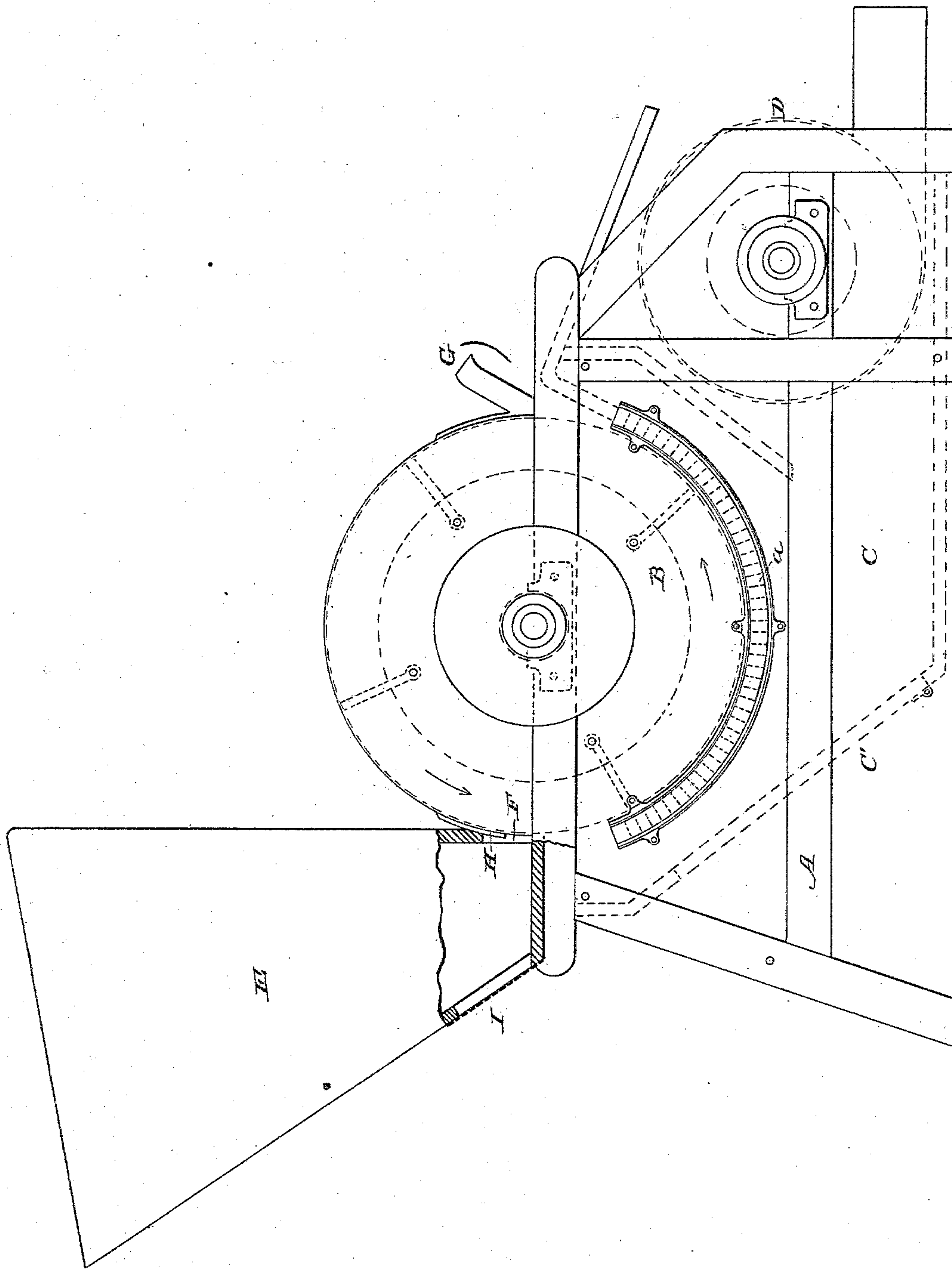


(No Model.)

A. T. ATHERTON.  
SEED COTTON CLEANER.

No. 288,152.

