

April 11, 1961

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2,979,094

CUCUMBER PUNCTURING MACHINE

Filed Nov. 13, 1957

2 Sheets-Sheet 1

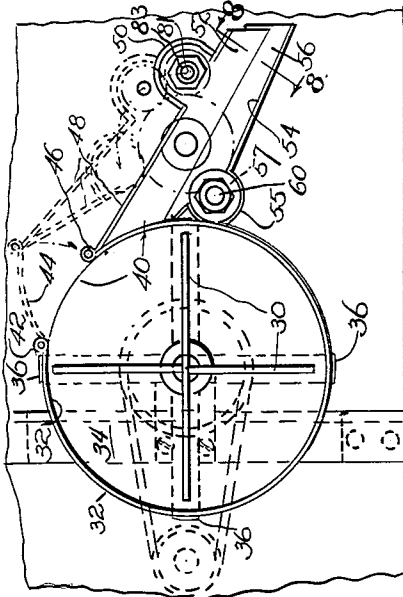


Fig. 2.

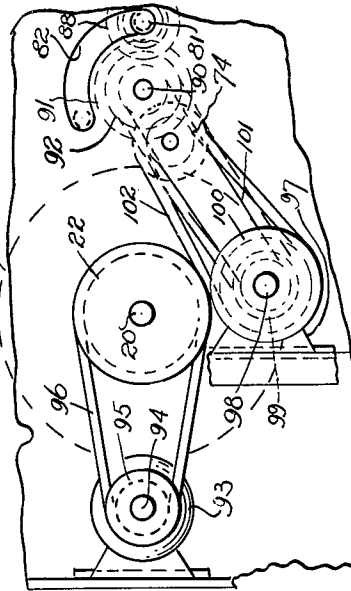


Fig. 3.

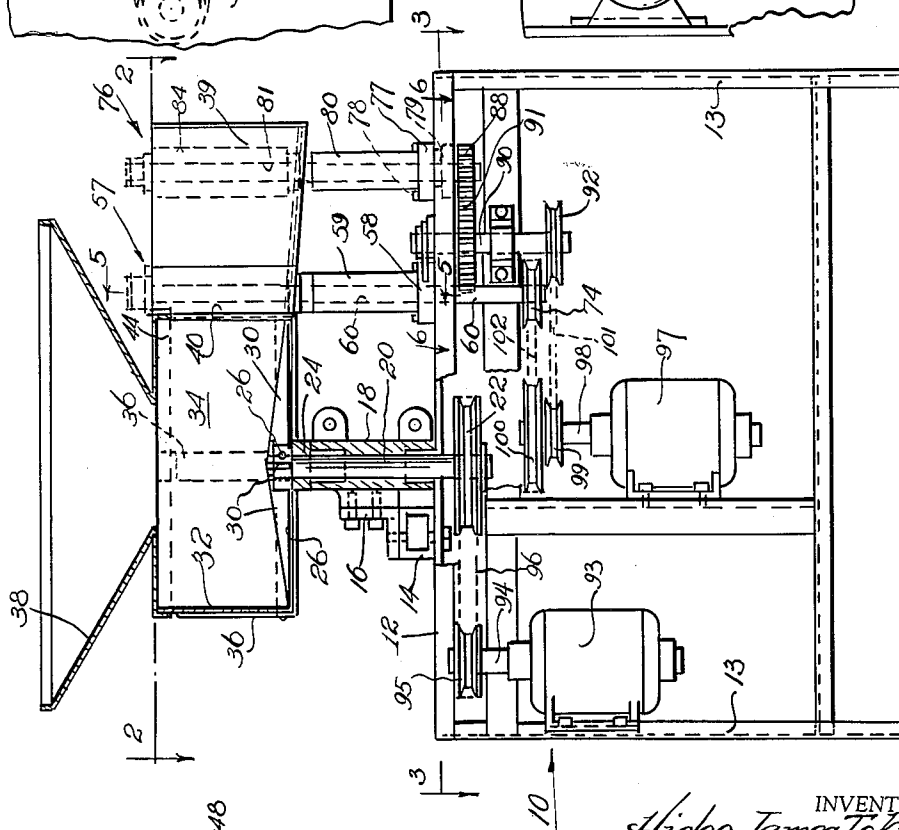
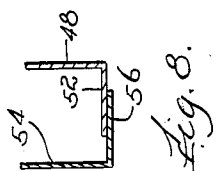


Fig. 1.



April 11, 1961

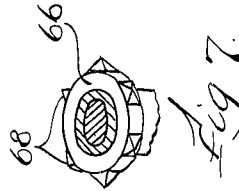
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CUCUMBER PUNCTURING MACHINE

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Filed Nov. 13, 1957, Ser. No. 696,209

6 Claims. (Cl. 146—56)

This invention relates to a machine for puncturing or pricking pickles, cucumbers, or other food products.

