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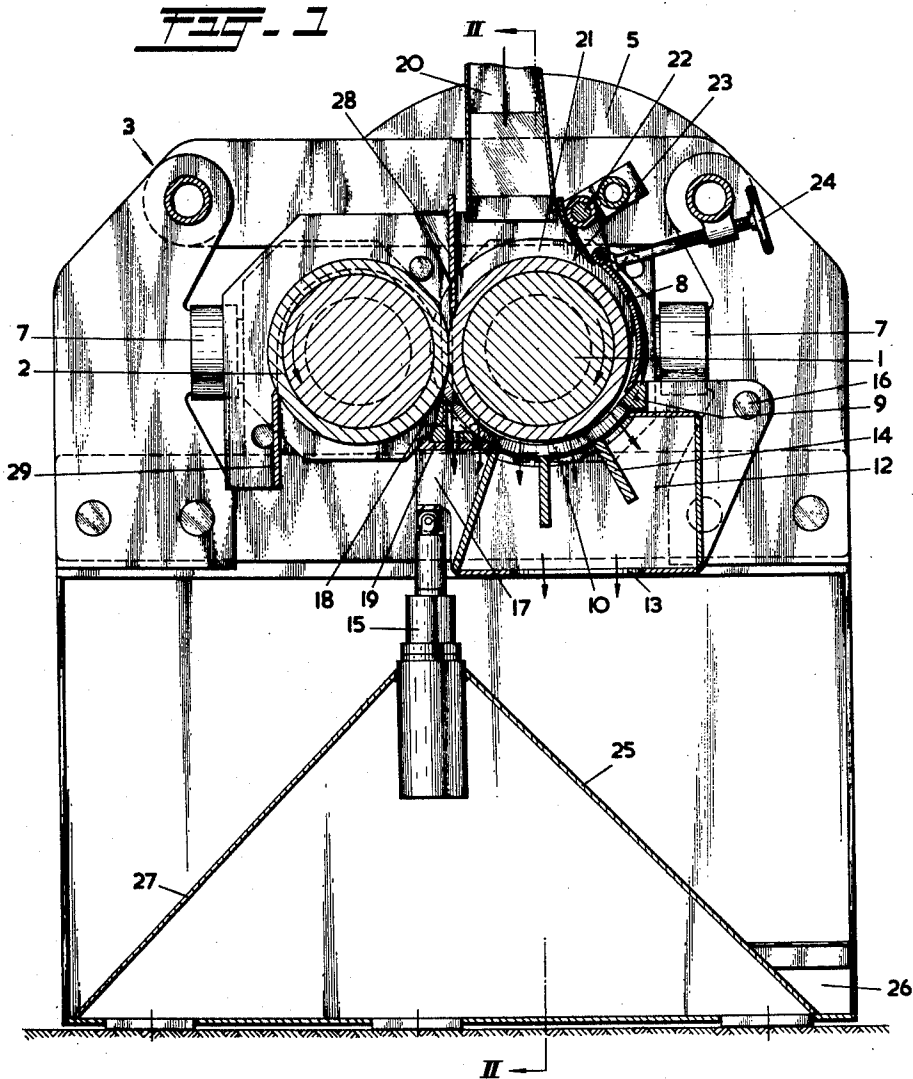
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APPARATUS FOR EXTRACTING LIQUID FROM LIQUID-CONTAINING MATERIAL

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2 Sheets-Sheet 1



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1

2,915,005

APPARATUS FOR EXTRACTING LIQUID FROM LIQUID-CONTAINING MATERIAL

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1 Claim. (Cl. 100—121)

The invention relates to an apparatus for extracting liquid from liquid-containing material, such as oil from oleaginous vegetable material, of the type described in U.S. Patent No. 2,724,327. In this known apparatus the material, which has been comminuted more or less, is fed to the gap between two counter-rotating rollers with grooved, or at least rough, and continuous cylindrical surfaces via a supply space which is bounded by the surface of one of the rollers and the concave surface of a curved guide plate placed eccentrically relative to this surface, in such a way that the supply space gradually narrows towards the gap between the rollers and the pressure in the material thus increases, but without the latter becoming so high that an appreciable quantity of liquid is expressed from the material before it has reached the gap between the rollers. Shortly before this latter the supply space, after a narrowest passage, has a widening over some distance, while near the widening and the narrowest passage the guide plate has been provided with outlet means for the liquid, preferably consisting of slot-shaped passage openings. This enables the liquid expressed between the rollers to escape against the supply direction of the material.

The invention aims at an improvement of such an apparatus, which consists in that, in front of the said narrowest passage, the guide plate has been provided with liquid outlet openings. This makes it possible to increase the pressure on the material between the first roller and the curved guide plate to a value at which liquid is expressed without the liquid flowing out obstructing the supply of the material, as would be the case in the known apparatus if the pressure in the material in the supply space were increased.

