C. W. SIMPSON & G. C. HOWARD.
Machine for Granulating Tobacco.

No. 207,140. Patented Aug. 20, 1878.

Fig. 1.

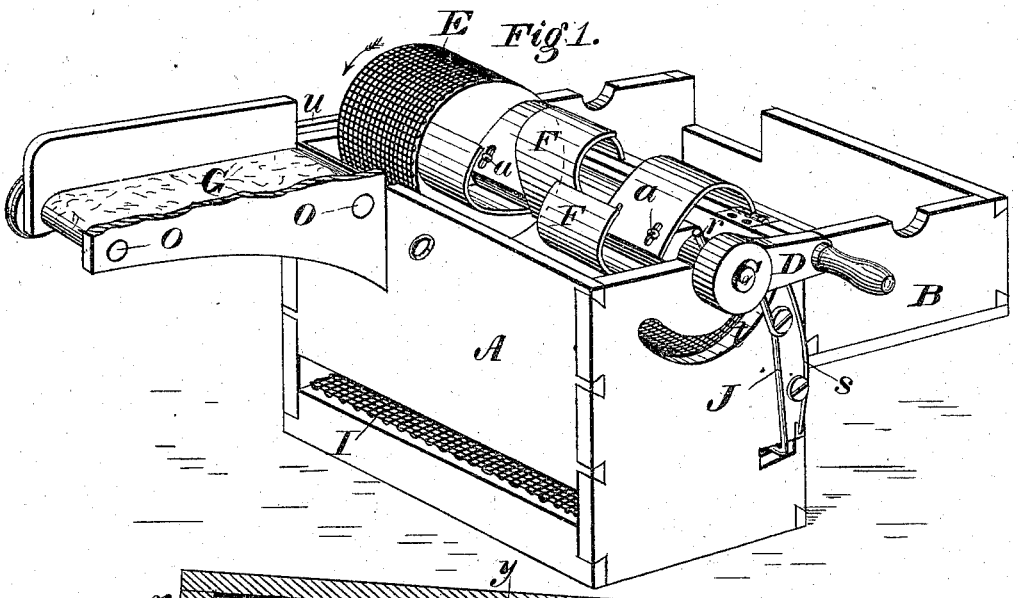


Fig. 2.

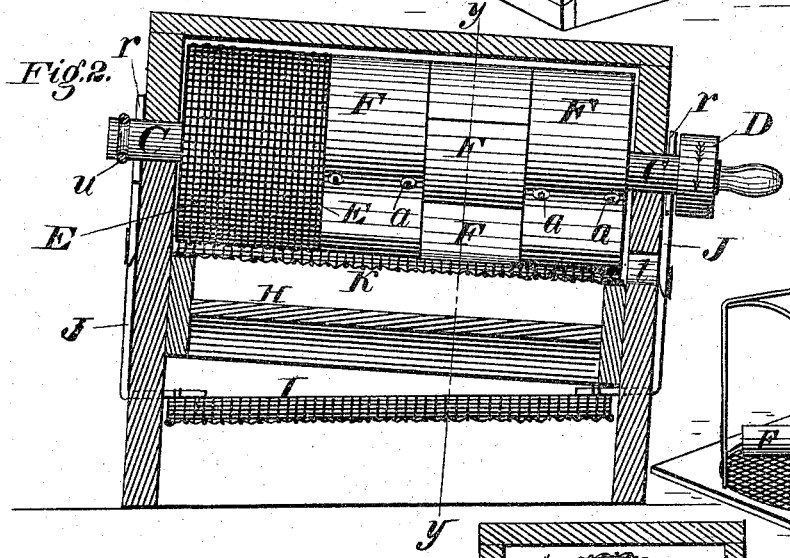


Fig. 4.

