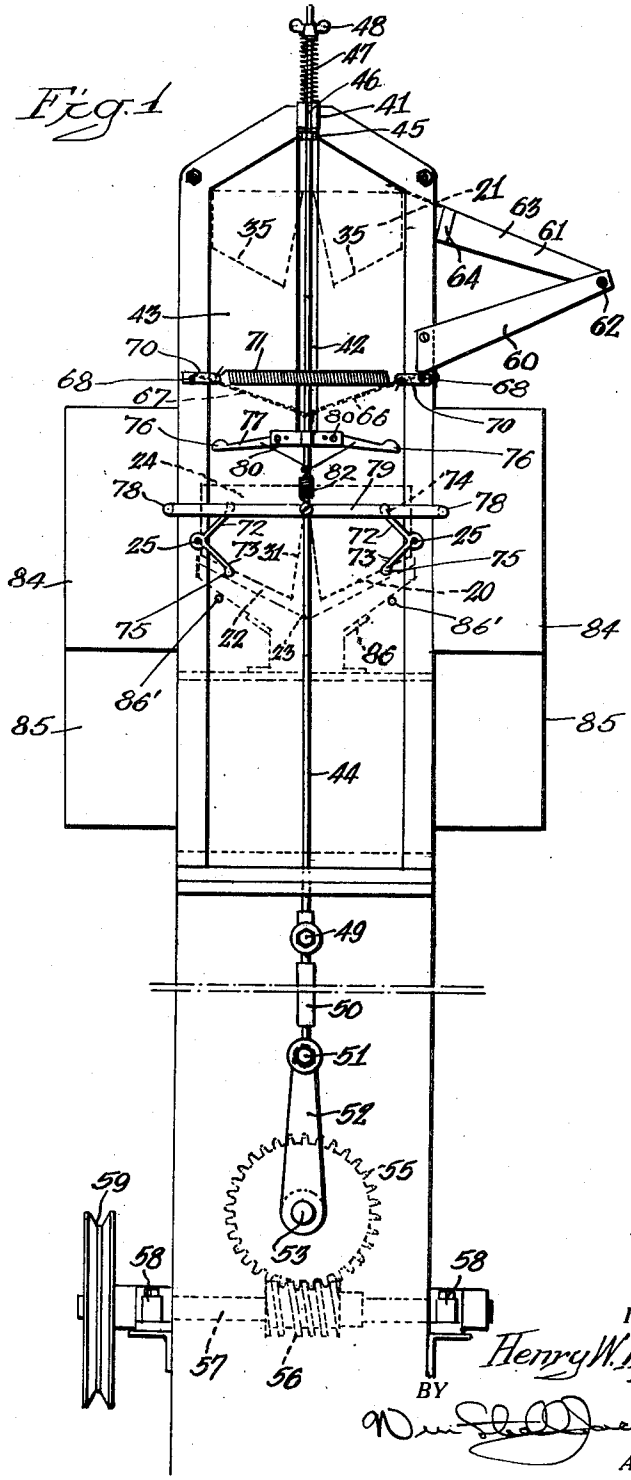
May 8, 1951 H. W. HAGERTY 2,552,171

JUICER

Filed July 10, 1947 6 Sheets-Sheet 1

Fig. 1



INVENTOR.
Henry W. Hagerty
BY
ATTORNEYS

May 8, 1951 H. W. HAGERTY 2,552,171

JUICER

Filed July 10, 1947 6 Sheets-Sheet 2

Fig. 2.