In consequence of this possibility of increasing the pressure and discharging the liquid thus flowing out it is possible, without the material being subjected to a preliminary expression in a separate auxiliary machine (1) to increase the roller pressure, as a result of which the fat content in the residue is greatly reduced and the input capacity is increased; (2) to treat finer material, i.e., material which can be conditioned and expressed better, the roller pressure not being partly used for the bruising of coarser particles of the material, but being fully available for the expression; (3) to increase the thickness of the layer of material between the rollers, as a result of which the capacity is considerably increased.

The invention will be further elucidated below with reference to the drawing.

Figures 1 and 2 illustrate a vertical and a longitudinal cross-section respectively through an apparatus according to the invention.

The apparatus consists of two cooperating horizontal rollers 1 and 2 with continuous but rough surfaces, e.g., provided with longitudinal grooves, which rollers are supported in the frame members 3, 4 and are each provided with their own drive 5 and with a toothed wheel respectively, which cooperates with a pinion 6 for rotation in opposite senses. Hydraulic jacks 7 acting upon

2

each of the bearings of the roller 1 furnish the contact pressure of the rollers.

Facing the roller 1, at some distance from it a concave, preferably polished guide plate 8 has been provided, which at the lower end rests against a beam 9, from which extend a number of parallel pressing rods 10 of triangular cross-section, which enclose downwardly widening passages 11 and whose upper surfaces form a smooth continuation of the inner surface of the guide plate 8, so that they form therewith a continuous guide surface, which is provided with slot-shaped liquid outlet openings. The position and the curve of this guide surface are such that the supply space for the material, enclosed by this surface and the corresponding roller surface, gradually decreases in width in the direction of the gap between the rollers, but after a point of narrowest passage, shortly before the gap, gradually widens again.

The beam 9 with the pressing rods 10 is mounted on a frame 12, provided underneath the pressing rods and having bottom outlets 13 and supporting ribs 14 for the pressing rods 10, this chamber being movable about a longitudinal axis 16 by means of hydraulic jacks 15 mounted in the foot of the frame, with a view to adjusting the pressing rods and the guide plate relative to the roller 1, i.e., adjusting the shape of the supply space for the material.

Mounted on supports 17 near the wall of the frame 12 turned away from the pivot 16, via which the adjusting force of the hydraulic jacks 15 is transmitted to the frame 12, approximately near the above mentioned narrowest passage of the supply space for the material, is a liquid separator consisting of an angle piece 18 lying with its open side against the pressing rods and resting on a base plate 19, the horizontal limb of this angle piece and said plate being provided with coinciding passage openings for the discharge of the liquid expressed between the rollers, which flows back via the above mentioned widening.

The material to be expressed is introduced above the roller 1 into the apparatus via an oblong filling tube 20 and drops on to the clockwise rotating roller 1, by whose roughened surface it is fed to the mouth of the supply space between guide plate and roller, while being laterally enclosed by the flanges 21. This supply is controlled by means of an adjusting valve 23, which is freely rotatable about an axis 22 and with which the upper edge of the plate 8 is pivotally connected. Near this upper edge of the plate 8 is acted upon by a supply-adjusting member 24 constructed in the form of a screw.

The liquid flowing out near the part of the series of outlet passages 11 lying before the narrowest passage drops via the bottom outlets 13 on to an inclined surface 25 of the foot of the frame and collects in the tank 26 provided with an outlet. On to this surface there also drops the liquid which is expressed between the rollers and flows out via the liquid separator. A surface with an opposite inclination 27 collects the cake of expressed material which is removed from the rollers 1 and 2 respectively by scraping plates 28 and 29.

What I claim is:

An apparatus for extracting liquid from liquid-containing material such as oleaginous material comprising two rotary rollers with continuous, irregular, cylindrical surfaces arranged in opposed relationship and adapted to exert expressing pressure on material passing therebetween and a curved guide plate extending around a substantial portion of the peripheral surface of one of said rollers in closely spaced but eccentric relationship thereto and terminating adjacent the nip of said rollers, said plate and the roller surface defining a smoothly and gradually tapering passageway reaching minimum annular dimension at a locus spaced from the nip of said rollers, said

3

plate and surface cooperating to exert pressure on said material therebetween to express liquid therefrom in advance of the nip of said rollers, the end portion of said plate between said locus of minimum annular dimension and the termination thereof adjacent the nip of said rollers departing from the previous curvature of the plate to provide a flaring continuation of said passageway whereby pressure is reduced on said material just prior to the nip of said roller, said plate on the side of the locus of minimum dimension opposite to the nip of

5

10

4

the rollers having outlet openings therein to discharge fluid expressed in said tapering passageway.

References Cited in the file of this patent**UNITED STATES PATENTS**

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