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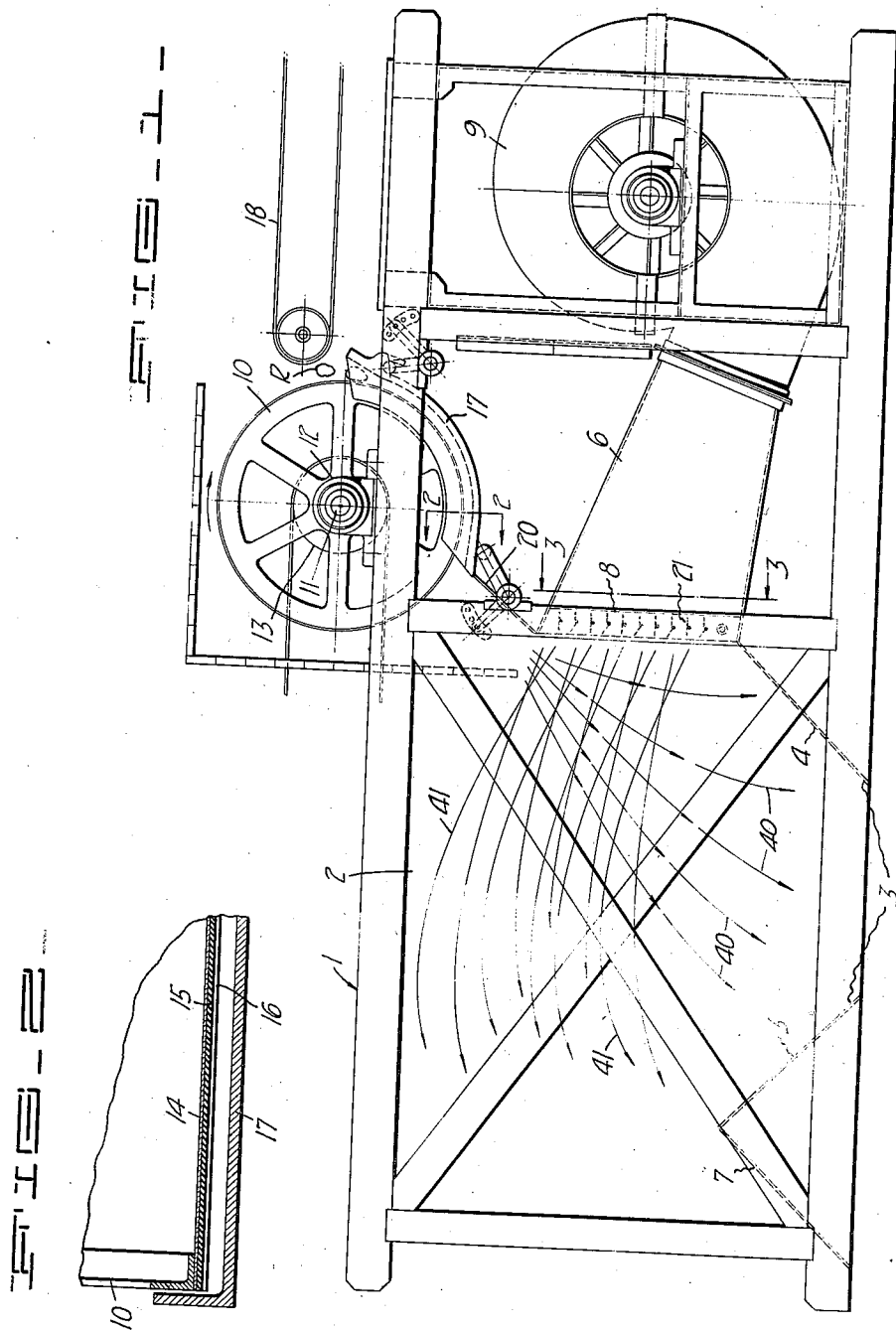
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RAISIN STEMMING APPARATUS

