(No Model.)

E. D. MILLS.

HOP STRIPPING MACHINE.

No. 332,275. Patented Dec. 15, 1885.

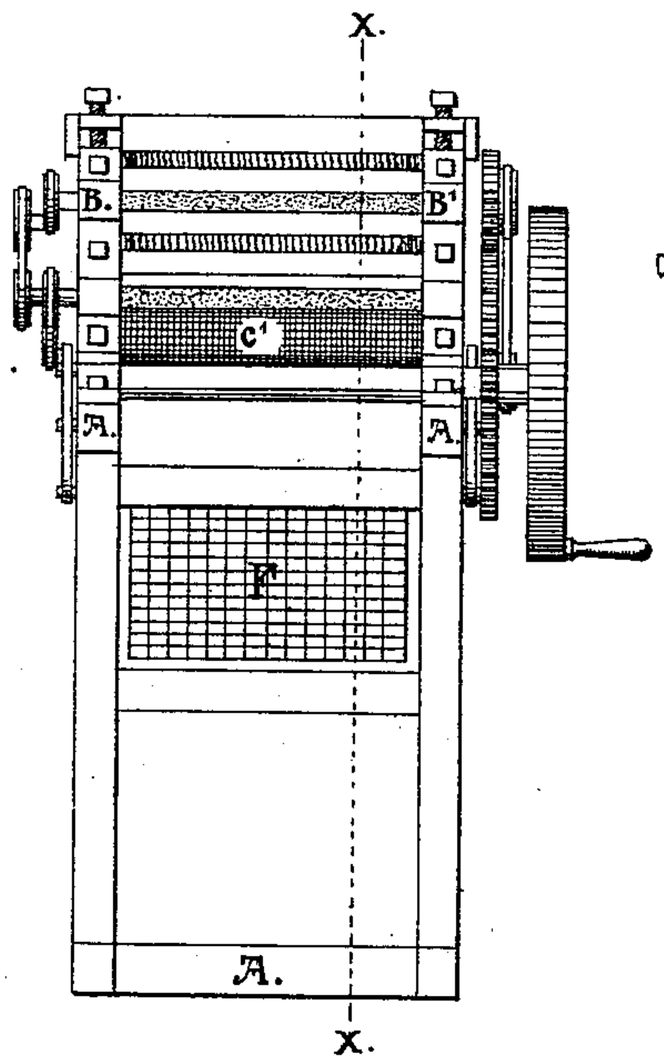

Fig. 2.

