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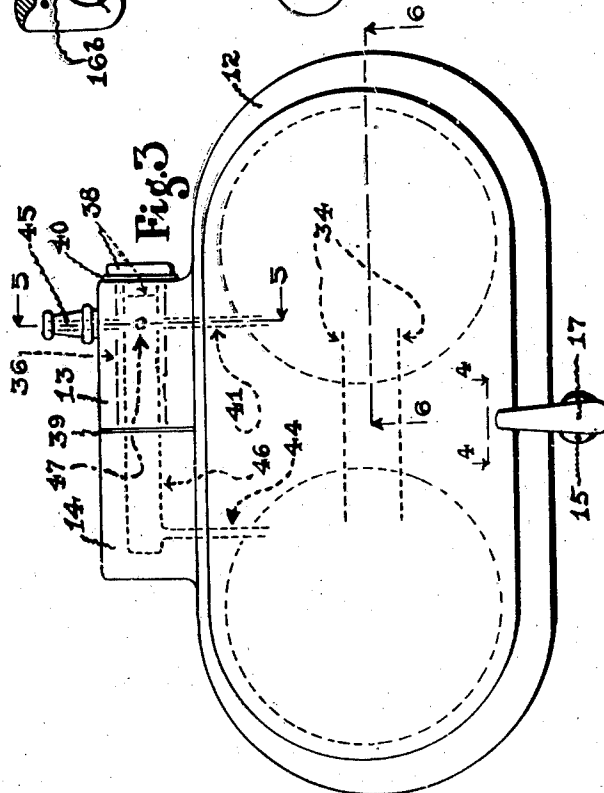
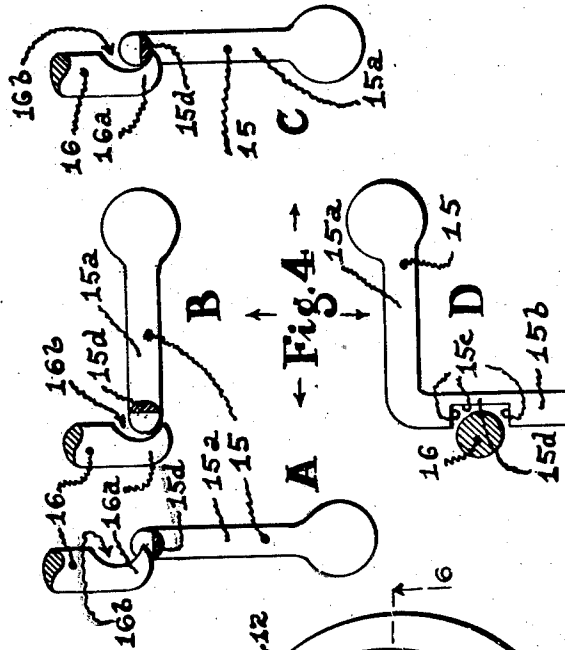
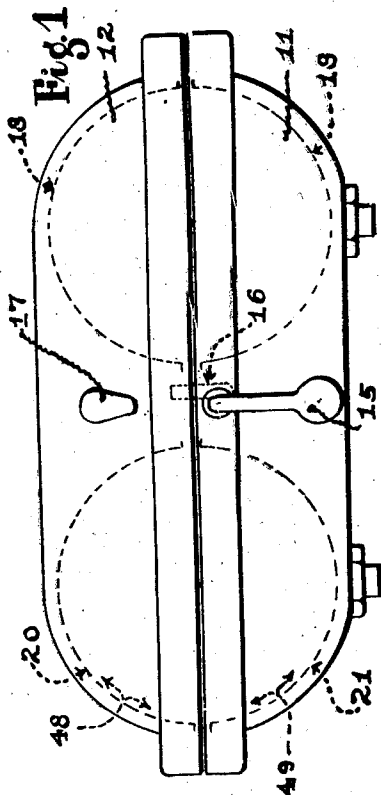
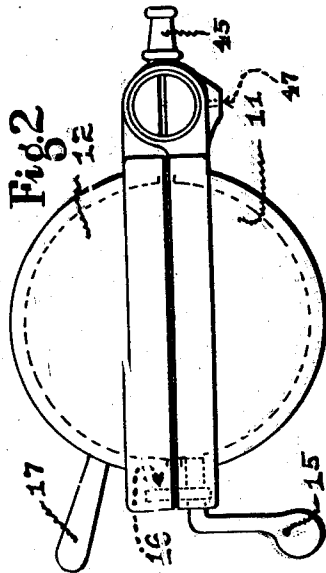
P. J. McCARTHY