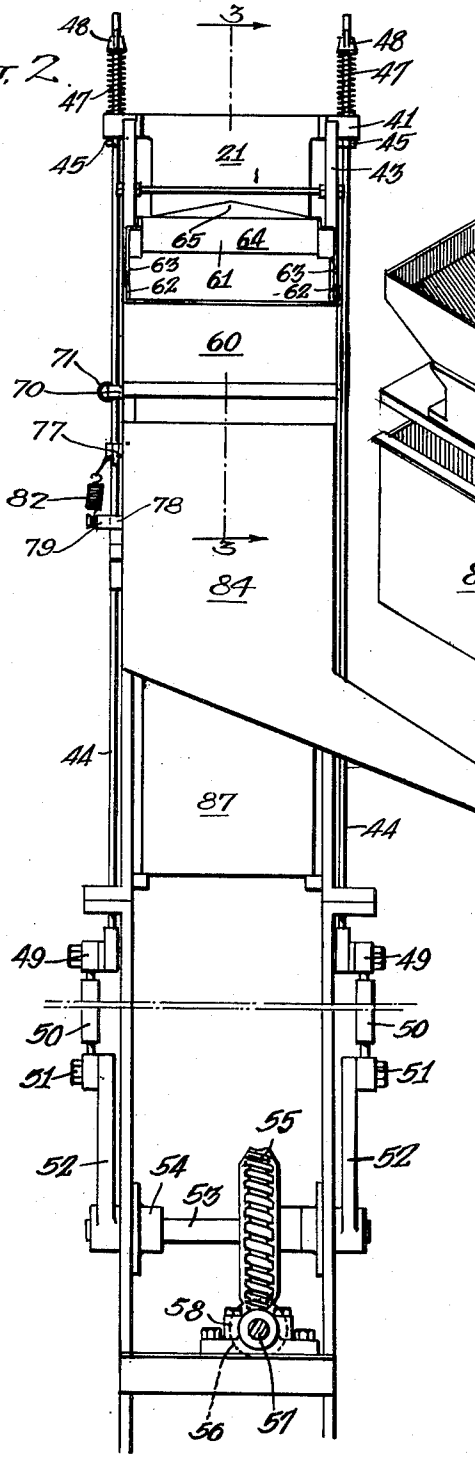
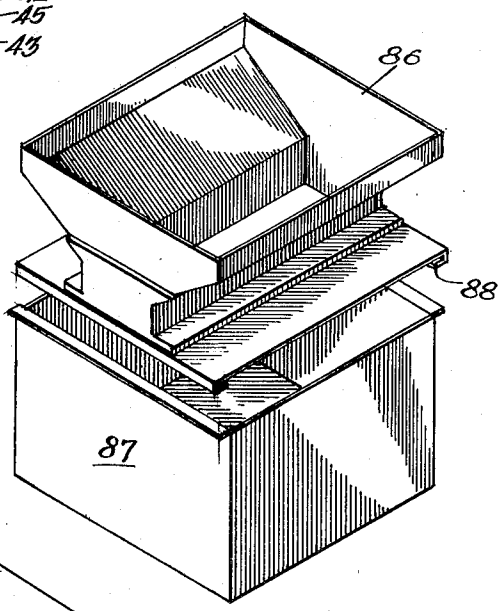


Fig. 8.



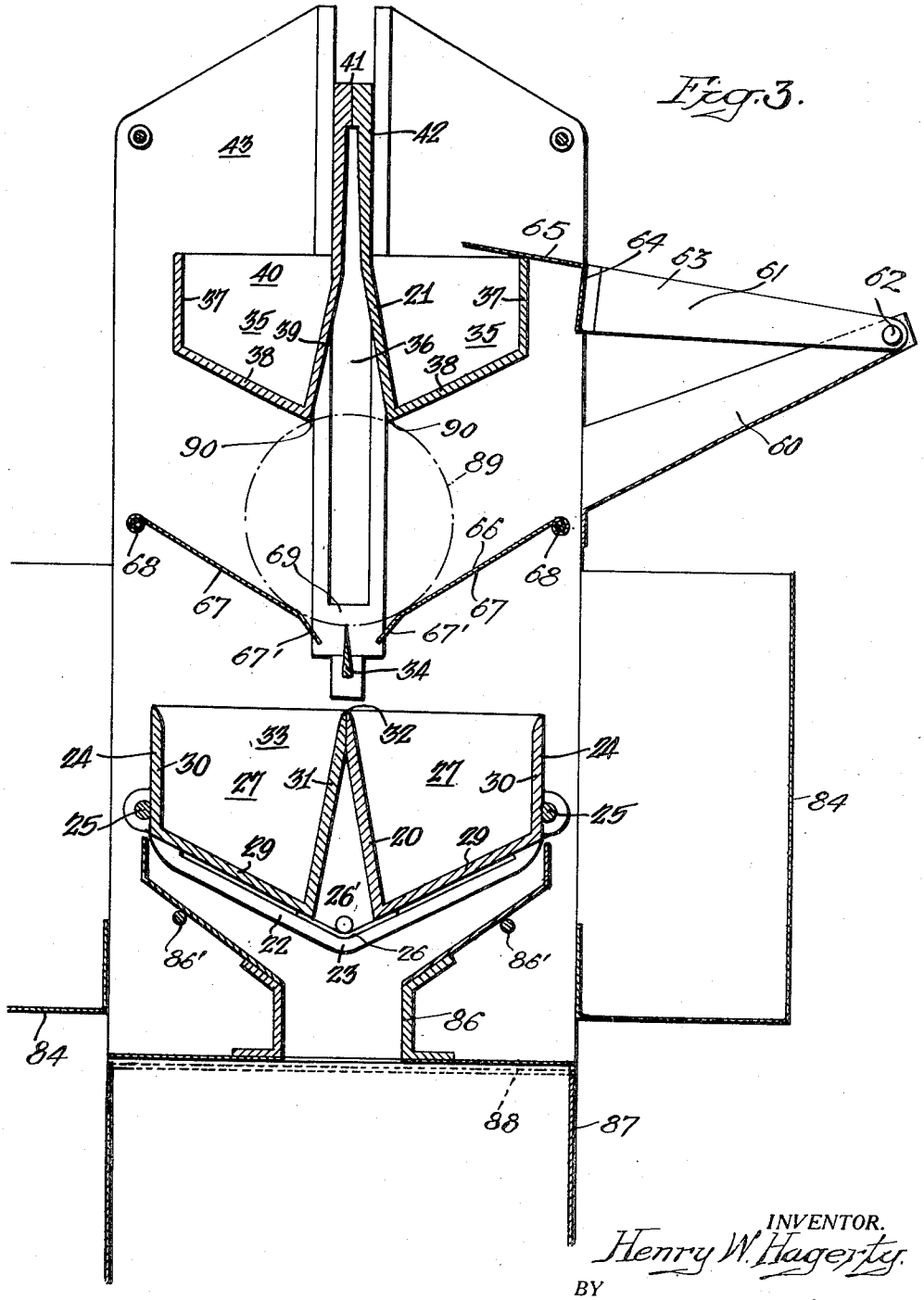
INVENTOR.
Henry W. Hagerty.
BY
ATTORNEYS

