June 14, 1949. A. E. OSLUND 2,473,215

HOP AND LEAF SEPARATOR

Filed Sept. 27, 1945

2 Sheets-Sheet 1

FIG. 1

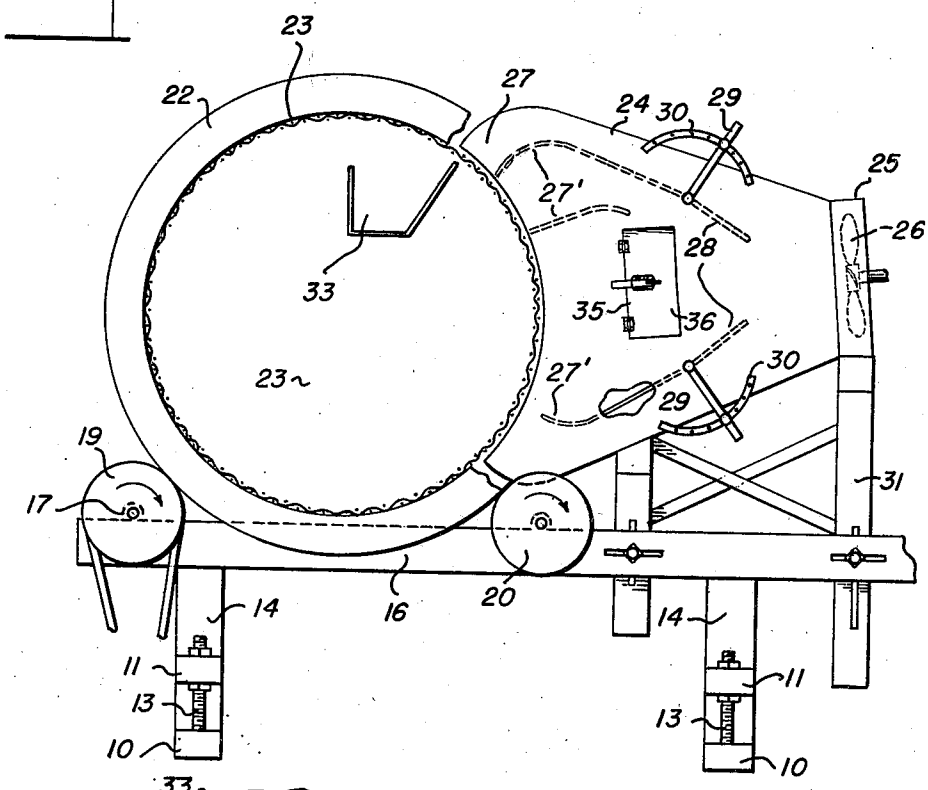
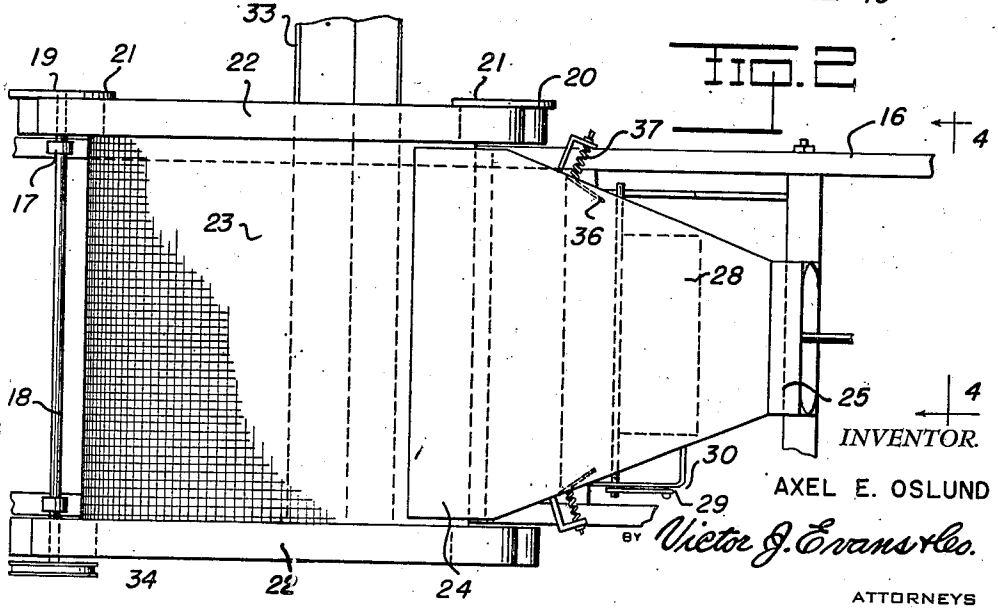


