(No Model.) 3 Sheets—Sheet 1.

E. D. MILLS & L. EMDIN.

HOP PICKING MACHINE.

No. 524,333. Patented Aug. 14, 1894.

Fig. 1.

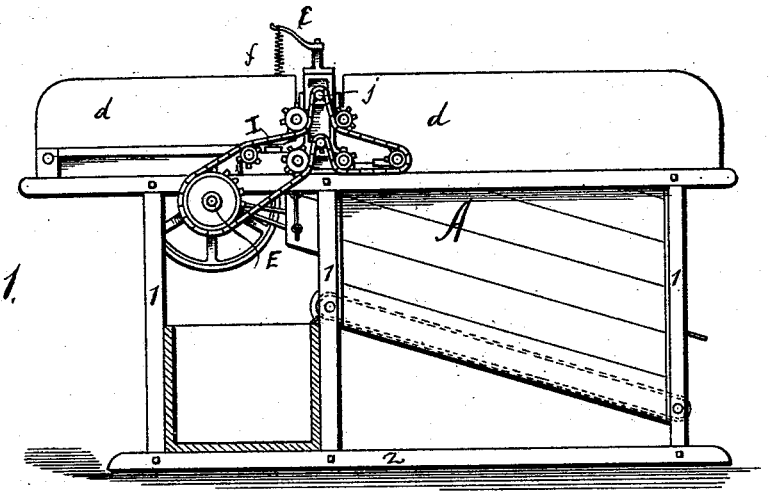


Fig. 2

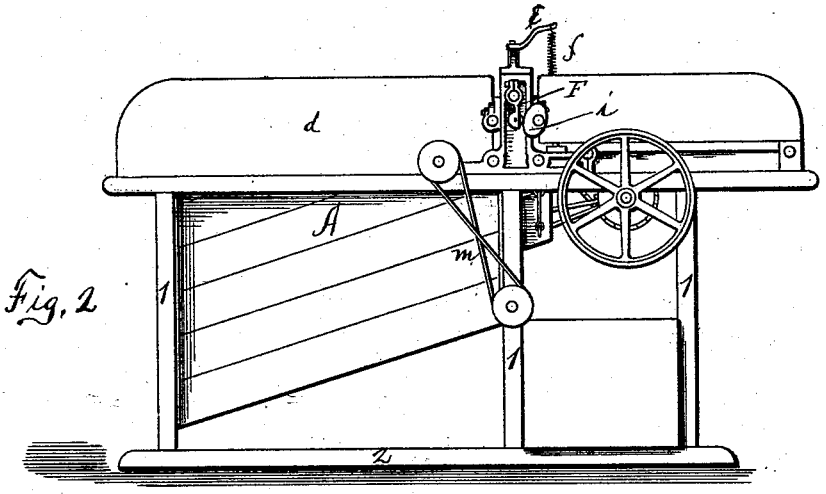


Fig. 4

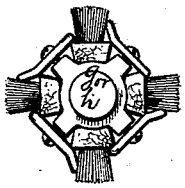
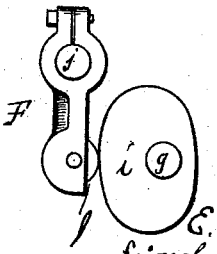


Fig. 5.



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(No Model.) 3 Sheets—Sheet 2.

E. D. MILLS & L. EMDIN.

HOP PICKING MACHINE.

No. 524,333. Patented Aug. 14, 1894.

