W. I. WINCHESTER AND H. LAUGHLIN, JR.

JUICE EXTRACTOR.

APPLICATION FILED AUG. 26, 1919.

1,355,101.

Patented Oct. 5, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

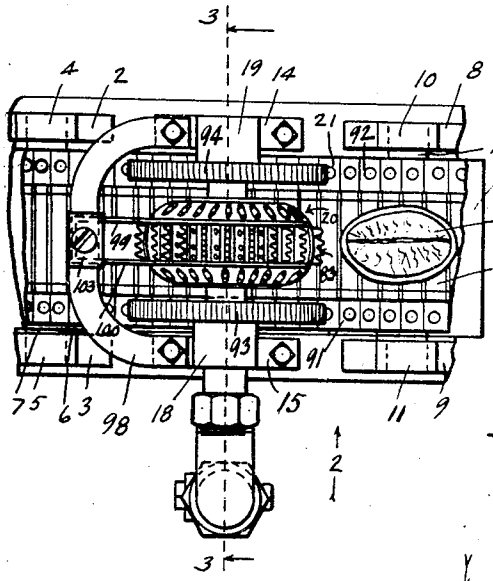


Fig. 2.

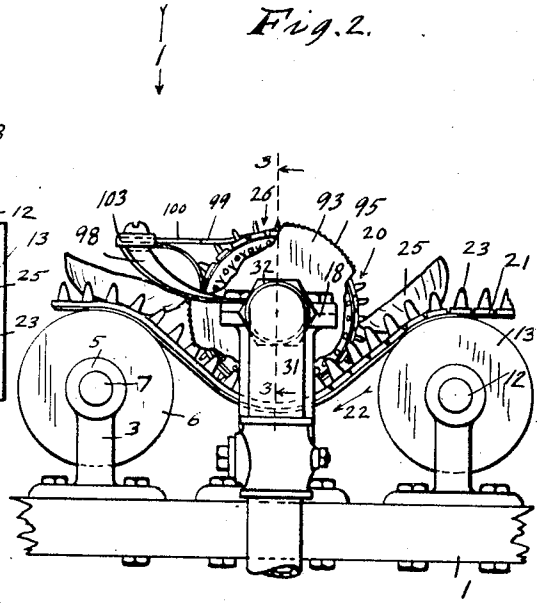
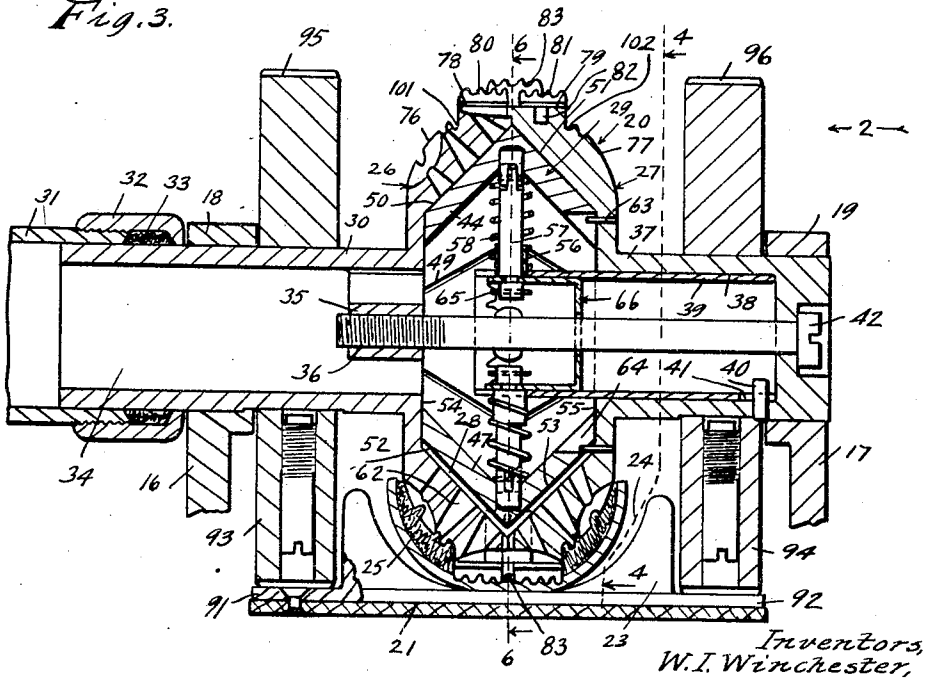


Fig. 3.