May 8, 1951 H. W. HAGERTY 2,552,171

JUICER

Filed July 10, 1947 6 Sheets-Sheet 3

Fig. 3.



INVENTOR.
Henry W. Hagerty.

BY

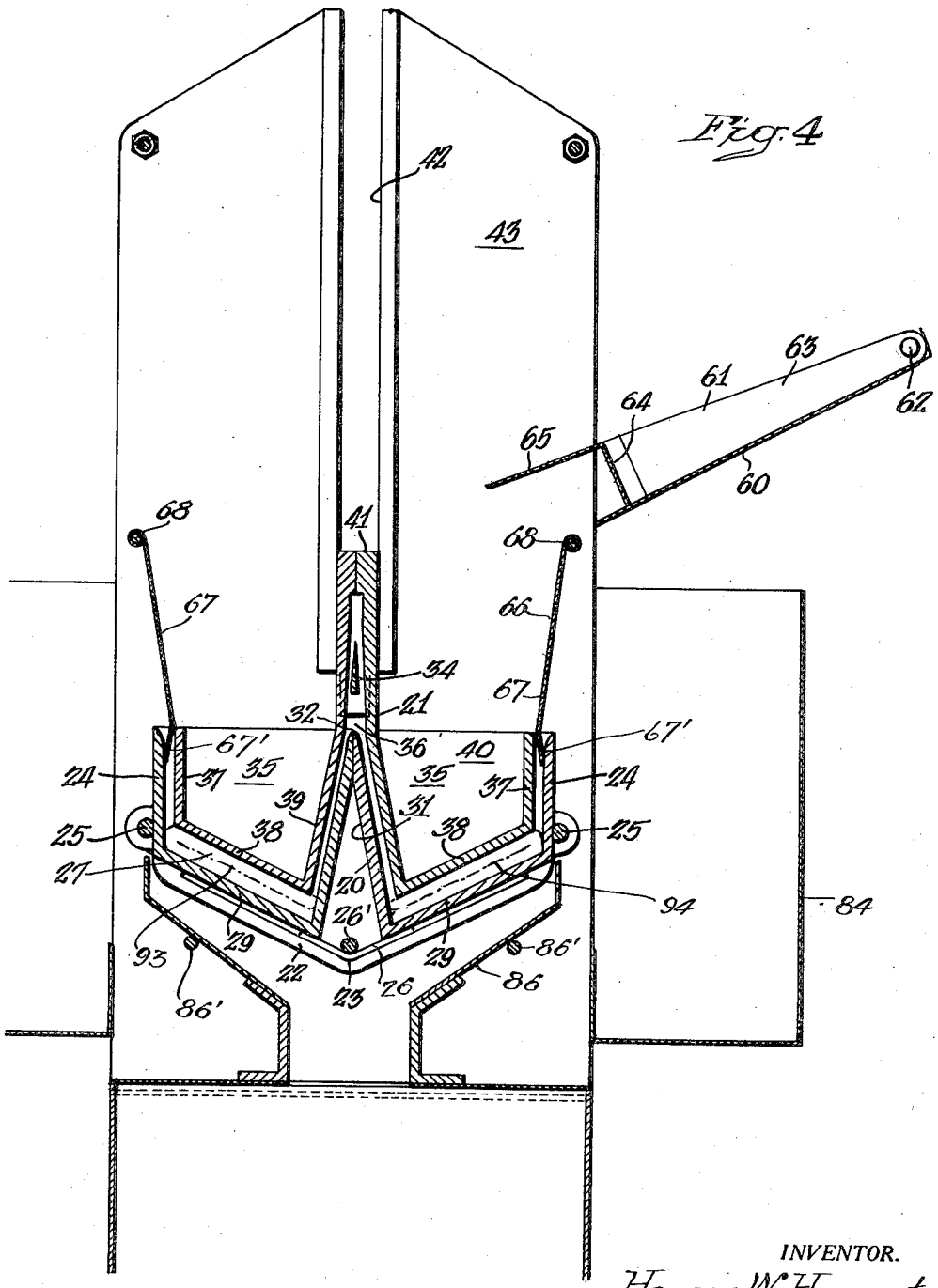
ATTORNEYS

May 8, 1951 H. W. HAGERTY 2,552,171

JUICER

Filed July 10, 1947 6 Sheets-Sheet 4

Fig. 4



INVENTOR.

Henry W. Hagerty.