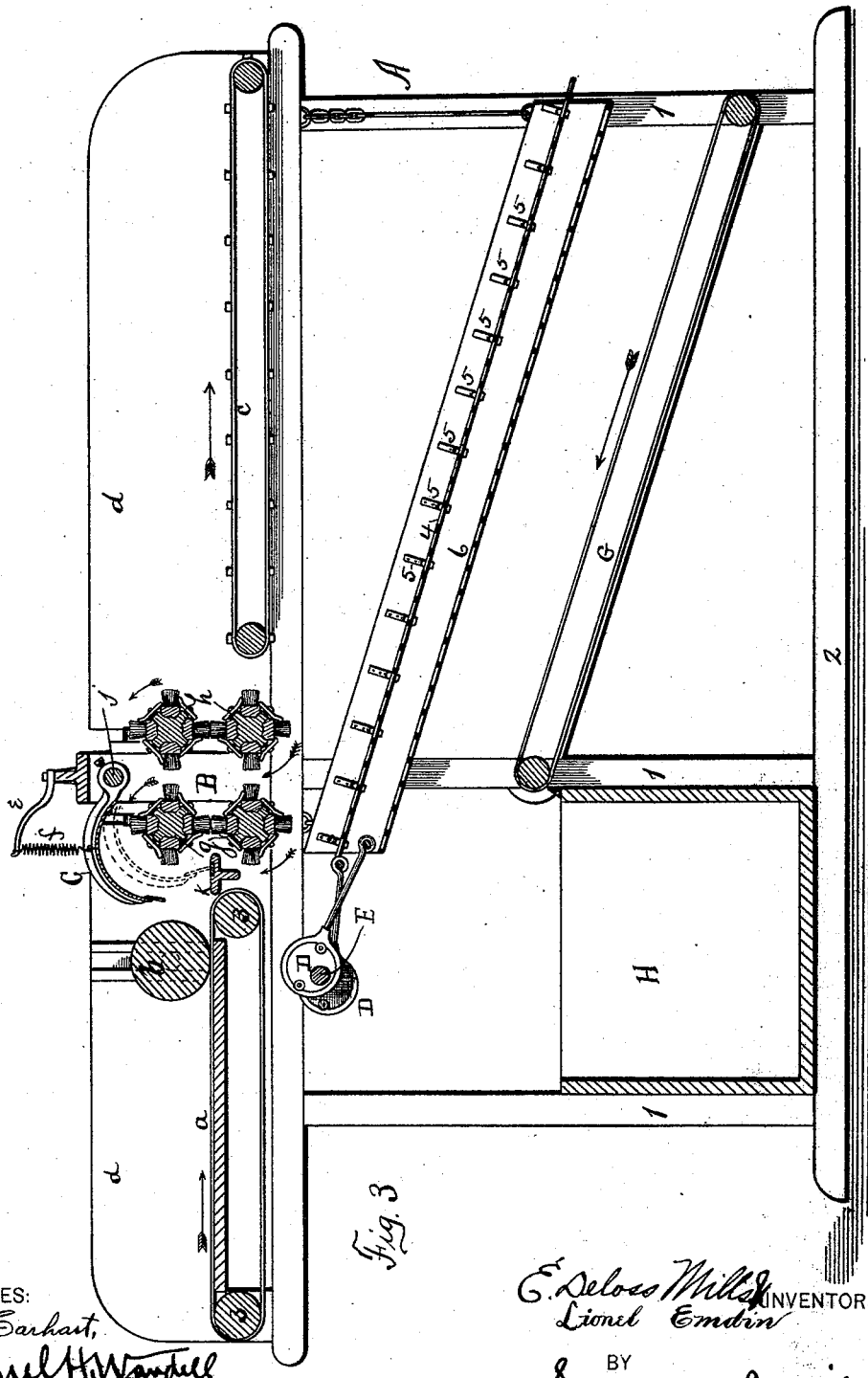

Fig. 3.

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(No Model.) 3 Sheets—Sheet 3.

E. D. MILLS & L. EMDIN.

HOP PICKING MACHINE.

No. 524,333. Patented Aug. 14, 1894.

