of a slowly rotating cylinder M which periphery is finely perforated.

The interior of the cylinder by means of a suitable hollow shaft is connected through pipe N with a fan or air exhauster O, which delivers its exhausted air and contained dust to a suitable settling chamber. The current of air caused by the fan to flow into the cylinder causes the fibrous material to settle thereon, and when settled thereon to be subjected to a filtering or dusting operation due to the inward passage of air through the deposited fibrous material. After remaining on the cylinder M for a sufficient length of time the fleece or sheet of fibrous material deposited thereon is removed by a taker-off roller P having a ribbed or other surface suitable for the purpose.

Q is a tray upon which any dirt or like impurities which have entered the cylinder M without passing away with the air, may fall therefrom when the part on which they are lodged is sheltered from the air blast by coming above such tray.

The fibrous matter removed from the cylinder M is delivered to the finely perforated or felt-clothed carrying roller R by which it is delivered to or from which it is taken by a wire brush roller S which in turn delivers it to a taker-in roller D¹ similar to D, thence to a picker roller G¹ similar to G and by which it is thrown down in a like manner on to the clothed roller J¹ similar to J for the same purpose, and from which the fibrous material is carried upward by an air current in the direction of the line of arrows and deposited upon a second perforated cylinder M¹ similar to M and which is also in communication by pipe N¹ with the fan O. The roller D¹ is made to fit as closely as is practicable within the partition A¹ so that the air for entrance into the cylinder M¹ is forced to enter the compartment B through the air openings L². Q¹ is a draw out tray situated below the cylinder M¹ for the same purpose as the tray Q is situated below the cylinder M.

The fibrous material which is adherent to and has been dusted upon the cylinder M¹ is removed therefrom by the edge of the tray Q¹ and falls on to the carrying roller R¹ by which it is delivered to a traveling belt T for removal from the apparatus. Such a removing traveling belt or an equivalent device may be combined with the cylinder R if it is desired that the material shall only be once treated, that is within the compartment A.

The driving of the different rollers may be accomplished in any suitable manner. For example the central group may be driven by the chain U.

To enable short staple material to be delivered to one or more of the card clothed or like rollers, the roller which is delivering it revolves against a closely adjacent and approximately concentric stationary plate which is led to or about to the point or line at which the card clothed roller takes up the fibrous material. The delivery edge of such a plate may be plain or serrated. At its intake side it may depart from the roller with which it is operating, to give a wide opening which will facilitate the easy feed or insertion of the material. Such a stationary plate is shown at W in conjunction with the taker-in roller D. It will be seen that this plate will cause the fibrous material to be delivered right into the nip of the rollers D and E. Similarly the edge of the grid F may end in a like extension F¹ and the partition A¹, in an opening in which the roller D¹ revolves, may be similarly formed. If desired however any ordinary plain or fluted feed rollers may be used.

The different rollers in a set by means of which the fibrous material is directly transferred from one to another preferably all rotate in one and the same direction, but this may be varied as long as the result is attained of feeding the fibrous material continuously through the apparatus.

X indicates a traveling belt for delivering up any seeds, "droppings" or the like which roll down the inclined grid H and fall off its lower edge on to the belt.

The different rollers and cylinders in the machine described are of about the relative diameters illustrated. The roller E is eight and a half inches in diameter. With such rollers and cylinders their revolutions per minute when working may be D, 14; E, 1200; G, 3200; M, 6; R, 2; S, 9; D¹, 36; G¹, 3200; M¹, 9; R¹, 12.

What we claim is:—

1. Apparatus for cleaning cotton waste or the like, comprising in combination a combing roller and grid, a taker-off roller rotating in the same direction but at higher speed than the combing roller for throwing the combed fibrous material in a finely divided and distributed condition against a current

of air for separation of the seeds or the like, a finely perforated rotatable cylinder upon which the purified material settles, a taker-off roller for removing such settled fibrous material from the cylinder, an air exhausting device for inducing a current of air through the apparatus and into and through the perforated cylinder, and a suitable inclosing chamber or compartment provided with the necessary air inlet or inlets, all operating substantially as hereinbefore described.

2. Apparatus for cleaning cotton waste or the like, comprising in combination a taker-in roller, a combing roller and grid, a taker-off roller rotating in the same direction but at higher speed than the combing roller for throwing the combed material in a finely divided and distributed condition against a current of air for the separation of seeds or the like, a finely perforated rotatable cylinder upon which the purified material settles, a taker-off roller for removing such settled material from the cylinder, a carrying roller for receiving and delivering such removed material, an air exhausting device for inducing a current of air through the apparatus and into and through the perforated cylinder, and a suitable inclosing chamber or compartment provided with the necessary air inlet or inlets, all operating substantially as hereinbefore described.

3. Apparatus for cleaning cotton waste or the like, comprising in combination a taker-in roller, a combing roller and grid, a taker-off roller rotating in the same direction but

at higher speed than the combing roller for throwing the combed material in a finely divided and distributed condition against a current of air for the separation of seeds or the like, a finely perforated rotatable cylinder upon which the purified material settles, a taker-off roller for removing such settled material from the cylinder, a carrying roller for receiving and delivering the removed material, a taking-up roller for taking up the material from the carrying roller, a second taker-in roller and picker roller for again throwing the material against a current of air for further purification, a second perforated cylinder upon which the re-purified material settles, a taker-off roller for removing such material from such second cylinder, a further receiving and delivering roller for carrying away such removed material, an air exhausting device for inducing a current of air through the apparatus and through the perforated cylinders, and suitable inclosing chambers or compartments provided with the necessary air inlet or inlets, all operating substantially as hereinbefore described.

In witness whereof we have hereunto set our hands in the presence of two subscribing witnesses.

WILLIAM CUTTILL.
JOHN DUNCAN BLACKWELL.

Witnesses:

WILLIAM GEO. HEYS,
JOHN O'CONNELL.