2,414,053

JUICER

Filed Dec. 18, 1941

2 Sheets-Sheet 1



INVENTOR *PATRICK JOSEPH McCARTHY*
BY *Nicholas Ripper*
REGISTERED PATENT AGENT

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2 Sheets-Sheet 2

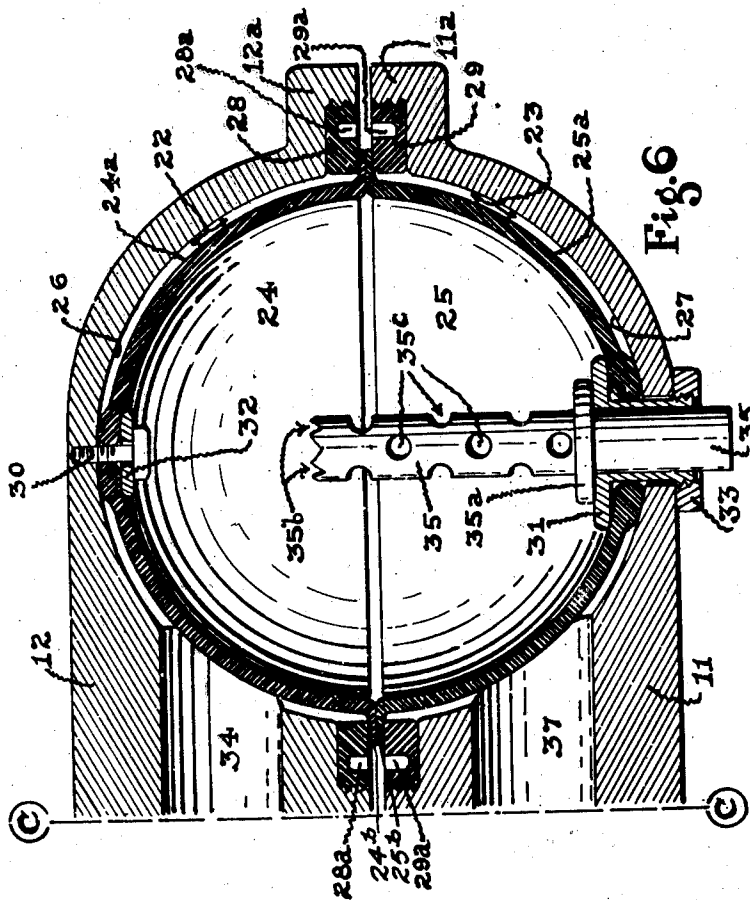


Fig. 6

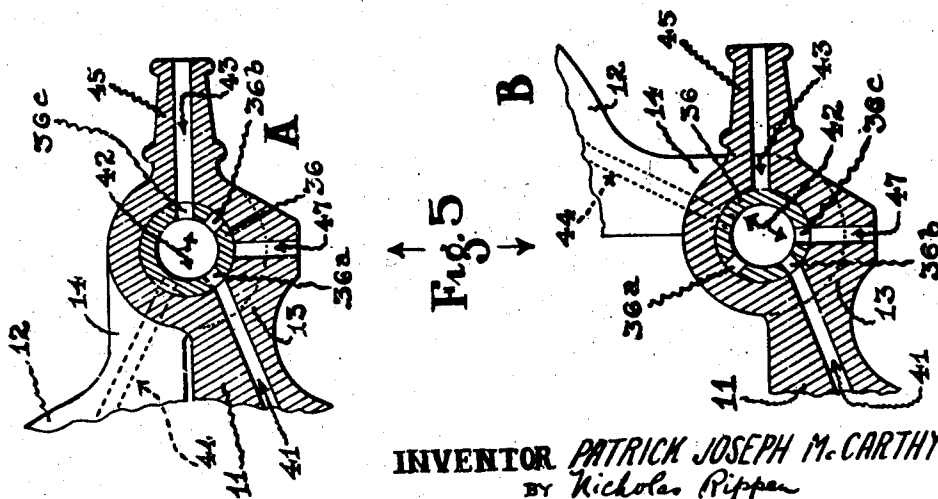


Fig. 5

INVENTOR *PATRICK JOSEPH M. CARTHY*
BY *Nicholas Rippen*
REGISTERED PATENT AGENT

UNITED STATES PATENT OFFICE

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JUICER

Patrick Joseph McCarthy, Los Angeles, Calif.

