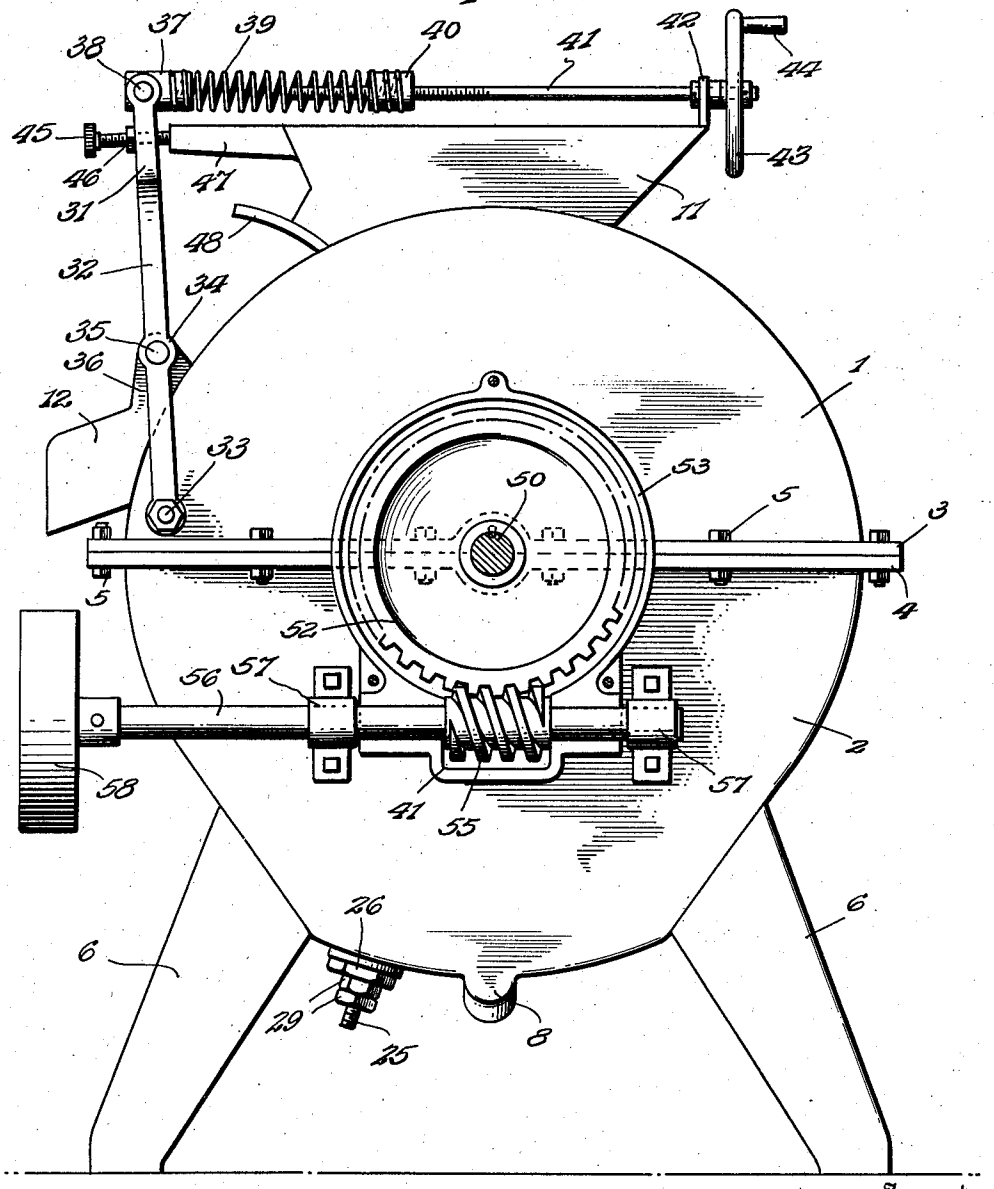
June 28, 1938. H. H. SLOCUM 2,121,932

ROTARY PRESS

Filed April 13, 1936 5 Sheets-Sheet 1

Fig. 1.



Inventor

Herbert H. Slocum.