BY

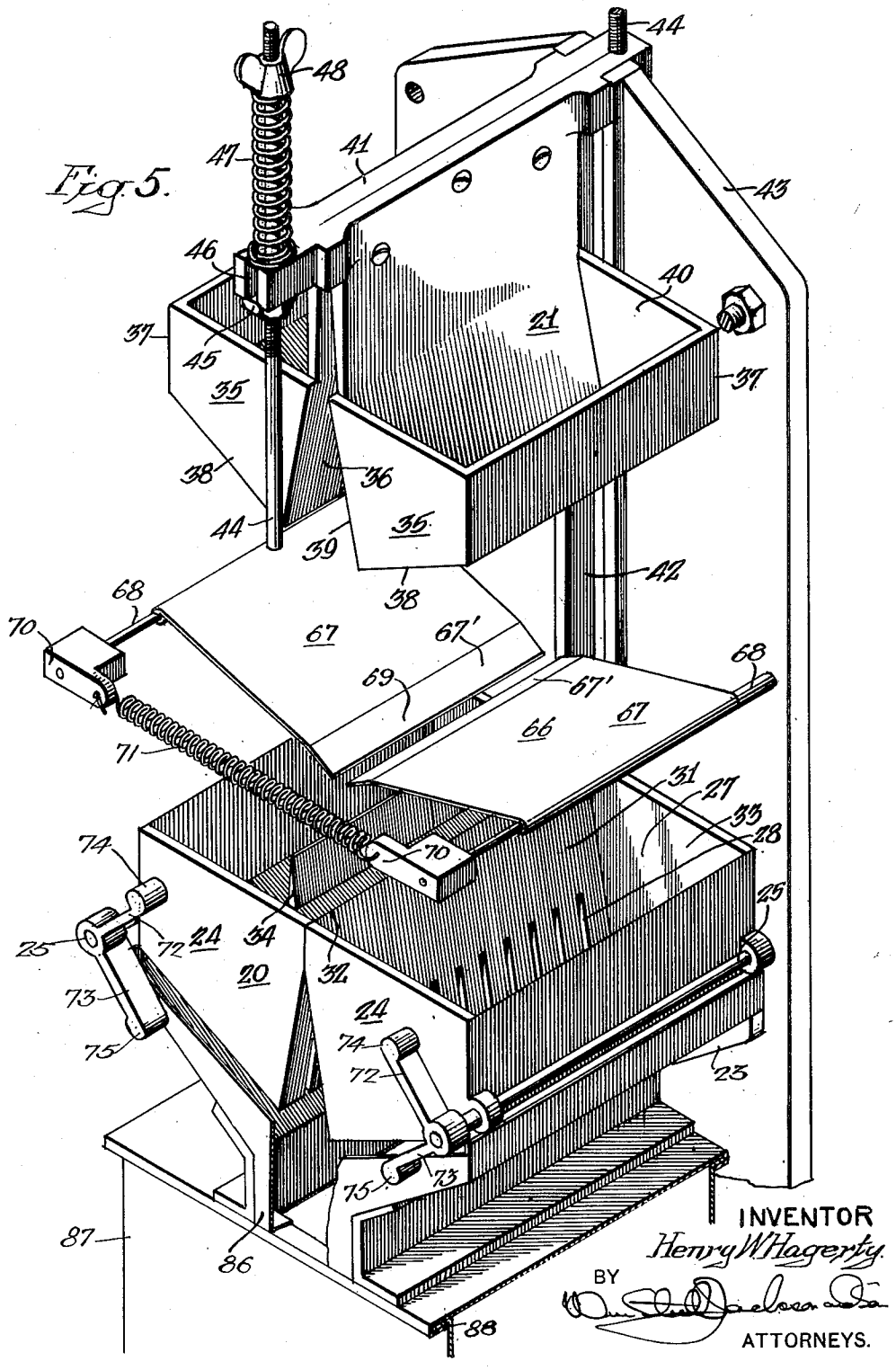
ATTORNEYS

May 8, 1951 H. W. HAGERTY 2,552,171

JUICER

Filed July 10, 1947 6 Sheets-Sheet 5

Fig. 5.



INVENTOR
Henry W. Hagerty.
BY
