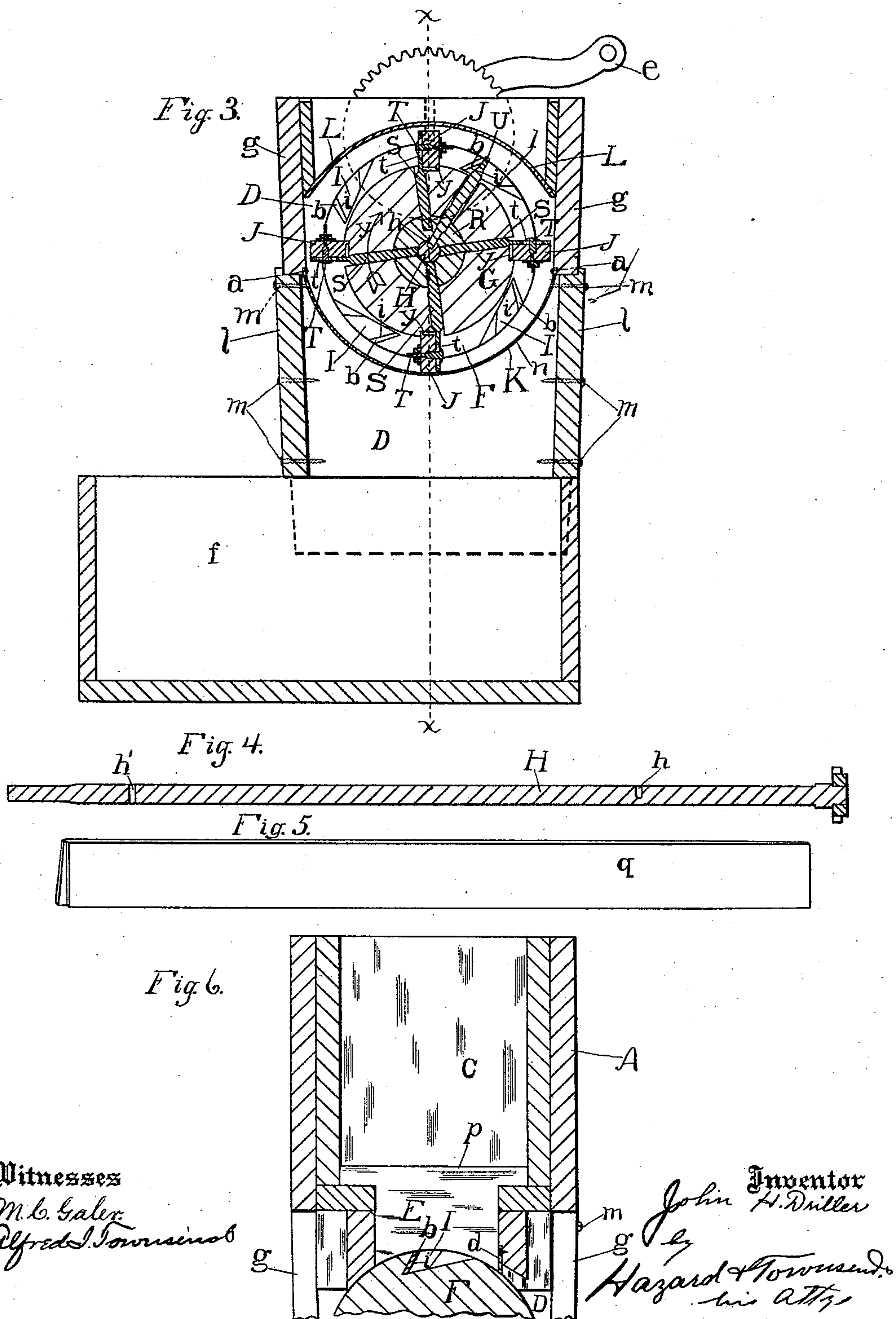


J. H. DRILLER.
SEPARATOR.

No. 454,940.

Patented June 30, 1891.



UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 454,940, dated June 30, 1891.

Application filed October 10, 1890. Serial No. 367,689. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. DRILLER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Separator, of which the following is a specification.

The object of my invention is to provide a machine which will rapidly separate or screen semi-liquid materials—such as cooked tomatoes in making catsup, small fruits in making jelly, &c.—where it is desired to separate the pomace or other coarse parts from the mush or other finer parts.

My invention comprises, essentially, the combination of an inclined revoluble separating-cylinder provided with longitudinally-arranged paddles or projecting ribs tapering from the tail to the head and a tapering separating-box having a perforated bottom conforming substantially to the curved face of half the cone generated by the ribs of the revolving cylinder and provided with the pomace-discharge opening.

It also comprises other features hereinafter fully set forth.

The accompanying drawings illustrate my invention.

