May 11, 1943.

F. C. SILVA

2,318,805

GRAPE STEMMER

Filed Aug. 27, 1942

2 Sheets-Sheet 1

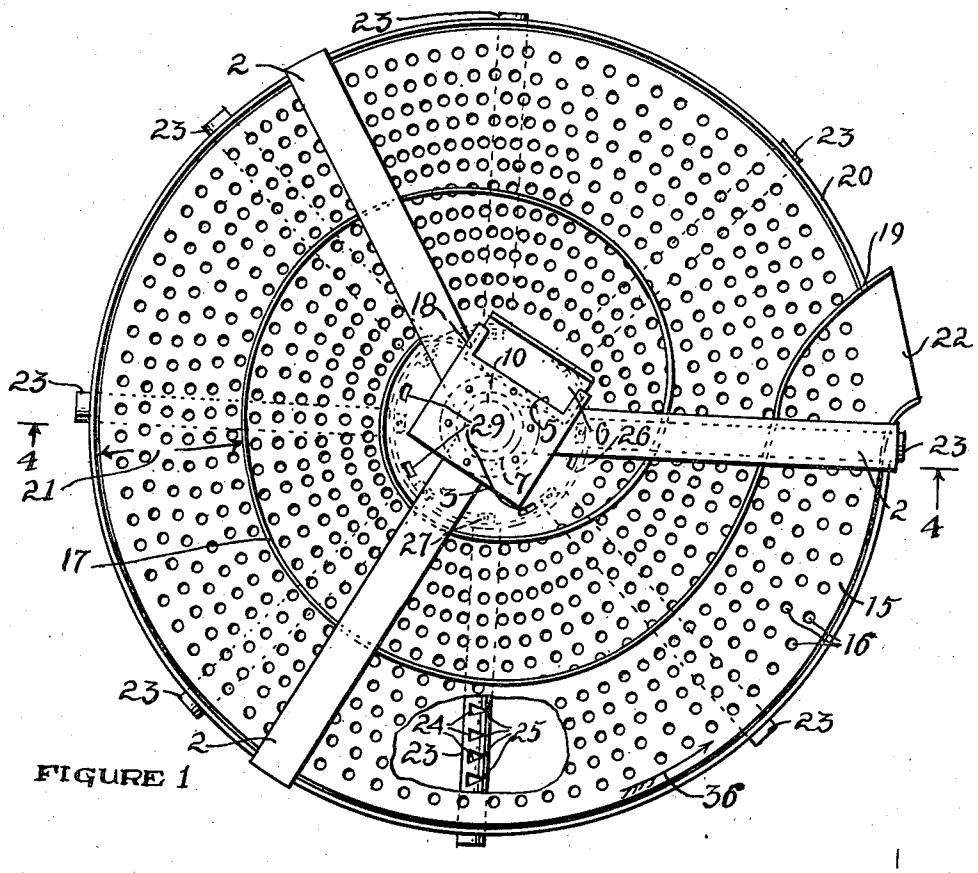


FIGURE 1

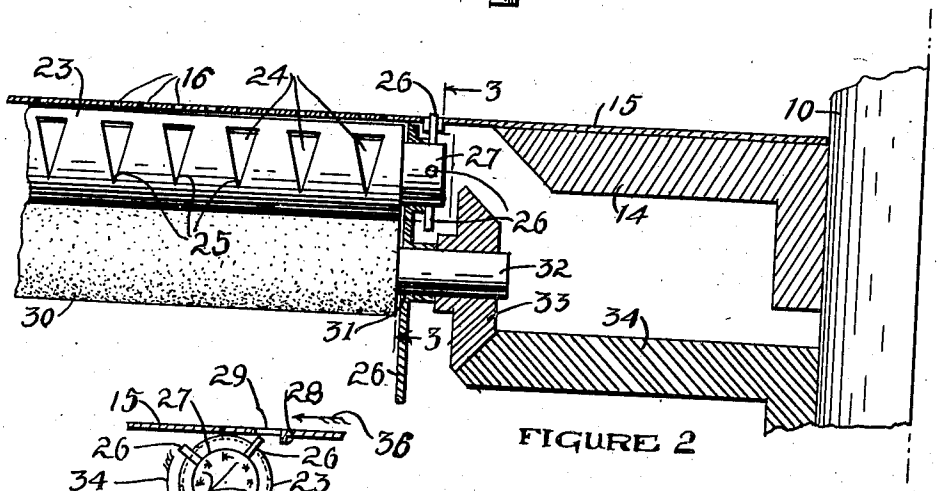


FIGURE 2

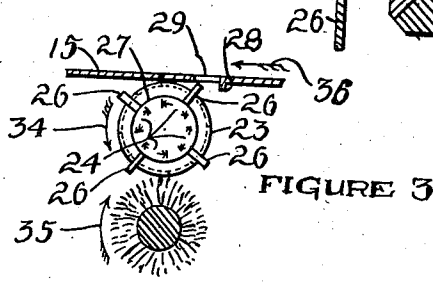


FIGURE 3

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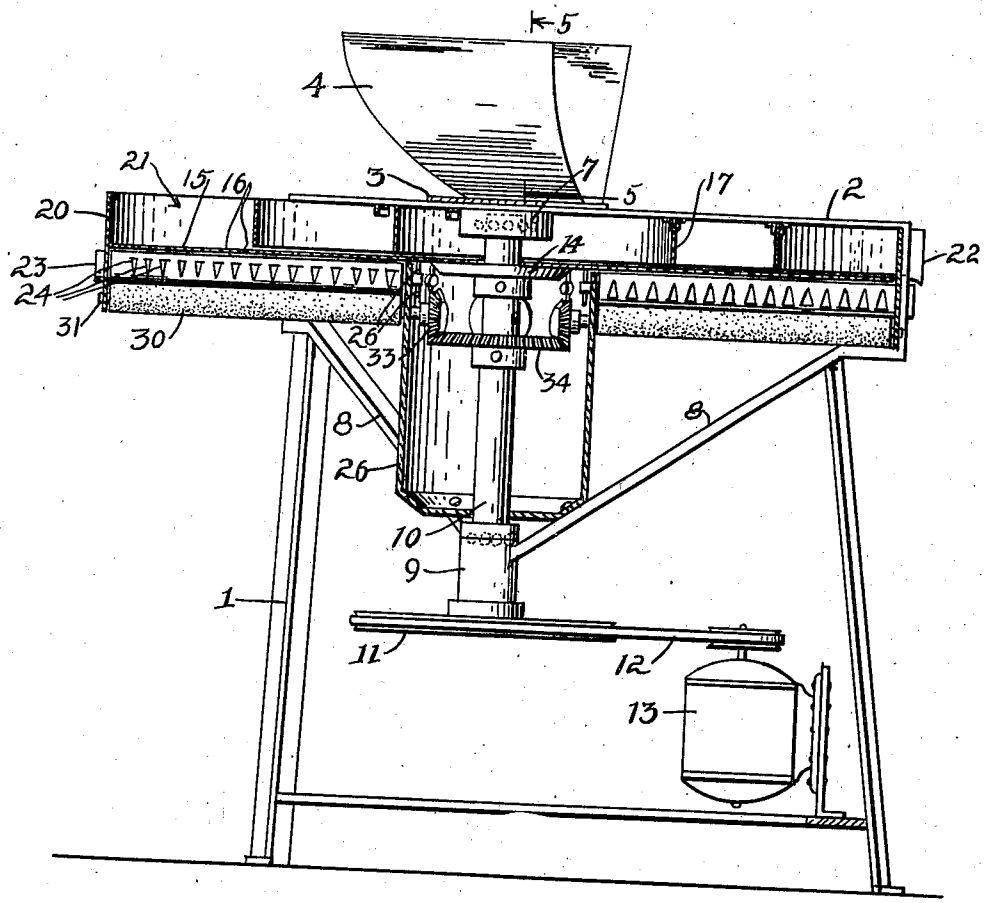
GRAPE STEMMER

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2,318,805

2 Sheets-Sheet 2

FIGURE 4



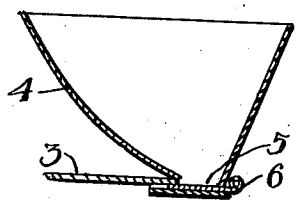


FIGURE 5

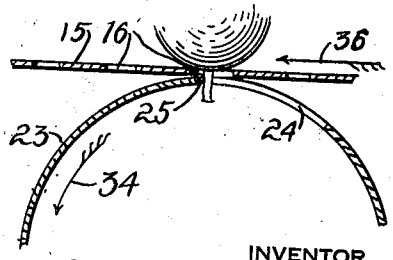


FIGURE 6

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Patented May 11, 1943 2,318,805

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GRAPE STEMMER

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Application August 27, 1942, Serial No. 456,433

8 Claims. (Cl. 146—55)

The present invention relates to means for mechanically removing the stems from grapes, and the principal object of the invention is to provide a means of the character indicated that will remove the stems from a greater percentage of the grapes run through than the machines heretofore known.