Filed Aug. 9, 1937

2 Sheets-Sheet 1



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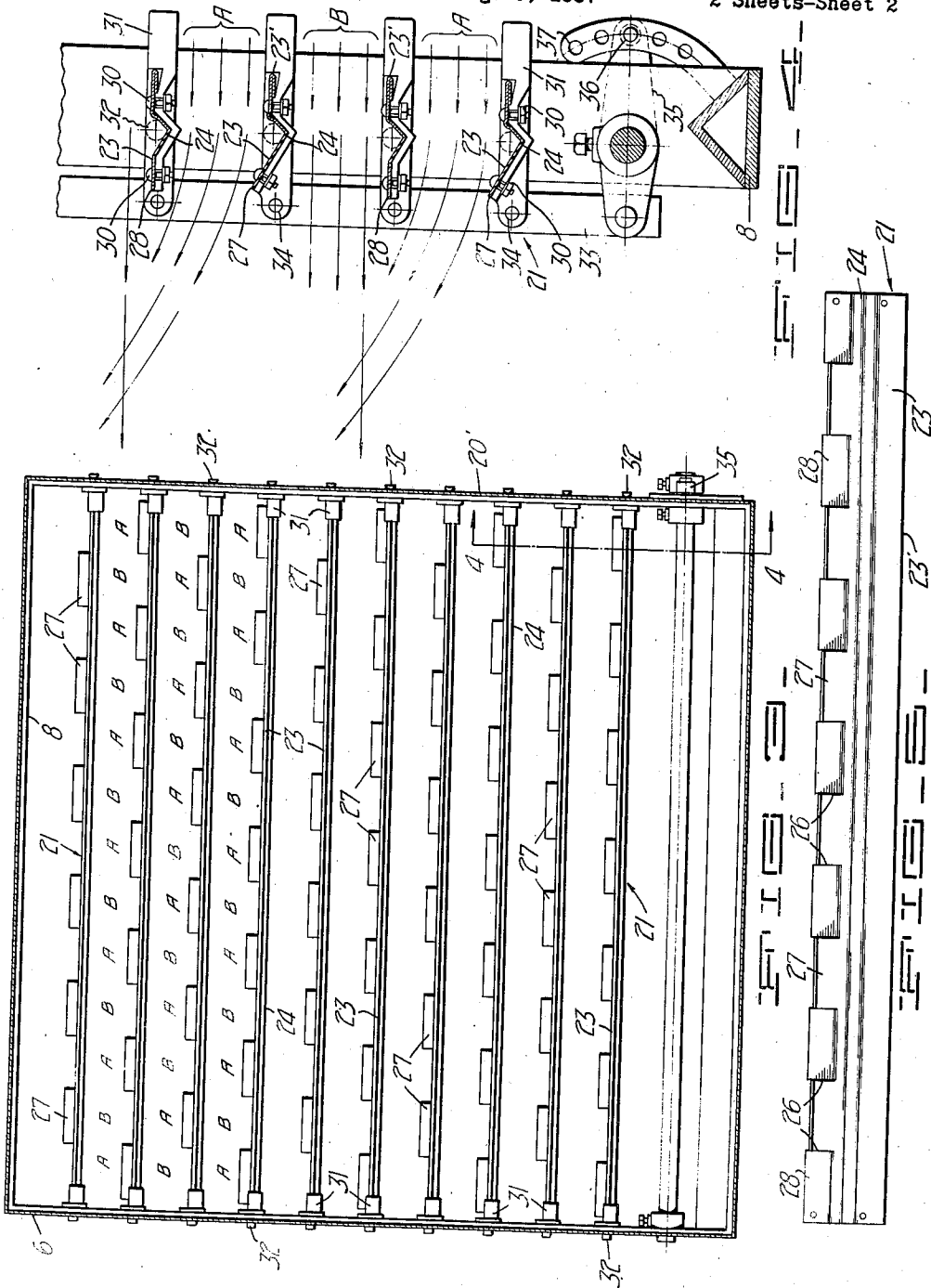
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RAISIN STEMMING APPARATUS

