July 28, 1936. O. GILLIATT 2,048,791

TOMATO JUICE EXTRACTOR

Filed Oct. 2, 1933

FIG. 1

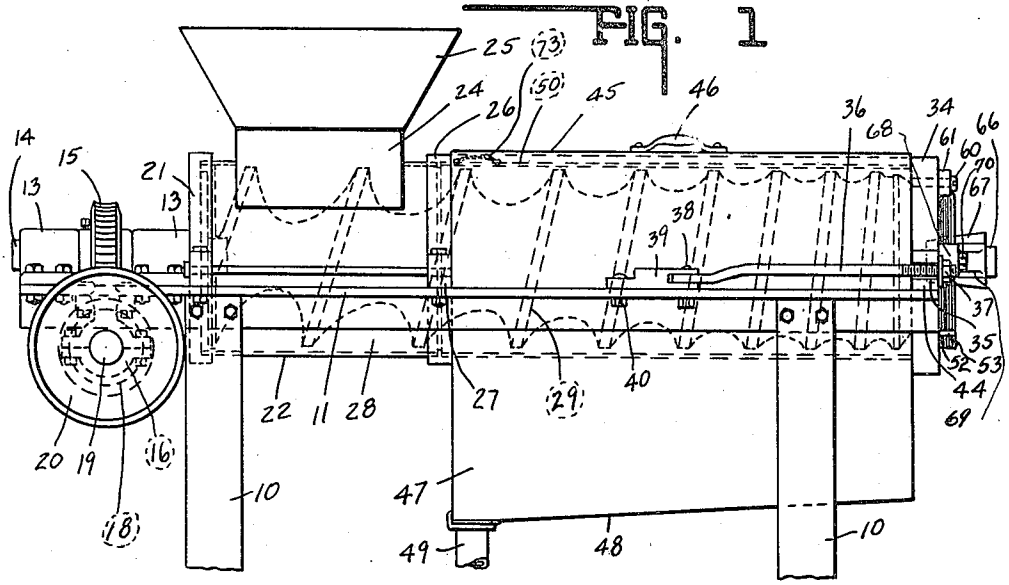


FIG. 2

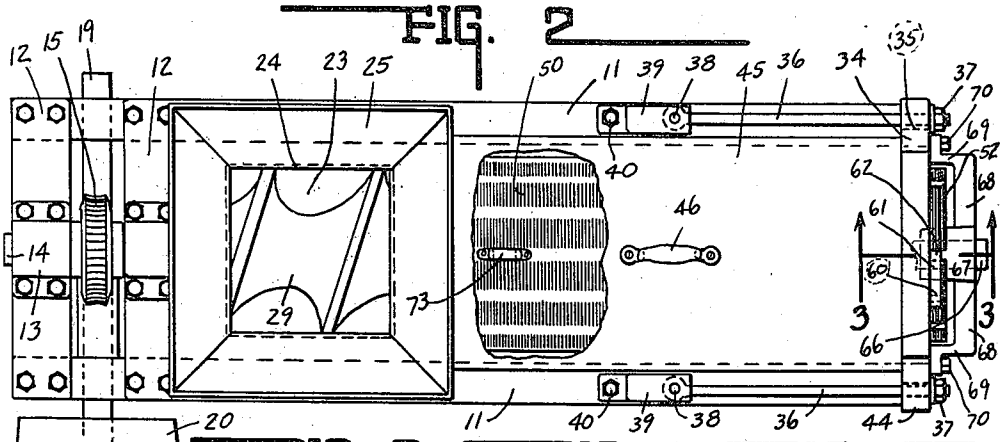


FIG. 3

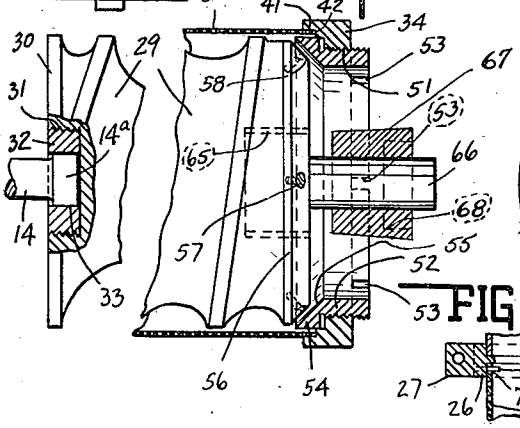


FIG. 4

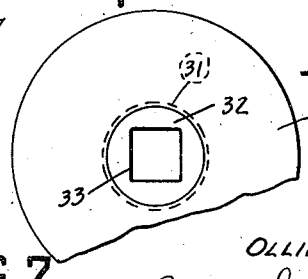


FIG. 5

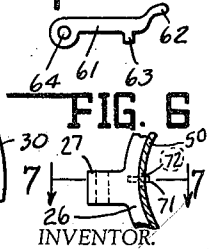


FIG. 6

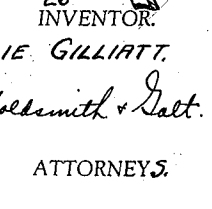


FIG. 7

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TOMATO-JUICE EXTRACTOR

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Application October 2, 1933, Serial No. 691,774

4 Claims. (Cl. 100—48)

This invention relates to a device peculiarly adapted to the separation of tomato juice from the pulp or pomace of the tomatoes.