Figure 1 is a vertical longitudinal mid-section on line *xx*, Fig. 3. Fig. 2 is a plan view with the feed-box and cover removed. Fig. 3 is a cross-section on line *yy*, Fig. 1, with the feed-box removed. Fig. 4 shows the shaft upon which the cylinder is mounted. Fig. 5 shows the paddle-setting straight-edge or gage. Fig. 6 is a cross-section of the feed-box and a fragment of the feed-head on line *ZZ*, Fig. 1.

A is the feed-box into which the cooked tomatoes or other material to be prepared are placed.

B is a vertically-sliding feed-gate to separate the main part of the feed-box from the compartment C, which communicates with the separating-box D through the feed opening or chute E, which is immediately above the top of the feed-head F of the separating-pulp cylinder G, which is mounted upon the inclined shaft H, which is journaled in the ends of the separating-box and is substantially parallel with the perforated bottom K of the separating-box, which bottom is suf-

ficiently inclined from the head toward the tail of the machine to cause the pulp to flow toward the tail when the cylinder is rotated. The head F of the separating or pulp cylinder is provided with a series of peripheral grooves I, arranged spirally or oblique to the axis of the head and extending from the lower end of the head nearly but not quite to the upper end of the head, so that the fruit passing through the feed-opening E is conducted toward the tail of the machine when the cylinder is rotated.

The separating-cylinder G is provided with a series of longitudinally-arranged ribs or paddles J, which are preferably seated in grooves *y* in the face of the cylinder and are secured to the cylinder by standards S. These ribs are tapering and increase in width from the head to the tail of the cylinder G, the main body of which cylinder is uniform in size, so that when the cylinder is rotated the wings describe a frustum of a cone. The separating-box is provided with a perforated sheet-metal bottom K, which extends across the separating-box and constitutes a curved sieve arranged beneath the cylinder and conforming substantially to the curved side of half the solid generated by the rotating ribs, but of a greater radius, and having its axis above the axis of the cylinder, so that where- as the ribs when in their lowest position touch the lowest portion of the sieve there is sufficient space between the sides of the cylinder and the upper edges of the sieve or curved bottom K to allow of the introduction of the cooked tomatoes or other material to be treated. The open end of the peripheral grooves I open into the spaces between the ribs, so that in operation the pulp is delivered into the spaces between the ribs. Over the cylinder is fitted a removable arched cover L, conforming substantially to the curved face of half the solid generated by the revolving ribs J. This cover is arranged close to, but is raised a half inch (more or less) above, the path of the revolving ribs. This cover is of special value when the machine is used in making catsup, as the mashed tomatoes are thrown up against it by the revolving ribs and drop therefrom into the path of the ribs, and are more thoroughly beaten than they

would be if the cover fit closely upon the paddles or was at a much greater height thereabove.

The shaft H, upon which the separating or pulp cylinder is mounted, is journaled in the ends of the separating-box D, and is inclined from the head down toward the tail of the machine, and the inner faces M N of the two ends of the box are arranged at right angles to such inclined shaft, so that the cylinder G with its head F and ribs J fits closely therein, but can revolve freely.

O is the pomace-discharge opening at the tail of the machine.

For convenience in construction the head F is made separate from the main body G of the cylinder, and is secured to the main body by screw-eyes P, set into the head, and screws Q, passed through the eyes and screwed into the body G of the cylinder. The screw-eyes preferably project into the longitudinal grooves *y*, in which the ribs are seated, so that when the ribs are in place the eyes and screws are concealed.

The body of the cylinder is preferably formed of a hollow cylindrical shell, and is held in position by the center collars R R', which are secured in place by the standards S, which are inserted through the shell and are screwed respectively into the collars, and to which the ribs are secured by nuts and bolts T. The collars are secured to the shaft by set-pins U, which are screw-threaded a part of their length, but are smooth-pointed. The shaft is provided with two set-holes arranged at the proper place to receive these pins when inserted through the collars. The hole *h* near the head of the shaft, which serves for the seat for the upper pin, preferably passes only part way through the shaft, in order not to weaken the shaft. The lower pin-hole *h'*, however, may pass entirely through the shaft, as there is but little strain on the lower part of the shaft.

It will be seen from Fig. 3 that the inside of the separating-box tapers in cross-section from the top to the bottom of the box, so that the cover L, which also tapers in cross-section, may fit tightly therein to prevent any of the material from being forced up between the cover and the sides of the box, and yet can be easily withdrawn when it is desired to gain access to the cylinder. The peripheral grooves I are arranged spirally, and the bottoms of the grooves slope from the surface of the head back into the head, and the rear part of the groove forms the main receptacle for the material passing through the feed-opening E. The rear wall *i* of the groove forms an abrupt angle with the periphery of the head and is faced with a removable plate *b*, so that when the outer edge becomes worn the machine may be easily repaired by replacing the worn plate with a new one. The plate is secured to the head by means of nails or screws or equivalent fastenings. The feed

opening or chute E is provided on the side toward which the head revolves with a flexible scraper *d*, arranged to engage the periphery of the head and prevent the passage of any pulp except that which is carried by the grooves I, so that the amount of material passing through the machine will depend solely upon the rapidity with which the cylinder is revolved. The scraper *d* is preferably made of sheet-rubber, and may be replaced by a new one when worn. The mush-box *f* is wider than the separating-box, so that the mush may be removed without disturbing the separating-box.