It is also an object to provide a machine that will effectively perform the work indicated without injury to the grapes, and that will permit the passing of a continuous stream of grapes therethrough.

Finally, it is an object of the invention to provide a machine of the character indicated that will be economical to manufacture, simple in form and construction, that consists of few moving parts, and that is highly efficient in its practical application.

In the drawings:

Figure 1 is a top plan view of a machine embodying my invention, with a part broken away.

Figure 2 is an enlarged section-elevation showing a portion of the stemming mechanism and operating means therefor.

Figure 3 is a view on line 3—3 of Figure 2.

Figure 4 is a sectional view on line 4—4 of Figure 1.

Figure 5 is a sectional view on line 5—5, Figure 1.

Figure 6 is an enlarged detail section showing the operation of the stem-stripping device.

In the particular embodiment of the invention herein disclosed, I show at 1 a supporting framework and at 2 top bars supported thereon and extending radially from a central plate 3 which they support.

The central plate 3 supports a hopper 4 and is provided with a discharge opening to the hopper as at 5, this opening being controlled by a slide 6.

Mounted upon the under side of the plate 3 is a bearing 7, and mounted on supports 8 of frame 1, and in axial alignment with the bearing 7, is a second bearing 9. A vertical shaft 10 is rotatably mounted in the bearings 7 and 9, and on the lower end of this shaft is mounted a pulley 11 with a driving connection 12 to an electric motor 13 and by means of which the shaft is rotated as desired.

Fixedly mounted on the shaft 10 a little way below the bearing 7 is a plate 14 having a flat top surface lying in a horizontal plane.

On the top of plate 14 is fixedly mounted a thin flat plate 15 perforated as shown to a point near its central portion. The perforations are numerous, as shown, and are of such a size and so spaced that the moving grapes placed thereon will readily engage them with their stems.

The grapes deposited on the perforated plate 15 from the hopper 4 are caused to move slowly outwardly to the point of discharge by a spiral guide 17, which is fixedly mounted on the undersides of top bars 2 and depends vertically therefrom. This spiral element 17 extends from a central point 18 to an outermost point 19 on the encircling wall 20 on frame 1 and cooperates with said encircling wall to form a spiral channel 21 extending from the hopper 4 to the discharge 22.

In this disclosure eight stripping devices are disposed about the underside of the plate 15, but since they are all identical in construction and operation but one will be described in detail.

Each stripping device comprises a tube as 23 having four longitudinal rows of triangular openings as 24 formed therein, and spaced to any degree desired. Each triangular opening is preferably in the form of an isosceles triangle with its short side lying longitudinally of the tube and its two longer sides forming an acute angle pointed in the direction of its rotation, 25. The tube 23 is rotatably mounted in the outer wall 20 and an inner supporting cylinder 26 on supports 8, this latter cylinder 26 being disposed to encompass shaft 10 in concentric relation thereto. The tube 23 is disposed under the plate 15, in parallel relation thereto, and with just clearance therebetween.

The tube 23 is caused to rotate one-quarter of a complete turn in the direction of rotation of plate 15, by means of four equally spaced pins 26 radially mounted on its bearing pin 27 to engage lugs as 28 depending from the under side of plate 15. A slot 29 is formed in the plate 15 immediately in front of lug 28 to permit passage of the pin 26.

It is obvious that stems caught in the points 25 of the triangular slots 24 and that do not fall away by force of gravity, must be mechanically removed from the tube 23. This mechanical removal of the stems is accomplished by means of a cylindrical brush as 30 rotatably mounted in the wall 20 and cylinder 26 as shown at 31 and in contactual relation with the bottom of the tube 23 and in parallel relation therewith. The inner end of the rod 32 upon which the bristles are mounted is projected inwardly of the cylinder 26 and fitted with a small bevel gear 33. The bevel gear 33 meshes with another bevel gear 34 fixedly mounted on the shaft 10.