Inventors,
W. I. Winchester,
Homer Laughlin, Jr.,
by Hazard & Miller
Atty's.

W. I. WINCHESTER AND H. LAUGHLIN, JR.

JUICE EXTRACTOR.

APPLICATION FILED AUG. 26, 1919.

1,355,101.

Patented Oct. 5, 1920.

2 SHEETS—SHEET 2.

Fig. 4.

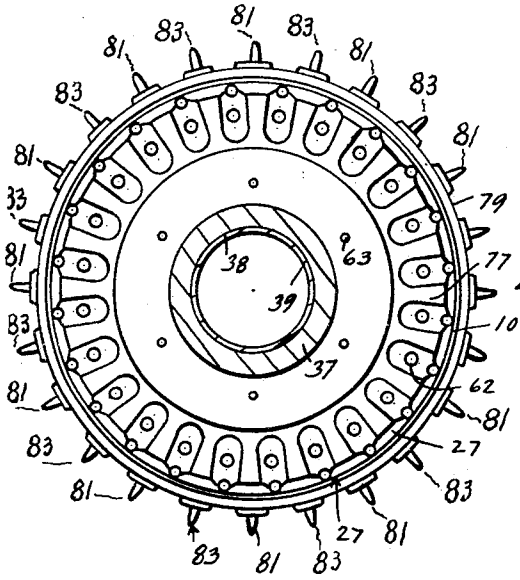



Fig. 5.

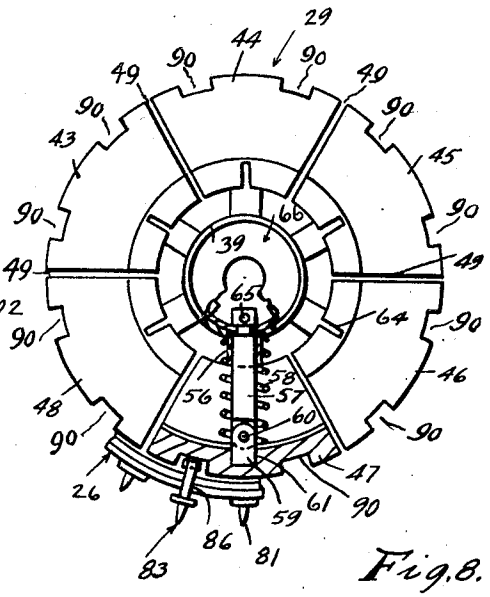
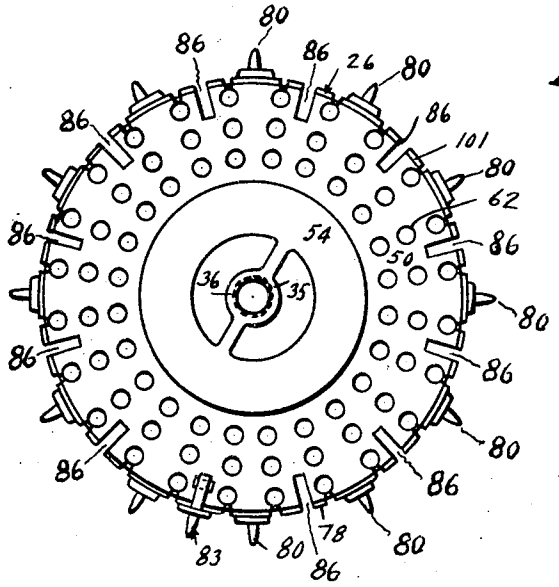



Fig. 8.

Fig. 6.



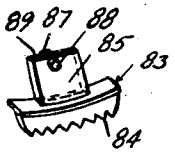
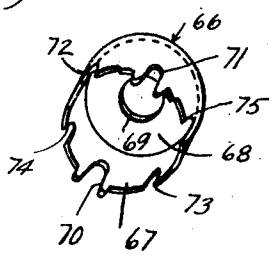




Fig. 7.




