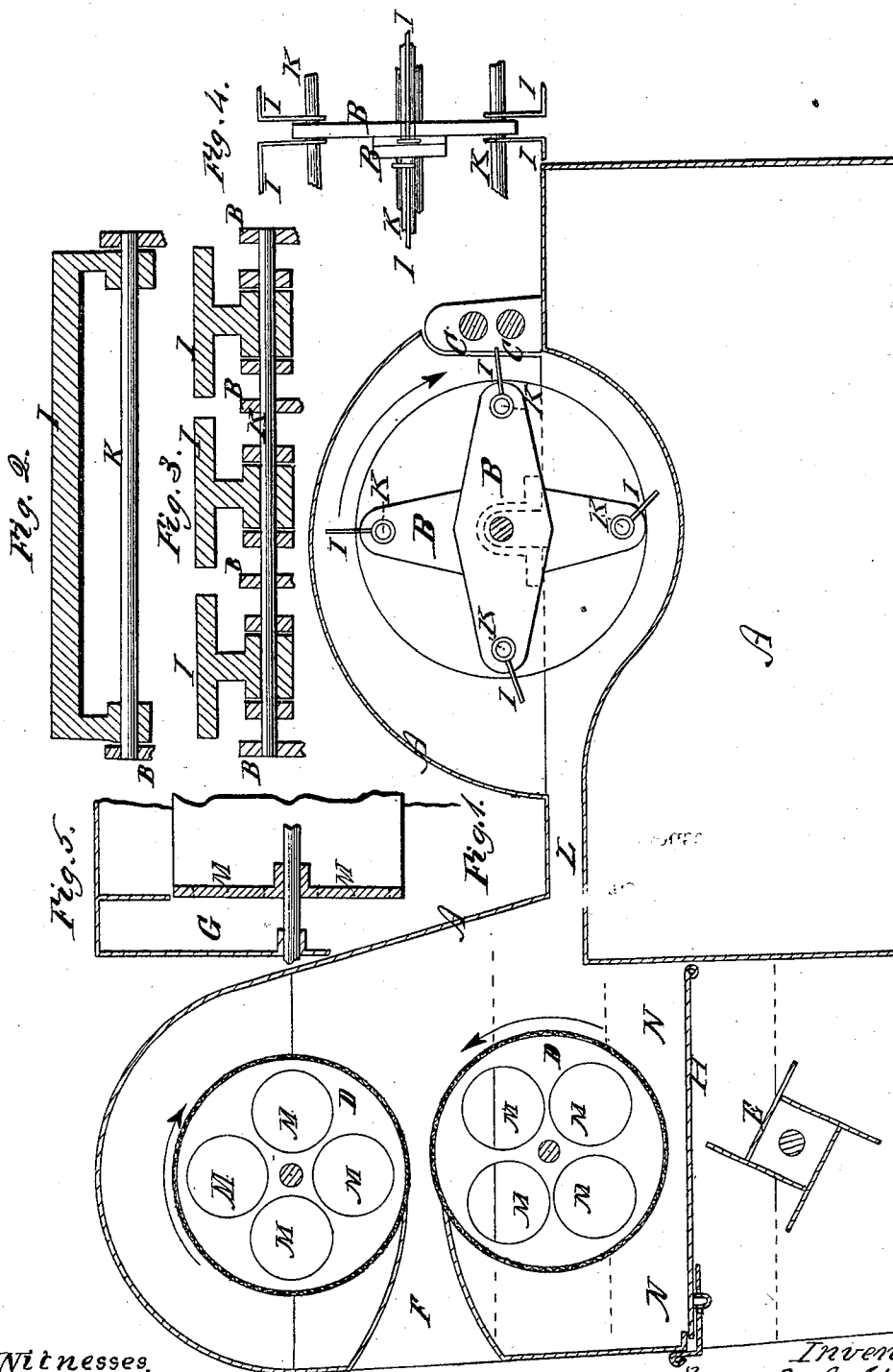


W. E. WHITEHEAD & A. T. ATHERTON.
Cotton-Openers.

No. 148,394.

Patented March 10, 1874.



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UNITED STATES PATENT OFFICE.

WILLIAM E. WHITEHEAD, OF MILES PLATTING, ENGLAND, AND ABEL T. ATHERTON, OF LOWELL, MASSACHUSETTS.

IMPROVEMENT IN COTTON-OPENERS.

Specification forming part of Letters Patent No. 148,394, dated March 10, 1874; application filed January 26, 1874.