FIG. 2



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FIG. 3

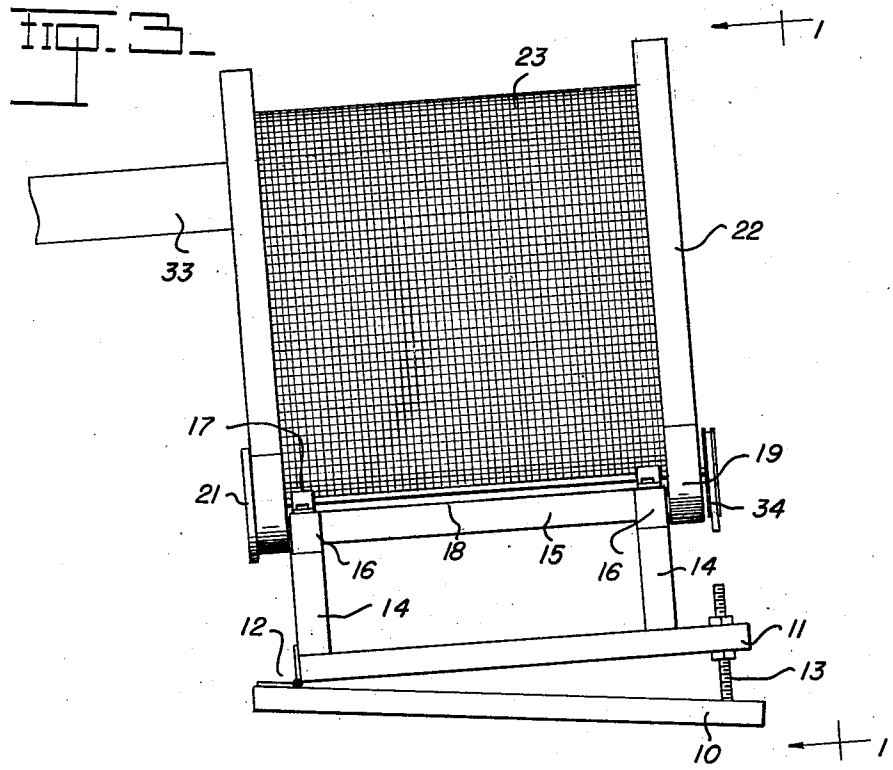
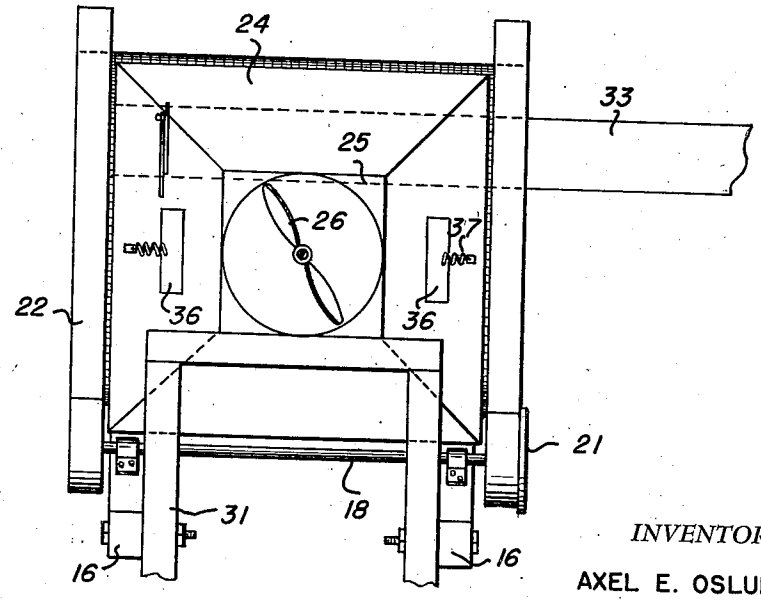


FIG. 4



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UNITED STATES PATENT OFFICE

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HOP AND LEAF SEPARATOR

Axel E. Oslund, Santa Rosa, Calif.

