

(No Model.)

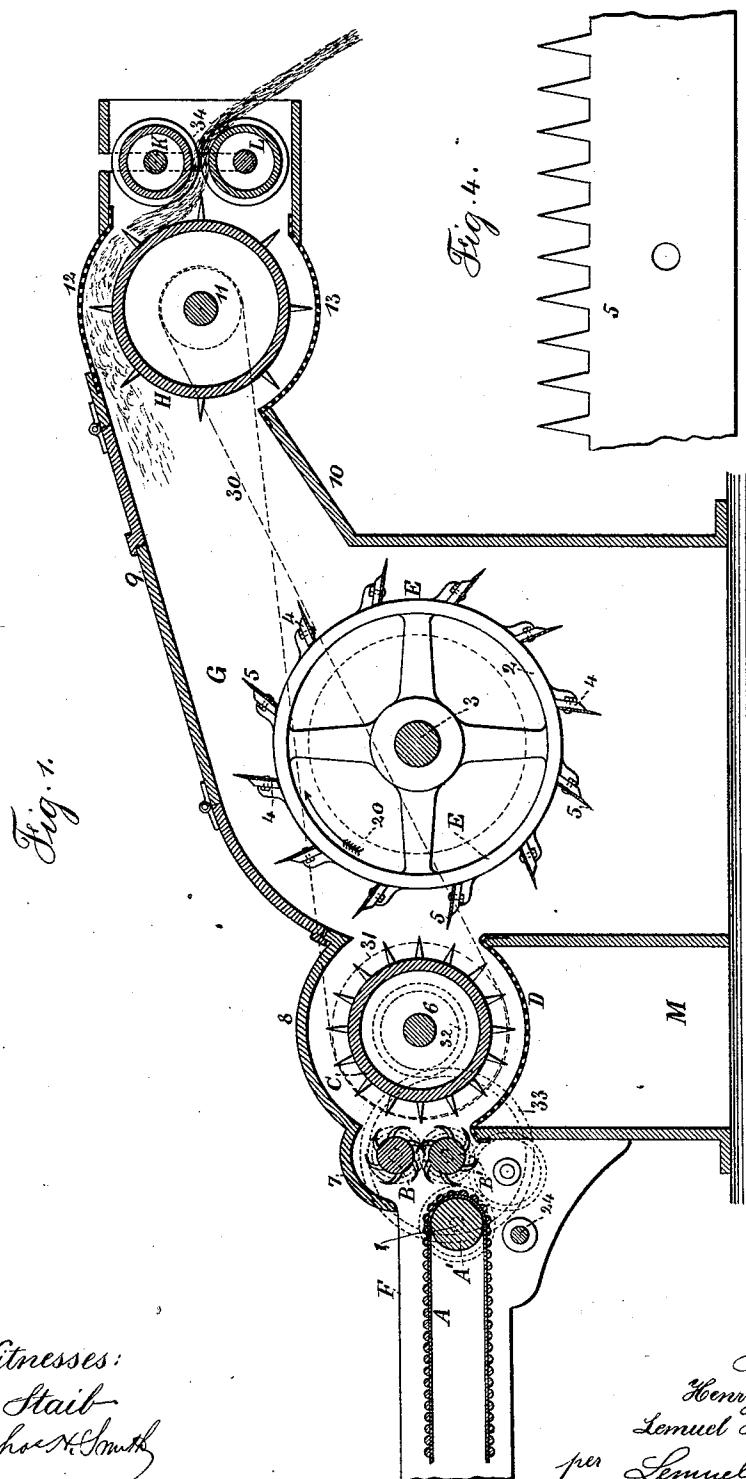
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H. TINDELL & L. F. DICKERSON.

MACHINE FOR OPENING AND MIXING WOOL, COTTON, &c.

No. 425,715.

Patented Apr. 15, 1890.