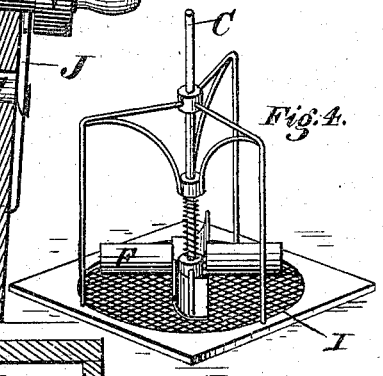
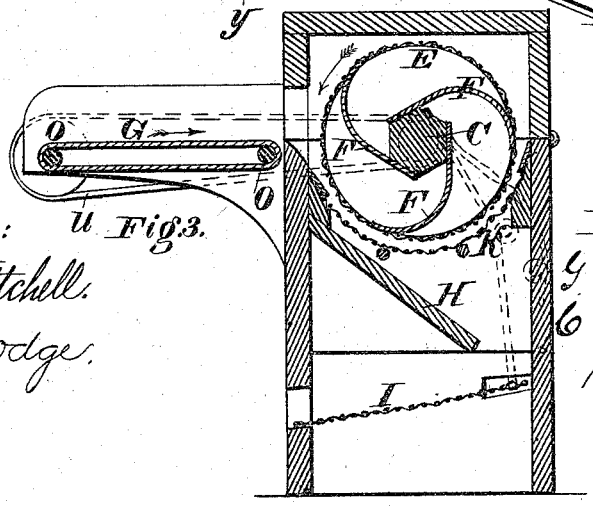


Fig. 3.



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UNITED STATES PATENT OFFICE.

C. WRIGHT SIMPSON AND GEORGE C. HOWARD, OF PHILADELPHIA, PA.

IMPROVEMENT IN MACHINES FOR GRANULATING TOBACCO.

Specification forming part of Letters Patent No. **207,140**, dated August 20, 1878; application filed July 23, 1877.

To all whom it may concern:

Be it known that we, C. W. SIMPSON and GEORGE C. HOWARD, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented certain Improvements in Machines for Granulating Tobacco, of which the following is a specification:

Our invention relates to a machine designed for the treatment of tobacco-leaves in their natural condition, for the purpose of removing the stems, and of breaking up and granulating the leafy portion, the leafy portion and the stems being separated and discharged from the machine at different points.

The invention consists in certain combinations and arrangements of mechanism, as hereinafter described, but more particularly in the combination of the roughened rotary cylinder with the screen thereunder; in the combination of yielding arms with the screen below the same; in the combination of the roughened cylinder, the yielding arms, and the screen below the same, with a second and reciprocating screen thereunder; in the peculiar arrangement of the endless feeding-apron in relation to the other parts, and in other details, hereinafter described.

Figure 1 represents a perspective view of our machine; Fig. 2, a longitudinal vertical central section of the same; Fig. 3, a cross-section of the same on the line *y y* of Fig. 2; Fig. 4, a perspective view, showing a modified form of the machine.

In Figs. 1, 2, and 3 of the drawings, A represents a rectangular case or body, provided with a hinged lid or cover, B, by which it may be tightly closed. C represents an inclined shaft, mounted lengthwise within the body, and provided at one end with an outside actuating crank or pulley, D. Within the body the shaft C is provided at one end with a cylinder or drum, E, having a roughened outer surface, which may be of any suitable construction, good results being secured by applying to the cylinder a cover of rough wire-gauze, as represented in the drawing. The shaft C is also provided within the body by the side of the drum E with a series of radially-curved arms, F, having flat outer faces, and made of a material which is slightly elastic, in order to admit of the arms yielding or giving in operation, so as to exert a spring-pressure on the tobacco. The arms are provided with slots at their inner ends, and secured to the shaft by means of screws *a* passed through said slots, as represented in Figs. 1 and 2, this arrangement admitting of the arms being adjusted radially, in order that they may be caused to exert more or less pressure, as circumstances may require. Within the body, below the drum E and arms F, there is mounted a longitudinal concave screen, K, extending from end to end, and so arranged as to lie in close proximity to the cylinder and the arms, as represented in Figs. 2 and 3.