Patented Nov. 6, 1883.



Witnesses:  
J. Walter Blandford  
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# UNITED STATES PATENT OFFICE.

ABEL T. ATHERTON, OF LOWELL, MASSACHUSETTS.

## SEED-COTTON CLEANER.

SPECIFICATION forming part of Letters Patent No. 288,152, dated November 6, 1883.

Application filed September 5, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ABEL T. ATHERTON, of Lowell, Massachusetts, have invented certain new and useful Improvements in Seed-Cotton Cleaners, of which the following is a specification.

My invention has relation to machines used to clean seed-cotton with a view to putting it in proper condition to be ginned. The devices now in common use for this purpose are, so far as my observation goes, defective, in that they are apt to curl or twist the cotton fiber, thus putting the cotton in a condition unfavorable for the action of the gin. In order that the cotton-gin shall effectively remove the lint-cotton from the seeds, it is necessary to so open the cotton that the saws of the gin, when acting on the cotton, shall easily remove the lint. If the cotton fiber be curled or twisted before it goes to the gin, then the saws of the gin are apt to tear and bruise the fibers, thus producing what is called "gin-cut" cotton, so troublesome to manufacturers.

It has been my object to obviate this defect, and to so open the seed-cotton that, after it goes through the gin, the fiber will be in as good condition as when in the cotton-field. This result I have attained by means of the improved seed-cotton cleaner which I shall now proceed to describe by reference to the accompanying drawing, which represents the machine in side elevation, partly in section.

A is the frame of the machine.

B (indicated in dotted lines) is the whipper-beater, consisting of swinging beaters mounted on a reel or spider which revolves within a cylindrical case, the construction and arrangement of said whipper-beater being substantially the same as shown and described in Re-issued Letters Patent granted to W. E. Whitehead and myself on the 6th of June, 1876, No. 7,159, to which reference is hereby made. Inasmuch as the construction and mode of operation of the whipper-beater is fully set forth in said Letters Patent, detailed description or illustration of the same is unnecessary here. The lower portion of the cylindrical case which surrounds the whipper-beater is made up of grid-bars *a*, (shown in dotted lines,) between which the leaf and other refuse loosened from the cotton by the action of the beaters descend.

C is a dead-air chamber, which receives the dirt, leaf, and other refuse, and D is an exhaust-fan for carrying off the lighter particles of the refuse. This fan is not necessary to the successful working of the machine, but is useful in cases where it is desired to carry the lighter portion of the dirt some distance away from the machine. The dirt which remains in the dead-air chamber can be removed therefrom from time to time, a drop-door, C', located at some convenient point in the walls of the chamber, being provided for the purpose.

E is the feed-hopper, containing the cotton to be fed to the machine.

F is the inlet through which the seed-cotton passes from the hopper to the whipper-beater.

G is the outlet from which the cleaned seed-cotton is discharged.

The direction of revolution of the whipper is indicated by arrows.

The beaters of the whipper, as they revolve, move in close proximity to the mouth of the feed-inlet F, so as to take the cotton therefrom in small quantity at a time. The cotton, which travels from F to G, passes over the grid-bars *a*, and through the lower half only of the whipper-case, and in its passage is thoroughly opened and cleaned without having its fiber in any degree twisted or curled.

In all other machines in practical use of which I have knowledge it is necessary, in order to remove the same quantity of leaf and dirt, to pass the seed-cotton entirely or almost entirely around through the space in which the opening devices revolve, the delivery being upon the same side of the machine with the feed, and it is to this that the injurious twisting and curling of the fibers are mainly due. In my machine the delivery is on the side opposite to the feed, and the cotton passes only through the lower grid-bounded half of the space in which the beaters revolve, and during its passage through the space the cotton is thoroughly cleaned of refuse, which falls through the grid-bars and collects in the dead-air chamber below.