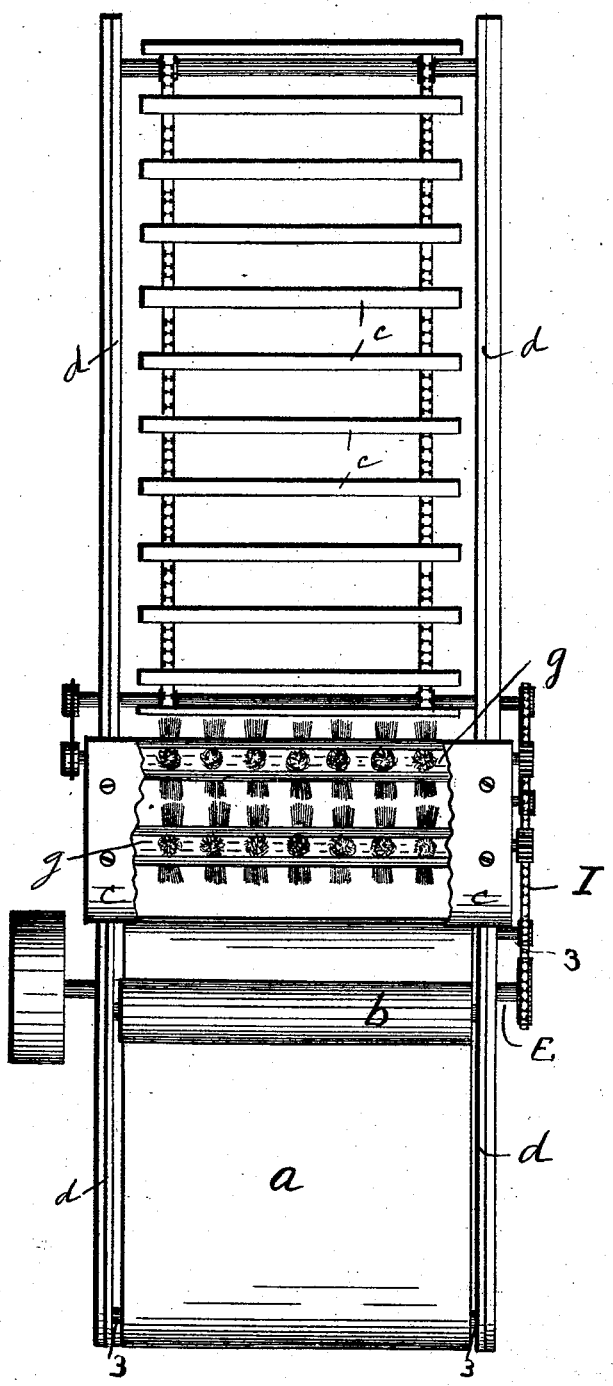

Fig. 6.

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UNITED STATES PATENT OFFICE.

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HOP-PICKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 524,333, dated August 14, 1894.

Application filed July 24, 1893. Serial No. 481,256. (No model.)

To all whom it may concern:

Be it known that we, E. DELOSS MILLS, of Clinton, in the county of Oneida, and LIONEL EMDIN, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Hop-Picking Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to devices for picking or pulling hops from the vines.

Our object is to produce a device which shall effectively remove the hops from the vines, thereby reducing the amount of leaves which are removed therefrom to the minimum and provide suitable means for separating any of the leaves which may be removed with the hops and conveying them to a receptacle; cheap and durable in its construction and of great utility. And to that end our invention consists in the several new and novel features and combination of parts hereinafter described and which are specifically set forth in the claims hereunto annexed.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1, is a side elevation of the right side of the machine. Fig. 2, is a side view of its opposite side. Fig. 3, is a vertical section through the machine just to one side of the center, enlarged. Fig. 4, is an end elevation of one of the brushes, enlarged. Fig. 5, is an enlarged detail of the cam and arm which operates the vibrating cut off. Fig. 6 is a top plan view with such parts removed as obstruct the view of the operating parts.

Similar letters and figures of reference indicate corresponding parts.

A, is a frame constructed in any ordinary manner, preferably provided with standards —1— and base rails —2— to give it strength.

Upon the forward end of the frame is an endless apron —*a*— traveling upon rollers —3— and serving to conduct the vines containing the hops within the stripping mechanism hereinafter described.

b, is a roller mounted vertically adjustable over the apron —*a*— between which and said apron —*a*— the vines pass in their inward movement. This roller —*b*— may, however, be dispensed with.

c, is an apron upon the rear end of the frame, suitably mounted and provided with means for rotating it for conveying the stripped vines and leaves to the rear of the machine.

The endless apron —*a*— upon the front end of the machine, the apron —*c*— upon the rear end of the frame, and the bar —*k*— running transversely across the machine constitute the feeding floor of the machine.

d, are wings or side pieces of the machine to keep the vines and hops from falling over the side of the machine.

