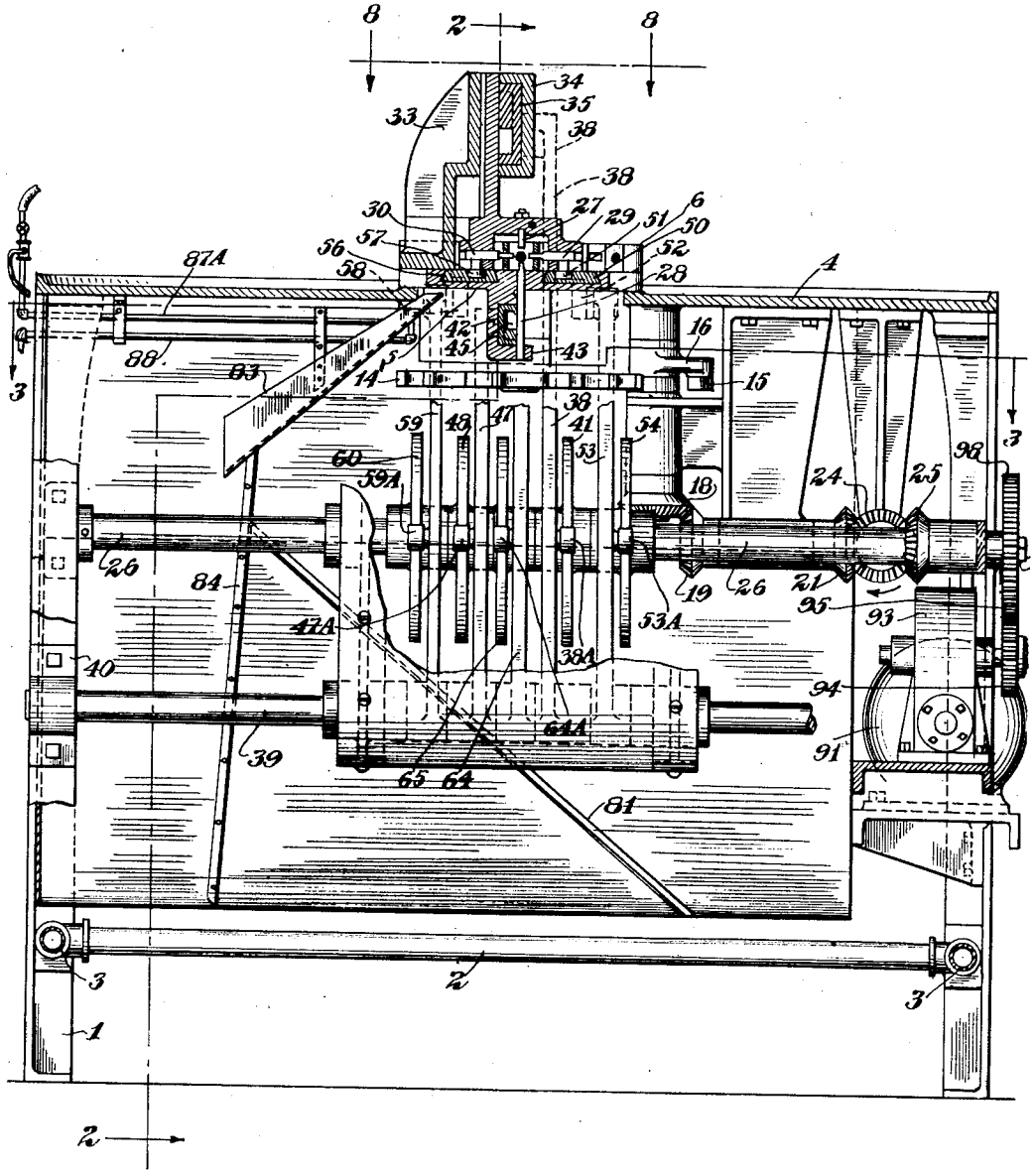
Dec. 19, 1933. A. K. SMITH 1,940,276

DATE PITTING MACHINE

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Fig. 1.



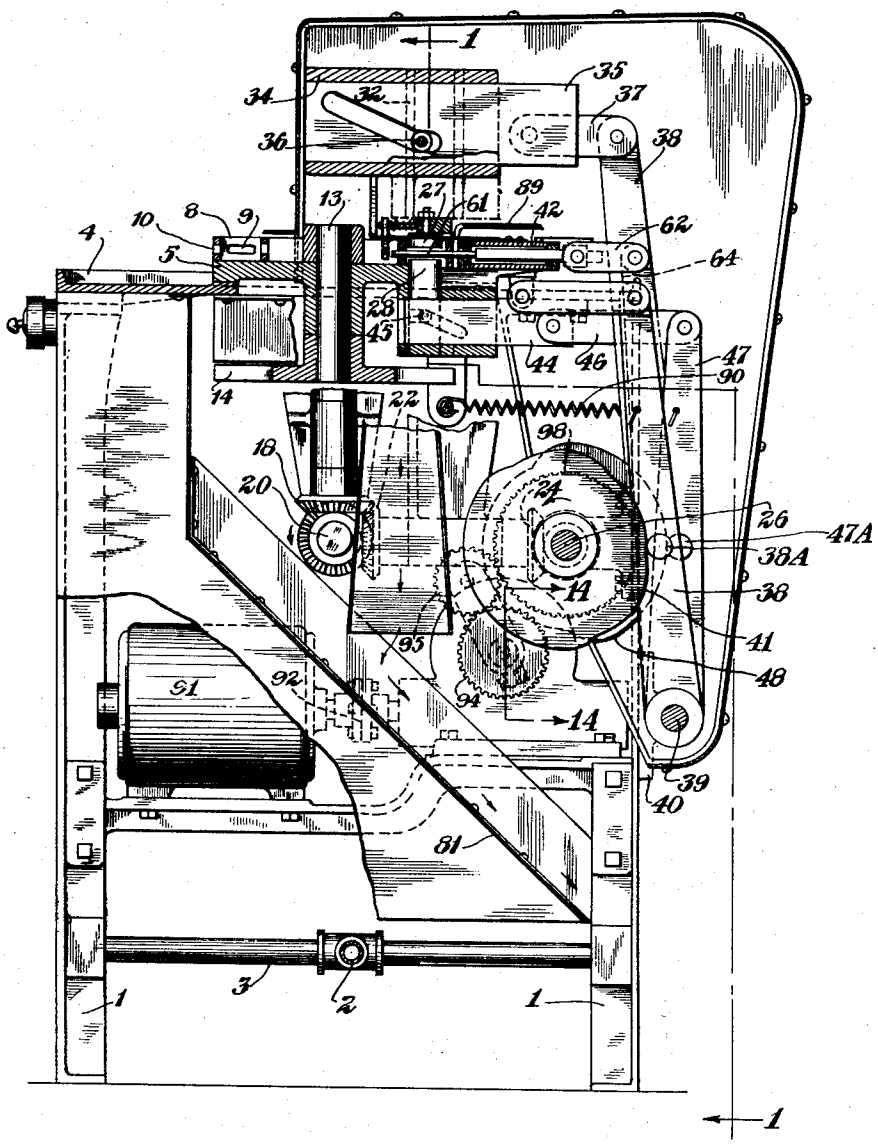
Inventor
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By his Attorneys
Janney, Blair & Curtis