H is a slide or door for controlling the inlet-passage F. The cotton operated on by the machine is necessarily of various grades, and some of these grades, on account of their leafy



condition, require to be fed to the whipper more slowly than others, so that the whipper-beater may more thoroughly act on the cotton. The slide or door H, therefore, is of importance, inasmuch as by opening it more or less any desired amount of cotton can be fed to the whipper during a given time.

I have experienced considerable difficulty in obtaining a satisfactory feed for the machine, those ordinarily employed for like purposes being insufficient in several respects, and not adapted for successful working, at times giving insufficient supply and at other times clogging the feed-inlet. This difficulty I have overcome by the expedient illustrated in the drawing, which consists in making a draft-opening, I, (covered by wire-gauze,) in the front of the hopper, opposite to or in line with, or substantially so, the feed-inlet F. When the whipper-beater is in revolution, it acts in some sense as an exhaust-fan, drawing air through the inlet F to supply that which is ejected by its action from the outlet G. When the hopper is filled with cotton, it would be difficult, in the absence of opening I, to draw down through the mass of cotton the requisite air, and the effect in that case would be a tendency to compact and consolidate the cotton; but with the opening I in the hopper air is supplied through that opening, and a draft is thus created through the inlet, which takes or sucks the cotton through the inlet to the beater with great certainty; and by the conjoined action of the draft-opening and the door H the feed can be regulated with great nicety. This feed device is entirely simple and not liable to get out of order. I can, if I please, use in connection therewith an endless power-driven feed-apron or other feeding instrumentality of known construction, arranged within the hopper in any customary or convenient way; but this is not a necessity, inasmuch as my feed device alone is adequate for the purpose.

The revolving whipper-beater is driven from any suitable prime mover by belt and pulley or gearing in the usual way; and the exhaust-fan, when used, is driven by belt and pulley from the whipper-beater. I am thus enabled to clean seed-cotton thoroughly, so as to prepare it for the gin, without curling or twisting the fibers; and this I accomplish without injury to the seed, which result is due to the fact that the cotton is fed loosely to the whipper-beater, and that the latter (as fully set forth in Reissued Letters Patent No. 7,159, hereinbefore referred to) has beaters which

yield, the whipper-beater acting both as the disassociating or separating instrumentality, and also as the agent for inducing a draft or air-current through the inlet, which serves to facilitate and insure the proper feed therethrough of the loose cotton.

Having described my improvements and the best way known to me of carrying the same into practical effect, what I claim as new and of my own invention is—

1. In a seed-cotton cleaner, the combination, substantially as hereinbefore set forth, of the feed-hopper E, inlet F, whipper-beater B, its inclosing-case and grid-bars, and outlet G, whereby the seed-cotton is supplied in loose condition to the whipper-beater, which acts both as separating and as draft-producing agent, as and for the purposes specified.

2. In a seed-cotton cleaner, the combination of the whipper-beater B and its inclosing-case, the grid-bars a, the dead-air chamber C, the hopper E, the inlet F, and the outlet G, these elements being constructed and arranged for joint operation, substantially as hereinbefore set forth.

3. In a seed-cotton cleaner, the combination of the whipper-beater B and its inclosing-case, the grid-bars a, the dead-air chamber C, the outlet G, the hopper E, the inlet F, and the feed-controlling slide or door H, these elements being constructed and arranged for joint operation, substantially as hereinbefore set forth.

4. In a seed-cotton cleaner, the combination, with the feed-hopper, the whipper-beater, and its inclosing-case, of the feed-inlet F, through which the loose cotton passes from the hopper to the whipper-beater, and the draft-opening I, placed in the lower portion of the hopper and in relation to the said inlet, substantially as hereinbefore set forth, whereby when the whipper-beater is in revolution a current of air is induced from the opening I through the inlet F into the beater-case, for the purpose of causing or facilitating the feed of the cotton to the whipper-beater, as specified.

5. In a seed-cotton cleaner, the combination of the hopper, the inlet F, the draft-opening I, the slide or door H, and the whipper-beater and its inclosing-case, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 28th day of August, 1883.

ABEL T. ATHERTON.

Witnesses:

FRANK COBURN,  
L. H. BONNER.