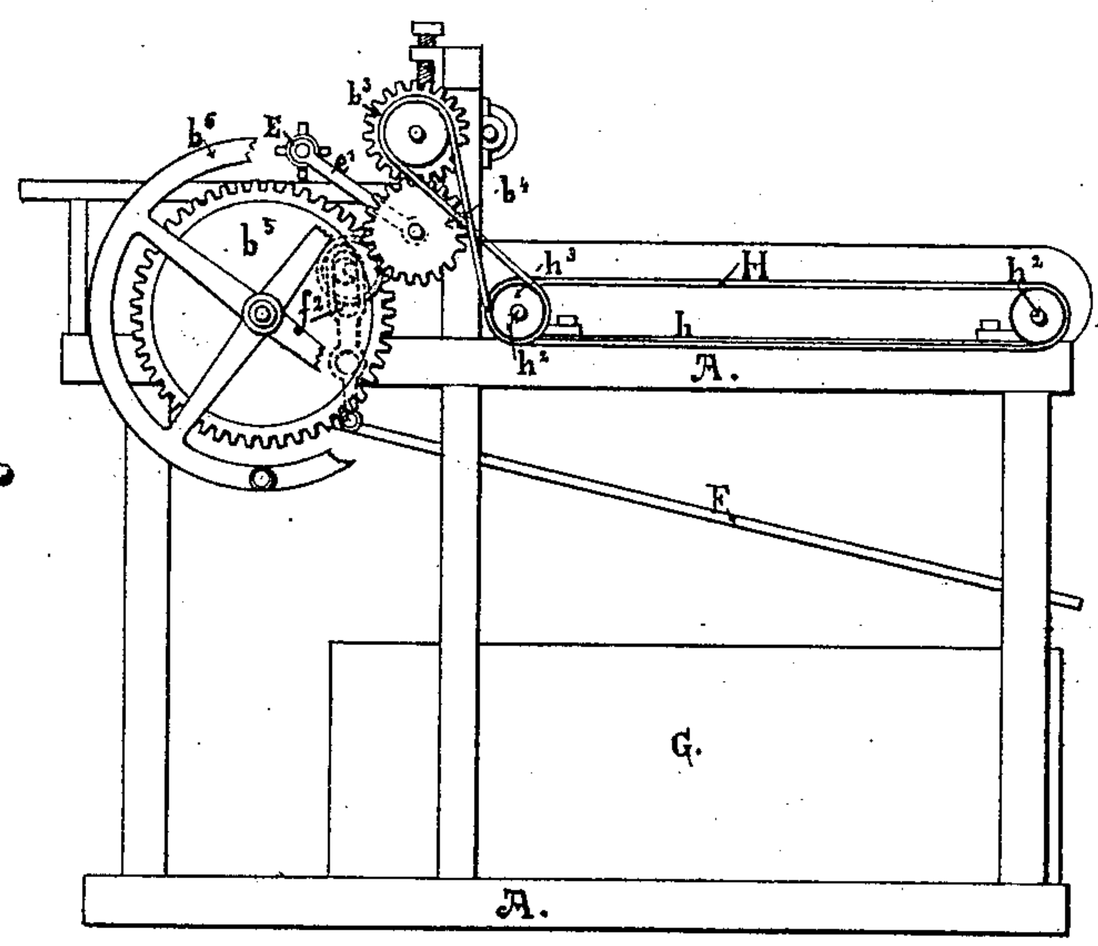

Fig. 1.

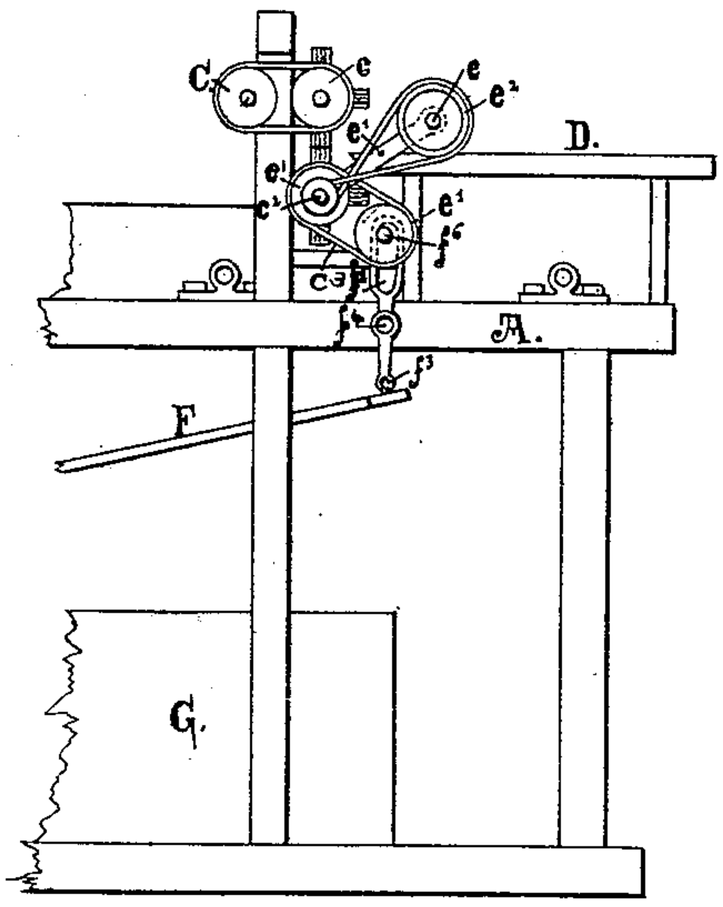

Fig. 3.