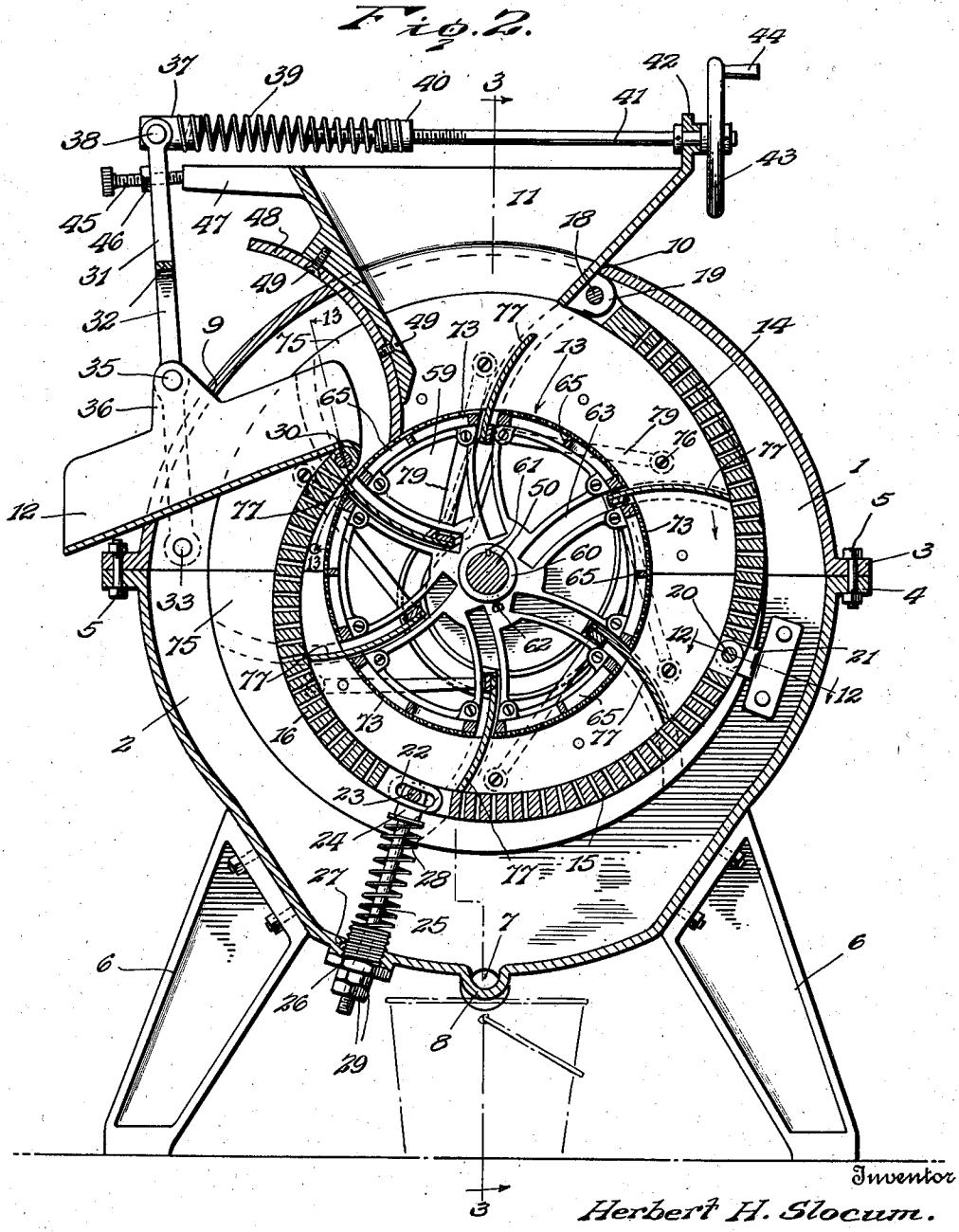
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Fig. 2.