When the machine is in operation the grapes in hopper 4 are allowed to discharge through the opening 5 on to the perforated plate 15 which is rotated in the direction of arrow 36 as described. The continuous rotation of plate 15 causes the grapes to contact the outer side of the depending spiral element 17, and this contact causes the grapes to rotate and to be shoved outwardly until eventually they are discharged at 22. But in the course of this movement a high percentage of the grapes shove their stems through some of the orifices 16. Those stems that are so positioned as the plate 15 passes over a tube 23 are caught in the acute angle 25, and since the tube 25 is stationary at the moment the stem is pulled off of the grape. When the lug 28 approaches and contacts a pin 26 it rotates the tube until it passes over the pin thereby turning a new set of openings 24 into an operative position. Since the brush 30 is rotated continuously by the mechanism described, and in a direction opposite to that of tube 23, it follows that any stems remaining in the openings 24 are brushed backwardly out of the points 25 and the points are made clear for more stripping. The direction of rotation of tube 23 and brush 30 are indicated by arrows 34 and 35.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A grape stemming device comprising, in combination, a rotating perforated plate, relatively fixed spiral means operative to move grapes on the central portion of the plate outwardly to the periphery thereof, stripper means disposed beneath the plate in operative position to grasp grape stems projecting downwardly through the perforations in the plate, and means operative to remove the stems retained by the stripper means.

2. A grape stemming device comprising, in combination, a rotating perforated plate, a relatively fixed spiral element overlying the plate to move grapes placed on the central portion of the plate outwardly to the periphery thereof, stripper means disposed beneath the plate to grasp grape stems projecting through the perforations in said plate, and means operative to remove the stems retained by the stripper means.

3. A grape stemming device comprising, in combination, a flat, horizontal, perforated, rotating plate, fixed spiral means mounted thereover operative to move grapes placed on the center thereof outwardly to the periphery thereof, stripper means disposed beneath the plate in operative position to grasp grape stems projecting downwardly through the perforations in the plate, and means operative to remove the stems from the stripper means.

4. The structure set forth in claim 3 wherein a side wall encloses the rotating plate, and wherein the first named fixed means comprises a spiral element defining a spiral channel extending from the central portion of the plate to the periphery thereof, in the direction of rotation of the plate.

5. The structure set forth in claim 3 wherein the stripper means comprises a cylindrical tube revolubly mounted in juxtapositioned relationship to the underside of the rotating plate, and radially thereof, said tube having circumferentially spaced longitudinal rows of pointed slots formed therein, the points of said slots being directed forwardly in the direction of rotation of the plate when in an operative position, and means operative to intermittently rotate the tube.

6. The structure set forth in claim 3 wherein the stripper means includes a cylindrical tube revolubly mounted in juxtapositioned relationship to the under side of the rotating plate, and radially thereof, said tube having circumferentially spaced longitudinal rows of stem grasping slots formed therein, radially disposed means mounted on the tube, and means associated with the rotating plate disposed to engage said radially disposed means and rotate the tube a predetermined distance.

7. The structure set forth in claim 3 wherein the stripper means includes a slotted tube revolubly mounted in juxtapositioned relationship to the underside of the plate and radially thereof and intermittently rotated a distance in the direction of rotation of the plate and by the rotation of the plate, and wherein stem removing means comprises a cylindrical brush mounted in brushing contact with the tube, and means drivingly connecting the brush and plate whereby the brush will be rotated continuously with the plate but in the opposite direction.

8. A grape stemming device comprising, in combination, a supporting frame, a flat perforated plate mounted thereon to rotate in a horizontal plane, a hopper mounted centrally over the plate to discharge thereon, a fixed spiral element disposed over the plate to form a spiral channel extending outwardly from the center of the plate in the direction of rotation of the plate to the periphery thereof, a plurality of radially disposed tubes revolubly mounted on the frame to closely underlie the plate, each tube having circumferentially spaced longitudinal rows of isosceles-triangle shaped slots formed therein with their points directed forwardly in the direction of rotation of the plate when in an operative position therebelow, radially disposed pins projecting outwardly from the tube, an annular row of slots formed in said plate to engage said pins, each slot having a depending lug formed on its rearmost edge to engage one of said pins and move it into said slot and to thereby rotate said tube a distance corresponding to the circumferential spacing of the slots therein, a cylindrical brush rotatively mounted in said frame and in contactual relationship with each tube, a shaft drivingly connected to the plate to rotate the same, and gear means inserted between the brush and shaft operative to rotate the brush continuously in a direction opposite to the direction of rotation of the tube.

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