Application September 27, 1945, Serial No. 618,827

3 Claims. (Cl. 209—45)

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The invention relates to a cleaning or recleaning apparatus, and more especially to hops sorting machine.

The primary object of the invention is the provision of a machine of this character, wherein hops picked from a field thereof, which picking must be done in the shortest possible time, due to the quick ripening thereof, as at this stage the blossoms become light, shed their petals and break up from rough handling, can be automatically cleaned, without loss of the seeds and lupulin, these being the valuable parts of the blossoms, and are relieved of leaves and other worthless matter, in a single operation of the machine.

Another object of the invention is the provision of a machine of this character, wherein the loose petals of the blossoms will be recovered and the leaves and other waste substances will be separated therefrom, so that hops cleaned of the latter can be collected from the said machine in this cleaned condition with dispatch.

A further object of the invention is the provision of a machine of this character, wherein major loss of the blooms of the hop plants, after the picking of such blossoms thereof, can be eliminated, and a thorough cleaning assured in the operation of the machine.

A still further object of the invention is the provision of a machine of this character, which is simple in construction, thoroughly reliable and efficient in operation, automatic in the working thereof, strong, durable, readily and easily handled, assuring a cleaning operation with dispatch, possessed of few parts, conveniently adjusted, susceptible of convenient inspection, inexpensive to manufacture, and inexpensive to install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompany drawings, which show the preferred embodiment of the invention, and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is an elevation of the machine constructed in accordance with the invention, and partly broken away.

Figure 2 is a fragmentary top plan view thereof.

Figure 3 is an end elevation, looking toward the machine at substantially right angles to that position thereof in Figure 1.

Figure 4 is a view similar to Figure 3 looking toward the reverse end thereof.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

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Referring to the drawings in detail, the machine constituting the present invention, comprises a pair of spaced base beams or rails 10, which are adapted to be supported on a level foundation or other sub-structure, and above these beams or rails are tilting bars 11, each being connected thereto by hinges 12, to be acted upon by raising and lowering jacks 13, for the tilting of such bars at a sloping angle to the lay of the beams or rails.

Rising from the bars 11 are rigid prop legs 14, carrying a bed frame 15 having the spaced parallel sills 16 provided with bearings 17, for cross axles 18 fitted with wheels 19 and 20, respectively, the latter being formed with peripheral flanges 21 and such flanged wheels are disposed on the low side of the machine. Contacting with the wheels 19 and 20 are the ring-like end members 22 of a rotary cylindrical drum 23, its cylindrical body being made from wire-mesh fabric functioning as a screen, the end member 22 next to the low side of the machine being engaged by the flanges of the wheels 20, so that this drum will not travel off of all the wheels 19 and 20 in its rotary movement.

Located in confronting relation exteriorly to the drum 23, and inclined slightly in its direction, is an outwardly tapered suction funnel 24, which at its open contracted or small end 25 has centrally located therein a bladed rotary suction fan 26, its rotation being had from any suitable power source and in any approved manner. The inner larger open end 27 of this funnel 24 is arranged close to the drum 23, the fan 26 being disposed and driven in a direction to cause a vacuum inside the said funnel and an airflow therethrough. Any conventional fan, blower or air motor may be used for this purpose. The direction and speed of airflow inside the funnel 24 is controlled by stationary baffles 27', together with adjustable baffles 28, these baffles being extended the full width of the funnel, excepting that the adjustable baffles 28 are short enough to move freely. The adjustable baffles 28 are operated outside of the funnel 24, and may be held in any desired position by the adjustable latch handles 29, operating in keeper quadrants 30 therefor.

The funnel 24 is mounted on an adjustable rack 31, attached to the sills 16, the adjustment being had at 32, so as to properly set the funnel with relation to the drum, as will clearly appear in Figure 1 of the drawings.

Extended within the drum 23 above its rotary axis and close to its mesh body is a conveyor

trough **33**, or any other form of convenient receptacle, so that on rotation of the drum the leaves sucked against the inside of the screen body are held there while being carried up to this trough, where having passed the suction zone of the funnel, they will drop off into the trough to be carried away or otherwise disposed of. The hops are deposited within the drum through either open end thereof and the deposit with the leaves are carried in a direction for the collection of the leaves as before stated, and the hops through gravity and weight will start rolling back before they reach the trough, and thus will find their way to the lowermost area of the drum where they will fall out of the latter to be caught into a receiver, not shown, for the recovery thereof in a cleaned condition.