ATTORNEYS.

May 8, 1951 H. W. HAGERTY 2,552,171

JUICER

Filed July 10, 1947 6 Sheets-Sheet 6

Fig. 6.

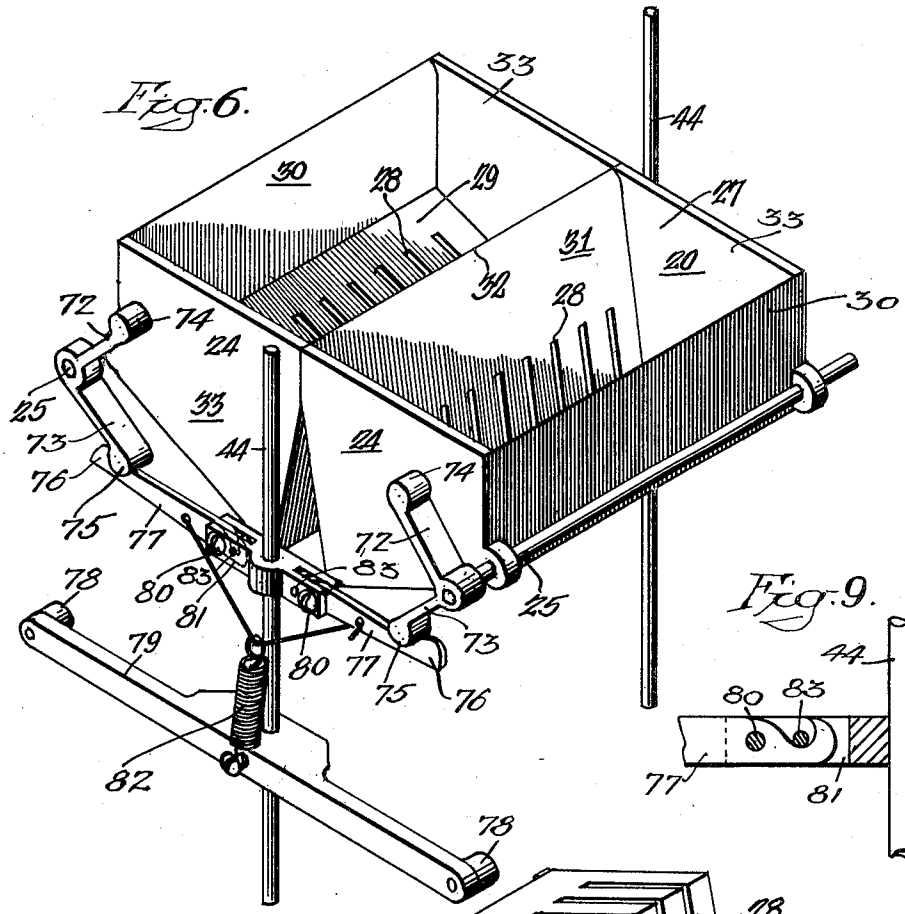
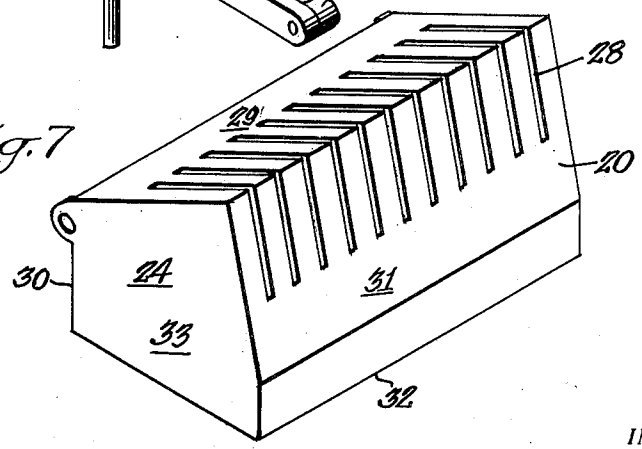