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2 Claims. (Cl. 100—50)

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My invention relates to automatic and semi-automatic apparatus for extracting juice from fruit and, although not restricted to home use, is particularly well adapted thereto.

A principal object is the replacement of the usual source of power in automatic devices, electric power, with the much less troublesome and costly source, the water pressure that is available at faucets in the home and elsewhere.

Another important object is the provision of a device for the purpose named that requires neither halving or other segmenting nor removal of the rind.

An additional object is a design that is equally adapted to single unit and plural unit devices.

Further objects are economy and simplicity of construction and maintenance and accessibility for quick and thorough cleaning.

Other objects and advantages will disclose themselves in the course of examining this description and the hereto accompanying drawings presenting one of many possible examples of the invention. This one, a two-unit type, has been selected solely to illustrate the principles and of course does not at all indicate the full scope thereof, whose actual limits are set forth in the hereto appended claims. Referring to said drawings—

Figure 1 is a front elevation view of said two-unit type of juicer.

Figure 2 is a side or end elevation view of the same.

Figure 3 is a plan view of the same as seen from above.

Figure 4 is a compound view of certain parts therein as seen in the plane 4—4 in Figure 3 to show how they function.

Figure 5 is a partly sectional, fragmentary view of certain parts as seen in the plane 5—5 in Figure 3.

Figure 6 is a vertical, sectional, one-half view of the same embodiment, as seen in the plane 6—6 in Figure 3.

This juicer comprises a lower or primary casing section 11 and an upper or secondary casing section 12, hingedly secured to one another by hinge assembly 13—14 and lockable together by catch assembly 15—16, a handle 17 being provided on section 12. Sections 11 and 12 are hollow, their walls being rigid and of metal, plastic or other suitable material, and referred to herein respectively as primary rigid wall and secondary rigid wall.

Primary section 11 contains the roughly hemispherically shaped, primary recesses or chambers 19 and 21. Secondary section 12 contains sim-

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ilarly shaped, secondary recesses or chambers 18 and 20, chambers 18 and 19 being opposed to, communicating with and adjacent one another, chambers 20 and 21 being similarly disposed and related.

Respectively disposed within chambers 19 and 18 and spaced from the respective defining surfaces 27 and 26 thereof by primary varying space 23 and secondary varying space 22, are primary hood 25, its primary flexible wall being indicated by 25a, and secondary hood 24, its secondary flexible wall being indicated by 24a.

Hoods 25 and 24 are adapted to collectively engage or embrace a fruit. The hoods are separately and collectively referred to herein also as "contractible fruit-engaging elements," the word "elements" appearing in the singular and plural forms.

The flexible walls are preferably of rubber or rubberlike material, although they may be of impermeable, elastic or even suitably folded non-elastic cloth or other flexible substance, or the walls may be of permeable material in combination with impermeable material, such as thin rubber sheet. The respective flanges or marginal portions 25b and 24b of hoods 25 and 24 are secured, by vulcanization or otherwise, to hard rubber rings 29 and 28, which are threaded for screwing into annular portions 11a and 12a of sections 11 and 12 respectively, holes 29a and 28a being provided in rings 29 and 28 respectively to facilitate screwing of the rings into place with a suitable, special tool. Hood 24 is perforated to provide a hole for receiving therethru the screw 30 for screwing thereof into the top wall of secondary section 12, a washer 32 intervening between the head of said screw and said hood.

Symmetrically of secondary hood 24, it is provided with a hole for receiving flanged bushing 31, held in place by nut 33, the function thereof being to fix hood 25 thereat to the rigid wall of section 11 in a watertight manner. Bushing 31 accommodates frictionally therein retained, flanged juice tube 35, prevented from being pushed downwardly upon inserting the fruit into the device, by flange 35a. At its fruit-adjointing end, tube 35 is provided with serrations 35b, and, along the length thereof, with holes 35c, respectively to facilitate the penetration of the fruit and the ejection of its juice.