One of the objects of this invention is to provide a machine which will puncture or prick pickles or cucumbers so that in the processing of same in connection with the pickling operation, said pickles or cucumbers will be more quickly and more effectively pickled due to the entrance of the pickling fluid through said perforations.

Another object of this invention is to provide a very simple and inexpensive machine or device which will perforate, puncture or prick pickles, cucumbers, and other food products, and which will handle a comparatively large number of same during a short period of time.

Another object of this invention is to provide a machine of the foregoing character which is provided with a pair of separate puncturing units, one of which is adjustable relative to the other.

Other objects will become apparent as this description progresses.

In the drawings:

Fig. 1 is a side elevational view partly in section of this invention.

Fig. 2 is a top detail plan view taken on lines 2—2 of Fig. 1.

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

Fig. 4 is an enlarged front elevation partly in section of the receptacle and drive mechanism.

Fig. 5 is an enlarged vertical section of one of the puncturing units taken on lines 5—5 of Fig. 1.

Fig. 6 is an enlarged plan view partly in section taken on lines 6—6 of Fig. 1.

Fig. 7 is a perspective view of one of the puncturing members, and

Fig. 8 is an enlarged cross section taken on lines 8—8 of Fig. 2.

The operating parts are supported on a stand or base generally indicated at 10 having a horizontal platform 12 supported on legs 13. Fixedly supported on the horizontal platform 12 is a beam 14 to which is secured an angle iron 16. A bearing housing 18 is secured to said angle iron 16 for the purpose of supporting said bearing housing in a vertical position. Rotatably supported in said bearing housing 18 is a vertical shaft 20 which extends upwardly of the bearing housing and also extends below the platform 12 through an opening in the platform and to which is fixedly secured a pulley 22. Supported on the top of said bearing housing 18 is a bushing 24. The vertical shaft 20 extends upwardly of said bushing. Resting on bushing 24 is a horizontal annular plate 26 which is provided with a central opening through which the vertical shaft 20 extends. The plate 26 is secured to shaft 20 by a pin 28 to rotate with the shaft. The annular plate 26 has fixedly secured to the top thereof a plurality of ribs 30. Four of said ribs are secured and are spaced approximately 90° from each other. Said ribs each taper or incline downwardly from the center of said annular plate.

Surrounding most of the rotating plate 26 is an annular

2

wall 32 which extends upwardly of the rotating plate 26. The rotating plate 26 together with the wall 32 forms a receptacle generally indicated at 34 for receiving the pickles as will be described. The wall 32 is secured to four brackets 36 which in turn are suitably secured to the horizontal platform 12.

Secured to the top of the wall 32 is a hopper 38. The pickles or cucumbers are dumped into the hopper 38 and pass into the receptacle 34 as is well understood. The rotating plate 26 will eject the cucumbers or pickles from said receptacle to a side trough generally indicated at 39.

The wall 32 does not completely surround the rotating plate 26 but is provided with an enlarged opening 40 along a portion thereof. Pivotally or hingedly secured as at 42 to the wall 32 adjacent the opening is a short wall section 44 which is curved on the same radius as wall 32. Pivotally or hingedly secured as at 46 to the opposite end of wall section 44 is a flat vertical wall 48 having an arcuate shape wall section 50 intermediate its ends. The bottom of vertical wall 48 is bent at right angles to the wall 48 to form a horizontal bottom wall 52. The horizontal bottom wall 52 extends inwardly under the annular plate 26.

Fixedly secured to the annular wall 32 adjacent the opposite end of the opening 40 is a stationary vertical wall 54 having an arcuate shaped section 55. The bottom of vertical wall 54 is bent at right angles to the wall 55 to form a horizontal bottom wall 56 which is positioned under the movable bottom wall 52. In other words, the bottom 52 overlaps the bottom 56 as best seen in Fig. 8.

The wall sections 44 and 48 are capable of being pivoted or moved as shown in dotted lines in Fig. 2 for the purpose of adjusting the position of one of the pricking members as will be explained. The walls 48 and 54 and their respective bottom walls 52 and 56 form the chute or trough laterally of the receptacle 32 to receive the pickles ejected from the receptacle.

