ABSTRACT OF THE DISCLOSURE

A group of flexible molded knife blades are rigidly supported at one end by a receptacle, the other end of each blade being sharp along its periphery, the blades being arranged to jointly define a hollow cylindrical space having said retaining slots between the blades, each blade's free end being resiliently deflectable radially inwardly and returnable to a normal position.

The present invention relates to juice-squeezers for oranges and similar fruits and more particularly to such squeezers as comprise a receptacle and a number of knife members projecting from the inside of the receptacle and arranged about a common centre line with slots between each other, the longitudinal extension of said knife-members between their lower and upper ends in the position of rest being substantially parallel with said centre line, the lower ends of said knife-members being rigidly connected to the receptacle and the free upper ends of the knife-members being designed to be inserted in the fruit, preferably in concentric relation to the axis of the fruit. In a prior appliance of this kind the knife-members comprise pins projecting upwards from the bottom of a cup or bowl and arranged along one or two concentric rings in relation to a common centre line. Each of said pins has several (six) edges extending radially from the pin, and when inserted into the orange or a similar fruit said edges are not adapted to cut out a disc with well-defined edge in the peel of the fruit when the fruit and the pins are rotated relatively to each other about said centre line. Said pins are rigid and not adapted to be bent towards the centre line by the squeezing of the orange for the purpose of driving out the juice. As far as is known by me this prior appliance has not found any extensive use.

The present invention is characterized substantially by the fact that the knife-members comprise resiliently flexible blades, the broadsides of which in the position of rest of the blades are substantially concentric to said centre line, and that the blades are adapted when inserted into the fruit by rotation of the fruit relative to the blades to cut out a disc-shaped portion in the peel of the fruit and a central body of the pulp of the fruit about said center line, and that the upper portions of said blades are adapted when a pressure is exerted by the user's hand against the outside of the fruit to be moved inwards towards the centre line against the spring action of the blades and on interruption of said pressure is said spring action to be moved back to the position substantially parallel with said centre line so that the juice of the fruit is driven out through said slots past the edge of said disc-shaped peel-portion into the receptacle. By said movements of the blades operated by one hand of the user, there is exerted a kind of pump-action and which drives the juice through said slots and past the edge of the peel-disc out into the receptacle. Said blades are at least two in number and have substantially greater width than the width of the slots in the position of rest of the blades. Preferably said axis, about which the blades are arranged in substantially concentric relation, inclines in an oblique angle to the horizontal plane.

Further characteristic features and advantages of the invention will appear from the following description with reference to the accompanying drawings showing as examples some embodiments of the invention. FIG. 1 is a side view and FIG. 2 is a cross-sectional view of the squeezer according to one embodiment, the knife-device in FIG. 2 being shown in section on the line II—II of FIG. 1. FIGS. 3, 4 and 5 are a side view, a plan view and an end view respectively of a second embodiment of the squeezer. FIGS. 6 and 7 are a side view and a plan view respectively of the squeezer according to a third embodiment. FIG. 8 is a cross-sectional view taken on the line VIII—VIII of FIG. 7. FIG. 9 is an axial section of the knife-device and its attachment to the bottom of the receptable, and FIG. 10 is a plan view of the device according to FIG. 9.

In the embodiment shown in FIGS. 1 and 2, the base of the knife-device, indicated generally by A, is formed by a cup or receptacle 10 in the shape of a segment of a sphere the bottom of which has a centrally located outlet-flow-pipe 11. Around the inlet end of this pipe the knife-device A projects upwards from the bottom of the receptacle. This knife-device comprises a number of knife-members in the form of blades 12 provided about a centre or axis line X—X common to the receptacle 10 and the pipe 11, the longitudinal directions of said blades being substantially parallel with said line. The blades in the example shown are four in number. The broadsides of these blades are located substantially concentrically in relation to the centre line X—X, and their lower ends are rigidly attached to the bottom of the receptacle and preferably formed integrally therewith and are of such a material that they are flexible in radial direction and their upper end portions are apt to be moved towards the line X—X by a pressure on their outer faces and when relieved from the pressure by their resiliency resume the position shown in the drawings. Between adjacent broadsides of the blades there are slots 13 tapersing towards the bottom of the receptacle because of which the blades taper towards their free ends 14. Since the blades 12 are designed to cut in rather soft and loose material they do not require any high degree of sharpness but they are preferably sharpened at their free ends 14 and at their longitudinal edges 15.