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Application August 9, 1937, Serial No. 158,194

3 Claims. (Cl. 146—55)

This invention relates to raisin cleaners generally and has for its objects the provision of means for loosening stems and foreign material from raisins and for effecting a separation of such stems etc. from the raisins in a manner whereby the raisins will be segregated from lighter particles of waste material, all while a large volume of raisins passes in a continuous flow through the apparatus. Another object is the provision of means for accomplishing the foregoing results without scratching or mutilation of the skins of the raisins and without injury to the raisins.

Other objects and advantages will appear in the drawings and specifications annexed hereto.

15 In the drawings, Fig. 1 is an elevational view of my invention.

Fig. 2 is a fragmentary sectional view taken along line 2—2 of Fig. 1.

20 Fig. 3 is an enlarged sectional view taken along the line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 3.

Fig. 5 is a plan view of one of the louvers shown in Figs. 3 and 4.

25 In the raisin industry the raisins reach the packing house with the dried stems and caps attached and before packing the raisins, the stems and caps must be removed. Heretofore, it has been customary to subject the raisins to a rubbing action between roughened metal surfaces, such as rollers etc., to loosen the stems, and the raisins have then been dropped through an air current to blow the stems away from the falling raisins into a waste compartment or hopper. However, the 30 action of the metal surfaces and stems on the raisins in the step of loosening the stems from the raisins results in breaking the stems in many cases, thus effecting only a partial separation of the stems, and in scratching and mutilating the raisins. Also the mere use of a straight air current for separation results in carrying a considerable number of raisins into the waste hopper, and in permitting some of the waste to pass into the raisin compartment, thus resulting in an imperfect segregation of the waste from the raisins, and necessitating several subsequent steps for effecting satisfactory segregation.

By the use of my invention, the aforesaid objections are substantially removed, and a highly efficient separation of the stems from the raisins and segregation of the raisins and stems is accomplished in one step without injury to the fruit.

55 In detail my apparatus for accomplishing the results above mentioned, comprises a frame 1

within one end of which is a compartment 2, having sides and a bottom, which bottom has an opening 3 therein with the bottom walls 4, 5, inclining diagonally upwardly from said openings, the upper edge of wall 4 connecting with the lower edge of the laterally directed opening at one end of a wind tunnel or conduit 6 and the upper edge of wall 5 connects with the upper edge of another section 7 of the bottom wall, which wall 7 extends divergently downwardly relative to wall 4 and terminates in a free lower edge at the end of compartment 2 opposite said conduit being substantially open so as to permit air ejected from the air conduit to freely pass out of said open end.

The end of conduit 6 opening into the compartment 2 is open and substantially rectangular in shape, and a rectangular, vertically disposed frame 8 is disposed at said open end, the sides of said frame being flat and disposed respectively in substantially the same plane as the sides of the conduit at said open end.

The conduit slopes slightly downwardly from its aforesaid open end to the opposite end thereof, which opposite end is connected to the air outlet of a conventional blower 9.

On main supporting frame 1 at a level above the frame 8 is a horizontally disposed relatively large diameter drum 10 extending between the sides of the frame 1, which drum is mounted on shaft 11 at its ends, said shaft ends being rotatably mounted in bearings 12 on the frame sides, said drum being rotated by any suitable means at a rate of speed of about 385 R. P. M., a pulley and belt 13 being indicated for driving the drum.

Said drum is provided with sheet metal outer sides 14, the outer surfaces of said sides being covered with a sheet of rubber 15 having grooves 16 formed therein extending longitudinally of the drum.