Secured to the platform 12 is a puncturing unit generally indicated at 57 and shown in detail in Fig. 5, which includes a bearing block 58 which supports a bearing housing 59 extending upwardly thereof. A rotatable shaft 60 is supported in the bearing housing 59 and extends below the bearing block 58 through an opening in the platform 12. The shaft 60 extends upwardly of the bearing housing 59. Said shaft being positioned adjacent the outlet opening of the receptacle 34 as best shown in Fig. 2. Mounted on the upper end of said shaft is a sleeve 62 which is secured to said shaft 60 by means of a set screw 63 to rotate with the shaft. Said sleeve is provided in the lower end with a circumferential flange 64 formed integrally therewith. Secured on said sleeve are the pricking or puncturing members to be described.

The pricking or puncturing members are arranged vertically on the sleeve 62 and comprise a plurality of annular discs 66 each provided on the outer periphery with spaced pins 68. Six of said pricking pins are shown on each of said discs and the pins are equally spaced around the periphery of the disc. The pricking discs 66 are mounted on said sleeve and are spaced from each other by washers 70. The top of said sleeve is externally threaded as at 72 and is adapted to receive a threaded nut 73 for the purpose of holding said washers and discs in a fixed type of relationship with said sleeve to rotate therewith. The entire sleeve together with the puncturing discs 66 may be removed from said shaft by loosening the set screw 63 and likewise the puncturing discs may be removed from the sleeve by loosening the nut 73. Thus the entire puncturing element as a unit may be removed and the puncturing discs themselves may be individually removed when desired.

The lower end of the shaft 60 extends below the platform 12 and has fixedly secured thereto a pulley 74.

3

Shaft 60 and the puncturing elements 66 thereon are rotatable with said shaft but said shaft is in a fixed relationship with respect to the receptacle 34.

The other puncturing unit generally indicated by the numeral 76 is generally similar to puncturing unit 57 previously described and same comprises a bearing block 77 which rests on platform 12 and is secured thereto by suitable fastening members 78.

The bearing block 77 is secured in such a manner that it may be moved arcuately on the platform 12. The platform 12 is provided with an arcuate shaped slot 79 through which the fastening bolts of the fastening members 78 pass and by tightening the nuts thereon in any one of the positions in which the block 77 is moved, it may be securely held. Suitably secured to said bearing block 77 is a bearing housing 80 similar to bearing housing 59 previously described. A shaft 81 similar to shaft 60 extends downwardly through said bearing housing 80 and bearing block 77 and said shaft also extends down through an arcuate shaped slot 82 in the platform 12. Thus the puncturing unit 76 which includes shaft 81, bearing housing 80 and bearing block 77 all may be moved as one unit, in positioning same in relation to puncturing unit 57.

Supported on the shaft 81 is a sleeve 83, similar to sleeve 62 previously described and sleeve 83 is secured to the shaft 81 by means of a set screw. Said sleeve has a lower circumferential flange like flange 64 and is adapted to have secured thereon identically to the manner heretofore described, the piercing discs 84 and the spacer elements 85 therebetween and same are secured to said sleeve by engagement of a nut 86 with the upper threaded portion of the sleeve identical to that previously described in connection with puncturing unit 57. The lower end of shaft 81 extends below the platform 12 as previously described and has fixedly secured to it a gear 88. The entire puncturing unit 76 is movable through the length of the arcuate shaped slot 82 with the fastening members 78 being simultaneously moved through the arcuate slots 79.

Suitably supported and secured to the platform 12 is a rotatable stub shaft 90 which supports an idler gear 91 fixedly secured thereto, which idler gear is in engagement with gear 88 on the puncturing unit 76.

The gear 88 on the shaft 81 will always remain in engagement or mesh with the idler gear 91 irrespective of its moved position and will be driven by the idler gear 91. The stub shaft 90 is suitably supported by bearing blocks and fixedly secured to the lower end of said stub shaft is a pulley 92.

Suitably supported on the base or stand 10 is an electric motor 93 having a motor shaft 94 to which is fixedly secured a pulley 95. A belt 96 connects driving pulley 95 to pulley 22 to rotate vertical shaft 20 and the annular plate 26 in the receptacle 34.

Also suitably supported on the base or stand 10 is an electric motor 97 having a motor shaft 98 to which is fixedly secured a small pulley 99 and a larger pulley 100. The small pulley 99 is connected by a belt 101 to the pulley 92 on the idler shaft 90 for the purpose of rotating the idler gear 91, which is in mesh with the gear 88 on the shaft 81 for rotating the shaft 81 and the puncturing discs 84 thereon. The larger pulley 100 on the motor shaft 98 is connected by a belt 102 to the pulley 74 on shaft 60 for rotating the shaft 60 and the puncturing elements 66.

It will be seen that the puncturing elements 66 on the shaft 60 rotate clockwise while the puncturing elements 84 on the shaft 81 rotate counterclockwise.