Inventors,
W. I. Winchester,
Homer Laughlin Jr.
by Hazard & Miller
Attys.

# UNITED STATES PATENT OFFICE.

WILLIAM I. WINCHESTER AND HOMER LAUGHLIN, JR., OF LOS ANGELES, CALIFORNIA.

## JUICE-EXTRACTOR.

1,355,101. Specification of Letters Patent. Patented Oct. 5, 1920.

Application filed August 26, 1919. Serial No. 320,000.

*To all whom it may concern:*

Be it known that we, WILLIAM ISAAC WINCHESTER and HOMER LAUGHLIN, Jr., citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Juice-Extractors, of which the following is a specification.

Our object is to make a juice extractor and our invention consists of the novel features herein shown, described and claimed.

Figure 1 is a fragmentary top plan view of a juice extractor embodying the principles of our invention, as seen looking in the direction indicated by the arrows 1 in Figs. 2 and 3.

Fig. 2 is a side elevation as seen looking in the direction indicated by the arrows 2 in Figs. 1 and 3.

Fig. 3 is a vertical cross sectional detail on the lines 3—3 of Figs. 1 and 2.

Fig. 4 is a cross sectional detail on the line 4—4 of Fig. 3, with parts omitted, the view being taken looking in the direction indicated by the arrows and showing an outside elevation of the housing.

Fig. 5 is a fragmentary detail of the automatic suction valve mechanism, with the larger part of the housing omitted.

Fig. 6 is a vertical cross section on the line 6—6 of Fig. 3 and on a plane parallel with Fig. 4 and showing the inner face of one of the housing members, with the other parts omitted.

Fig. 7 is a perspective of the assembling sleeve.

Fig. 8 is a perspective of one of the pressure operated jaws for operating the automatic suction valve.

A frame 1 may be a board or timber rigidly mounted in a horizontal plane. Pillow blocks 2 and 3 are fixed upon the frame 1 in transverse alinement. Bearings 4 and 5 are formed in the tops of the pillow blocks and a guide roller 6 is provided with a spindle 7, and the spindle 7 is mounted in the bearings 4 and 5. In a like manner pillow blocks 8 and 9 are fixed upon the frame 1 in transverse alinement. Bearings 10 and 11 are formed at the top of the pillow blocks 8 and 9, a spindle 12 is mounted in the bearings and a roller 13 is mounted upon the spindle between the bearings 10 and 11.

Attaching plates 14 and 15 are secured to the frame 1 between the rollers 6 and 13. Posts 16 and 17 extend upwardly from the bearing plates 14 and 15. Bearings 18 and 19 are formed at the upper ends of the posts 16 and 17, and a juice extractor housing 20 is mounted between the bearings 18 and 19.

A conveyer belt 21 runs over the rollers 13 and 6 in the direction indicated by the arrow 22, said belt being depressed between the rollers 13 and 6 to pass under the housing 20, the lower extremities of the housing 20 being substantially on a level with the centers of the rollers. The belt 21 is of flexible material such as canvas or leather, and has a continuous series of cleats 23, each of said cleats being curved or concaved from their upper edges and the cleats fitting together side by side so as to form a trough 24 to receive a half a lemon or orange 25 lying in the trough with its flat side upwardly.

The juice extractor housing 20 comprises members 26 and 27. The members 26 and 27 are circular in cross section or side elevation and cup-shaped in longitudinal section and fit together rim to rim to produce a chamber 28. An automatic suction valve 29 fits and operates in this chamber 28. The member 26 has a straight hollow axle 30 extending through the bearing 18 into the end of the suction pipe 31, and a stuffing box nut 32 fits upon the axle 30 and is screw seated on the end of the suction pipe 31, there being packing 33 around the axle 30 against the end of the pipe 31 to make a stuffing box connection between the suction pipe 31 and the axle 30, and a hollow 34 in the axle 30 leads from the chamber 28 in the housing 20. A bracket 35 is formed in the hollow 34 and a screw threaded bearing 36 is formed in the bracket at the axial center of the axle 30.