Fig. 9.

Fig. 7



INVENTOR.

Henry W. Hagerty.

BY

Wm. Schroeder Jackson and Son

ATTORNEYS

Patented May 8, 1951

2,552,171

UNITED STATES PATENT OFFICE

2,552,171

JUICER

Henry W. Hagerty, Miami, Fla.

Application July 10, 1947, Serial No. 760,170

3 Claims. (Cl. 100—40)

1

The present invention relates to juicers for fruit, particularly of the character of oranges, grapefruit, lemons, and other citrus fruit.

A purpose of the invention is to simplify the construction of juicers, increase the effectiveness and render the operation automatic or semi-automatic.

A further purpose in a juicer is to support the fruit between press elements and desirably in line with a knife and separator by a platform which is conveniently provided with a locating pocket for the fruit, which is preferably resiliently supported and most desirably divided and resiliently pivotally supported at both sides, and which is deflected from the path of the movable press element or head against the resilient bias in closing the press.

A further purpose is to admit fruit from a trough into the press and preferably onto the platform by a gate suitably pivoted and interconnected for movement with the head.

A further purpose is to deflect receptors forming portions of the press bottom outwardly for dumping of rind by cam interconnection with a press rod which reciprocates the head.

A further purpose is to divide the receptors making up the press bottom by a separator below and in line with a knife, to divide the head and shape it to straddle the knife in line with the separator and engage the receptors and to deflect the platform from the path of the head, desirably making the bottom portions of the head of wedge shape.

A further purpose is to move the bifurcated head into a position straddling the knife and the separator, and entering the receptors, the wedge on the bottom of the head cooperating with a wedge on the bottoms of the receptors, and the slot on the head mating with the wedge on the separator.

Further purposes appear in the specifications and in the claims.

In the drawings the applicant has chosen to illustrate one only of the numerous embodiments in which the invention may appear, choosing the form shown from the standpoints of convenience in illustration, satisfactory operation, and clear demonstration of the principles involved.

Figure 1 is partly diagrammatic fragmentary side elevation of the juicer of the present invention.

Figure 2 is a partly diagrammatic fragmentary front elevation of the structure of Figure 1.

Figures 3 and 4 are enlarged fragmentary sections on the line 3—3 of Figure 2, showing steps in the operation of the device.

Figure 5 is a fragmentary perspective of the operating parts of the press.

Figure 6 is a fragmentary perspective showing the cams on the press rod.

2

Figure 7 is an inverted perspective of one of the receptors.

Figure 8 is a fragmentary perspective of the juice collection mechanism.

Figure 9 is a fragmentary section illustrating the hinge construction for permitting the cam to avoid operation on the down stroke.

Describing in illustration but not in limitation and referring to the drawings:

In the prior art, juicers for fruit have commonly required considerable labor by the operator, and where they have been automatic or semi-automatic, have been subject to the difficulty of frequent stoppage or clogging, or have involved considerable complexity and expense to construct, or high maintenance and cleaning cost.

By the present invention, the operations are performed with very little labor by the operator, the device is extremely positive and efficient, is not likely to clog, can be constructed simply and comparatively cheaply without the necessity for expensive machining of many complex parts, and can be cheaply cleaned and maintained.

The device of the invention comprises a press which includes a press bottom 20 and a press head 21. The press bottom comprises a stationary rib 22 which slopes in both directions toward the center 23 and receives receptors or press cups 24 pivotally supported at 25 on the outside of each receptor. A resilient pad 26 of rubber or the like extends over the rib and is held by a screw 26'.

The receptors are suitably perforated to permit juice from the cup-like interiors 27 of the receptors to pass through slots 28 in the bottom walls of the receptors. The receptors suitably have oppositely sloping bottom walls 29, outside walls 30, inside separator walls 31 which converge at a separator point 32 to form a wedge-shaped separator, and end walls 33. The separator point is centrally upwardly directed and extends laterally from side to side of the juicer in line with a centrally upwardly directed knife 34 immediately above the separator and extending across the press.