Below the drum and extending partially upwardly around the same, and following the cylindrical outer contour of the drum, is a concave comprising an arcuate metal plate 17 spaced from the drum about the thickness of the raisins R. The raisins are fed to the space between the plate 17 and drum by an endless conveyor 18 or other suitable means, the raisins dropping into said space adjacent the upper edge of the plate 17. The drum revolves in the direction of the arrow causing the raisins to be rolled slightly between the plate and corrugated outer surface of the drum and to be ejected from over the lower edge of the plate for falling onto the upper end of a downwardly inclined metal sheet 20 for di-

recting the raisins over said sheet. The lower edge of said sheet terminates adjacent the upper side of frame 8 and along the side of the frame facing compartment 2, thus the raisins passing over the metal sheet 20 will fall in substantially a single layer across the side of frame 8 facing toward compartment 2.

Within frame 8 extending between the lateral sides 20, 20' thereof are a plurality of horizontally extending louvers 21 vertically spaced apart.

Said louvers are shown more in detail in Figs. 3, 4 and are substantially the same as shown in my copending application Ser. No. 158,192, filed August 9, 1937, which louvers comprise horizontally extending strips of metal 23, each strip being formed centrally of its width to provide an elongated V-shaped central portion 24 extending longitudinally of each strip from end to end thereof. The margin 23' of each strip disposed between the upper edge of one of the sides of the V-shaped portion 25 and the side of the frame 8 facing the blower, is flat and is disposed parallel in opposed relation to the adjacent strip, while the margin of each strip extending outwardly from the upper edge of the other side of the V-shaped portion 24 is cut transversely of the length of the strip at equally spaced points 26. The sections 27 of the margin between said cuts are alternately disposed in the plane of the side of the V-shaped portion connecting therewith while the sections 28 at the sides of sections 27 are disposed in the plane of the continuous margin on the opposite side of the portion 24. The strips 23 are arranged in a vertical row and the sections 27, 28 of adjacent strips are arranged alternately directly over each other as indicated in Fig. 3. Thus air passing from the blower between the adjacent pairs of louvers will be deflected upwardly at spaced vertical points upon being deflected by the upwardly inclined upper face of sections 27, as best seen in Fig. 4, and will cross the air currents that pass straight through between the lower inclined surface of each section 27 and upper surface of section 28 directly therebelow.

Assuming the louvers are arranged with their margins 23' parallel to the directional flow of air from the blower in conduit 6, it will thus be seen that said air will be deflected upwardly upon striking the upper surfaces of sections 27, but the air passing between the louvers directly below each of the sections 27 will continue in substantially the same direction past the louvers. Since the sections 27, 28 are alternately disposed in adjacent pairs of louvers one over the other, and since the sections 27, 28 are alternately disposed in the direction of the length of the louvers, the air moving across the plane in which the raisins fall across one side of frame 8 has characteristics in the areas projected generally horizontally from the spaces designated A, (Fig. 3) that are different from the areas projected from spaces B, the pattern of the areas projected from spaces A and B resembling a checkerboard arrangement.

This checkerboard arrangement of the areas of different characteristics has the effect of causing a sort of "fluttering" action in the plane through which the raisins fall from the plate 20, and has been found to cause a substantially complete separation of the stems from the raisins, and to cause the stems to be carried beyond the bottom portions 5, 6 and onto or beyond bottom portion 7 of the compartment 2, while the raisins all fall onto portions 5, 6 and pass downwardly through opening 3 for being carried away from

below said opening by a conveyor (not shown) to a remote point for further handling of the raisins. The stems and lighter foreign material is similarly carried to some other point from bottom portion 7.