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Fig. 2.



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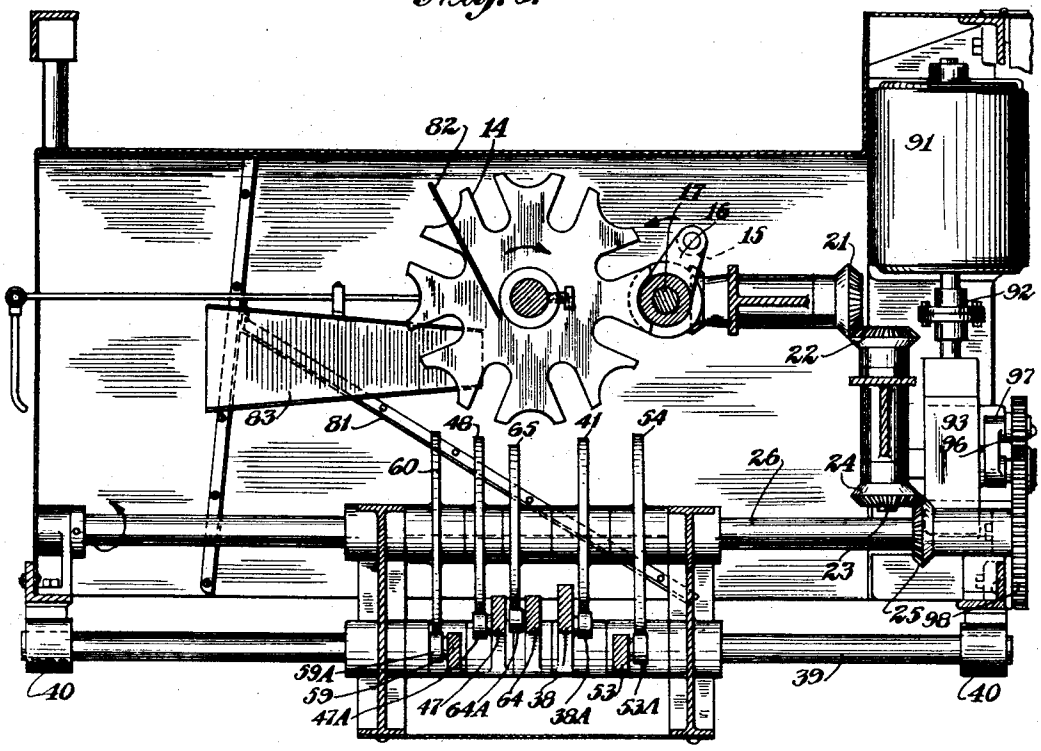
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Fig. 3.



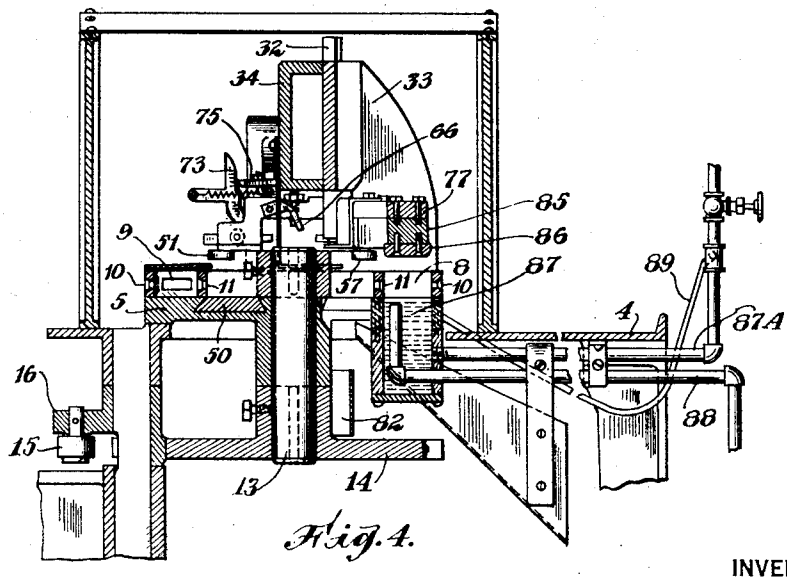
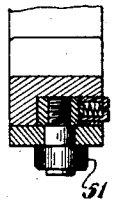


Fig. 4.

Fig. 5.