In practice the material to be separated is placed in the feed-box A and the gate B is raised sufficiently to allow the passage of about the amount of material to be fed to the machine, thus allowing a steady flow of the material into the feed-opening E. The cylinder is rotated in the direction of the arrow and the material is carried by the grooves I and thrown between the ribs J, which carry it along toward the discharge-opening O. As it proceeds down through the separating-box it is thrown by the centrifugal force against the cover L and the perforated bottom K. The result of the operation is that the finer portion passes through the perforated bottom into the mush-box *f* and the stems, seeds, skins, and other coarse portions pass off through the pomace-discharge opening O at the tail of the machine.

My machine can be used advantageously as a screen for separating dry material as well as wet. The portion of the sides of the separating-box below the perforated bottom is made separate from the portion above such bottom, and the edges of the perforated bottom are fastened to the upper portion or sections *g*. The lower sections *l* are secured to the end pieces M N by screws *m*, so that they can be easily removed when it is desired to replace the perforated bottom. This is necessary in order that the bottom can be placed in position without kinking it. If the bottom is kinked or uneven, it will wear out more rapidly than if it is perfectly true. The end pieces M N are each provided with a shoulder *n*, which is of the curvature desired for the perforated bottom, and the ends of such bottom are fitted upon and secured to such shoulders.

p is a gage-plate which is sometimes inserted into the feed-opening E to decrease the size thereof when the material to be operated upon is so fluid as to flow very freely.

In order to adjust the paddles or ribs J accurately, I provide a straight-edge *q*, and I provide two notches or grooves *r r'* in the end pieces of the separating-box, so arranged that when the straight-edge is set in the notches its lower edge will be equidistant with the perforated bottom from the axis of the shaft, so that in adjusting the ribs the outer edge thereof is set so as to just escape the straight-

edge. This brings them into such position as to just escape the perforated bottom when the cylinder is rotated.

t t are slots in the standards, through which the bolts *T* pass. They allow such adjustment to be made.

The machine can be easily taken apart to be cleaned. To clean it the feed-box is first removed. Then the cover *L* is lifted out. Then the set-pins *U* are unscrewed and withdrawn, thus releasing the shaft *H* from the cylinder *G*.

u is a slide in the tail-boxing *v*, which is perforated to allow the insertion of a rod to drive out the shaft. When the shaft is withdrawn from the cylinder, the cylinder is removed, thus exposing the perforated bottom *K*. If desired, the ribs or paddles may then be removed from the cylinder by first removing the bolts *T*. The head can then be separated from the main body *G* by removing the screws *Q*. Then by unscrewing the standards *S* the collars *R R'* are released and may be withdrawn. The top sections *g* of the separating-box project inward over the inside of the bottom sections *l*, thus leaving a space 2 between the perforated bottom *K* and the lower section on each side, which allows the perforated bottom to be thoroughly cleaned when the separating-box is inverted.

Now having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a separator, the combination of the inclined revoluble separating-cylinder provided with longitudinally-arranged ribs, the separating-box provided with the curved perforated bottom, and the arched cover conforming substantially to the curved face of one-half of the solid generated by the revolving ribs and arranged farther than said bottom from the path of the revolving ribs.

2. The combination of the inclined revoluble separating-cylinder provided with the ribs, and the separating-box provided with the curved sieve arranged beneath the cylinder and conforming substantially to the curved side of half the solid generated by the rotating ribs, but of a greater radius and having its axis above the axis of the cylinder.

3. In a separator substantially such as set forth, the combination of the peripherally-grooved feed-head, the feed-box provided with the feed-opening, and the flexible scraper arranged to engage the periphery of the feed-head.

4. In a separator, the combination of the separating-cylinder provided with the longitudinally-arranged ribs, and the separating-box provided with the perforated bottom conforming substantially to the curved side of half the solid generated by the rotating ribs, but of a greater radius and not concentric therewith, substantially as and for the purpose set forth.

5. In a separator such as described, the combination of the shaft, the feed-head, the body of the cylinder provided with the longitudinal rib-grooves *y*, the screw-eyes set into the feed-head and projecting into the rib-grooves, the screws passed through the eyes, and the ribs secured in the grooves.

6. The combination of the shaft provided with the set-holes, the body of the cylinder formed of a cylindrical shell, the center collars, the standards inserted through the shell and respectively screwed into the collars, and the screw-threaded smooth-pointed set-pins.

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Witnesses:

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