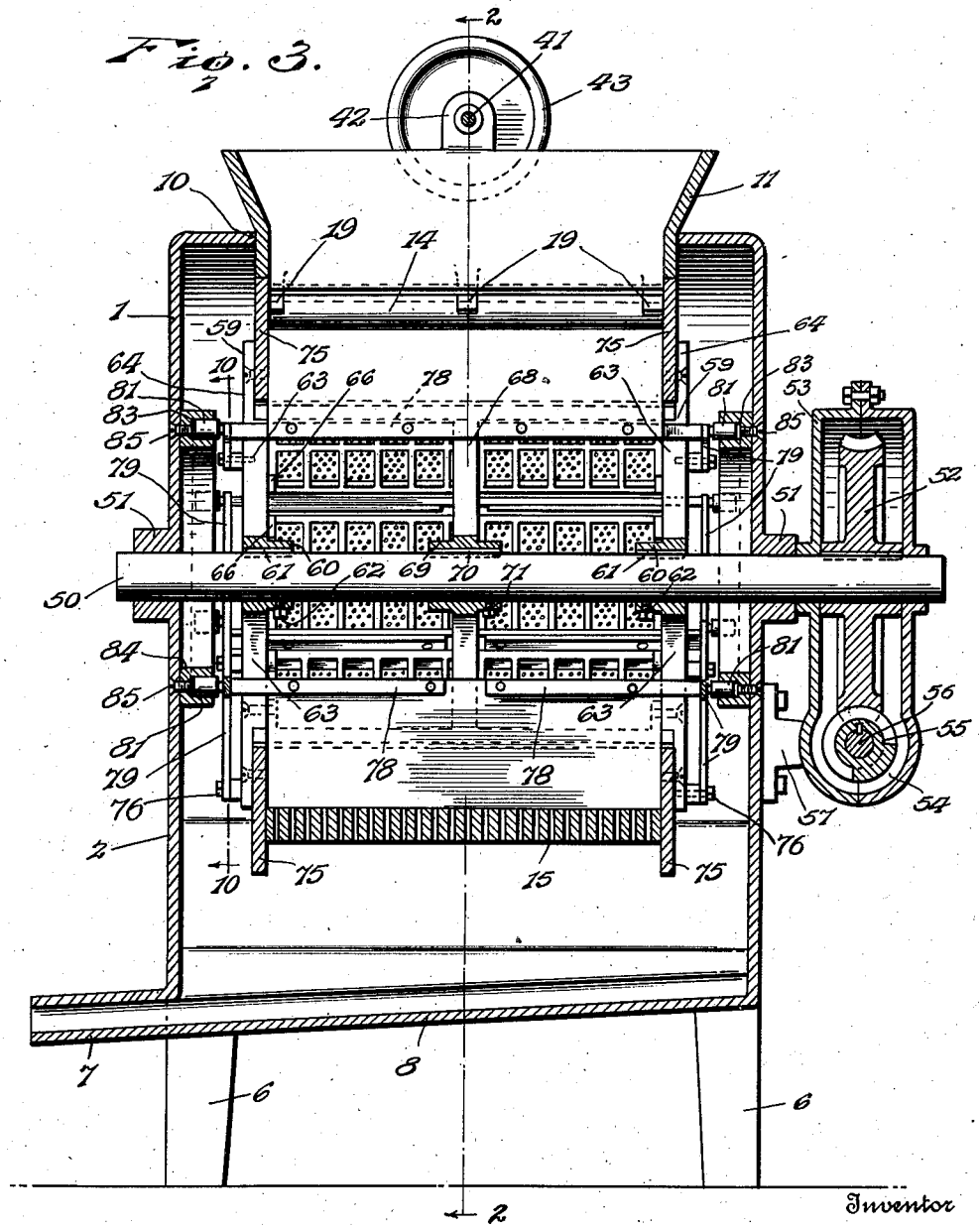
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Fig. 3.



Inventor

Herbert H. Slocum.

By Lacey & Lacey, Attorneys

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Fig. 4.

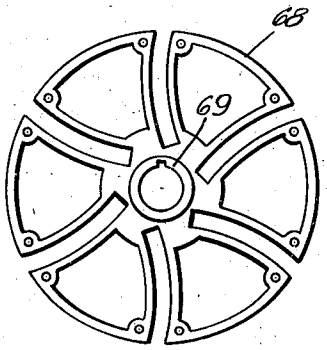


Fig. 5.

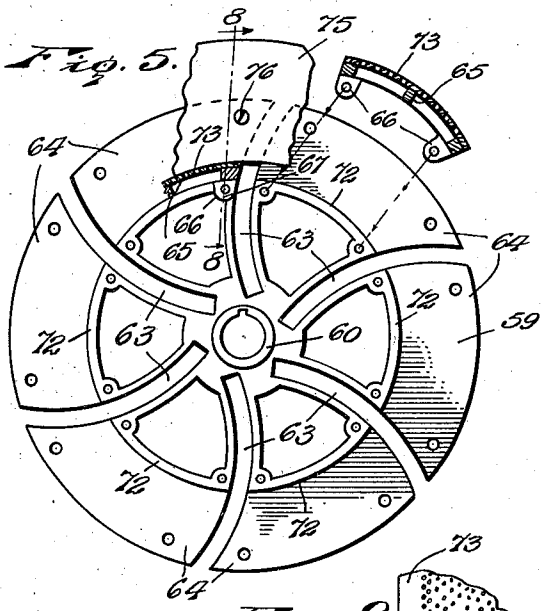


Fig. 9.

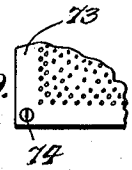


Fig. 7.