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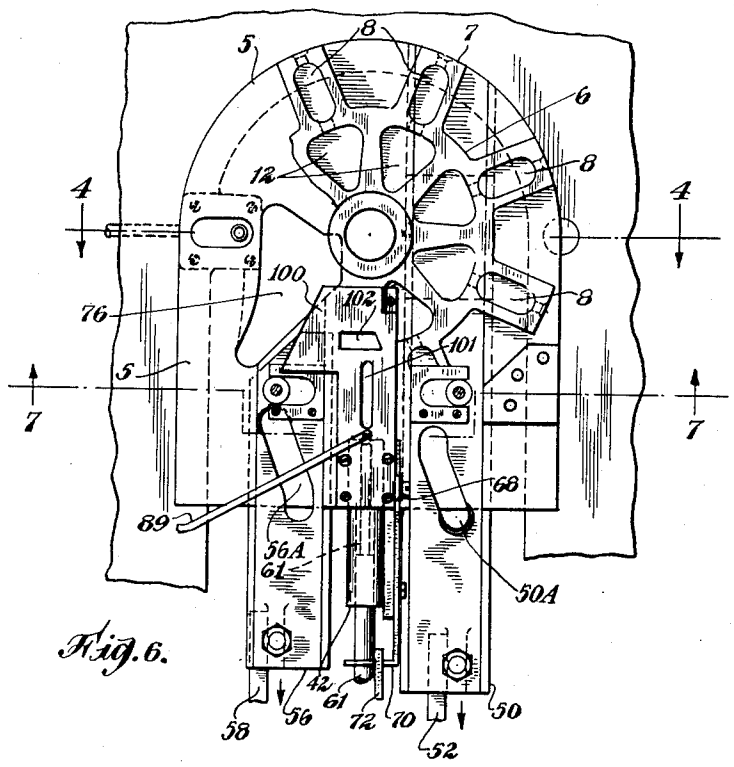


Fig. 6.

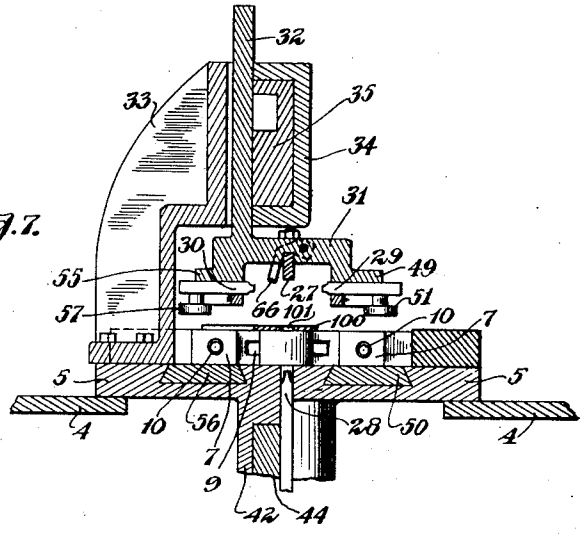


Fig. 7.

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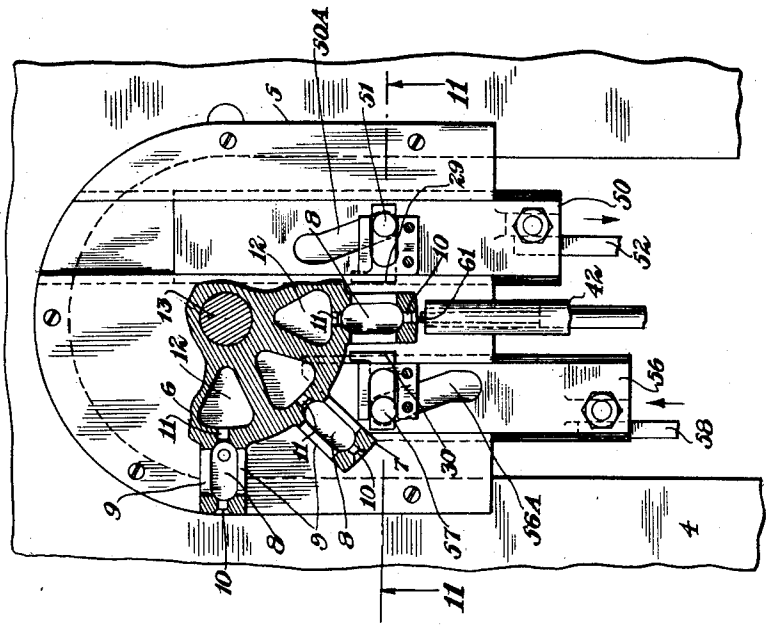


Fig. 9.

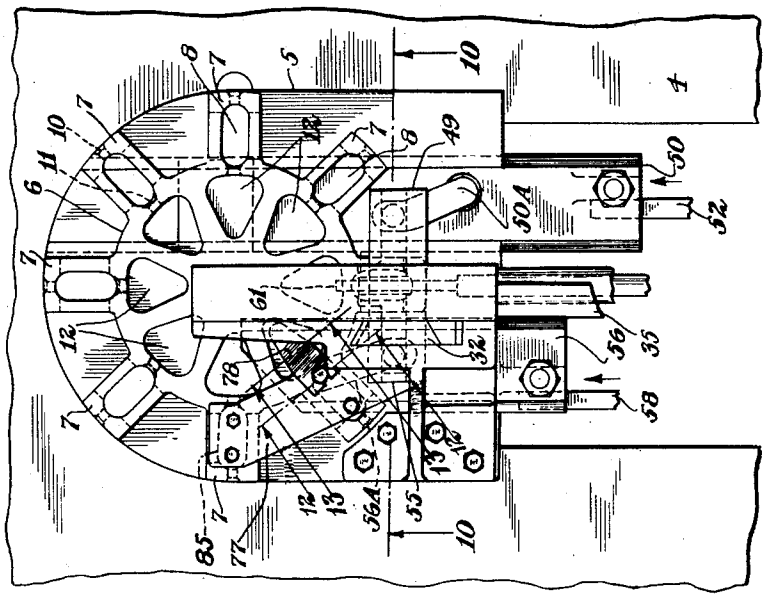


Fig. 8.

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Fig. 10.

