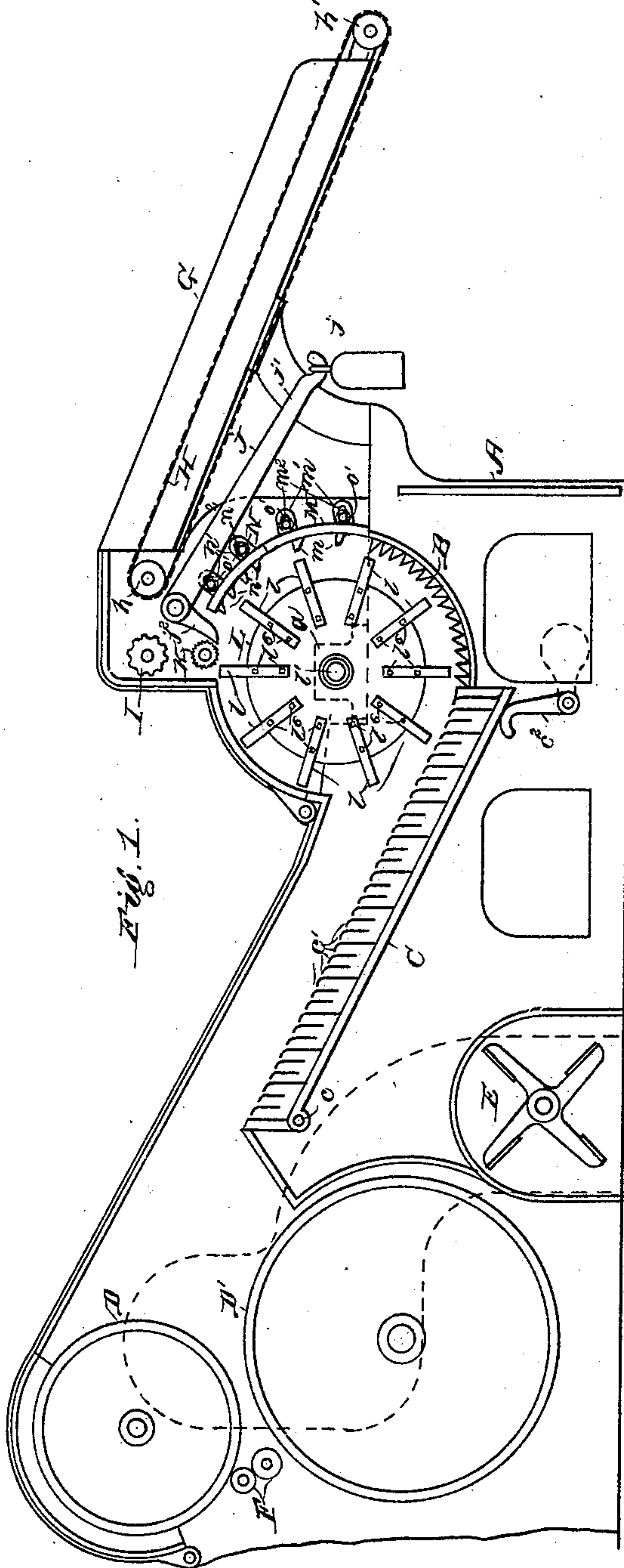
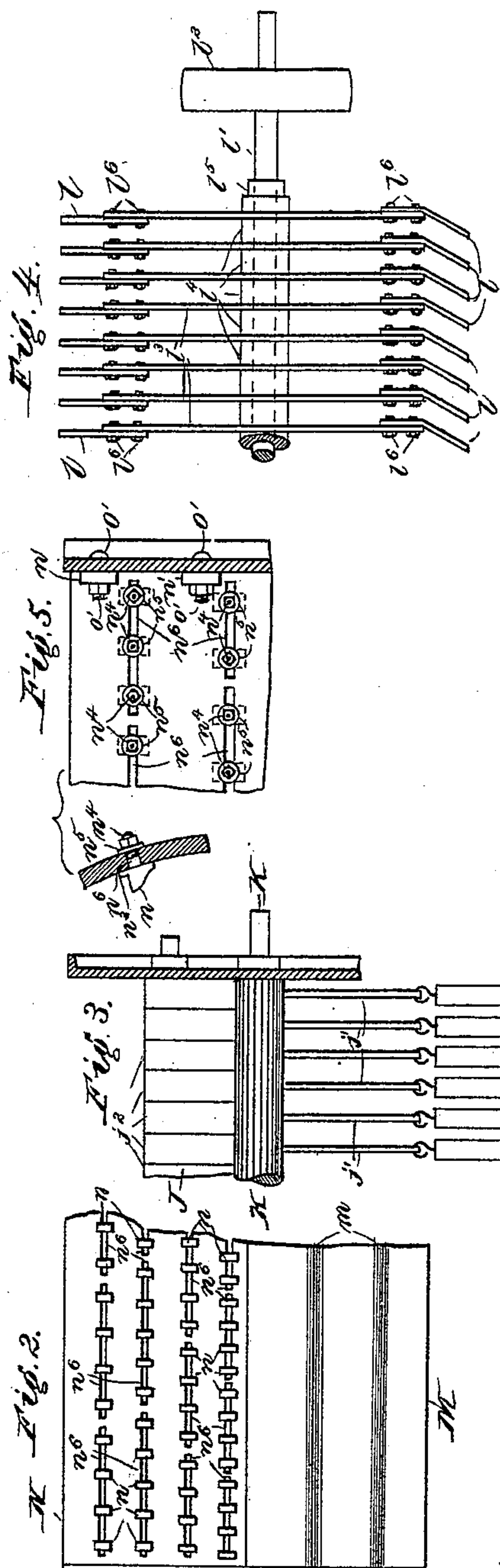