The member 27 has an axle 37 extending into the bearing 19 in line with the axle 30. A bore 38 extends into the axle 37 from the chamber 28, a supporting casing 39 fits tightly in the bore 38 and extends into the chamber 28. A pin 40 is driven tightly through the shell of the axle 37 and fits in a slot 41 formed through the end of the casing 39 to hold the casing from rotating.

A screw 42 is inserted through the end of the axle 37, through the casing 39, through the chamber 28 and screwed into the bearing 36 to hold the members 26 and 27 together, preferably the head of a screw 42 is recessed into the end of the axle 37.

The automatic suction valve 29 is preferably formed in six radial sections, 43, 44, 45, 46, 47 and 48, the sections being cut small upon the radial lines 49 so that the sections may move upon the radial lines in and out. The chamber 28 formed by the inner periphery of the members 26 and 27 have inclined meeting faces 50 and 51 meeting at right angles at the parting line between the members 26 and 27, and the automatic suction valve 29 have inclined faces 52 and 53 fitting the faces 50 and 51.

The chamber 28 has straight sides 54 and 55 at right angles to the axis parallel with each other and joining with the faces 50 and 51 and the automatic suction valve 29 has straight faces joining with the faces 52 and 53 to fit the straight faces 54 and 55.

Bearings 56 extend radially from the inner end of the casing 39. Valve stems 57 are slidingly mounted in these bearings. Expansive coil springs 58 are mounted upon the stems 57 and around the bearings 56 against the periphery of the casing 39. Heads 59 are connected to the outer ends of the stems 57 by pins 60, the direction of the pins 60 being parallel with the axis, and the heads 59 are fitted in sockets 61 formed in the members 43 to 48 inclusive through their inner sides and at their centers so that the sections may rock to a limited extent upon the pins 60. The outer ends of the springs 58 fit against the inner faces of the sections 43 to 48 inclusive, there being one spring and one stem for each section.

Perforations 62 are formed through the members 26 and 27 within the area covered by the faces 50 and 51, so that when the automatic suction valve 29 is in place the faces 52 and 53 of the valve cover the inner ends of the perforations 62. Pins 63 are driven tightly through the member 27 to engage in slots 64 in the sections 43 to 48 to limit the inward movement of the sections and to hold the automatic suction valve 29 from rotating within the housing. The stems 57 extend through the casing 39 and pins 65 are inserted through the inner ends of the stems 57 to hold the stems from moving outwardly under the tension of the springs 58.

In order to hold the suction valve 29 collapsed while the housing 20 is being assembled we employ an assembling sleeve 66. The assembling sleeve 66 fits slidingly in the casing 39 and consists of an annular band 67, and a head 68 formed integral with one edge of the band and having a central opening 69. Diametrically opposed notches 70 ad 71 are formed in the edge of the band 67 opposite the head 68, said notches being comparatively deep. A second pair of diametrically opposed notches 72 and 73 are formed in the edge of the band 67 a step shallower than the notches 70 and 71, and a third pair of diametrically opposed notches 74 and 75 are formed in the edge of the band 67 still another step shallower than the notches 70 and 71. Reading around the band, the notches 70, 74, 72, 71, 75 and 73 are evenly spaced apart and radial to the axis so as to divide the band into six equal parts.

After the suction valve 29 has been assembled, as in Fig. 5, and the assembling sleeve 66 placed in the casing 39, two opposite members, as 43 and 46, are pressed inwardly to their limits and the sleeve 66 moved longitudinally in the casing 39 to bring the stems of the members 43 and 46 into the notches 70 and 71, then the members 44 and 47 are compressed and the sleeve 66 moved another step to bring the stems of the members 44 and 47 into the notches 72 and 73, and then the two other members 45 and 48 are compressed and the sleeve moved another step to bring the stems of the members 45 and 48 into the notches 74 and 75. This will hold all of the members of the suction valve 29 collapsed while the casing 39 is being placed in the axle 37 and while the housing member 26 is being placed in position, and the screw 42 inserted to hold the housing members 26 and 27 together, then a tool may be inserted through the axle 30 to drive the sleeve 66 farther into the casing 39 and out of engagement with the valve stems 57.