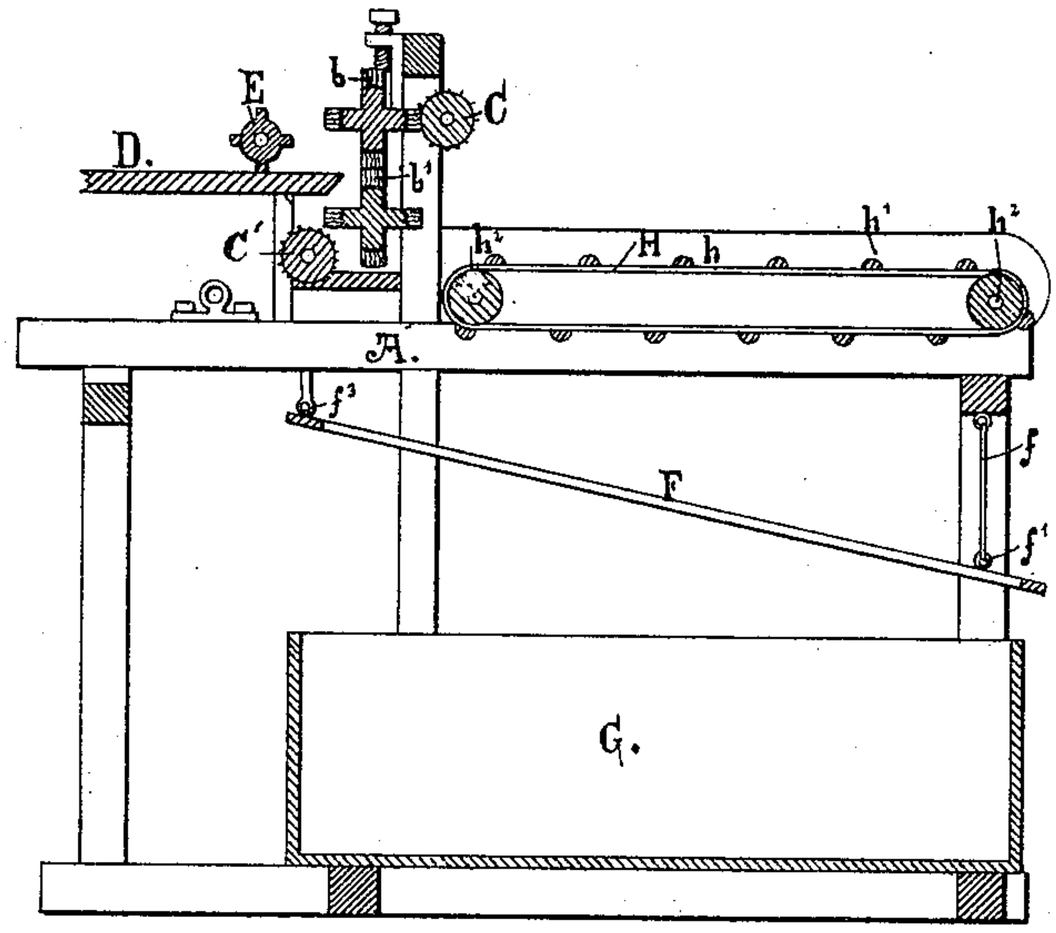

Fig. 4.

WITNESSES.

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HOP-STRIPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 332,275, dated December 15, 1885.

Application filed May 23, 1885. Serial No. 166,529. (No model.)

To all whom it may concern:

Be it known that I, E. DELOSS MILLS, of Clinton, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Hop-Stripping Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

In the accompanying drawings similar letters of reference refer to corresponding parts throughout the several views.

Figure 1 is a side elevation of the machine, a portion of the balance-wheel being removed to expose parts of the working mechanism. Fig. 2 is a front elevation of my machine. Fig. 3 is a side view of a portion of my machine the reverse of Fig. 1. Fig. 4 is a section on line *x x* of Fig. 2.

In the drawings the working parts of the machine are shown mounted on frame A, consisting of six legs united by side and cross sills, beams, and cross-beams, as shown in the drawings, but which may be of any other suitable and convenient construction. The frame supports bearings of the ordinary construction, in which are journaled shafts for supporting the strippers and clearing-rolls.

For stripping the hops from the vines, I provide strippers *b* and *b'*, which are mounted in bearings B B'. The strippers are preferably constructed with four wings, forming a cross in cross-section; but two or more wings may be used, square or oval in cross-section. On the external edges of the wings I provide brushes constructed of bristles or other flexible material having the required strength and stiffness; or the brushes containing the bristles may be placed longitudinally on the surfaces of circular strippers. The strippers are mounted to be rotated in bearings B and B', the ends of the bristles moving in contact with each other and rotated in opposite directions, the contact-points of the brushes moving in the same direction, allowing the hops to enter the spaces between the wings of the strippers before the wings strike them, thereby preventing injury to the hops. The strippers may be constructed flat or oblong in cross section. These strippers are driven by spur-gears b^3 b^4 on the ends of the shafts of the respective strippers.

b^5 is a gear-wheel journaled in the frame, and meshes into pinion-gear b^4.

b^6 is a balance-wheel constructed and mounted on the shaft with the gear-wheel b^5. The balance-wheel is provided with a handle for driving the connecting mechanism. A pulley may be attached to the shaft of the gear-wheel and the mechanism driven by power.