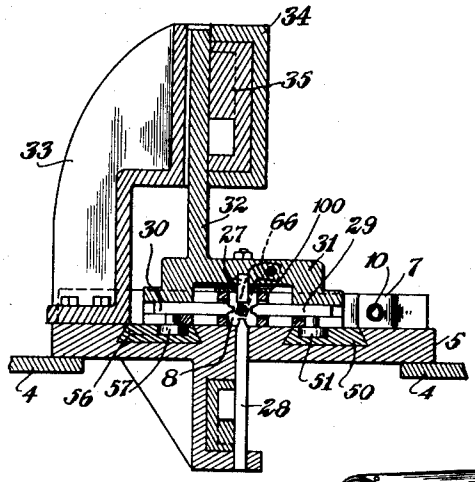
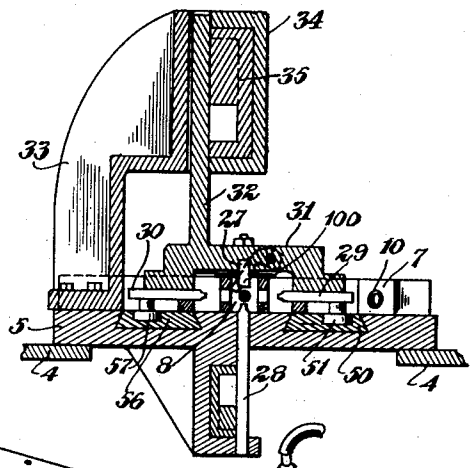


Fig. 11.



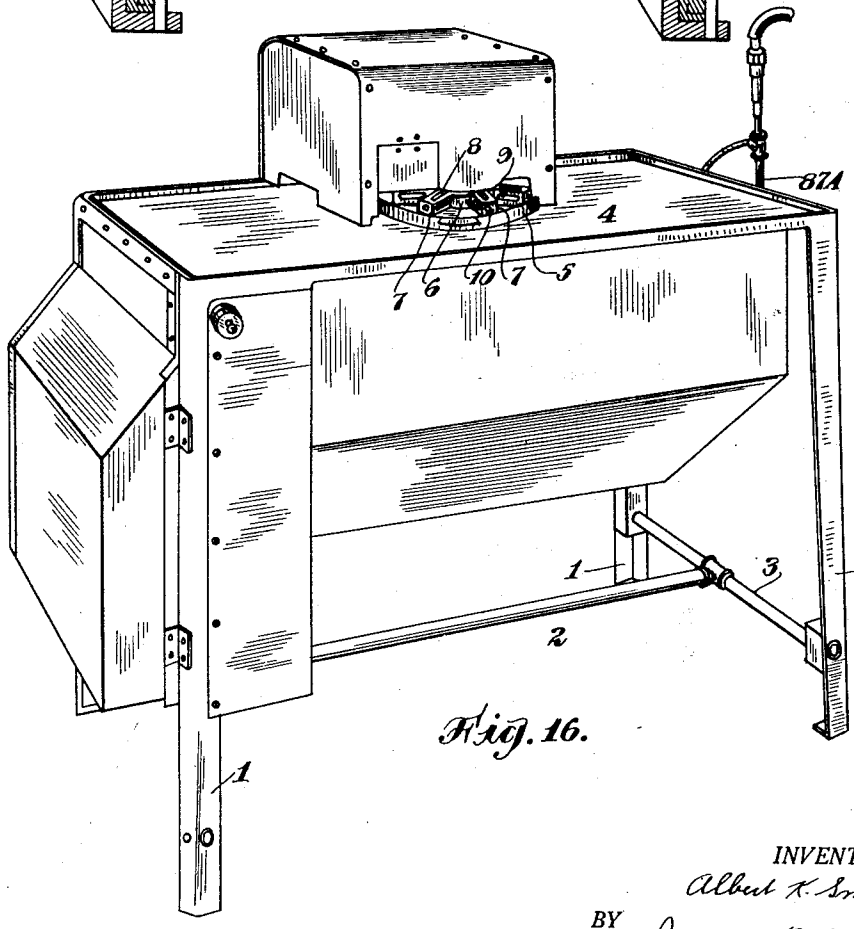


Fig. 16.

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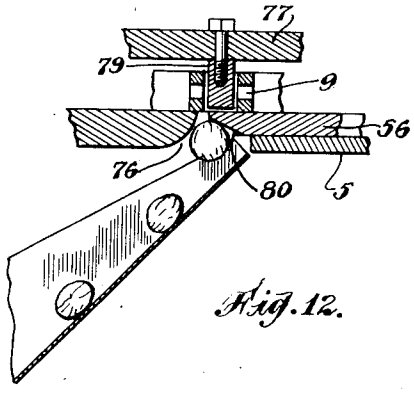


Fig. 12.

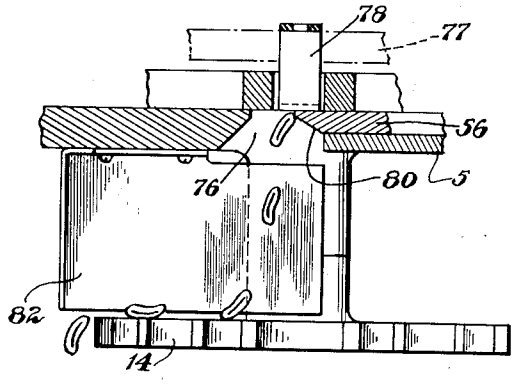


Fig. 13.

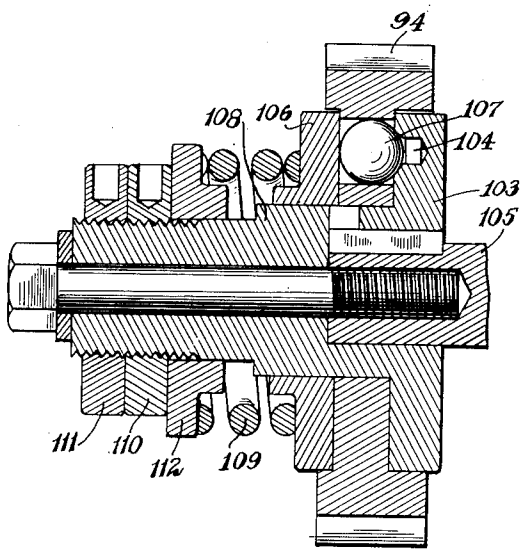


Fig. 14.