The chief object of this invention is to provide apparatus whereby parts may be readily disassembled for cleaning and which have a greater efficiency than the apparatus set forth in the copending application entitled "Process and apparatus for producing tomato products", Serial No. 489,332, filed October 17, 1930, which is now Patent No. 1,989,231, dated January 29, 1935.

The chief feature of the invention consists in the adjustable throat construction.

Another feature of the invention consists in the adjustable throat construction in combination with a variable pitched conveying and expressing feed screw associated with a substantially tubular enveloping screen.

Preferably the screen is of the general character illustrated and described in the before mentioned copending application.

Other features of the invention will be pointed out more specifically hereinafter.

The full nature of the invention will be understood from the accompanying drawing and the following specification and claims:—

In the drawing, Fig. 1 is a side elevational view of the separator portion of the tomato product producing machine.

Fig. 2 is a top plan view thereof, a portion of the cover being broken away to show a portion of the screen in plan.

Fig. 3 is an enlarged sectional view showing the free end of the screen, the adjustable throat and the feeding screw and the opposite end construction of the feeding screw, the screw being shown in elevation and the bearing for the screw shaft being omitted.

Fig. 4 is an end elevation of a portion of the driving end of the screw.

Fig. 5 is a side elevation of one form of locking dog employed for maintaining the desired adjustment of the adjustable throat construction.

Fig. 6 is a side elevation of a portion of one end support for the screen, the latter being shown in section and non-rotatably associated therewith.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 6.

In the drawing 10 indicates supporting standards in turn supporting a frame structure 11 comprising a pair of parallel members which at one end are connected by the transverse supports 12 which rotatably support in the bearings 13 thereof the shaft 14 having the squared end 14a, and upon which is mounted, between said members 12, the worm wheel 15. Positioned therebeneath and mounted in the bearings 16 suspendingly supported from the members 11 is the shaft 19 mounting a worm 18. One projecting end of the shaft 19 mounts a pulley, sprocket, or the like, 20, whereby the device may be driven.

An end plate structure 21 in combination with a cylindrical portion 22 having an opening 23 therein from which projects tubular portion 24 terminating in hopper type intake 25, cooperates with the spacing collar 26 suitably supported as at 27 upon the frame work to form a receiving chamber for the crushed or torn tomatoes.

Rotatably supported in the chamber 28 formed within the aforesaid structure, is a screw, generally indicated by the numeral 29, having an end plate structure 30 that is apertured as at 31 and threaded to receive a driving collar 32 having a square or similarly outlined opening 33. The aperture 33 is adapted to receive the complementarily formed end 14a of the shaft 14, which shaft extends through the end plate 21. In this manner the feed screw, indicated generally by the numeral 29, is rotated and may be readily detached from the drive shaft 14 and pulled from the machine at the discharge end.

Also supported by the collar 26 is one end of a cylindrical perforated screen structure 50, preferably of slotted character, such as that specifically disclosed in the before mentioned copending application for Letters Patent. This screen is non-clogging.

A screen support, indicated generally by the numeral 34, is provided with a pair of apertures 35 and extending through the same are the clamping rods 36 mounting nuts 37. Each rod 36 is pivotally supported at 38 in the bracket 39 suitably secured as at 40 to the frame members 11. The screen 50 is seated in the recessed portion 41 of the support member 34 and the free end of the screen bears against the shoulder 42. Thus the screen is clampingly supported between the collar 26 and the screen support member 34. The end of the screen is prevented from pitching downwardly by reason of the outwardly projecting portions 44 on the support member 34 and resting upon the frame members 11.

To prevent rotation of the screen—see Figs. 6 and 7—it is provided with at least one notch in its end. Preferably two diametrically positioned notches in each end are provided and are indicated by the numeral 71. The screen support at each end includes lugs 72 herein shown as pins, that extend radially inwardly and are received

by the notches when the screen is seated. To facilitate screen removal a handle 73 is provided at the intake end of the screen. When removing the screen, the exposed discharge end is grasped in one hand and handle 73 is grasped by the other.