Cooperating with the press bottom, the head 21 is bifurcated or divided into sections 35 separated by a vertical slot 36 which is capable of straddling the knife when the press closes. Each section includes an outside wall 37 which is inside of the line of the outside wall 30 on the receptor and is capable of entering the receptor as shown in Figure 4. A bottom wall 38 on each head section is parallel to the slope of the corresponding bottom wall 29 on the receptor, the two bottom walls oppositely sloping in wedge formation for ease in depressing the platform, to be described, and exerting wedge pressure on the fruit. Likewise an inside wall

39 on each section conforms to the slope of the separator wall 31, producing an upwardly converging shape in the lower portion of slot 36. The end wall 40 is likewise parallel to the corresponding end wall of the receptor and aligned so that the head can fit inside the receptor, as shown in Figure 4.

The head is mounted on a crosshead 41 which moves up and down the crosshead guides 42 in the opposite sides of the frame 43.

The crosshead is reciprocated by press rods 44 (one on either side) which carry adjustable abutments or nuts 45 below the engagement in slots 46 of the crosshead, and are resiliently pressed from above against the crosshead by springs 47 adjustably tightened by thumb nuts 48.

At their lower ends the press rods 44 are pivotally connected at 49 on each side of the machine to connecting rods 50 making pivotal connection at 51 with cranks 52 on a crankshaft 53 turning in bearings 54 under the action of wormwheel 55 driven by worm 56 on shaft 57 in bearings 58 from pulley 59 connected to any suitable source of power such as an electrical motor.

Fruit is inserted under manual or automatic feed in trough 60 at the front of the machine and the insertion of the fruit is controlled by gate 61 which is pivotally connected to the trough near the outside at 62 on each side and is preferably of yoke formation, having side 63, a gate bar 64 and an operating projection 65 which is raised and permitted to lower by the head.

Located in the space between the head and the press bottom and above the knife is a feed platform 66 suitably divided at the lateral center in line with the knife into two portions 67 pivoted at the outside at 68 in front and rear of the path of the head and normally sloping downward toward the center line to form a center pocket 69. The pivots (shafts) of the platform sections carry at their ends biasing levers 70 which are connected by a tension spring 71 tending to cause the platform sections to return to the position of Figure 5, for example, when they have been downwardly deflected by the head and the head is raised to permit such return. The inner ends of the platform portions are downwardly bent at 67' to fit inside the receptors in the lowermost position as shown in Figure 4.

Cams are provided on the press rod and the receptor pivots to dump the receptors and return them to their pressing position.

As best seen in Figures 1, 5 and 6, each receptor pivot 25 has at one end radial cam arms 72 and 73 substantially at right angle to one another and diagonally inwardly directed as shown when the receptors are in the pressing position. On the ends of the arms are cams 74 and 75 respectively. When the head has reached its lowermost position and begins its retraction, cams 76 on cam arms 77 carried by one of the press rods engage cams 75 carried by cam arm 73 on the receptor pivots, thus deflecting the receptors outwardly with respect to one another and about their pivots 25 to dumping position. At the same time cams 74 on cam arms 72 on the receptor pivots are moved outwardly and as the press rods continue their upward travel, cams 74 are engaged by cam abutments 78 on cam arm 79 mounted on the press rod at a suitable distance below cam arm 77. This latter cam action returns the receptors to the press position. During the downward stroke the cams are inoperative, cam arms 77 being pivoted at 80 on an arm 81 mounted transversely on the press rod and permitting the arms 77 to swing freely upwardly without operative action when they engage the cams on the down stroke. A tension spring 82 from a suitable abutment holds the arms 77 in their outwardly extending position and suitable stop engagement at 83 at the hinge prevents the arms from swinging downward during the operative action. The cams 78 do not engage on the down stroke as the cams 74 and 75 are not in their path on this stroke.

The rinds which are thrown out of the receptors when the receptors are deflected into dumping position are received by troughs 84 (Figure 4), and discharge through chutes 85 at each side. The juice produced and passing through the slots 28 is collected by a funnel 86 (best seen in Figure 8) and stored in a tank 87 interconnected by slot-and-flange connection 88. The funnel 86 is supported by removable cross rods 86'. The chutes 85 may be removed to remove the tank 87.