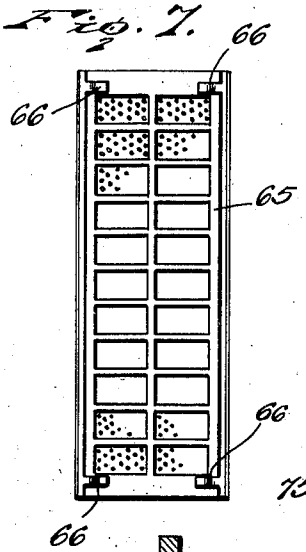


Fig. 6.

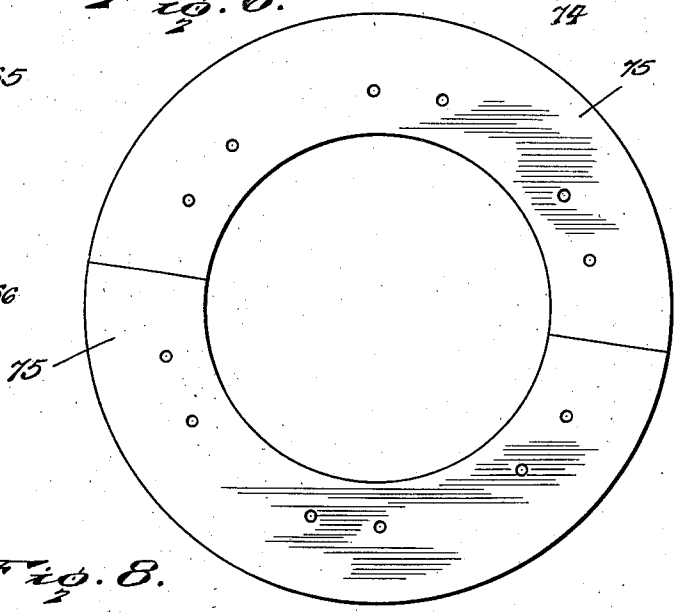
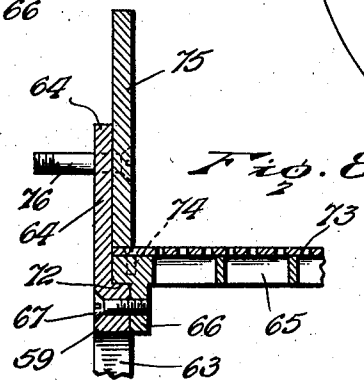


Fig. 8.



Inventor

Herbert H. Slocum.

By Lacey & Lacey, Attorneys

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Fig. 10.

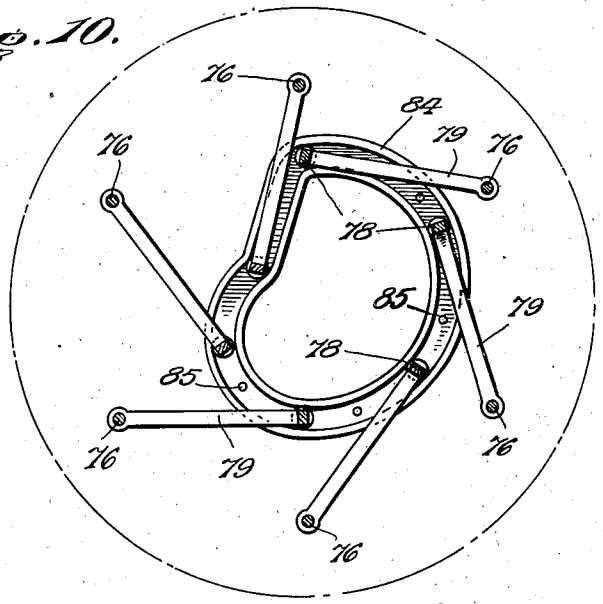


Fig. 12.

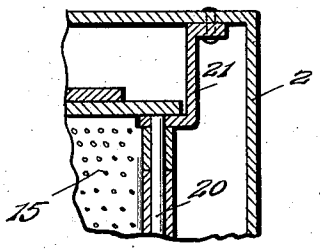


Fig. 11.

