No. 876,394. PATENTED JAN. 14, 1908.

F. PHELPS.

COTTON CLEANER.

APPLICATION FILED MAY 1, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

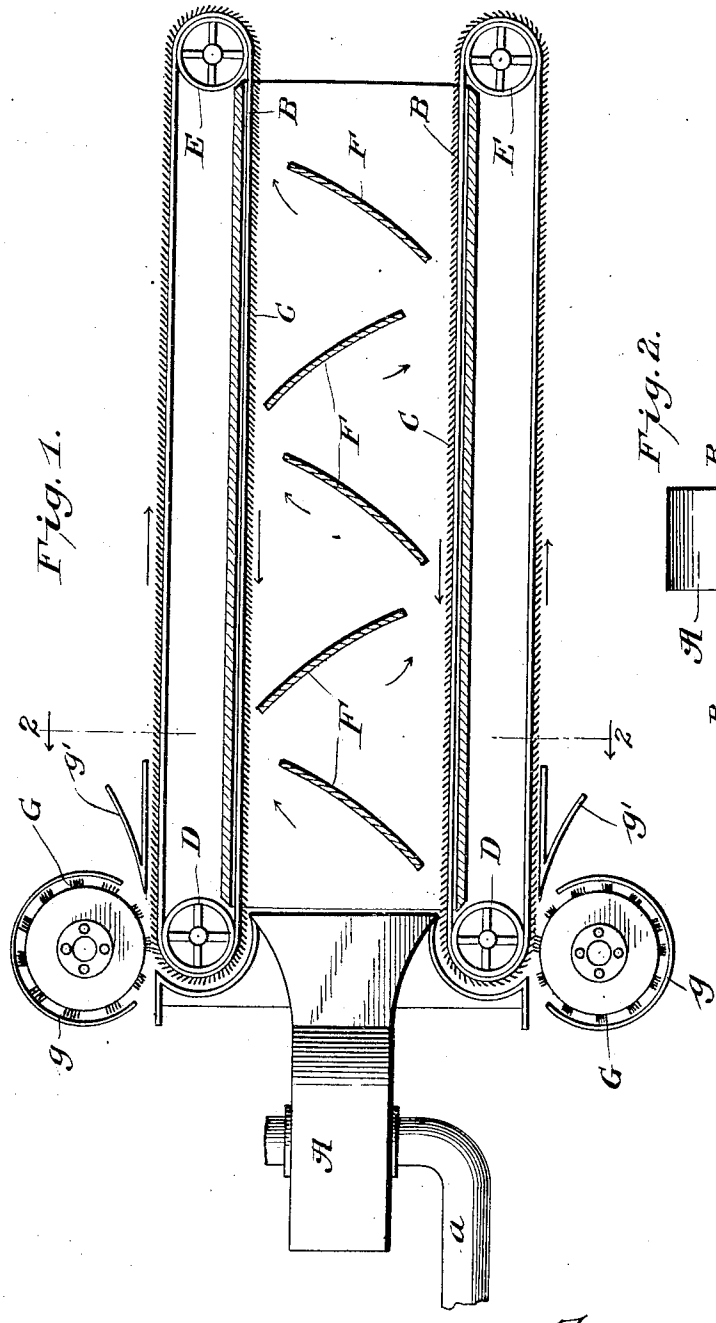
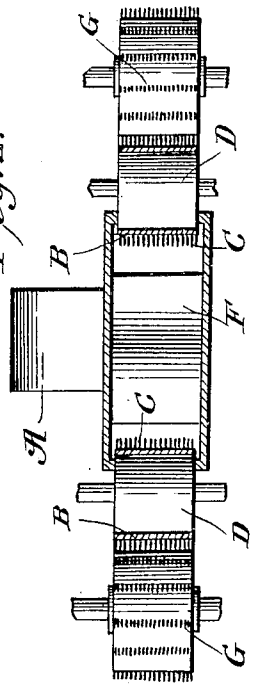


Fig. 2.