Erected upon the center of the machine and transversely thereto is the bracket —B— having a concavo-convex cut off —C— pivoted thereto and mounted upon the shaft —*j*—.

e, is an arm secured to the top of said bracket and having a spring or other elastic connection —*f*— connecting said arm with the said cut off —C—, so as to adapt it to engage yieldingly with the feeding floor of the machine.

g, are shafts mounted upon the front side of the bracket —B— and are provided with brushes at regular intervals, or their entire periphery may be covered with brushes or bristles and are mounted directly over each other so that the ends of said brushes meet during rotation; suitable means being provided upon the ends of the shafts for rotating them.

h, are similar shafts provided with brushes and mounted upon the rear face of the bracket —B— having suitable means provided for rotating them. They are, however, provided with pinions of less diameter than the pinions upon the shafts —*g*— so that when they are set in motion by the mechanism hereinafter described they will rotate faster than the brushes upon shaft —*g*—. We do not, however, limit ourselves to the number of these shafts or rotating brushes, as it will be very evident that any number may be used. Neither do we confine ourselves to any particular construction thereof as it will be evident that various constructions and kinds of brushes may be used.

Transversely across the frame is a main shaft —E— having its right side provided with a wheel having sprockets thereon and suitable means for rotating said wheel. The

ends of the shafts *g*, and *h* and the ends of the apron shafts are provided with sprocket wheels.

I—, is an endless sprocket chain engaging therewith, as shown in Fig. 1, so that when the wheel above referred to is rotated, all of the wheels and rollers are set in motion. Directly under these brushes is slidingly mounted a sieve —4— within the swinging shoe whose bottom is the sieve 6 having the usual meshes therein of a size to freely admit the hop passing through. And transversely across the feeding floor of the sieve are cross bars —5— fixed to said shoe. 6, is a smaller sieve mounted just below the sieve —4—. These sieves are connected to eccentric —D— which in turn are secured upon the main shaft —E— of the machine.

Upon the left-hand end of the upper shaft —*g*— is rigidly secured a cam wheel —*i*—.

Upon the left-hand end of the shaft —*j*— which carries the sleeve —C— is mounted an arm —F— adapted to be secured rigidly to said shaft and having its opposite end adapted to travel upon the periphery of said cam wheel. For the purpose of allowing the arm —F— to travel freely upon the cam wheel —*i*— we may mount therein a roller —*l*—.

Our invention is operated as follows: The vines containing the hops are first placed upon the endless apron —*a*—, whence they pass inwardly under the roller —*b*— and between the brushes or brush shafts —*g*— and —*h*—. When the vines are passing between said brushes the cam —*i*— engaging with the arm —F— forces the cut off —C— down into engagement with the vines as they pass through and upon the bar —*k*— running transversely across the machine, thereby holding the vines intermittently until the brushes have rubbed or forced the hops therefrom; the hops falling down upon the sieve —4—. The sieves being constantly moved backward and forward the hop drops through one of the meshes and hangs by the leaf (provided a leaf has been taken off with it) and as the mesh passes by the bars —5— the hop and leaf are separated, when the hop passes down onto the sieve —6— and finally through the meshes thereof onto the endless apron —G— which is rotated by passing a belt over one of its rollers, connecting it with the main portion of the machine. The hop thus separated travels upwardly as indicated by the arrow and is thrown into the receptacle —H—.

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

1. In a hop picking machine, the combination with the frame and the front and rear portions, of a bracket mounted transversely thereon, brushes rotatively mounted therein having their peripheries in contact, means for rotating them simultaneously, a cam wheel rigidly secured upon one end of said brushes, a cut off concavo-convex in cross section rotatively mounted in said bracket and having an arm adapted to engage with the cam wheel for the purpose of raising and lowering the said sleeve when the brushes are rotated, as set forth.

2. In a hop picking machine, the combination with a frame, of a bracket mounted transversely thereon, brushes secured thereon having their periphery in contact and means for rotating them, a cam wheel rigidly secured upon one end of said brushes, a cut off concavo-convex in cross section mounted in said bracket and having an arm secured to one end of its shaft adapted to engage with the cam wheel, an arm secured at the top of said bracket and an elastic connection between it and the sleeve, as set forth.

In witness whereof we have hereunto set our hands this 18th day of July, 1893.

E. DELOSS MILLS.
LIONEL EMDIN.

In presence of—
SAMUEL A. WANDELL,
HOWARD P. DENISON.