To all whom it may concern:

Be it known that we, WILLIAM E. WHITEHEAD, of Miles Plating, county of Lancaster, England, and ABEL T. ATHERTON, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Machines for Opening, Cleaning, and Lapping Cotton and other Fibrous Materials; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings making part of this specification—

Figure 1 being a longitudinal vertical section of a cotton opening, cleaning, and lapping machine provided with our improvements; Fig. 2, a central longitudinal section of a swinging whipper, not claimed in this specification; Fig. 3, a similar section of a compound swinging whipper, or several whippers swinging on the same pivot-rod; Fig. 4, a diagram, showing the relative arrangement of the overlapping whippers herein described; Fig. 5, a central longitudinal section of one end of one of the cage-cylinders, and of the adjacent air-chamber.

Like letters designate corresponding parts in all of the figures.

The first feature of our invention consists in the arrangement of swinging whippers upon offset or equivalently-constructed revolving reels or spiders, in such a manner that one whipper overlaps another, or covers intermediate spaces not traveled in by other whippers in the paths of their revolutions, whereby every part of the cotton presented to the whippers is fully acted upon, as hereinafter specified. The second feature of our invention consists in a cut-off and sand-chamber, peculiarly constructed, and arranged beneath the lower cage-cylinder, whereby the usual cut-off plates or pans inside of the cage-cylinder, or concentric outside cut-off plates, are dispensed with, and the difficulties and objections incident thereto are avoided, and the sand and dirt are more completely separated from the cotton, substantially as hereinafter specified.

In the accompanying drawings, let A represent the frame of the machine; B B, the revolving reels or spiders, on which the whip-

pers are mounted and swing; C C, the feed-rolls; D D, the wire-cloth cage-cylinders; E, a draft-fan, situated in a chamber below the cage-cylinders; F, the opening between the cage-cylinders in the rear wall of the machine, through which the cotton is discharged and formed into laps; G, a close air-chamber at each end of the cage-cylinders, through which the draft-air of the machine, with the light dirt and dust, is conveyed from the cage-cylinders to the fan-chamber below, and thence out of the machine; H, a drop door or valve below the cage-cylinders and opening down into the fan-chamber; I I, the whippers; K K, the pivot-rods, on which the whippers freely swing; L, a narrow passage between the whipper-chamber and the cage-cylinder chamber; M M, openings in the ends of the cage-cylinders, through which the air passes from the cylinders into the air-chambers G G. The pivot-rods K K are shown as mounted near the outer extremities of the reels or spiders B B, at a comparatively great distance from the axis of their revolution, so that the whippers freely swing in much smaller circles on their own pivots than in their orbital motion on the shaft of the reels or spiders.

Our present improvement consists in the arrangement of the whippers, which have striking-surfaces parallel, or nearly so, with the feed-rollers, on the different pivot-rods so that one overlaps the other, and thereby covers any intermediate spaces not traversed by the others in the paths of their revolution on the axis of the reels or spiders, and thereby one or more whippers always will strike any part of the cotton presented by the feed-rolls C C.

The arrangement shown in the drawings is seen in Fig. 4, where the spiders B B, bearing different whipper-rods K K, are situated in different planes of revolution, and the whipper I I, in the middle of the figure, laps across the spaces between the upper and the lower whippers.

Our improved cut-off and sand-separating device, in place of an interior or exterior cut-off plate for the lower cage-cylinder, consists of a recess or chamber, N, formed under the lower cage-cylinder, and opening into the draft-passage of the machine in front of the cage-

cylinder, but closed by a plate at the bottom of the delivery-passage F at the rear of the cage-cylinder, the said closing-plate reaching close to the cage-cylinder at a considerable angle thereto, so that any cotton that may adhere to the cage-cylinder simply passes by the plate without getting entangled under it, and no liability arises of the packing of cotton between a cut-off plate and the cage-cylinder, thus displacing and destroying the action of the plate, and frequently breaking the cage-cylinder. And by this improved device all draft at the rear of the cage-cylinder is as fully provided against as by the cut-off plate, and nothing to interfere with the action thereof is offered, while we are enabled also to strengthen the wire periphery of the cage-cylinder, and to keep it in shape, by cross frames or rings between the ends thereof. We are likewise enabled to have an opening directly from the main draft-space down into the cut-off chamber in front of the cage-cylinder, wherein sand and other impurities may drop without passing into the cage-cylinders; and by having the door or trap-valve H at the bottom of this chamber, all the impurities are easily cleared from the machine. The cotton,

by means of this device, is very thoroughly cleaned.

We herein disclaim, in general terms, cotton-whippers having whipping-surfaces parallel, or nearly parallel, with the feed-rolls, as they form the subject-matter of an application filed by us July 23, 1873.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The whippers I I, having striking-surfaces substantially parallel with the feed-rolls, and arranged upon offset or equivalently-constructed reels or spiders B B, in such a manner that one whipper overlaps another, or covers spaces not traveled in by the others in the paths of their revolution, substantially as and for the purpose herein specified.

2. The cut-off and sand-chamber N, provided with the door or opening bottom H, and arranged beneath the lower cage-cylinder, substantially as and for the purpose herein specified.

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Witnesses:

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