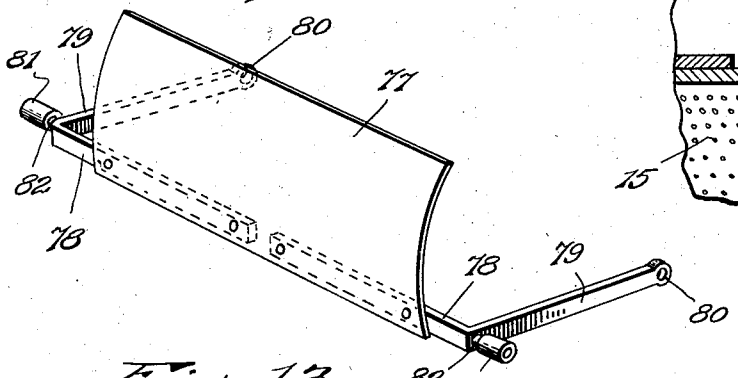
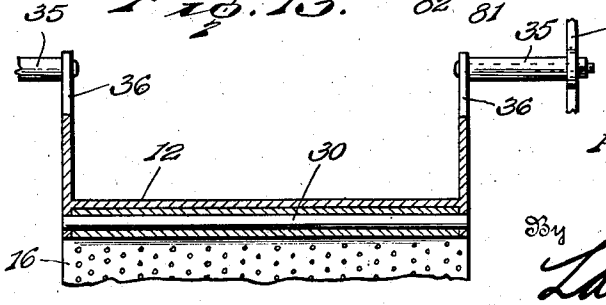


Fig. 13.



Inventor

Herbert H. Slocum.

By Lacey & Lacey, Attorneys

Patented June 28, 1938 2,121,932

UNITED STATES PATENT OFFICE

2,121,932

ROTARY PRESS

Herbert H. Slocum, Seattle, Wash., assignor of one-half to John W. Storfold, Seattle, Wash.

Application April 13, 1936, Serial No. 74,182

3 Claims. (Cl. 100—47)

This invention relates to a rotary press and one object of the invention is to provide a press of such construction that juice or oil may be very quickly and very thoroughly extracted from fruit or cooked or ground products which are fed through the press in a continuous stream from a hopper.

Another object of the invention is the provision of a press wherein blades carried by a rotary drum move the material to be acted upon through a gradually reduced chamber or space between the drum and walls of the press, thus causing the material to be subjected to heavy pressure and the juice or oil thoroughly extracted before the material is delivered to the outlet of the press.

Another object of the invention is to provide an improved arrangement of grating through which the juice or oil passes during the pressing action and so mount the grating that, while the material passing through the press will be subjected to heavy pressure, the grating will be yieldably supported and permitted to move away from the drum in case a stone or other non-compressible object should pass into the press to prevent jamming or breaking of the press.

Another object of the invention is to provide the press with an improved type of rotary drum carrying material engaging blades or rakes which extend substantially radially of the drum and are gradually moved from an extended position towards a retracted position within the drum during the pressing operation.

Another object of the invention is to so construct this press that as the compressed material approaches the delivery trough or outlet of the press, it will be scraped from the drum, thus insuring proper delivery and also removing material which might cause the drum to become clogged.

Another object of the invention is the provision of a press which is very strong and durable, capable of being operated at a high rate of speed, and very efficient in its operation.

The invention is illustrated in the accompanying drawings, wherein

Figure 1 is a view in elevation looking at one side of the press.

Figure 2 is a sectional view taken vertically through the press along the line 2—2 of Figure 3.

Figure 3 is a sectional view taken vertically through the press along the line 3—3 of Figure 2.

Figure 4 is a view in elevation of a disc forming a center brace for the rotary drum of the press.

Figure 5 is a view in elevation of a disc forming a head for one end of the drum and illustrating the manner in which gratings are applied.

Figure 6 is a view in elevation of arcuate members which, when applied, serve to provide each head of the drum with a circumferentially extending flange or retainer.

Figure 7 is a view looking at the inner face of one of the gratings which form the cylindrical body of the drum.

Figure 8 is a fragmentary sectional view through an end portion of the drum, taken along the line 8—8 of Figure 5.

Figure 9 is a fragmentary view of a corner portion of a sheet of perforated material carried by each of the gratings.

Figure 10 is a view of the mechanism for imparting movement to the blades or rakes radially of the drum during rotation of the drum, the view being taken along the line 10—10 of Figure 3.

Figure 11 is a perspective view of one of the rakes or blades.

Figure 12 is a fragmentary sectional view taken along the line 12—12 of Figure 2.

Figure 13 is a sectional view taken along the line 13—13 of Figure 2 and illustrating the manner in which the discharge trough is mounted.