(No Model.)

G. HORROCKS.
OPENER AND PICKER FOR COTTON, &c.

No. 441,760.

Patented Dec. 2, 1890.



Witnesses.
Henry Hyde.
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UNITED STATES PATENT OFFICE.

GEORGE HORROCKS, OF TEWKSBURY, ASSIGNOR TO THE ATHERTON MACHINE COMPANY, OF LOWELL, MASSACHUSETTS.

OPENER AND PICKER FOR COTTON, &c.

SPECIFICATION forming part of Letters Patent No. 441,760, dated December 2, 1890.

Application filed February 8, 1890. Serial No. 339,712. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HORROCKS, a subject of Victoria, Queen of the United Kingdom of Great Britain and Ireland, residing at Tewksbury, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Openers and Pickers for Cotton, Wool, and other Fibrous Materials, of which the following is a specification.

My invention relates to openers and pickers for cotton, wool, and other fibrous materials; and it consists in the combinations hereinafter described and claimed, the purpose of said invention being to increase the capacity of the machine both in the quantity of fiber cleaned in a given time and in the amount of dirt and foreign matters removed therefrom.

In the accompanying drawings, Figure 1 is a side elevation, with one side of the frame removed, of a section of a cotton-opener to show the internal construction thereof and my improvement applied thereto; Fig. 2, an inside rear elevation of a part of the bonnet, showing the cleaning and separating teeth secured thereto and the transverse ribs which assist in cleaning and opening the fibers; Fig. 3, a rear elevation of the pedals and feed-rolls, showing a part of the side of the frame and one side of the opener; Fig. 4, a front or rear elevation of a portion of the beater-cylinder, showing a part of the beater-shaft, its driving-pulley, and the circular cylinder-plates and beater-blades secured thereto; Fig. 5, a front elevation of a portion of the upper plate of the bonnet, showing means of securing and adjusting the teeth thereon, also means of adjusting the distance of said plate from the beater-cylinder.

The frame A, triangular grid-bars B, flat grid-bars c' , secured transversely to the dust-box C, said dust-box being inclined and hinged at its upper end at c and at its lower end supported by the weighted bent balance-lever c^2 , the wire cages D D', the fan E, which exhausts the cages and causes the fibers to be laid in a lap thereon, and the calender-rolls or feed-rolls F (according as said rolls are at the end of the machine or merely at the end of a section thereof, preceding in operation

another section of similar construction) are all of the usual construction and operation. The inclined feed-table G and feed-apron H and apron-rolls $h h'$ are also of the usual construction, and have been used in substantially the same position as shown in the accompanying drawings.

The crowding-roll I, to prevent the fiber from passing by the feed-rolls and to force it down toward the bite of the feed-rolls or equivalent devices, is also well known. Instead of a pair of feed-rolls I prefer to use one feed-roll K and a series of feed-levers J or "pedals," so called, the same being bent levers, as shown, weighted at the lower ends j of their longer arms j' to force the short arms j^2 of said feed-levers toward the feed-roll K, the surfaces of said short arms nearest to said feed-roll serving as feed-plates, over which the fiber passes and between which and said feed-roll the fiber is nipped and held while being struck by the blades l of the beater-cylinder L. The beater-cylinder or beater may be of any usual construction, (as a porcupine-cylinder or a whipper-cylinder, both well-known constructions,) but is here represented as consisting of a shaft l' , supported in suitable journal-boxes a (one of which is shown in dotted lines in Fig. 1) at opposite sides of the frame, a pulley l^2 , fast on said shaft l' and driven by a belt in the usual manner, a series of washers or annular metallic plates l^3 , arranged on said shaft at intervals at right angles thereto and separated from each other by spacing-collars l^4 , arranged between the successive plates l^3 , nuts l^5 , engaging a thread (not shown) on the shaft l' on opposite sides of the outer plates l^3 of the series, (but one nut l^5 being shown,) blades l , secured by the bolts l^6 to said plates radially therewith at desired intervals, the parts of said blades which extend beyond said plates being straight or bent at different angles laterally in such a manner that the points of all the blades will in a single revolution of the beater describe as nearly as possible the curved surface of a single imaginary cylinder. The beater-cylinder above described is well known and not of my invention.