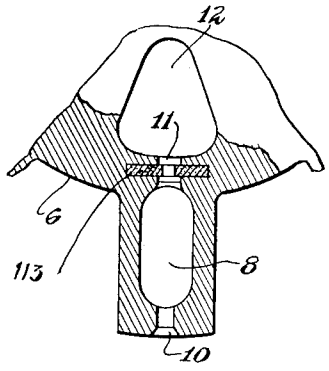


Fig. 15.

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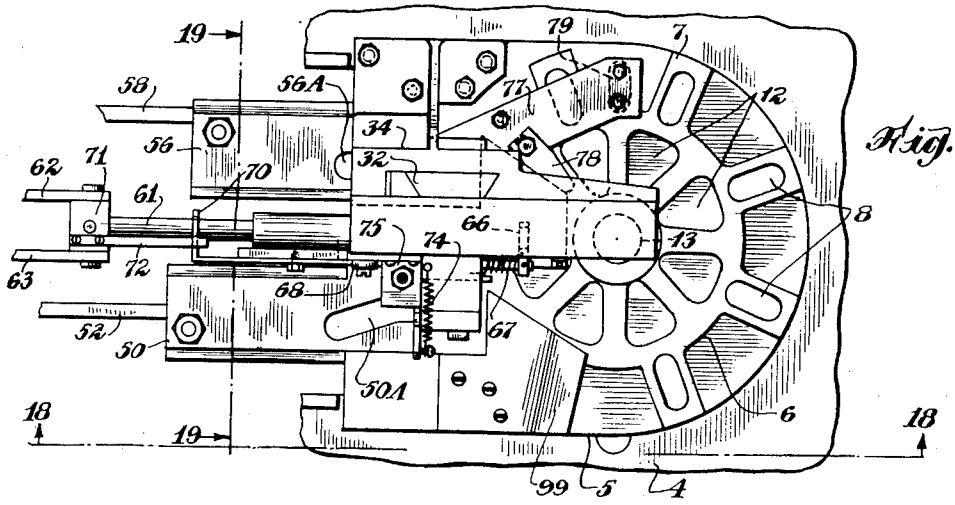


Fig. 17.

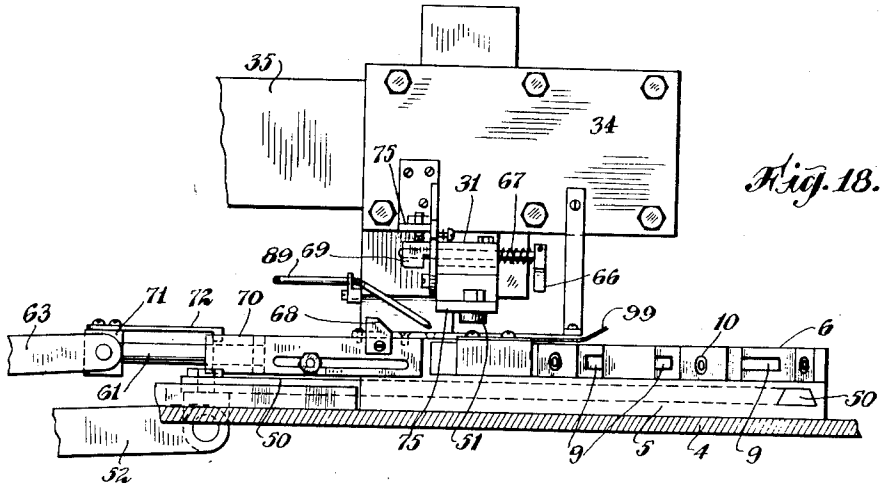


Fig. 18.

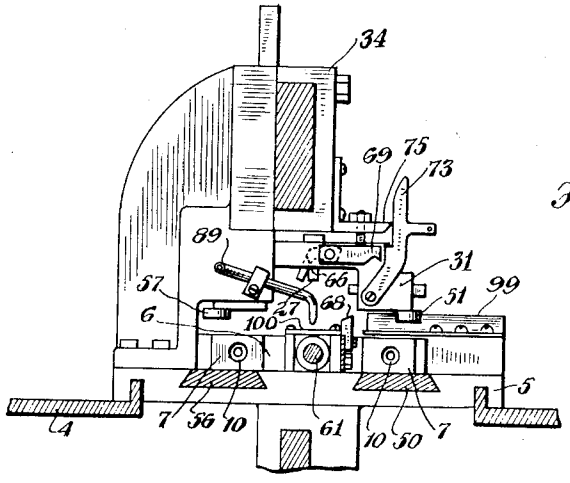


Fig. 19.

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1,940,276

UNITED STATES PATENT OFFICE

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DATE PITTING MACHINE

Albert K. Smith, West Orange, N. J.

Application February 14, 1931. Serial No. 515,681

5 Claims. (Cl. 146—17)

This invention relates to machines for pitting dates and the like.

It is an object of the invention to provide an efficient and durable mechanism for pitting dates; one which will operate at high speed without interruption; and one which will extract pits from dates with a minimum of injury to the meat of the date.

Other objects will be in part obvious and in part pointed out hereinafter.

In the drawings:—

Figure 1 is a sectional view of the illustrative machine taken on the line 1—1 of Fig. 2.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 6.

Fig. 5 is an enlarged detail view of the mounting of one of the side pit positioning fingers.

Fig. 6 is an enlarged top plan view of the circular plate conveyor and associated parts in indexing position; certain portions being broken away for clearness of illustration.

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6 and showing the date positioning fingers in open position.

Fig. 8 is an enlarged sectional view taken on the line 8—8 of Fig. 1.