The members 26 and 27 have curved side faces 76 and 77 through which the perforations 62 extend, and flat peripheral faces 78 and 79. Toothed ribs 80 and 81 fit crosswise against the peripheral faces 78 and 79, and shanks 82 extend from the ribs into the members 26 and 27, and the ribs and shanks may be soldered or otherwise rigidly secured to the members 26 and 27.

The ribs 80 and 81 are evenly spaced apart and extend all the way around the members 26 and 27. Suction valve actuating heads 83 are arranged alternately with the ribs 80 and 81 and have actuating teeth 84 extending outwardly, and shanks 85 extending through radial openings 86 in the housing 20, and stop lugs 87 and 88 extend laterally from the inner ends of the shanks 85. The inner end faces 89 of the shanks 85 engage in seats 90 formed in the periphery of the suction valve 29, there being preferably two seats 90 to each member, 43, 44, 45, 46, 47 and 48. The shanks 85 are long enough so that when the valve member 47, for instance, is expanded under the tension of the springs 58, as in Fig. 5, the head 83 is moved outwardly from the periphery of the housing and the teeth 84 extend beyond the planes of the teeth of the ribs 80 and 81, and so that when the teeth 84 press upon the peel of the fruit 25 and press the peel against the belt 21, the pressure will move the mem-

ber 47 inwardly and uncover the openings 62 and suction will draw the juice from the fruit through the openings.

The outer edges 91 and 92 of the belt 21 extend beyond the cleats 23, and wheels 93 and 94 are fixed upon the axles 30 and 37 and have corrugated faces 95 and 96 to run upon these edges 91 and 92 of the belt 21. so that the travel of the belt will rotate the wheels 93 and 94 to rotate the juice extractor housing 20, and cause the halves of the lemons or oranges to pass under the juice extractor housing 20, and as the operation proceeds the pressure upwardly on the teeth 84 will operate the suction valve members 43, 44, 45, 46, 47 and 48 successively to open the suction valve 29 at the point where the housing is in contact with the fruit and the tension of the springs 58 will hold the other members of the suction valve 29 closed. Suction is applied to the suction pipe 31 to carry away the juice extracted from the fruit.

A bar 98 is connected at its ends to the bearings 14 and 15 and bows around the rear side of the juice extractor housing 20 and wires 99 and 100 extend around the juice extractor housing 20 in grooves 101 and 102, and the ends of the wires are secured to the center of the bar 98 by a clamp 103, thereby making a stripper to prevent the fruit from traveling around with the juice extractor housing 20.

Various changes may be made without departing from the spirit of our invention as claimed.

We claim:

1. A juice extractor comprising a conveyer; a rotary extractor housing mounted above the conveyer and having a chamber and perforations leading to the chamber; means for causing suction from the chamber; and a suction valve mounted in the chamber to be operated by contact with the fruit upon the conveyer.

2. A juice extractor comprising the combination with a conveyer, forming a trough and adapted to receive a half a lemon or the like with the cut side upwardly; a rotary housing mounted above the conveyer and having a chamber and perforations leading to the chamber; and a suction valve mounted in the chamber to close the perforations and adapted to be opened by contact with the fruit.

3. In a juice extractor, a rotary housing having a chamber and having perforations leading to the chamber; a sectional valve mounted in the chamber and adapted to close the openings; actuating heads arranged radially in the housing; and having shanks slidingly mounted through the housing to engage the sections of the valve so that pressure upon the heads will move the sections to open the perforations.

4. A juice extractor comprising the combination with a conveyer forming a trough adapted to receive and carry half a lemon or the like; a rotary housing mounted to be operated by the conveyer and engage the cut side of the fruit, said rotary housing having a chamber and having perforations leading to the chamber; a sectional suction valve mounted in the chamber and adapted to close the perforations; and means whereby the contact of the housing with the fruit will open the perforations adjacent to the fruit and leave the other perforations closed.

In testimony whereof we have signed our names to this specification.

W. I. WINCHESTER.
HOMER LAUGHLIN, Jr.