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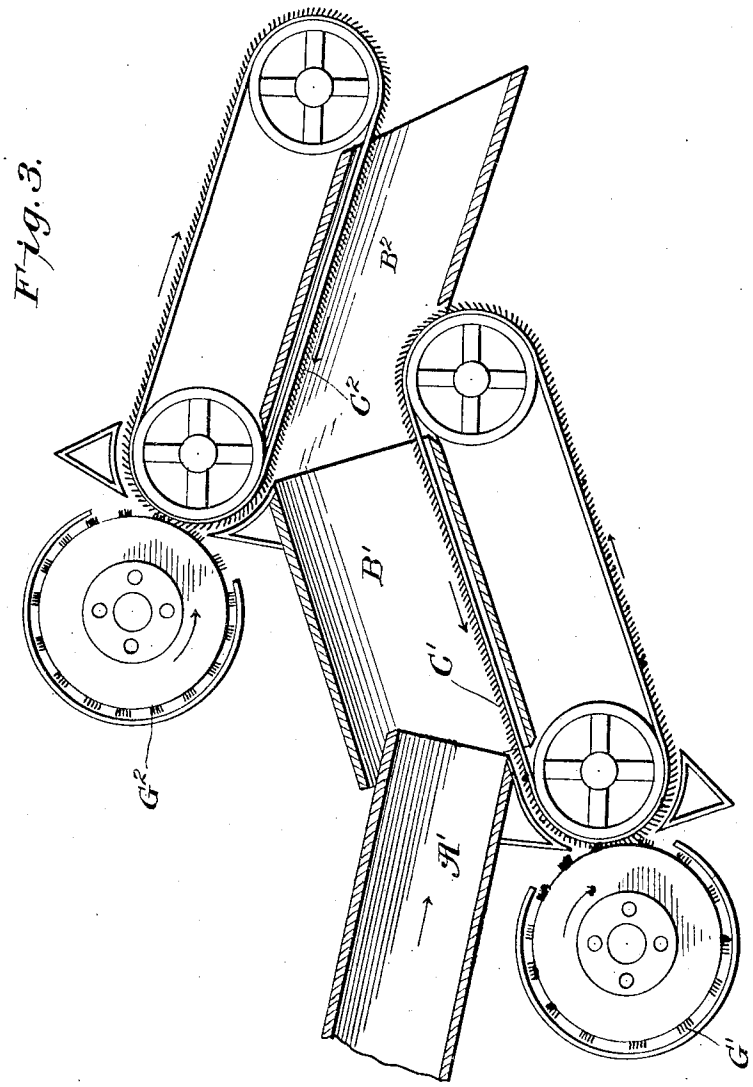
2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

FRANK PHELPS, OF WELLSTON, OKLAHOMA.

COTTON-CLEANER.

No. 876,394. Specification of Letters Patent. Patented Jan. 14, 1908.

Application filed May 1, 1907. Serial No. 371,268.

To all whom it may concern:

Be it known that I, FRANK PHELPS, a citizen of the United States, residing at Wellston, in the county of Lincoln, Oklahoma, have invented certain new and useful Improvements in Cotton-Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The subject of this invention is a machine or apparatus whereby seed-cotton or other similar material is very thoroughly and effectively cleaned or separated from dirt and trash by the action of an air-blast and a plurality of conveyers (or their equivalents) running counter to the air-blast and alternately or successively exposed to its action, said conveyers being covered with carding-cloth or having other suitable means to catch or collect the cotton blown thereupon, and carry it against the blast to suitable brushes or removing devices, while the dirt, motes, hulls, leaves, twigs, brush and other trash, blow out with the blast.

The objects are, chiefly, to improve the process of cleaning or separating seed-cotton, and to provide a practicable and simple machine for that purpose or for any similar work for which the machine may be adapted.

Two different constructional embodiments of the invention are represented in the accompanying drawings, which form a part of this specification, and with reference to which the invention will first be described and then more particularly pointed out in the appended claims.

Figure 1 is a horizontal sectional view of one machine. Fig. 2 is a cross-section on line 2—2 of Fig. 1, looking in the direction of the arrow. Fig. 3 is a horizontal sectional view of another machine.

Referring to Fig. 1, a suction-fan or blower A, to which cotton is supplied by a tube *a*, has its discharge mouth or chute arranged at one end of an elongated box, casing or trunk B, the other end of which is open, while the sides and top and bottom of the box are closed, thus providing a passage for the air-blast and cotton discharged with the blast from the blower. In said passage, beside the opposite interior side-walls thereof, suitable conveyers C run counter to the direction of the air-blast; the direction of motion of the conveyers being indicated by arrows. Said conveyers are desirably in the form of endless belts or aprons, covering substantially the interior sides of the box for the full height thereof, and passing around drum-pulleys or rollers D and E at the front and rear ends of the box, respectively, so that the forwardly traveling runs of the conveyers pass inside the box, while the returning or rearwardly-traveling runs of the belts pass outside. These conveyer-belts have their exterior surfaces covered with carding-cloth, or other similar material, or are otherwise provided with fine teeth, hooks or the like substantially covering the surfaces of the belts; said teeth or hooks being desirably pointed or inclined in the direction of travel of the belts in order to effectively catch and hold the cotton as it is blown thereagainst by the blast.