Fig. 9 is a similar view but showing the parts in different position; certain portions being broken away for clearness of illustration.

Fig. 10 is a sectional view taken on the line 10—10 of Fig. 8 and showing the date positioning fingers in closed position.

Fig. 11 is a sectional view taken on the line 11—11 of Fig. 9 and showing the side positioning fingers in open position.

Fig. 12 is an enlarged sectional view taken on the line 12—12 of Fig. 8.

Fig. 13 is an enlarged sectional view taken on the line 13—13 of Fig. 8.

Fig. 14 is an enlarged sectional view taken on the line 14—14 of Fig. 2.

Fig. 15 is an enlarged top plan view partly in section of a modified form of feed plate date pocket.

Fig. 16 is a perspective view of a complete machine with guard plates and coverings.

Fig. 17 is similar to Fig. 6, but showing certain parts which were left out of Fig. 6 for clearness of illustration.

Fig. 18 is a sectional view taken on the line 18—18 of Fig. 17.

Fig. 19 is a sectional view taken on the line 19—19 of Fig. 17.

The machine consists generally of a circular plate conveyor having a plurality of pockets in which the fruit is positioned and carried to the pit extracting mechanism; means for positioning the pit of the fruit in the pockets during the extracting operation; means for extracting the pits; means to discharge the fruit and the pits; means to clean the pockets; and operating mechanisms for the several elements.

Referring to Figs. 1 and 16, the machine is supported by suitable side frames 1 and cross bracings 2 and 3. A table 4 extends across the top of the side frames 1, and located thereon is a circular supporting plate 5 for the fruit carrier. As best shown in Fig. 8, the fruit carrier consists of a circular plate 6 having a plurality of extensions 7 (eight in the illustrative machine) extending radially therefrom. Extensions 7 are provided with pockets 8 to receive the dates to be pitted; said pockets extending through the extensions 7 so that the dates rest on supporting plate 5.

Extensions 7 are provided with side openings 9, and end openings 10 and 11, all leading to the pocket 8; side openings 9 being provided to permit insertion of positioning fingers to position the pit of the fruit in the pocket, and end openings 10 and 11 being provided to permit a plunger to enter the pocket and eject the pit from the fruit.

Adjacent each opening 11, plate 6 is provided with a pocket 12 extending through the plate; said pockets being provided to receive the pits ejected from pockets 8.

As shown in Fig. 4, plate 6 is fixed to a vertical shaft 13 which is rotated intermittently through a Geneva stop mechanism. As shown in Figs. 1 and 3, said mechanism consists of a star wheel 14 fixed to the lower end of shaft 13 and adapted to be moved intermittently by a roller 15 carried by an arm 16 secured to a rotating shaft 17. Shaft 17 is rotated through a bevel gear 18 meshing with a bevel gear 19 on a shaft 20 (see Fig. 2) which shaft carries a bevel gear 21 (see Fig. 3) meshing with a bevel gear 22 on a shaft 23. Shaft 23 carries a bevel gear 24 meshing with a bevel gear 25 on the main shaft 26.

Through the mechanisms just described, fruit conveying plate 6 is given an intermittent movement to bring each pocket 8 in turn to the pit positioning and extracting mechanisms presently to be described.

Referring to Fig. 7, the pit of the fruit is positioned in the pocket in line with end openings 10 and 11 by vertically moving the positioning fin-

gers 27 and 28 and by horizontally moving positioning fingers 29 and 30. As shown in Fig. 9, the positioning fingers extend lengthwise pocket 8 to form with the openings 10 and 11 a confining channel for the pin and the plunger which pushes the pit from the fruit, and such channel insures the ejection of the pit through the end opening 11.

Positioning finger 27 is carried by a vertically reciprocable plate 31 which carries an extension 32 laterally supported by a bracket 33 and a cap 34 secured to the bracket 33. Plate 31 is reciprocated vertically by a cam plate 35 operating on a roller 36 carried by extension 32. Cam plate 35 is reciprocated horizontally through a connecting link 37, a lever 38 pivoted on a shaft 39 fixed in bearings 40, attached to side frames 1, and a cam 41 on main shaft 26 which contacts with a roller 38A carried by lever 38.

Positioning finger 28 is slidably supported by support plate 5, a bearing 42 and a strap 43, and is moved vertically by a cam plate 44 operating on a roller 45 carried by the finger 28. Cam plate 44 is reciprocated by connecting link 46, a lever 47 pivoted on shaft 39, and a cam 48 on shaft 26 which contacts with a roller 47A carried by lever 47.

Side positioning finger 29 is slidably mounted in bearings formed in an extension 49 of plate 31, and is reciprocated horizontally by a cam plate 50 slidable in guides formed in plate 5 and provided with a cam groove 50A, which receives and operates on a roller 51 carried by finger 29 when plate 31 is lowered. Cam plate 50 is reciprocated by a connecting link 52, a lever 53 pivoted on shaft 39, and a cam 54 on shaft 26 which contacts with a roller 53A on lever 53.

Side positioning finger 30 is slidably mounted in bearings formed in an extension 55 of plate 31, and is reciprocated horizontally by a cam plate 56 slidable in guides formed in plate 5 and provided with a cam groove 56A, which receives and operates on a roller 57 carried by finger 30 when plate 31 is lowered. Cam plate 56 is reciprocated by a connecting link 58, a lever 59 pivoted on shaft 39, and a cam 60 on shaft 26 which contacts with a roller 59A on lever 59.

The positioning fingers 27, 28, 29 and 30 are arranged to move into pocket 8, and, by contact with the fruit, position the pit of the date in line with end openings 10 and 11 of the pocket, so that a plunger 61 driven through opening 10 will engage the end of the pit and push it out of opening 11.