This screen, as will be seen in Fig. 2, has an inclination toward one end, corresponding with the inclination of the shaft C, in order that the stems of the tobacco which remain upon its surface may be discharged over its lower end, an opening, *t*, being made in the end of the body to permit the escape of the stems from the screen. On the outside of the body, opposite the cylinder E, an endless horizontal apron, G, is mounted upon supporting-rollers O, for the purpose of delivering the tobacco-leaves into the machine against the roughened cylinder E, an opening being made at the proper point in the machine to permit the entrance of the leaves.

The rollers which support the apron, having their bearings in arms or supports on the outside of the body, the motion is communicated to the apron by means of a pulley applied to one of its supporting-rollers, and driven by a belt, *u*, over the pulley on the outer end of the shaft C. In the bottom of the body there is mounted a longitudinal laterally-inclined screen, I, which receives a lateral reciprocation from levers J, pivoted to the ends of the body, acted upon at their upper ends by cams or pins *r* on the shaft C. At the lower edge of the screen I the body is provided with an opening to permit the escape of the granulated tobacco. Within the body, between the screens K and I, there is secured an inclined board, H, the purpose of which is to direct the material which falls through the upper screen onto the lower edge of the lower screen.

In operating the machine the body is closed and the shaft C rotated in the direction indi-

cated by the arrows. The tobacco-leaves being spread upon the apron G are carried thereby into the machine against the roughened cylinder E, by which they are carried down between its surface and the screen K, the screen and cylinder serving to break up the leaves, and to a great extent separate and loosen the leafy portion from the stems or fibrous portion. The tobacco passes from under the cylinder E downward on the screen K beneath the arms F, which, acting upon it with a yielding pressure, serve to break up and granulate the leafy portion in such manner that it will pass through the screen K, at the same time removing from the stem such portions of the soft or leafy tobacco as may have remained upon the stems when they passed from under the cylinder E. The stems and coarse fibrous or woody portions are discharged through the opening *t*, the granulated leafy portion, falling through the screen K upon the board H, is delivered upon the reciprocating screen I, which directs the valuable portion upward through the front of the machine in a clean condition, while the dust, powder, and foreign matters, falling through the screen I, are retained in the base of the machine.

The form of machine represented in Fig. 4 differs from that in the other figures in having a vertical shaft and a flat horizontal screen, and also in lacking the various other parts; but is essentially the same in the single particular of having curved yielding metallic blades acting in conjunction with a screen.

We are aware that the combination of a rotary toothed cylinder and a surrounding concave is old in grinding-mills, and also that a spirally-grooved or corrugated cylinder has been used in connection with a surrounding case of sheet metal, having openings therein, for hulling rice; and therefore we do not claim, broadly, the use of any roughened cylinder with any perforated jacket; but we believe ourselves to be the first to combine a cylinder of the construction and in the manner shown and described, so as to be adapted for the separation of tobacco stems from the leaves.

Having thus described our invention, what we claim is—

1. In a tobacco stemming and granulating machine, the combination of an inclined concave screen, K, and a roughened inclined cylinder, E, arranged for joint operation, substantially as shown and described, whereby the leafy portion is removed from the stems and reduced to a uniform degree of granulation and the two portions separated and discharged at different points.

2. In a tobacco stemming and granulating machine, the combination of the inclined screen K and the inclined shaft C, provided with a roughened cylinder, E, and curved arms or blades F.

3. The combination of the feed-apron, the roughened cylinder, the curved rotary blades, and the inclined screen.

4. In a tobacco stemming and granulating machine, the combination, within an inclosing body, of the inclined concave screen, the roughened cylinder, and rotary blades with a conducting-board and a vibratory inclined screen, both located below the concave screen.

5. In a machine for stemming and granulating tobacco, the combination of the concave screen and the series of curved rotating radially-adjustable blades.

6. In a machine for stemming and granulating tobacco, the combination of the screen K, the curved or rounded yielding presser arms or blades F, arranged to act above and in conjunction with the screen, substantially as described, and shown in Figs. 2 and 3.

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