A cover 45 partially cylindrical in form, is provided with a handle 46 whereby the same may be readily removed when desired. The cover together with the structure, hereinafter set forth, forms a separating chamber. The lower portion of said chamber includes a tank like arrangement 47 having inclined bottom 48 inclining downwardly toward an outlet 49 which may or may not be controlled by a valve not shown. The tank 47 and cover 45 form a separating chamber surrounding the screen 50. As shown clearly, the screen is substantially cylindrical and open at both ends and as set forth herein before. The feed screw is of substantial uniform diameter throughout its length, except that the spacing, between the portions of uniform diameter, gradually decreases from the inlet end of the machine to the discharge end of the machine, and the root or base diameter of the grooved portion between each uniform diametered portion is of gradual increasing diameter from the inlet to the discharge end of the machine. The result is as follows;—

As the material is supplied to the machine, it is conveyed by the feed screw from the receiving chamber 28 to the separating chamber coextensive therewith and as the pulp is gradually forced toward the discharge end of the machine which is at the right in Fig. 1, the material is gradually compressed within the screen by reason of the increase in diameter of the central portion of the screw or reduction in depth of the groove before mentioned, and by reason of the decrease in the spacing between the threads at successive positions so that the pulp compresses in its forward travel through the machine. The result is that the juice is gradually forced from the pulp and through the screen apertures, and the correspondingly increasing portion of the solids in the remaining pulp is subjected to greater pressure for further juice separation so that by the time the pomace is ready for discharge at the discharge end of the machine, practically all of the desired juice content has been expressed by the feed screw through the screen, leaving only the pomace or relatively solid material of the tomatoes for discharge. The discharge end of the machine is provided with an adjustable throat construction for varying the degree of back pressure exerted upon the pomace and thus there is obtained the desired degree of separation between the pomace and the juice. This means for adjustable throat construction is shown most clearly in Fig. 3 and cooperating parts thereof are shown in Figs. 1, 2, and 5.

The screen end support member 34 is centrally apertured and the same is threaded as at 51. Threadedly mounted therein is a throat sleeve 52 which at one end and the outer end is provided with a peripheral series of spaced notches or recesses 53. The other end of the sleeve is provided with an outwardly extending peripheral portion 54 which is provided with the conical face or throat 55. The discharge end of the feed screw has detachably associated therewith a throat associated ring 56 which is detachably connected to the feed screw as at 57 and the same is also inclined as at 58. In the drawing the inclinations of the conical faces 55 and 58 are shown the same.

It will be apparent that as the sleeve throat is rotated or threaded inwardly or outwardly with respect to the screen end support member 34, the width of the annular channel between faces 55 and 58 constitute the discharge outlet for the pomace is correspondingly decreased or increased respectively.

Pivotally supported by the pivot member 60 is a dog 61 which has a finger engageable portion 62 and a locking tooth 63, the latter being adapted to seat in any one of the selected recesses 53 of the adjustable sleeve throat. The member 60 extends through the opening 64 of the locking dog and is suitably secured to the screen end support member 34 and preferably near the upper portion thereof for gravity locking of the dog.

The exposed end of the feed screw is suitably apertured and the same is threaded as at 65 and threadedly mounted therein is a stub shaft 66. The shaft 66 is rotatably supported in a bearing 67 from which extends a pair of diverging arms 68 with inturned ends 69, the latter being rigidly secured as at 70 to the screen end support member 34.

The resulting construction is such that the free end of the shaft is supported by a detachable bearing which may be readily removed and upon removal, the nuts 37 may be removed and the entire end support 34 with the adjustable throat may be axially removed from the machine. Then the screen may be removed following removal of the feed screw construction. This permits access to be had to the entire interior of the machine for cleaning, it being understood, of course, that the cover 45 has been initially removed.

While the invention has been described in great detail in the foregoing specification, the same is not to be considered as of restrictive character but merely by way of illustration and modifications, which will readily suggest themselves to persons skilled in this art, are all considered to be within the scope of the invention, reference being had to the appended claims.

The invention claimed is:—

1. An adjustable detachable discharge structure for a press having a rotatable screw, an enveloping straining screen and a supporting frame, including in combination a plurality of elongated members pivotally supported upon the frame considerably remote from the discharge end of the screen, a centrally apertured screen support, supported by the frame and clampingly and detachably associated with the discharge end of the screen and detachably associated with said members, an interlock operative between the screen and said support, a tubular throat sleeve adjustably supported by the screen support and having a tapered inlet, a complementary tapered end on the screw cooperating with the inlet, latch means retaining the throat sleeve in axially adjusted position, and shaft bearing means for the screw positioned externally of the throat sleeve and independent of the same.

2. A device as defined by claim 1, characterized by the screen support and throat sleeve having a threaded adjusting connection, said throat sleeve having a plurality of longitudinally elongated spaced recesses on its periphery, said throat sleeve being exposed beyond said support for latch seating in an adjacent recess, said latch means being supported by the support on the face opposite the face having the screen engagement therewith.

3. A device as defined by claim 1, characterized by said shaft bearing means including a C-member rigid with said support, said C-member having its intermediate portion offset from the support and exposing the recessed end of the throat sleeve between the offset portion and the support.

4. A device as defined by claim 1, characterized by the screen support and throat sleeve having a threaded adjusting connection, said throat sleeve having a plurality of longitudinally elongated spaced recesses on its periphery, said throat sleeve being exposed beyond said support for latch seating in an adjacent recess, said latch means being supported by the support opposite from the screen engagement, said shaft bearing means including a C-member rigid with said support, said C-member having its intermediate portion offset from the support and exposing the recessed end of the throat sleeve between the offset portion and the support.

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