In operation, with the press head up above the position of Figure 3, the gate is raised by the operating projection 65 on the head, and an orange or other fruit 89, hand or mechanically fed into the trough 60, enters the pocket 69 of the platform 66, resting centrally disposed above the knife 34. The head then moves down under the action of pulley 59, shaft 57, gears 56 and 55, cranks 52, connecting rods 50 and press rods 44 acting on crosshead 41, and the fruit 89 is contacted by the bifurcated head sections at 90 (Figure 3), forcing the fruit down against the knife and depressing the platform against the action of its spring as shown.

Further downward travel of the head forces the fruit down over the knife, cutting into two sections 91 and 92, which are separated by the wedge separator 31 and deposited in the receptors. The platform is forced further downward so that its ends 67' enter the receptors.

With further downward travel of the head, the fruit sections 91 and 92 are squeezed between the wedge bottom surfaces of the head and the wedge bottom surfaces of the receptors, while held against the separator walls 31, the juice draining through the slots 28. The rinds 93 and 94 are ready for removal from the receptors. The gate 61 has moved downward, and another fruit can be fed in the trough 60, but is held by the gate bar 64 against entering the press until the next cycle.

The press rods now begin their up stroke, raising the head permitting the platforms to raise under spring action, raising the gate, and bringing the cams 76 into contact with the cams 75 to swing the receptors into their dumping position. The rinds are thrown out into the troughs 84 and the chutes 85. With further upward travel of the press rods, the cams 78 contact the cams 74 and return the receptors to the position at the beginning of the cycle. In the meantime, the juice has collected in the tank 87.

It will be evident that the action of the head, gate, platform, knife, separator and receptors is automatic, and the device will operate for a long time without maintenance, merely requiring feeding of fruit, removal of juice and rinds and cleaning at appropriate intervals.

In view of my invention and disclosure varia-

tions and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of my invention without copying the structure shown, and, I, therefore, claim all such insofar as they fall within the reasonable spirit and scope of my claims.

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

1. In a juicer, a press bottom, pivotal mounting means for dumping the press bottom, a press head cooperating with the press bottom when the latter is in pressing position, a reciprocating press rod connected to the press head, a cam on the press rod for dumping the press bottom as the press head begins to rise and having an inactive position as the press head is lowered, a cooperating cam on the press bottom pivotal mounting means for engagement by the cam on the press rod to dump the press bottom, a second cam on the press rod for returning the press bottom to its pressing position with further upward movement of the press rod, and a second cooperating cam on the press bottom pivotal mounting means for returning the press bottom to its pressing position with further movement of the press head on its retractive stroke, the second cam on the press rod passing the cams on the press bottom pivotal mounting means during lowering of the press head.

2. In a juicer, a press bottom comprising a pair of pivoted receptors, each provided with a pivot and having an upwardly directed separator, a knife above and in line with the separators, a press head divided and shaped to straddle the knife and to cooperate with the receptors, a press rod reciprocating and manipulating the press head, a pair of cam surfaces on the pivot of each receptor, pivotally supported cam surfaces on the press rod which on the upward stroke of the press rod engage one of the cams on each receptor pivot and deflect the separator for dumping and which on the down stroke pivotally yield and pass the receptor cams without effect, and a second pair of cams on the press rod below the first which engage the other cams on the receptor pivots toward the end of the up-stroke and which pass the cams on the receptor pivots without effect on the down stroke.

3. In a juicer, a pair of separated press bottoms having perforated side and bottom walls and having adjoining walls of the respective press bottoms meeting at the top and sloping away from one another to form a wedge-shaped portion partly from one press bottom and partly from the other press bottom, pivotal mounting means for each press bottom at the outside thereof, a knife positioned above the wedge-shaped portion formed by the adjoining walls, a bifurcated head having a slot which in pressing position bridges the knife and having head portions which cooperate with each of the press bottoms, press mechanism for moving the head, and pivotal retracting means for swinging the press bottoms about their pivotal mounting means into dumping position when the head is out of pressing position and for returning the press bottoms, before the head returns to pressing position, to form the wedge-shaped portion by the meeting walls of the press bottoms.

HENRY W. HAGERTY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
420,868	Dunlap	Feb. 4, 1890
434,327	Dunlap	Aug. 12, 1890
752,579	McLaren	Feb. 16, 1904
765,005	Gregory	July 12, 1904
1,840,182	Bailey	Jan. 5, 1932
1,888,528	Faulds	Nov. 22, 1932
2,067,555	Walker	Jan. 12, 1937
2,311,565	Nelson	Feb. 16, 1943