Plunger 61 is slidably supported by bearing 42, and is reciprocated horizontally by connecting links 62 and 63, a lever 64 pivoted on shaft 39, and a cam 65 on shaft 26 which contacts with a roller 64A on lever 64. Plunger 61 is arranged to operate when openings 10 and 11 are in line with the plunger 61. Plunger 61 drives the pit out of opening 11 into pocket 12 where it may drop onto plate 5. Because dates are very sticky, means are provided to positively wipe the pit from the end of the plunger and opening 11 and prevent the pit from sticking to the plunger upon its return movement. As best shown in Figs. 17, 18 and 19, such wiping means comprises a wiper 66 normally positioned at one side of opening 11 and fixed to a shaft 67 journaled in plate 31. Shaft 67 is rocked to swing wiper 66 across opening 11 by a cam 68 which operates on a lever 69 secured to shaft 67. Cam 68 is carried by a slide 70 which is moved in one direction to rock wiper 66 toward opening 11 by a trunnion 71 fast on plunger 61, and is moved in the other direction by a hooked arm 72 secured to trunnion 71; the arrangement being such that wiper 66 is moved to position in front of opening 11 immediately after plunger 61 has forced the pit out of opening 11, and is permitted to remain in front of said opening until after plunger 61 has returned to its initial position.

To hold wiper 66 in front of opening 11 after cam 68 has been withdrawn, a pawl 73 pivoted to plate 31 engages lever 69 through the action of a spring 74 and holds wiper 66 against movement until plate 31 moves upward, whereupon pawl 73 is kicked out of engagement with lever 69 by an angle plate 75 fixed to cap 34.

It will be understood that the fruit conveyor remains stationary during a pit extracting operation and then advances one step to present the next pocket to the pit extracting mechanism. In the operation of the extracting mechanism, the positioning fingers are first operated to position the pit in line with the plunger, and are held in positioning position while the plunger operates to extract the pit. Then the fingers and plunger are withdrawn and the next pocket is advanced.

After an extracting operation the pit in pocket 12 and the date in pocket 8 are moved by the next step of conveyor plate 6 to an opening 76 formed in supporting plate 5 where they may drop or be conducted to suitable receptacles. Suitable chutes for conducting the dates to a receptacle are shown at 83 and 84 in Fig. 1. As shown in Fig. 13, the pits may be conducted to a receptacle by dropping onto the star wheel 14 of the Geneva stop mechanism and being carried thereby to a chute 81 into which the pits may be pushed by a bevel plate 82.

As dates are very sticky, provision is made to prevent the pits and dates from adhering to conveyor 5 or supporting plate 6, and to force the pits and dates to pass through opening 76. To force the pit through opening 76, plate 31 is provided with an extension 77 which carries a plunger 78 adapted, upon descent of plate 31, to pass through pocket 12 and force the pit down through opening 76. To force the date through opening 76, extension 77 is provided with a second plunger 79, which operates to pass through pocket 8 and force the date down through opening 76. To prevent the pit and date from adhering to plungers 78 and 79, cam plate 56 is provided with a tapered extension 80 which passes beneath plungers 78 and 79 and wipes the pit and date therefrom.

Upon the next step movement of fruit conveyor 5, the pocket 8 from which the date has been ejected is presented to a cleaning plunger 85 having a cleaning pad 86 secured to its under surface. Plunger 85 is carried by extension 77 of plate 31, and is lowered into pocket 8 upon the descending stroke of plate 31. Beneath plunger 85, a water reservoir 87 is provided into which pad 86 of plunger 85 dips at each down stroke. Reservoir 87 is attached to plate 5 directly beneath an opening provided in said plate beneath plunger 85, the opening in the plate 5 forming a part of the reservoir. Water enters the reservoir through a pipe 87A and is maintained at a constant level by an overflow pipe 88. A suitable drain plug may be provided to empty and clean the reservoir.

To lubricate and clean the plunger 61 which extracts the pit from the date, a water pipe 89 may be provided to drop water intermittently onto the end of the plunger.

After a pit extracting operation, and to prevent the date in the next oncoming pocket 8 from dropping through cam groove 50A in cam plate 50, said plate is withdrawn a sufficient distance to present its imperforate end beneath the oncoming pocket 8. Immediately after the pocket has passed, the plate is returned to position to receive roller 51 in cam groove 50A. This additional movement of cam plate 50 is caused by the cam 54 on shaft 26.

A guide plate 99 may be provided to correctly position in the pockets 8 any dates which may have been carelessly placed in the pocket by the attendant. As shown in Figs. 17 and 18, such plate is secured to support plate 5 and overlies conveyor plate 6.

To prevent the date from accompanying upward movement of positioning finger 27, and to prevent the extracted pit from adhering to wiper 66, a stripper plate 100 extends over conveyor 6 directly beneath plate 31, said plate being provided with openings 101 and 102 for the finger 27 and wiper 66 respectively. Said plate is secured to plunger housing 42. Openings 101 and 102 are only large enough to accommodate the passage of the finger 27 and wiper 66 respectively, thus preventing the fruit or pit from passing therethrough.

It will be understood that suitable springs such as the one shown at 90 in Fig. 2 are provided to maintain the rollers of the several cam operated levers in contact with their respective cams.

The main shaft 26 is operated from a motor 91 through a flexible coupling 92, a worm and wheel reduction unit 93, and a gear train consisting of a spur gear pinion 94 fastened to the shaft of the reduction unit, an idler gear 95 on a shaft 96 fixed in an arm 97 adjustably secured to the housing of worm gear unit 93, and a change gear 98 fixed to main shaft 26.