Witnesses:
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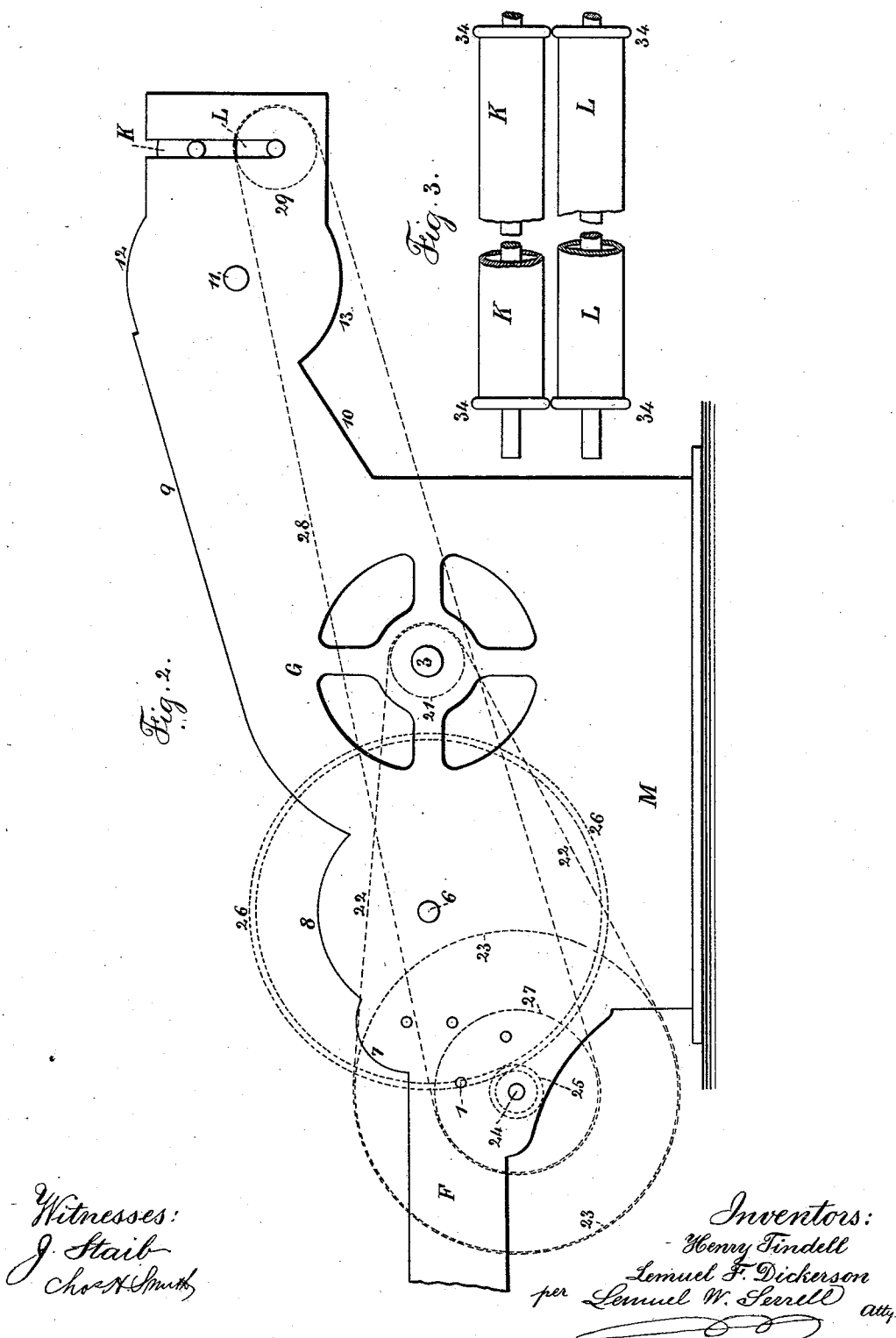
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UNITED STATES PATENT OFFICE.

HENRY TINDELL, OF HARRISON, AND LEMUEL F. DICKERSON, OF NEWARK,
ASSIGNORS TO EMILY R. PARKHURST, OF MONTCLAIR, NEW JERSEY.