Hinge assembly 13—14 comprises secondary, hollow hinge lug 14, extending from and preferably integral with secondary casing section 12 and provided with a thereto operatively fixed and therewith preferably integral, hollow hinge pin

36, the interiors of lug 14 and pin 36 communicating continuously with one another. Assembly 13-14 also comprises primary hinge lug 13, extending from and preferably integral with primary casing section 11 and adapted to receive, rotatably, snugly fitted therein, the hinge pin 36, into whose end a nut 38 is screwed for holding the two hinge lugs together, a washer thereat being indicated by 40, and a washer between the two lugs by 39.

Common to casing section 11 and to primary hinge lug 13, see Figures 3 and 5, is primary initial passage 41, communicating continuously with primary varying space 23, see Figure 6, and, operatively alternately with the hollow interior 42 of hinge pin 36, see Figure 5. Also in lug 13, are inlet passage 43, common to inlet nozzle 45, which is preferably integral with lug 13, and outlet passage 47, see Figures 3 and 5.

In secondary hinge lug 14 is secondary, initial passage 44, communicating continuously with hollow interior 46 of lug 14 and with a secondary varying space that is not shown but indicated locally, see Figure 1, by numeral 48, and that corresponds in appearance and function to secondary varying space 22, see Figure 6. In the rigid wall of section 12 is secondary intermediate passage 34 intervening between and continuously communicating with spaces 48 and 22.

In the rigid wall of primary casing section 11 is primary intermediate passage 37 intervening between and continuously communicating with space 23, see Figure 6, and with a primary varying space, not shown but indicated locally, see Figure 1, by numeral 49, and that corresponds in appearance and function to space 23.

Hinge pin 36 is provided, adjoining the cylindrical, interior surface of hinge lug 13, with first port 36a, second port 36b and third port 36c, disposed in a manner whereby they function as valve elements, as will be apparent further on in this description.

For securing together the two hingedly connected members or casing sections 11 and 12, I provide a self-locking lock or catch that requires no extra movement for locking other than simply closing section 12 downwardly quickly on to section 11. This entirely novel catch assembly comprises a hook 16 that is operatively thereto fixed in section or member 12 and a lever 15 that is rotatably mounted in section or member 11, see Figures 1, 2, 3 and particularly 4. The lever-adjacent end 16a of hook 16 is recessed at 16b. Lever 15 comprises a pin portion 15b and an arm portion 15a, the pin portion being recessed to constitute recess 15c, adjoining attenuated part 15d of pin portion 15b. When section 12 is brought down quickly, lever-adjacent end 16a strikes attenuated part 15d laterally thereof, whereby pin portion 15b is rotated from the position in A to the position in B, where the normally downwardly extending, vertically disposed arm portion 15a has been swung up into a horizontally disposed position, see also D, a plan view of B. Gravity then exerts itself upon arm portion 15a, whereby it swings downwardly again into said normal position, the attenuated part 15d then becoming engaged by the lever-adjacent end 16a at recess 16b thereof, see C in Figure 4, the hook 16 and the lever 15 thereupon being locked to one another and thereby locking casing sections 11 and 12 to one another. To disengage them from one another, the arm portion 15a is rotated upwardly to the position of B and D, the handle

17 is grasped and the section 12 may then be lifted away from section 11.

When the sections are in open position, section 12 extending upwardly, a fruit, such as an orange, is forced down onto juice tube 35 and is penetrated thereby. Section 12 is then brought down and locked to section 11 and when they are in this relationship, Figure 5, view A, shows that port 36a establishes communication between passage 41 and interior 42, port 36c establishes communication between interior 42 and inlet passage 43, and consequently with inlet nozzle 45, and port 36b is not functioning or is blocked. Also communication being continuous between interior 42 and passage 44, liquid, such as water under pressure entering through inlet nozzle 45 passes into all four varying spaces thereby the four hoods are contracted, the fruit between them squeezed and the juice thereof ejected through the juice tube.

When the sections are then opened, port 36a is not functioning, see view B of Figure 5, port 36b has re-established communication between passage 41 and interior 42, port 36c has established communication between interior 42 and outlet passage 47, and communication between interior 42 and inlet nozzle has been interrupted or blocked. Since communication between passage 44 and interior 42 is continuous, the fluid in the now upwardly extending section 12 is now free, under the force of gravity, to descend and leave the device by way of outlet passage 47. And, when the next fruit to be squeezed is introduced into primary chamber 19, the now contracted hood 25 is thereby distended and the fluid in the expanded space 23 is ejected through passage 41 and out through outlet passage 47.