Normally for most operations the puncturing units 57 and 76 are positioned as shown in full lines in Fig. 2, however, if it is desired to shift puncturing unit 76 in relation to puncturing unit 57 it may be done readily for example as shown in dotted lines in Fig. 2. The puncturing unit 76 may be positioned and secured any-

4

where along the length of the arcuate shaped slot 82 and the gear 88 thereof will always remain in mesh with the gear 91 to drive it. In moving the puncturing unit 76, it is also necessary to re-position the section of the chute or trough which bounds the puncturing unit 76. Since one of the two sections of the trough is movable relative to the other, it may be re-positioned as shown in dotted lines in Fig. 2 or in any other desired position.

The operation will be apparent from the foregoing but will be briefly summarized.

The cucumbers which are dumped into the hopper 38 drop into the receptacle 34 and are moved outwardly thereof to the trough or chute 39 by means of the rotating plate 26 and the ribs 30 thereon. The rotating puncturing elements of the puncturing unit 57 will puncture or prick the cucumbers and will move them forwardly or outwardly on the trough where they are also engaged by the rotating puncturing elements on the puncturing unit 76 which moves them from the trough into a conveyor belt not shown or to a suitable receptacle.

The pickles which thus pass from the machine have been punctured sufficiently so that when they are processed in the conventional manner, the pickling solution will readily penetrate the pickles or cucumbers to facilitate and speed up their pickling process. The adjustment of the adjustable puncturing unit 76 in relation to the non-adjustable puncturing unit 57 permits various size cucumbers to be handled and also insures that each cucumber irrespective of its size is punctured by both units which is highly desirable.

It will be understood that variations and modifications may be made from the foregoing without departing from the spirit and scope of the appended claims.

I claim:

1. A machine for puncturing a food product comprising in combination, a receptacle having a side discharge opening, a horizontally mounted rotating member at the lower end of said receptacle for directing the food product laterally outward to discharge same through said discharge opening, a plurality of puncturing members each mounted for rotation on a vertical axis and positioned in spaced relation to each other and in the path of movement of said food product from said discharge opening, means for rotating said puncturing members to puncture said food product, and means for moving at least one of said puncturing members with respect to the other to vary the distance between said puncturing members.

2. A machine for puncturing food products comprising in combination, a receptacle having a side discharge opening, a horizontally mounted rotating member at the lower end of said receptacle for directing the food products laterally outward to discharge same through said discharge opening, a plurality of puncturing members each mounted for rotation about a vertical axis and positioned in spaced relation to each other and in the path of movement of said food products from said discharge opening, means for rotating said puncturing members to puncture said food products, said puncturing members each including a vertical shaft and a plurality of discs removably secured to each said shaft, said discs each provided with a plurality of spaced puncturing pins, and means for moving at least one of said puncturing members with respect to the other to vary the distance between said puncturing members.

3. A machine for puncturing a food product comprising in combination, a receptacle having a side discharge opening, a trough in communication with said side discharge opening and extending laterally thereof, a horizontally mounted rotating member at the lower end of said receptacle for directing the food product laterally outward to discharge same through said discharge opening to said trough, a plurality of puncturing members each mounted for rotation about a vertical axis for puncturing the food product upon discharge from said discharge opening, one of said puncturing members being positioned adjacent said

5

discharge opening, the other of said puncturing members being positioned in said trough in spaced relation to said first mentioned puncturing member, means for adjusting the puncturing member in said trough to vary the distance between it and the first puncturing member, said 5 trough having a pair of side members and means for adjusting one of said side members relative to the other side member when adjusting one of said puncturing members relative to the other.

4. A machine for puncturing cucumbers for pickling 10 purposes comprising in combination, a receptacle for receiving cucumbers in disarranged form, said receptacle having a side discharge opening, a trough in communication with said discharge opening and extending laterally thereof, a horizontally mounted rotating member at the 15 lower end of said receptacle for throwing the cucumbers laterally outward to discharge same through said discharge opening to said trough, a pricking member mounted in said trough for rotation on a vertical axis, and means for rotating said pricking member to puncture said discharged 20 cucumbers.

5. A machine for puncturing cucumbers for pickling

6

purposes comprising in combination, a receptacle for receiving cucumbers in disarranged form, said receptacle having a side discharge opening, a trough in communication with said discharge opening and extending laterally thereof, a horizontally mounted rotating member at the 5 lower end of said receptacle for throwing the cucumbers laterally outward to discharge same through said discharge opening to said trough, a plurality of pricking members each mounted in said trough for rotation on a vertical 10 axis, and means for rotating said pricking members to puncture said discharged cucumbers.

6. In a device of the character set forth in claim 5 in which one of said pricking members is adjustable relative to the other pricking member.

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