MACHINE FOR OPENING AND MIXING WOOL, COTTON, &c.

SPECIFICATION forming part of Letters Patent No. 425,715, dated April 15, 1890.

Application filed November 11, 1889. Serial No. 329,868. (No model.)

To all whom it may concern:

Be it known that we, HENRY TINDELL, of Harrison, in the county of Hudson, and LEMUEL F. DICKERSON, of Newark, in the county of Essex, both in the State of New Jersey, have invented an Improvement in Machines for Opening and Mixing Wool, Cotton, &c., of which the following is a specification.

The object of this invention is to open out the fibers, remove the dust, and deliver such fibers in the form of a sheet or bat, and it is adapted to take the place of either picking or mixing machines, wherein the fibers are carried by a blast into a room or chamber and subside by gravity. In Letters Patent No. 337,014, March 2, 1886, granted to S. R. Parkhurst, a doffing or collecting apparatus is represented, in which the fiber is caught upon the ends of pins, the air passing through a cylinder and discharging at the end of the case, and the sheet of fiber being drawn off by delivery-rolls. The present improvement is adapted to accomplish the same object in a more efficient manner.

In the drawings, Figure 1 is a vertical section of the improved machine. Fig. 2 is a diagrammatic view illustrating the driving mechanism at one side of the machine. Fig. 3 is a detached view of the delivery-rolls, and Fig. 4 is a detached view of part of one of the serrated blades of the opener-cylinder.

The feeding-belt A is of ordinary construction, and the feed-rolls B B' are armed with teeth, and may be similar to those shown in Letters Patent No. 238,709. There is a toothed cylinder C adjacent to the feed-rolls B B', the teeth of the said toothed cylinder C being preferably radial, so as to partially open the fiber as such fiber is carried down by the teeth from the feed-rolls and above the grating D, through which grating dust and burrs are free to fall; but the locks of fiber are supported by such grating and cannot fall away while moved along by the toothed cylinder C.

The cylinder E is a combined opener and blower. It is formed of two or more heads 2 upon the shaft 3, and upon the periphery of each head there are transverse projecting flanges 4, the faces of which are inclined to the radial lines, upon these flanges being se-

cured the toothed blades 5, the points of which are V-shaped, as shown in Fig. 4. These blades are bolted to the transverse flanges 4, and are of sufficient width to set up currents of air, as in ordinary brush-blowers, for the twofold purpose of conveying away the fiber and blowing dust from the same.

The shaft 1, Fig. 2, of the roller A', around which the feeding-belt passes, is supported by suitable frames F, which frames also support the shafts of the feed-rolls B B', the shaft 6 of the toothed cylinder C, and the shaft 3 of the opener E. It is preferable to cover the feed-rolls by a segmental hood 7, to place the segmental hood 8 over the toothed cylinder C, and to inclose the opener-cylinder E by a blower-case G, having openings at the ends of the opener-cylinder E, the converging top and bottom boards 9 and 10 forming with the sides of the blower-case a trunk extending to the collecting-cylinder H, which is suitably supported upon a shaft 11, with bearings in the sides of the blower-case. There is a segmental grating 12 above the collecting-cylinder H and a similar grating 13 below such cylinder, the same being continuations from the top and bottom boards of the blower-case, and there are delivery-rolls K L, the shafts of which are supported upon continuations of the sides of the blower-case, the upper roll being allowed to rise and fall, the bearings for the shaft being slotted, as represented by dotted lines in Fig. 1 and in full lines in Fig. 2.

The collecting-cylinder H is armed with teeth, which are preferably radial, or nearly so, and their ends are adjacent to the gratings 12 and 13. The cylinder itself is preferably closed, and the air passing along through the blower-case from the opener and blower E escapes through the gratings 12 and 13.