This improved rotary press has a housing formed with upper and lower sections 1 and 2 which are formed about their contacting marginal edges with flanges 3 and 4 through which bolts 5 are passed to securely but detachably hold the upper housing section in engagement with the lower section. Supporting legs 6, which are bolted or otherwise secured to the lower section, support the housing at a desired height so that a receptacle may be placed under the spout 7 to receive juice or oil which accumulates in the bottom of the housing and flows through the trough 8 and the spout 7 leading from one end of the trough. Openings 9 and 10 are formed in the upper section through the peripheral wall thereof and upon referring to Figure 2 it will be seen that a hopper 11 extends inwardly through the opening 10 while a discharge trough 12 extends through the opening 9.

Within the housing in concentric relation thereto is mounted a rotary drum, indicated in general by the numeral 13, which will be hereinafter more fully described and about this drum is disposed a grating which extends in a spiral path and is formed of arcuate sections 14, 15 and 16. These grating sections are formed of thick perforated metal, the upper grating section 14 having its upper end secured by a rod 18 extending through ears 19 carried by the hopper

11 and the lower end of the grating section being secured by a rod 20 carried by brackets 21. It will thus be seen that the upper grating section will be mounted in a fixed position within the housing. The intermediate grating section 15 is pivotally mounted at one end by the rod 20 which holds it in end to end engagement with the grating section 14 and meeting ends of the grating sections 15 and 16 are slotted, as shown at 22, to receive a rod 23. The rod 23 also passes through a clevis 24 at the inner or upper end of a stem or plunger 25 which extends radially of the drum and casing and is slidably received through a bushing 26 screwed into a threaded opening 27 formed through the bottom of the casing. A coiled spring 28 about the stem between the clevis 24 and the inner end of the bushing urges the connected ends of the grating sections 15 and 16 towards the drum and in order to control inward movement of the stem and secure it in a set position, there have been provided nuts 29 which are threaded upon the outer end portion of the stem. By this arrangement, the stem may be adjusted longitudinally to maintain the connected ends of the grating sections a predetermined distance from the drum. As the connected end portions of these grating sections are slotted longitudinally and urged towards the drum by the spring, they may be forced away from the drum and thus permit a stone or other non-compressible substance to pass through the gradually decreasing space between the drum and the grating without jamming and without causing parts of the press to be broken. The upper end of the grating section 16 is mounted by a rod 30 which extends through bearing brackets or the like carried by and depending from the inner end of the outlet trough or chute 12. It will thus be seen that the grating sections 15 and 16 may have pivotal movement relative to the grating section 14 and the inner end of the trough.

The chute or trough 12 is to be adjusted through the opening 9 in order to normally maintain the upper end of the grating section 16 a predetermined distance from the drum and in order to do so, there has been provided a yoke 31 having depending arms 32 which straddle the housing and at their lower ends are pivotally mounted, as shown at 33. Bearings 34 are formed intermediate upper and lower ends of the arms 32 to receive pins or studs 35 projecting outwardly from the upwardly extending portions 36 of side walls of the trough. It will thus be seen that when the yoke is rocked about the pivot pins 33, the trough will be shifted longitudinally through the opening 9 and the upper end of the grating section 16 moved towards or away from the drum according to the direction in which the trough is moved. At its upper end, the yoke is formed with a clevis carrying a block 37 which is pivotally mounted, as shown at 38, and to this block is connected one end of a strong spring 39 extending in overlying relation to the upper end of the hopper and connected at its other end with a block 40 threaded upon an adjusting rod or shaft 41. The rod or shaft 41 is rotatably mounted through a bearing bracket or ear 42 rising from the hopper at the opposite end thereof from the yoke, and externally of the hopper the shaft carries a hand wheel 43 provided with a handle 44 so that the wheel may be easily turned to rotate the shaft and cause movement of the block 40 along the threaded end portion of the shaft. As this block 40 is moved along the shaft, tension of the spring 39 will be adjusted and pull exerted by the spring upon the yoke regulated. Therefore, pressure exerted by the grating section 16 which is urged towards the drum by pull of the spring will be regulated. A set screw 45 which is threaded through the yoke and carries a locking nut 46, is provided to serve as an adjustable stop for engaging the arm or horn 47 carried by and projecting from the hopper under the spring 39. It will thus be seen that movement of the yoke under influence of the spring may be limited and the extent to which the upper end of the grating section 16 moves towards the drum controlled. By this arrangement, the grating sections 15 and 16 will be yieldably held against movement away from the drum by the springs 25 and 39 and, therefore, sufficient pressure will be exerted to very effectively squeeze juice and oils from material passing through the press between the drum and the gratings, but at the same time choking or breakage of parts due to a stone or the like entering the press with the material will be eliminated. A scraping blade 48 which is secured to the hopper by screws or equivalent fasteners 49 has its lower end in scraping engagement with the cylinder and as this blade is curved longitudinally, as shown in Figure 2, material which has been formed into a substantially dry cake by pressure exerted to extract juice and oils from it, will be removed from the drum and guided into the discharge spout or trough as the drum rotates.