In the use of the squeezer the orange, for example, is placed on the outer edges 14 of the blades so that these edges are positioned substantially in concentric relation to the axis of the fruit. The fruit is then forced down towards the bottom of the receptacle (as shown by a dot-and-dashed circle 19 in FIG. 1) in which movement the fruit is squeezed by the user's hand and at the same time rotated about the axis X—X so that the blades 12 will cut out a small round disc in the lower portion of the orange-peel and at the free ends 14 of the blades are finally positioned a small distance below the upper portion of the peel. Said disc of the peel by the rotation and squeezing of the orange in relation to the knife-device A will be moved a short distance from the lower end of the orange into the latter. By the rotation and squeezing of the orange by the user's hand the tongues or blades 12 are repeatedly and periodically bent towards each other and by their resiliency from each other to the position according to FIG. 1. By these movements the fibres of the pulp of the orange are partially cut in pieces and the juice is caused to flow downwards past the edge of the peel-disc cut out of the lower portion of the peel. The pips (seeds) of the fruit will be largely positioned and trapped in the rotation body or core cut out by the blades.
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13 in the centre of the fruit, and the juice of said body is squeezed out through the slots 13 past said peel-disc while at least most of the pits by their size are prevented from escaping through the slots. The peeled-disc cut out at the beginning of the squeezing operation also prevent pits and pulp to escape through the lower part of the orange. Thus, the juice squeezed out in most cases will be free from pits and pulp.

During the squeezing operation the cup or receptacle 10 in this embodiment is designed to be placed over a drinking-glass or a bottle, for example, to which the juice is conducted through the pipe 11. The fruit-squeezer has the following advantages as compared with well known appliances now in common use:

(1) There is no use of a knife for cutting the orange in two halves.

(2) The juice is squeezed out of an orange during about the same time as is required for half an orange in the use of the ordinary squeezer.

(3) The juice obtained is much cleaner.

(4) A lesser quantity of the juice will be lost.

(5) The appliance is easily cleaned since no difficulty accessible straining devices have to be cleaned.

The construction of the squeezer may diverge as to details from the embodiment described with reference to FIGS. 1 and 2 while the essential feature of the invention are maintained. Thus the embodiment according to FIGS. 3 to 5 inclusive is based on the same main principle. The arrangement of the knife members A is here the same as above described with the difference that the centre or axis line X—X of the knife-device is not vertical but inclines in an angle of about 45 to 60 degrees to the horizontal plane and also the receptacle 10 to which the knife-device is connected has another shape. This receptacle has an oval shape and an entirely closed bottom and is formed with a pour off end 16 for the juice and a handle 17 at the opposite end. The bowl or receptacle is formed with a base plate 18. The manner of operation of this embodiment is substantially the same as that of the first embodiment.

A further embodiment of the invention is shown by FIGS. 6 to 10 inclusive in which the bottom of the receptacle is formed with a hollow attachment or projection 19 for the knife members A, said attachment or projection having an open lower end, a cylindrical lower portion and a tapering upper portion. The common axis or centre line X—X of this projection 19 and the knife-device A inclines in an angle of about 45 to 60 degrees to the horizontal plane. The outer and inner faces of the knife blades 12 are substantially parallel with the line X—X, and the outer ends forming the end edges 14 are substantially thinner than the remaining portions of the blades. The blades 12 in the non-operating or rest position shown in the drawings have their broadsides located substantially along a cylindrical surface concentric with said center line and inner elongated sides which jointly define an empty cavity receptive of a cylindrical core of fruit peel and pulp, each of the free ends having sharp edges extending into said slots for cutting the cylindrical core of peel and pulp from a fruit, and each of the free ends being resiliently deflectable radially inwardly to a position intermediate the adjacent free ends and against such core of fruit in response to manual squeezing on any fruit into which said blades project, whereby juice passes through said slots into said bottle or glass through said partially deflected edges.

2. A squeezer as claimed in claim 1, wherein each of said blades has a substantially greater width throughout its length than the width of said slots with said blades disposed in their normal position of rest.

3. A squeezer as claimed in claim 1, wherein each of said blade is provided with a longitudinal rib disposed on the inner surface thereof, the said rib contacting the edge of each said slot when the squeezer is in its normal position of rest.

4. A squeezer as claimed in claim 1, wherein the outer sides of said blades respectively have at least one longitudinal rib disposed thereon, the said rib being in contact with said slot when the squeezer is in its normal position of rest.

5. A squeezer as claimed in claim 1, wherein said rib is provided with an obstruction thereon, the said obstruction being formed with an oblique angle to the said slot when the squeezer is in its normal position of rest.

6. A squeezer as claimed in claim 1, wherein each of the blade is provided with a longitudinal rib disposed on the inner surface thereof, the said rib contacting the edge of each said slot when the squeezer is in its normal position of rest.
sides of said blades have transverse offsets spaced from said end edges.

7. A squeezer as claimed in claim 1, wherein said receptacle has a projection extending from the interior of its bowl-shape to a point disposed generally centrally of the rim of the bowl-shape, said blades being rigidly connected by said projection to the interior of said receptacle.

8. A squeezer as claimed in claim 1, wherein the interior of said receptacle has a strainer comprising stationary teeth projecting from the interior of said receptacle and arranged with mutual interspaces for retaining coarse particles of the fruit during pouring of juice from the receptacle.

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