The plates M N form removable parts of the bonnet, the lower plate M being provided

on its inner surface with transverse ribs m , against which the fibers are struck by the rotation of the beater-cylinder, the upper plate N being provided with teeth or spikes n , which project radially inward from the curved inner surface of said last-named plate. Here-
 5 tofore such plates have been rigidly secured in place at an invariable distance from the beater-cylinder; but it is desirable to vary the distance of the plates M N from the beater-
 10 cylinder, according to the length of staple of the fibers and the greater or less amount of dirt and foreign matters contained therein, the action of the machine upon the fibers
 15 being more violent as the space between said plates and the beater-cylinder is less. I therefore provide each of said plates M N with parallel ears $m' n'$ on their outer curved surfaces at or near their side edges, said ears being
 20 provided with parallel slots $m^2 n^2$, through which and through holes in the sides of the frame are driven screw-bolts O O', secured in place by nuts $o o'$, so that when said nuts are
 25 loosened the plates M N may be set nearer to or farther from the beater-cylinder. The adjusting movement of the plates is so slight in any case that the curvature of the plates and their
 30 parallelism with the path described by the free ends of the blades need not be regarded. It is desirable, for the reasons given above with relation to the adjustment of the distance between the plates M N and the beater-
 35 cylinder, to increase or diminish the number of the teeth or spikes n , and thereby to increase or diminish the separating and cleaning capacity of the machine. I therefore provide the plate N with transversely-extending slots n^6 , and I provide each tooth
 40 near its attaching end with a collar or shoulder n^3 , which rests against the inner face of said plate N, said shoulder being farther from the attaching end of the tooth than the thickness of the plate N, and said attaching end is
 45 screw-threaded to engage a nut n^4 , which turns on said attaching end against the outer surface of said plate N, or preferably against a washer n^5 , surrounding said attaching end between said nut n^4 and plate N. By loosening the nuts n^4 the teeth may be placed nearer
 50 to or farther from each other, and any desired number of teeth may be removed from the plate N, or other teeth may be added thereto.

The plates N are preferably metallic.

55 I claim as my invention—

1. The combination of the frame, the beater, the toothed cleaning and separating plate,

and means of adjusting the distance of said plate from said beater, as and for the purpose specified. 60

2. The combination of the frame, the beater, the ribbed cleaning and separating plate, and means of adjusting the distance of said plate from said beater, as and for the purpose specified. 65

3. The combination of the frame having sides provided with holes, the beater, the toothed cleaning and separating plate provided with ears having slots, and bolts passing through said holes and slots to secure said plate to said frame and to allow the distance of said plate from said beater to be varied, as and for the purpose specified. 70

4. The combination of the frame having sides provided with holes, the beater, the ribbed cleaning and separating plate provided with ears having slots, and bolts passing through said holes and slots to secure said plate to said frame and to allow the distance of said plate from said beater to be varied, as and for the purpose specified. 75 80

5. The combination of the frame, the beater, and the cleaning and separating plate provided with teeth removably secured in said plate and laterally adjustable therein to vary the distance of said teeth from each other, and thereby to increase or diminish the separating and cleaning capacity of said plate, as and for the purpose specified. 85

6. The combination of the slotted plate and the teeth, provided with shoulders at a distance from the attaching ends of said teeth greater than the thickness of said plate, said teeth near their attaching ends being screw-threaded, and nuts to engage the screw-threads on said teeth to secure said teeth to said plate, as and for the purpose specified. 90 95

7. The combination of the frame, the beater, the feed-roll, the pedals or weighted feed-levers, and the cleaning and separating plates, as and for the purpose specified. 100

8. The combination of the frame, the beater, the feed-roll, the pedals or weighted feed-levers, and the cleaning and separating plates adjustable in distance from said beater, as and for the purpose specified. 105

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 9th day of November, A. D. 1889.

GEORGE HORROCKS.

Witnesses:

ALBERT M. MOORE,
JAS. H. WILSON.