The louvers 21 respectively are secured at their ends as by bolts 30, to castings 31 which castings are formed to support the louvers at their ends, as seen in Fig. 4, the upper contour of the castings being shaped to correspond to the cross-sectional contour of the louvers on their lower sides. Each of the castings 31 is provided with a stub-shaft 32 rotatably extending through the side frame, and one of the ends of each of said castings on the side of frame 8 adjacent compartment 2 is pivotally mounted to a vertical bar 33 as at 34, so as to maintain the louvers in the same relative degree of inclination on shafts 32. A crank arm 35 connected to one of the stub shafts 32 outside the frame 8 is provided for turning so as to permit simultaneously changing the degree of inclination of the louvers as desired, the arm 35 being provided with a locking pin 36 adapted to be projected through an opening in the arm and into one of a row of holes 37 in the frame for holding the louvers in adjusted position.

The exact cause of the efficient and complete separation of stems from raisins due to the control of the air currents as described, is difficult to determine, but is believed to be due to effecting pressure and directional changes in the air currents at the alternate vertical and horizontal points at about where the raisins cross the air currents which causes a sufficient agitation of the air at said points to "float" the stems, and other particles of lighter weight than the raisins away from said points without materially changing the general downward movement of the raisins. The general directional movement of the raisins is indicated by the arrows 40, in Fig. 1, and the path of movement of the stems etc. is indicated by the arrows 41. It has been found, however, that the construction and arrangement of the louvers as described effects a substantially complete and highly efficient separation of the stems from the raisins and segregation thereof; whereas changes in the structure and arrangement fails to accomplish the desired results.

Having described my invention, I claim:

1. In apparatus of the character described, a raisin stemmer comprising: a generally cylindrical, elongated, horizontally disposed drum, the radially outwardly facing sides of which, relative to its horizontal axis, are of relatively resilient rubber grooved longitudinally of said axis; a concave comprising an imperforate, metal plate having a relatively smooth concave side facing said drum; said concave extending around substantially one quarter of the circumference of said drum; and means supporting said concave spaced from said drum a distance substantially that of the diameter of raisins to be fed between said concave and drum; and means for revolving said drum to cause movement of such raisins across said concave in direction of the circumferential movement of the cylindrical sides of the drum when the latter is so revolved.

2. In apparatus of the character described, a raisin stemmer comprising: a generally cylindrical, elongated, horizontally disposed drum, the radially outwardly facing sides of which, relative to its horizontal axis, are of relatively resilient rubber; a concave terminating at one of its edges below said drum and extending from said edge

around about one quarter of the circumference of said drum, and the edge thereof opposite said one of its edges terminating at one lateral side of the drum; means supporting said concave in a position with its concave side spaced from the convex side of said drum a distance about equal to the diameter of the raisins adapted to be fed over the upper edge of the concave that terminates at said one lateral side of the drum to be-
 10 tween said concave and drum; means for so feeding raisins over said upper edge; means for revolving said drum over its horizontal axis in direction for causing raisins so fed to said space to be moved downwardly over the concave for
 15 discharge from the lower edge of the latter that terminates below said drum; said concave being imperforate, and said means supporting said concave being arranged and adapted to mount said concave for movement of the entire concave
 20 toward and away from said drum or for movement of its said upper and lower edges toward or away from said drum independently of each other as may be desired.

3. In apparatus of the character described, a

raisin stemmer comprising: a generally cylindrical, elongated, horizontally disposed drum, the radially outwardly facing sides of which, relative to its horizontal axis, are of relatively resilient rubber grooved longitudinally of said axis; a
 5 concave comprising a metal plate, terminating at one of its edges below said drum and extending from said edge around about one quarter of the circumference of said drum, and the edge thereof
 10 opposite said one of its edges terminating at one lateral side of the drum, separate means supporting said concave spaced from said drum and also supporting said concave for movement to-
 15 ward and away from said drum at each of said edges independently of the other; means for feeding raisins over the said edge thereof that terminates at said one lateral side of the drum to the
 20 space between said concave and drum; and means for revolving said drum in direction to cause movement of the raisins so fed toward the edge of the concave that terminates below said drum for discharge from said space over the said latter edge of the concave.

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