Between the belts, inside the blast passage, are arranged a series of deflectors or deflector-boards F, disposed in alternately oblique or inclined positions relative to the belts, so as to deflect the air-blast and cotton carried thereby to opposite sides of the passage and upon the two belts in alternation. The cotton carried by the blast will thus be forcibly blown against one belt, then against the other, throughout the length of the blast passage; so that the cotton is collected by impaling or sticking on the teeth of the belts, while all dirt, motes, trash, etc. are blown on by the blast and discharged at the outer or rear end of the passage. The deflectors F may be movably mounted and adjusted by any suitable means, to regulate the inclination for the deflection. The cotton adhering on the belts is carried thereby against the blast to the front or receiving end of the passage, and is then removed from the belts by rotating brushes G which operate on the belts outside the box, and preferably in association with the front pulleys of the rollers D. The brushes G revolve of course in such direction as to brush or remove the cotton from the belts in the direction of motion of the belts. Said brushes may be incased in parti-cylindrical shells *g*, between which and suitable guards or shields *g'* the cleaned or separated cotton is discharged. In Fig. 3, the cotton is similarly treated in another form of apparatus, embodying the same principle. In this construction, the air-blast and cotton carried thereby are discharged from the blower through a spout or

chute A′ into an angularly-related or obliquely-disposed passage B′ which opens into an angularly-related or obliquely-disposed passage B^2, making a continuous zigzag passage. Conveyer belts C′ and C^2, covered with carding-cloth or otherwise provided with teeth as before described, are arranged in the respective passages B′ and B^2, each belt being located in that side of its passage which confronts the end or discharge mouth of the preceding passage, so that the blast from the chute A′ strikes upon the belt C′ and then upon the belt C^2. Brushes G′ and G^2 are provided for removing the separated cotton from the belts, as will be understood by reference to the drawings. These obliquely-related passages B′ and B^2 and the conveyers may be multiplied to provide a longer zigzag arrangement if desired. In each construction, it will be observed that the cotton discharged from the fan is blown first upon one belt and then upon the other, which crisscross blowing insures the collection of substantially all the cotton, while effectively blowing off all foreign matter, such as dirt, motes, twigs, leaves, hulls and other trash.

I have disclosed as examples two constructional modifications in the drawings, but it is obvious that the constructions may be varied in different ways without departing from the principle of my invention. Therefore, I do not desire to be confined to the illustrated details or to any specific embodiment or embodiments of the invention.

It is noted that the collection of the cotton is performed by conveyers having means for catching the cotton blown thereagainst, the conveyers being covered with carding cloth or otherwise provided with teeth for impaling the cotton, or having any equivalent means for performing the desired function. The term "conveyer" is not intended to be restricted to an endless belt, but is intended to include any equivalent traveling surface or instrumentality adapted for the purpose described.

While the drawings represent horizontally disposed machines, it may be stated that this arrangement is preferred only to facilitate the removal of the cleaned cotton by the revolving brushes. The machines, however, may be arranged vertically instead of horizontally, in which case the drawing would represent vertical sections instead of horizontal sections.

Instead of blowing the cotton through the passage by an air-blast, the cotton may be drawn through the passage by suction, by means of a suction fan in communication with the rear end of the passage. This arrangement may be regarded as an equivalent construction, although the arrangement shown is preferred.

I claim as my invention and desire to secure by Letters Patent of the United States.

1. In a cotton cleaner or separator, the combination of a passage through which cotton to be cleaned is forced by an air-current, a plurality of conveyers in said passage facing in different directions and running counter to said air-current and adapted for catching cotton blown thereagainst, means whereby the air current with the cotton carried thereby is directed or deflected successively against said conveyers, and means outside of said passage for removing the cotton from the conveyers.

2. In a cotton cleaner or separator, the combination of a passage through which cotton to be cleaned is forced or carried by an air-current, conveyers in opposite sides of said passage running counter to said air-current and provided with means for catching and retaining cotton blown thereagainst, means for directing or deflecting the air-current successively or alternately against said conveyers, and means outside of said passage for removing the cotton from the conveyers.

3. In a cotton cleaner or separator, the combination of a blast passage through which cotton to be cleaned is forced or carried by an air-current, means for deflecting the air-current against opposite sides of said passage, and cotton collectors traveling along opposite sides of said passage counter to said air-current, and means outside of said passage for removing the cotton from said collectors.

4. In a cotton cleaner or separator, the combination of a blast passage through which cotton is carried by an air-current, means for deflecting said air-current against opposite sides of said passage, and endless belts running in opposite sides of said passage counter to the air-current and returning outside of said passage, said belts being provided with carding-cloth or teeth for catching the cotton blown thereagainst, and revolving brushes coacting with the belts outside of said passage for removing the cotton therefrom.

5. In a cotton-cleaner or separator, a passage for a cotton-conveying blast or air-current and a plurality of conveyers therein traveling contrary to the general direction of the air-current and adapted to collect cotton blown thereagainst, the arrangement being such that the blast or air-current takes a substantially zigzag course first against one conveyer and thence against another.

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

FRANK PHELPS.

Witnesses:
H. S. KENNEDY,
A. E. KING.