Driving power is delivered to the drum **23** through a suitable belt pulley **34** associated with the axle for the wheels **20**.

As the area of the screen covered by the leaves in front of the funnel varies, so does the degree of suction or vacuum inside of the funnel tend to fluctuate, and to keep the degree of vacuum or suction constant, a vent on each side of the funnel **24** is provided, as at **35**. This vent **35** is controlled by a hinged door or damper **36**, which is automatically operated in conjunction with a spring **37**, in that it can be seen when the air pressure inside of the funnel becomes less than on the outside thereof the door or damper will tend to open inwardly of the said funnel, and thus maintain the suction or vacuum constant within the latter. The tension of the spring **37**, as well as the position of the funnel **24** in relation to the drum **23**, the position of the baffles and the slope of the machine, are adjustable, so as to reach the best operating results obtainable.

The shape of the funnel and the shape of the baffles inside of the latter may vary for different reasons, as for instance, the size and capacity of the operation of which the machine is called upon to execute.

What is claimed is:

1. In a hop cleaning machine, the combination which comprises a cylindrical wire mesh drum with open ends and having ring-like members on the ends, spaced rollers upon which the said ring-like members are positioned, shafts rotatably mounting the rollers whereby the drum being carried by the rollers is rotated upon rotation of the rollers, said rollers mounted to support the drum with the axis thereof inclined, a funnel-like housing having a large and a small end with the large end arcuate in section to receive the said cylindrical drum, an exhaust fan positioned in the outer small end of the housing for drawing air from the interior of the drum through the wire mesh thereof whereby materials in the drum are held in suspension against the inner surface of the wire mesh thereof, stationary converging baffles positioned in the housing and in the path of the exhauster, adjustable baffles pivotally mounted in the housing and positioned to coact with the said converging baffles, means adjusting the positions of the said adjustable baffles, and converging means in the said wire mesh drum for receiving materials when released from the inner surface of the cylindrical drum.

2. In a hop cleaning machine, the combination which comprises a cylindrical wire mesh drum with open ends and having ring-like members on the ends, spaced rollers upon which the said ring-like members are positioned, means rotatably mounting the rollers whereby the drum being carried by the rollers through the ring-like members is rotated upon rotation of the rollers, said rollers mounted to support the drum with the axis thereof in an inclined position, a funnel like housing having an enlarged end and a small end with the large end arcuate in elevation for receiving the outer surface of the said cylindrical drum, and an exhaust fan positioned in the outer small end of the funnel like housing for drawing air from the interior of the drum through the wire mesh thereof whereby materials in the drum are held in suspension against the inner surface of the wire mesh thereof as the drum passes the large end of the said funnel like housing, stationary baffles positioned in converging relation in the funnel like housing and in the path of the exhaust fan, adjusting baffles hinged to the edges of the stationary baffles, and means adjusting the positions of the said adjusting baffles, to restrict the flow of air through the funnel like housing.

3. In a hop cleaning machine, the combination which comprises a cylindrical wire mesh drum with open ends and having ring-like members on the ends, spaced rollers upon which the said ring-like members are positioned, means rotatably mounting the rollers whereby the drum being carried by the rollers through the ring-like members is rotated upon rotation of the rollers, said rollers mounted to support the drum with the axis thereof in an inclined position, a funnel like housing having an enlarged end and a small end with the large end arcuate in elevation for receiving the outer surface of the said cylindrical drum, and an exhaust fan positioned in the outer small end of the funnel like housing for drawing air from the interior of the drum through the wire mesh thereof whereby materials in the drum are held in suspension against the inner surface of the wire mesh thereof as the drum passes the large end of the said funnel like housing, stationary baffles positioned in converging relation in the funnel like housing and in the path of the exhaust fan, adjusting baffles hinged to the edges of the stationary baffles, an intermediate transversely positioned stationary baffle between the former stationary baffles, resiliently held doors held in the sides of the funnel like housing for relieving air pressure therein, and a longitudinally disposed chute positioned in the upper part of the wire mesh drum for receiving particles dropping from the inner surface of the drum as the surface thereof passes the said funnel like housing.

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