In operation, the attendant places dates in the pockets 8 as the pockets are moved intermittently. In Figs. 6 and 7, the conveyor is moving a pocket 8 in a clockwise direction toward the pit extracting mechanism. During this movement the positioning fingers are in the position shown in Fig. 7, and the pit extracting plunger 61 is withdrawn, as shown in Fig. 6. During this movement of the conveyor, the cam plate 50 is also retracted so that the date in the oncoming pocket 8 will not fall through cam groove 50A. When the conveyor comes to rest with a pocket 8 in front of plunger 61, as shown in Fig. 9, plate 31 descends, as shown in Fig. 11, causing positioning finger 27 to enter pocket 8 and causing rollers 51 and 57 to enter cam grooves 50A and 56A respectively. While finger 27 is moving downwardly, finger 28 moves upwardly and the vertical position of the pit is fixed by fingers 27 and 28. Fingers 29 and 30 then move into pocket 8 through the action of cam grooves 50A and 56A on rollers 51 and 57 respectively and fix the horizontal position of the pit. Plunger 61 then enters opening 10 in pocket 8 and pushes the pit out of opening 11. Wiper 66 is then moved in front of opening 11, pushing the pit to the side of pocket 12. Wiper 66 remains in front of opening 11 until plunger 61 is withdrawn to initial position, thus preventing the plunger from drawing the pit back into opening 11. Plunger 61 and fingers 27, 28, 29 and 30 are then withdrawn and conveyor plate 6 moves another step to present the next pocket 8 to the extracting mechanism and to move the extracted pit and the pitted date to the opening 76 in plate 5. Plungers 78 and 79 then descend and force the pit and date through opening 76. Extension 80 of cam plate 56 then wipes the pit and date from plungers 73 and 79. After the next step movement of the conveyor, cleaning plunger 85 descends and cleans pocket 8.

The machine will operate without interruption and at a high speed which is limited only by the ability of the attendant to place dates in the pockets 8.

Because of the unique construction and arrangement of the positioning fingers which form a confining channel for the pit, irregularity in the size or shape of the pits has no effect on the efficient operation of the machine.

Because of the provisions made to overcome the effect of the inherent stickiness of dates, the machine will not become clogged and will require a minimum of attention.

In Fig. 14 is shown a slip clutch driving mechanism which may be interposed between the worm gear reduction and the drive pinion gear 94. Said slip clutch driving mechanism comprises a circular plate 103 keyed and bolted to reduction gear shaft 105 and provided with a plurality of countersunk pockets 104, in each of which a hardened steel ball 107 is seated; said balls being carried by gear pinion 94 in holes formed therein and being pressed toward said countersunk pockets 104 by a plate 106 mounted on an extension 108 of circular plate 103, and pressed toward balls 107 by a spring 109. The pressure on spring 109 may be adjusted by means of the nut 110 and a lock nut 111 on extension 108. A washer 112 is interposed between spring 109 and nut 110.

As shown in Fig. 15, a washer 113 preferably of rubber may be inserted in opening 11 of feed plate pocket 8 to assist in preventing the meat of the date from accompanying the pit when the pit is ejected through the opening 11.

It will be understood that the invention is not to be limited to the particular embodiment thereof shown for illustration, and that all of the features of the invention need not be used conjointly but may be used in various combinations as defined by the sub-joined claims.

I claim:

1. A machine for pitting dates and the like comprising, in combination, a circular plate conveyor provided with a plurality of pockets extending therethrough, each adapted to receive a date to be pitted, and each provided with side and end openings; a supporting plate for the conveyor plate; a plurality of pit positioning devices adapted to enter each pocket in succession and position the pit in line with the end openings of the pocket, said devices being constructed and arranged to extend lengthwise the pocket and form a guiding channel between the end openings of the pocket; a plunger adapted to enter the pocket through one end opening and force the pit out of the other end opening; means to present each pocket in turn to said devices and said plunger; means to wipe the ejected pit from the plunger and close the pocket opening through which the pit was ejected; means to discharge the pit and pitted date into suitable receptacles; and means to clean the pockets; said means comprising a felt pad shaped to closely fit a pocket, means to moisten the pad with water, and means to move the pad into and out of the pocket.

2. A machine for pitting dates and the like comprising, in combination, a circular plate conveyor provided with a plurality of pockets extending therethrough, each adapted to receive a date to be pitted, and each provided with side and end

openings; a supporting plate for the conveyor plate; a plurality of pit positioning devices adapted to enter each pocket in succession and position the pit in line with the end openings of the pocket, said devices being constructed and arranged to extend lengthwise the pocket and form a guiding channel between the end openings of the pocket; a plunger adapted to enter the pocket through one end opening and force the pit out of the other end opening; means to present each pocket in turn to said devices and said plunger; means to wipe the ejected pit from the plunger and move the pit away from the pocket opening through which the pit was ejected; and means to discharge the pit and pitted date into suitable receptacles.

3. A machine for pitting dates and the like comprising, in combination, a circular plate conveyor provided with a plurality of pockets extending therethrough, each adapted to receive a date to be pitted, and each provided with side and end openings; a supporting plate for the conveyor plate; a plurality of pit positioning devices adapted to enter each pocket in succession and position the pit in line with the end openings of the pocket, said devices being constructed and arranged to extend lengthwise the pocket and form a guiding channel between the end openings of the pocket; a plunger adapted to enter the pocket through one end opening and force the pit out of the other end opening; means to present each pocket in turn to said devices and said plunger; and means to wipe the ejected pit from the plunger and move the pit away from the pocket opening through which the pit was ejected.

4. A machine for pitting dates and the like comprising, in combination, a circular plate conveyor provided with a plurality of pockets extending therethrough, each adapted to receive a date to be pitted, and each provided with side and end openings; a supporting plate for the conveyor plate; a plurality of pit positioning devices adapted to enter each pocket in succession and position the pit in line with the end openings of the pocket, said devices being constructed and arranged to extend lengthwise the pocket and form a guiding channel between the end openings of the pocket; a plunger adapted to enter the pocket through one end opening and force the pit out of the other end opening; and means to present each pocket in turn to said devices and said plunger.

5. A machine for pitting dates and the like comprising, in combination, a conveyor provided with a plurality of pockets each adapted to receive a date to be pitted and each provided with side and end openings; a plurality of pit positioning devices adapted to enter each pocket in succession and position the pit in line with the end openings of the pocket, said devices being constructed and arranged to extend lengthwise the pocket and form a guiding channel between the end openings of the pocket; a plunger adapted to enter the pocket through one end opening and force the pit out of the other end opening; and means to cause relative progression between the plurality of pockets and the positioning devices and plunger whereby each pocket is presented in turn to said devices and said plunger.

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