The drum which is rotatably mounted in the housing concentric thereto is carried by a shaft 50 which is journaled through bearings 51 carried by side walls of the housing and one end portion of this shaft projects outwardly, as shown in Figure 3, and carries a worm gear 52 enclosed in a casing 53. The lower portion of this gear casing is formed with a chamber 54 to receive a worm 55 carried by a drive shaft 56 which projects from the lower portion of the gear casing and is rotatably mounted in bearings 57 carried by the wall of the lower housing section 2. A pulley 58 carried by the worm shaft provides means whereby rotary motion may be transmitted to it from a motor or other source of power. It is to be understood that the worm shaft 56, worm 55 and worm gear 52 merely illustrate one means by which rotary motion may be imparted to the shaft 50 and that other means may be employed for turning the drum shaft.

The drum has a head 59 at each end, each of which consists of a circular disc having a hub 60 which is keyed to the shaft 50, as shown at 61, and also secured by a set screw 62 and thus caused to turn with the shaft and be prevented from sliding longitudinally thereon out of its proper position. Arcuate slots 63 are formed in the heads or discs substantially radially thereof and between these slots there have been provided extensions or flanges 64 of reduced thickness which serve as abutments for the ends of gratings 65 which extend longitudinally of the drum.

The ends of the gratings rest upon the heads between the slots and carry inwardly extending lugs 66 through which securing screws 67 are threaded, as shown in Figure 8, to securely but detachably hold the gratings in place. One or more center braces may be provided for the drum, it being understood that while only one center brace has been illustrated in the drawings, others may be employed if found necessary. This center brace 68 is in the form of a disc

corresponding in shape and construction to the heads 59 except that the reduced flanges or extensions 64 of the heads are omitted. The center brace has a hub 69 which fits snugly about the shaft 50 and a key 70 and set screw 71 are employed to hold the brace firmly in its proper position and cause it to turn with the shaft. The gratings 65 may merely rest against the intermediate brace. After the gratings have been applied with their ends secured to the heads and bearing against the shoulders 72 thereof and inner faces of the flanges 64, sheets of perforated metal are applied to the outer faces of the gratings and secured by screws 74 passed through their marginal portions. It will be understood that these sheets of perforated metal may be applied to the gratings and secured thereto before the gratings are set in place and secured by the screws 67. Semi-circular bands or sheets 75 are then applied and secured against inner faces of the extensions 64 where they are secured by bolts or equivalent fasteners 76 passed through alined openings formed in the extensions 64 and sheets 75. These sheets serve to brace the end disc or head of the drum and also constitute closures for the portions of the slots 63 which extend between the extensions, this being clearly shown in Figure 5 where a portion of one of the sheets 75 is shown secured and serving as a barrier for the outer end portion of a slot. The sheets are of such size that when applied, they provide ends of the drum with large flanges of such diameter that they overlap marginal portions of the outer grating formed by the grating sections 14, 15, and 16.