The gearing for driving the respective cylinders and rolls may be of any suitable character. We prefer to use that which is illustrated by dotted lines, the same consisting of a band-wheel or pulley 20 upon the shaft 3 of the cylinder E, and upon this shaft 3 is a pulley 21, with a belt 22 to the band-wheel 23 on the shaft 24. There is a pinion 25 on shaft 24, gearing into a large wheel 26 upon the

shaft 6 of the toothed cylinder C, and there is also a pulley 27 upon the shaft 24, with a belt 28 to the pulley 29 on the shaft of the lower delivery-roll L. The collecting-cylinder H is driven by a crossed belt 30 from a pulley 31 upon the shaft 6 of the toothed cylinder C, as represented by dotted lines in Fig. 1. The feed-rolls B B' are geared together and driven by gearing 32 33, (shown by dotted lines in Fig. 1,) connecting the shaft of the lower feed-roll to the shaft 6 of the toothed cylinder C, and the roller A' of the feeding-belt is driven by an intermediate gear to the gear on the lower feed-roller B'.

It is now to be understood that the feed-rolls are set to carry in the proper quantity of cotton, wool, or other fiber, and that the surface speed of the toothed cylinder C is greater than the surface speed of the feed-rolls B B', so that there is an opening operation performed between the feed-rolls and the toothed cylinder C, and the combined opener and blower E runs much faster and in the direction shown by the arrow, so that the locks of fiber are thoroughly opened by the action of the teeth upon the blades 5, as the teeth upon the cylinder C hold such locks, and the centrifugal action, together with the currents of air set up by the toothed blades, projects the locks of fiber along the upper portion of the blower-trunk, so as to pass in between the collecting-cylinder H and the grating 12. Should any locks of fiber pass toward the grating 13 as the air escapes, they will be carried up by the teeth of the cylinder H, and the mass of fiber, as it is loosely packed in between the cylinder H and the grating 12, is carried along by the teeth of the cylinder H, and is drawn off in the form of a bat between the delivery-rolls K and L.

In cases where delivery-rolls have heretofore been made use of for a loose bat of fibrous material, it sometimes happens that the bat of fiber is thicker near one end of the delivery-rolls than it is near the other end, and the weight of the feed-rolls causes the thicker portions of the bat to be more consolidated by the pressure than the thinner portion. To avoid this difficulty we provide upon the ends of the delivery-rolls the peripheral ribs or flanges 34, which, coming into contact, limit the proximity of the rolls, so that undue pressure is not exerted upon the thin portion of the bat, it being understood

that the peripheral ribs keep the rolls K and L apart the proper distance for the bat of ordinary thickness, and should the supply of fibrous material be in excess the upper roll will rise at one or both ends, while if the supply of fiber is deficient the peripheral ribs prevent the near approach of the upper roll to the lower one.

It is usually preferable to inclose the lower part of the machine with a casing, as shown at M, so as to keep in dust and particles that fall through the grating D, and also to prevent any air escaping from the blower and opener except that which passes through the blower-case G.

We claim as our invention—

1. The combination, with the toothed feed-rolls B B' and belt A, of the toothed cylinder C, having radial or nearly radial teeth and acting to partially open the fibrous material against the teeth of the feed-rolls, the grating D below the toothed cylinder, through which dust and foreign particles can fall away, the combined opener and blower E, having toothed blades that act with the cylinder C to open the fibrous material, and the case G, through which the fibrous material is blown, substantially as set forth.

2. The combination, with a combined opener and blower and the blower-case, of a collecting-cylinder at the delivery end of the case and the segmental gratings above and below the collecting-cylinder, such collecting-cylinder having teeth for receiving and moving along the fibrous material as the same is packed into the space between the collecting-cylinder and the grating as the air escapes, and rolls for delivering the bat of fibrous material, substantially as set forth.

3. The combination, with the blower for opening and delivering fibrous material and the case for the same, of a collecting-cylinder at the end of the case for receiving the fibrous material and a pair of delivery-rolls having peripheral ribs or flanges for limiting the approach of one roller toward the other, substantially as set forth.

Signed by us this 4th day of November, 1889.

HENRY TINDELL.
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Witnesses:

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