C C' represent clearing-rolls. The former is placed in the rear of its companion stripper on substantially the same horizontal line. The latter is placed in front of its companion on substantially the same horizontal line. Both clearing-rolls are journaled in bearings B and B', and run into the bristles on the strippers and each in contact with the surface of its companion in the same direction, thereby moving in opposite directions. The external surfaces of the clearing-rolls should be provided with material sufficiently rigid to form a beating or clearing surface to the bristles on the strippers. I prefer wire-cloth, as shown in Fig. 2; but other material may be used.

c and *c'* represent grooved pulleys on the ends of the shafts of the respective strippers for receiving and operating belts for driving the clearing-rolls.

c^2 is a grooved pulley on the end of the shaft of the lower stripper for receiving and operating belt c^3 for driving the feeding device. Other mechanism may be used for driving the strippers and clearing-rolls.

D represents a feed-table, supported on the frame on substantially the same horizontal line with the contact-point of the strippers.

E represents the feeding device for feeding the vines laden with hops between the strippers, and for preventing the same from passing between the strippers with too great rapidity. The feeding device is constructed with four wings, forming a cross in cross-section, and is preferably made from cast-iron or other metal having the required weight to suitably regulate the feed. The edges of the wings of the feeding device may be provided with projecting teeth for engaging the vines.

e is a shaft to which the feeding device is attached, and by which the same is journaled

in links e' e'. The opposite ends of these links are pivoted upon the shaft of the lower stripper, or the same may be pivoted to the frame, and are constructed to allow an upward circular motion to the feeding device, so as to readily accommodate different quantities of vines which may be fed into the machine. The feeding device is mounted on the table, as before described, and has a rotating motion, and is driven by grooved pulley e^2, attached to the end of shaft e, through a cross-belt running in grooved pulley c^3 on the stripper-shaft. The several gear wheels and pulleys should be made in size with reference to the quantity of hops and vines to be fed into the machine. The feeding device and strippers moving in the same direction, the strippers should be speeded about three times as fast as the feeding device to secure satisfactory work; but this may be varied. The hops when swept from the vines fall onto an inclined vibrating sieve, F. This sieve is supported at its rear by hooks f f, which fit into eyes f' f' on either side of the sieve, the upper ends of these hooks fitting into eyes in the frame. The front end of the sieve is supported and pivoted on either side to levers f^3 f^3. These levers are pivoted at or near their centers at f^4 f^4 to the frame. The upper ends of these levers are provided with longitudinal slots f^2 f^2, which fit over eccentrics f^6 f^6, rigidly attached to ends of the shaft of the lower clearing-roll.

The mechanism here described is provided for imparting a vibrating motion to the sieve, for separating the leaves from the hops when picked; but other means for vibrating the sieve may be used. The meshes of the sieve should be of sufficient size to allow the hops to drop through into receptacle G.

H represents an endless carrier for carrying the vines from the strippers after the hops have been stripped from the same, and is formed with flexible sides h h. These side strips are preferably formed by providing leather strips. Any other flexible material of the required strength may be used, with cross-strips or rods h', attached to the sides at sufficient distances apart to prevent the vines from falling onto the inclined sieve, and is mounted on rollers h^2 h^2, journaled in the frame, as indicated in Figs. 1 and 4. This carrier is driven through grooved pulley h^3, attached to a projecting end of the shaft of roller h^2, by means of a cross-belt running in a similar pulley attached to the end of the shaft of the upper stripper.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of two strippers, each constructed with wings and brushes at their outer edges, with means whereby they are rotated at the same peripheral speed, and the brushes brought substantially in contact with each other at each revolution of the same.

2. The combination of two strippers constructed with an equal number of wings and brushes at their outer edges, and adapted to be rotated in opposite directions, and so arranged that the brushes contact at each revolution.

3. In a hop-picking machine, the strippers provided with brushes, said strippers rotating in opposite directions and practically contacting with each other as the machine is operated, in combination with clearers for keeping the brushes clean.

4. The combination, with two strippers constructed with brushes rotated in opposite directions, substantially in contact with each other, as described, of two clearing-rolls each constructed and rotated in the opposite direction from its companion stripper and in contact therewith.

5. The combination, with the rotating strippers constructed substantially as described, of the clearing-rolls, with wire-cloth held rigidly thereto, each clearing-roll rotating in an opposite direction from its companion stripper and in contact therewith.

6. The combination of two strippers constructed and mounted to be rotated in opposite direction, substantially in contact with each other, with a feeding device in front of the stripping-rolls constructed to feed the vine to the strippers, the feeding device moving the vine in the same direction of the strippers and retaining the same in continuous motion at a lower speed than the strippers.

7. A hop-stripping machine comprising the strippers, the clearing-rolls, an endless carrier for receiving the vines from the strippers and carrying the same from the machine, the vibrating screen, and mechanism for moving the same.

In witness whereof I have affixed my signature in presence of two witnesses.

E. DELOSS MILLS.

Witnesses:
EDWIN H. RISLEY,
HENRY D. DARLING.