The fruit or cooked or ground material which is to be passed through the press is poured into the hopper and passes from the hopper into the upper portion of the housing between the end flanges 75 of the drum and is to be moved through the spirally extending space between the cylindrical walls of the drum and the spirally extending outer grating. In order to move this material through the spirally extending space which gradually decreases in depth from the upper end of the grating section 14 to the upper end of the grating section 16, there have been provided rakes or pushers each of which is formed as shown in Figure 11. By referring to this figure, it will be seen that each rake has a blade 77 formed of strong metal of sufficient thickness to impart rigidity to it. The blades are set into the slots of the heads 59 and intermediate bracing disc 68 and upon referring to Figures 3 and 11 it will be seen that each blade is fixed to a pair of bars 78 which project from ends of the blade so that these extended end portions of the mounting bars may engage through the slots 63 of the heads 59. The extended portions of the mounting bars are bent to form arms 79 which extend at a tangent to the heads 59 and at their outer ends are pivotally mounted by certain of the fasteners 76 which are of sufficient length to project outwardly from the extensions 64 of the heads, as shown in Figure 8, and engaged through the eyes 80 formed at ends of the arms. At their junction with the bars 78, the arms 79 carry rollers 81 rotatably mounted upon stems 82 and these rollers engage in channels 83 formed in cams 84 which are secured against inner faces of the end walls of the housing by screws 85. The cams are of a duplicate construction and each shaped as shown in Figure 10. The cams extend eccentric to the axis of the shaft 50 and from an inspection of Figures 2 and 10, it will be seen that as the shaft and drum rotate, the blades of the rake will gradually move from an extended position in which they project substantially radially from the drum to a retracted position within the drum. Outer marginal edges of the blades are in contact with the inner surfaces of the grating sections 14, 15, and 16 during this movement and the pulpy masses of fruit or ground material will be carried through the gradually reduced space between the drum and the spirally extending outer grating and finally delivered to the trough or chute 12. In view of the fact that the masses of pulpy material between pairs of blades are moved through a gradually reduced space, gradually increasing pressure will be applied and the juice or oil forced from the material. Juice or oil flows through the perforations of the grating sections 14, 15 and 16 and accumulates in the lower portion of the housing from which it flows through the trough 8 and spout 7 into a container placed under the open outer end of the spout. By adjusting the tension of springs 25 and 37, pressure exerted upon the material may be controlled and as the springs yieldably hold the grating sections 15 and 16 against movement away from the drum, choking cannot take place and breakage of parts will be prevented in case a stone, fruit kernel or the like should enter the press with the material to be acted upon. The scraper 48 has close contacting engagement with the peripheral wall of the drum formed by the grating 65 and sheets of perforated metal 73 and serves very effectively to detach the cake of dry material passing from the upper end of the grating section 16. It will thus be seen that the dry material will be all removed from the face of the drum and guided into the discharge trough 12.

Having thus described the invention, what is claimed as new is:

1. In a rotary press, a housing, a drum rotatably mounted in said housing, a hopper extending into the housing over said drum, a discharge spout passing loosely through an opening formed in the housing at one side of the drum and hopper, a grating extending spirally about the drum and together therewith defining a chamber gradually decreasing in dimensions from the hopper to the outlet spout, said grating having sections slidably and pivotally connected with each other at their ends, a yieldable support engaging the connected ends of the grating sections and urging the grating towards the drum, the discharge spout having its inner end pivoted to the adjoining end of the grating, a yoke pivoted to the housing externally thereof and pivotally connected with the discharge spout in straddling relation thereto and serving to mount the spout for longitudinal movement into and out of the housing, a helical spring having one end abutting the yoke and yieldably resisting movement of the yoke away from the housing in a direction to move the discharge spout outwardly and resisting movement of the last-mentioned end of the grating away from the drum, a mounting for the other end of said spring, a shaft rotatably mounted and threaded through said mounting to adjustably support the same and regulate tension of the spring, means carried by the drum for passing material through the chamber between the drum and grating as the drum rotates whereby pressure exerted by the grating will extract fluid from the material, and means between the hopper and the spout for directing com-

pressed material into the spout as it leaves the chamber between the drum and grating.

2. A rotary press comprising a housing, a drum rotatably mounted in said housing, a hopper extending into the housing over the drum, a discharge spout extending into the housing at one side of the drum and hopper, grating sections pivoted respectively to the hopper and inner end of said spout, an intermediate grating section pivoted at one end to the lower end of one of the first-mentioned grating sections and having its other end pivotally and slidably connected with the lower end of the second one of the first-mentioned grating sections, a yieldable support for the pivotally and slidably connected ends of the last-mentioned grating sections yieldably resisting movement of the said sections away from the drum, a support for the discharge spout yieldably held in position for resisting outward movement of the spout and movement of the spout and the grating section carried by the spout away from the drum, means carried by the drum for forcing material through the space between the drum and grating sections as the drum rotates; and means for directing compressed material into the spout.

3. In a rotary press, a housing, a grating in the housing, and a drum in the housing cooperating with the grating to form a chamber decreasing in dimensions from one end towards its other end, the housing being provided with an inlet communicating with the larger end of said chamber and with discharge means leading from the smaller end of the chamber, said drum consisting of a rotary shaft journaled through the housing, heads fixed to said shaft and formed with radially extending slots, an intermediate bracing disc fixed to the shaft between the heads and formed with radially extending slots, circular bands carried by said heads and constituting barriers for outer end portions of the slots formed therein, gratings supported by the heads and bracing disc with their side edges terminating at opposite sides of the slots formed in the heads and disc, blades slidable through the spaces between said gratings and movable through the slots of the bracing disc, arms pivoted to said heads and having portions extending through the slots of the heads and secured to said blades, cams carried by said housing, rollers carried by said arms and engaged with said cams for imparting pivotal movement to the arms and moving the blades from an extended position across the space between the drum and grating to a retracted position, and means for rotating said shaft.

HERBERT H. SLOCUM.