Obviously a single unit device can be designed, wherein there are no intermediate passages such as 34 and 37 and wherein a passage like 44 leads directly from the upper or secondary lug into the secondary chamber corresponding to the primary chamber that receives the fluid directly from the hinge assembly.

Also, obviously, with suitable modifications, a three- or four-unit device can be made, or one with even more, so that quicker juice-extracting can be effected.

Instead of utilizing drinking or other water from the mains, any other fluid under pressure may be used, whether the fluid be a liquid or a gas, such as, for example, compressed air.

The word "fluid" is used herein in its broadest sense to include liquids or gases.

I claim:

1. For extracting juice from a fruit, a device powered by pressure fluid and including or being characterized by: a primary casing section having a primary rigid wall and, therewithin, a primary chamber; secured to said primary section by a hinge assembly, a secondary casing section having a secondary rigid wall and, therewithin, a secondary chamber communicating with and adjacent said primary chamber; respectively disposed within said primary and said secondary chamber, a primary hood and a secondary hood, having respectively a primary flexible wall and a secondary flexible wall, each secured marginally thereof to the corresponding said casing section, both respectively spaced from the defining surfaces of the corresponding said chambers by a primary and by a secondary varying space, said hoods being adapted to collectively engage said fruit; extending through said primary flexible wall and adapted to penetrate said fruit, a juice tube; respectively communicating with said

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primary and said secondary space and in said rigid walls, a primary initial passage and a secondary intermediate passage adapted to convey and introduce pressure fluid into said primary and secondary space respectively, whereby said hoods are contracted, said fruit between them squeezed and the juice thereof ejected through said juice tube; said hinge assembly comprising an inlet passage for receiving pressure fluid and an outlet passage for releasing it from the device, said assembly comprising also a hinge pin, and, receiving it rotatably therein, a hinge lug, said hinge pin being provided with a plurality of ports adapted to contributively, alternatively, establish and interrupt communication between said primary initial and said secondary intermediate passage on the one hand and said inlet passage on the other hand, and said primary initial and said secondary intermediate passage on the one hand and said outlet passage on the other hand, said hinge pin being provided with a plurality of ports adapted to establish communication between said varying spaces and said inlet passage and to interrupt it between said varying spaces and said outlet passage while said casing sections are closed, and to interrupt communication between said varying spaces and said inlet passage and to establish it between said varying spaces and said outlet passage while said casing sections are open.

2. For extracting juice from a fruit, a device powered by pressure fluid and including or being characterized by: a primary casing section having a primary rigid wall and, therewithin, a primary chamber; secured to said primary section by a hinge assembly, a secondary casing section having a secondary rigid wall and, therewithin, a secondary chamber communicating with and adjacent said primary chamber; respectively disposed within said primary and said secondary chamber, a primary hood and a secondary hood, having respectively a primary flexible wall and a secondary flexible wall, each secured marginally thereof to the corresponding said casing section, both respectively spaced from the defining sur-

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faces of the corresponding said chambers by a primary and by a secondary varying space, said hoods being adapted to collectively engage said fruit; extending through said primary flexible wall and adapted to penetrate said fruit, a juice tube; respectively communicating with said primary and said secondary space and in said rigid walls, a primary initial passage and a secondary intermediate passage adapted to convey and introduce pressure fluid into said primary and said secondary space respectively, whereby said hoods are contracted, said fruit between them squeezed and the juice thereof ejected through said juice tube; said hinge assembly comprising a secondary, hollow hinge lug extending from said secondary casing section and provided with a thereto operatively fixed, hollow hinge pin, said assembly comprising a primary hinge lug extending from said primary casing section and adapted to receive, rotatably therein, said hinge pin, the lug interior of said secondary lug continuously communicating with the pin interior of said pin and with said secondary passage and consequently with said secondary space, said primary lug being provided with an inlet passage for receiving the pressure fluid and with an outlet passage for releasing it from the device, said primary initial passage being common to said primary casing section and to said primary lug, said pin being provided with a first, a second and a third port, said first port and said third port respectively communicating with said primary initial passage and said inlet passage when said casing sections are closed, said second port and said third port respectively communicating with said primary initial passage and said outlet passage when said casing sections are open, whereby, in the closed state, pressure fluid travels from said inlet passage to said varying spaces, and, in the open state, communication between said inlet passage and said pin interior is interrupted and communication is established between it and said outlet passage, communication being retained between said varying spaces and said pin interior.

PATRICK JOSEPH MCCARTHY.