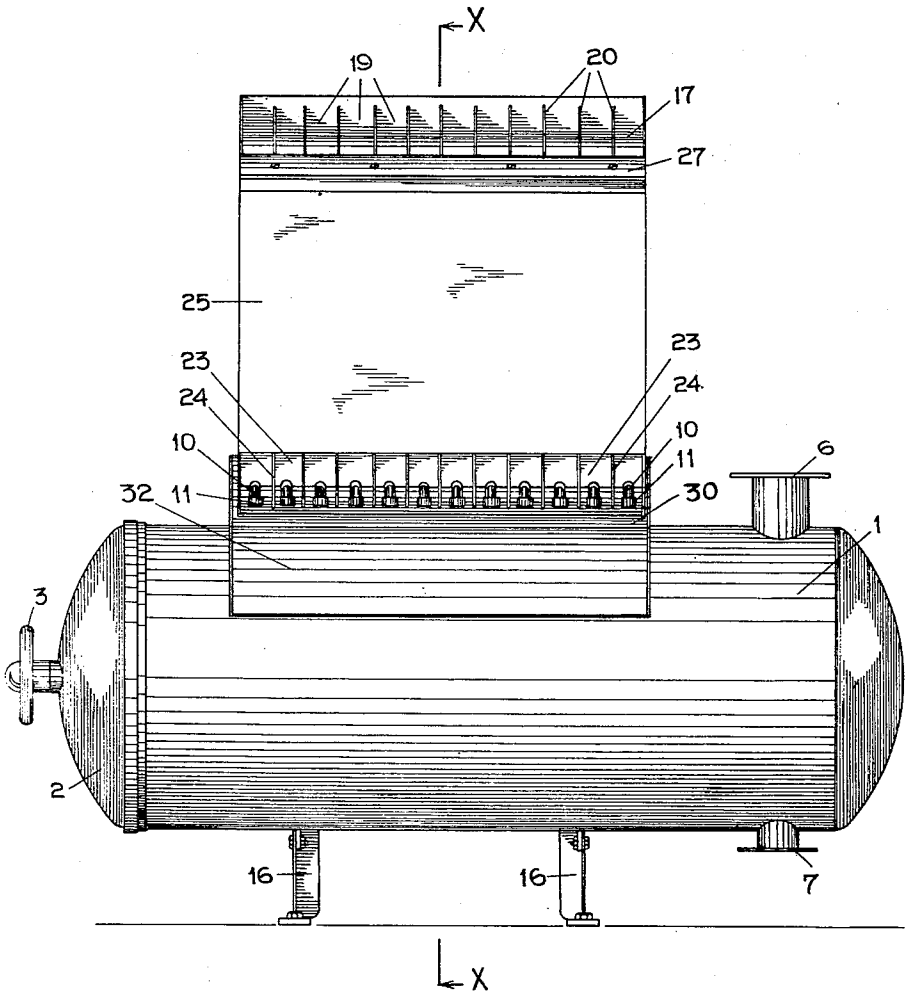
Aug. 10, 1948. H. H. CRIBB ET AL 2,446,812

SUCTION EVACUATOR FOR REMOVING THE FLUID CONTENT OF EGGS

Filed May 1, 1946 3 Sheets-Sheet 1

Fig. 1.



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Filed May 1, 1946 3 Sheets-Sheet 2

FIG 2

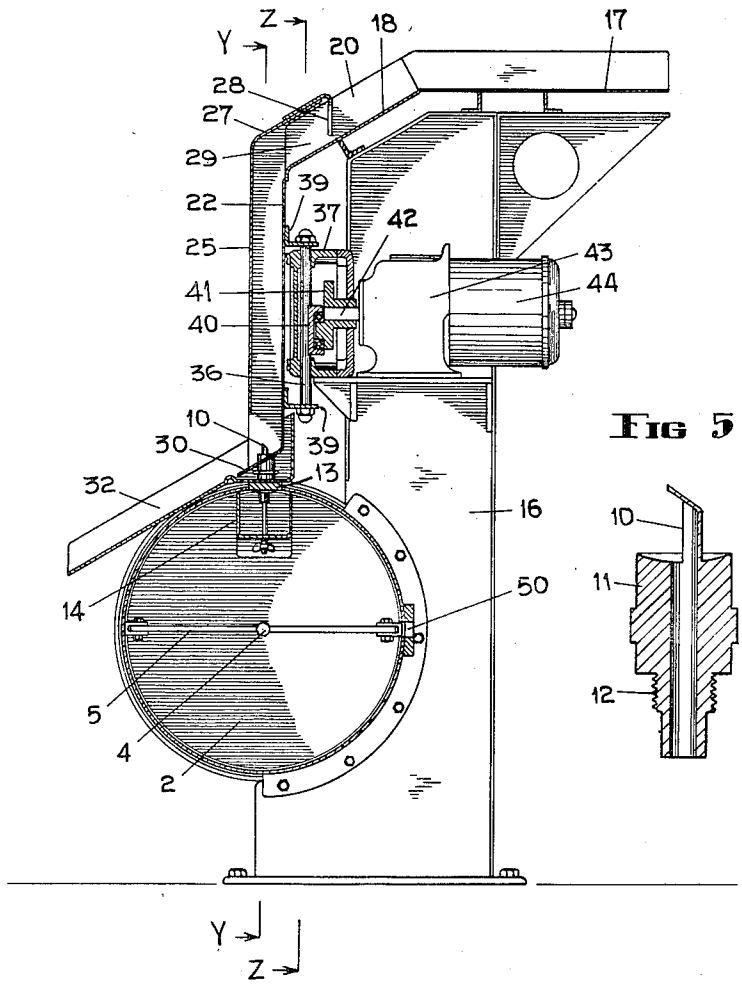


FIG 5

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FIG 3.

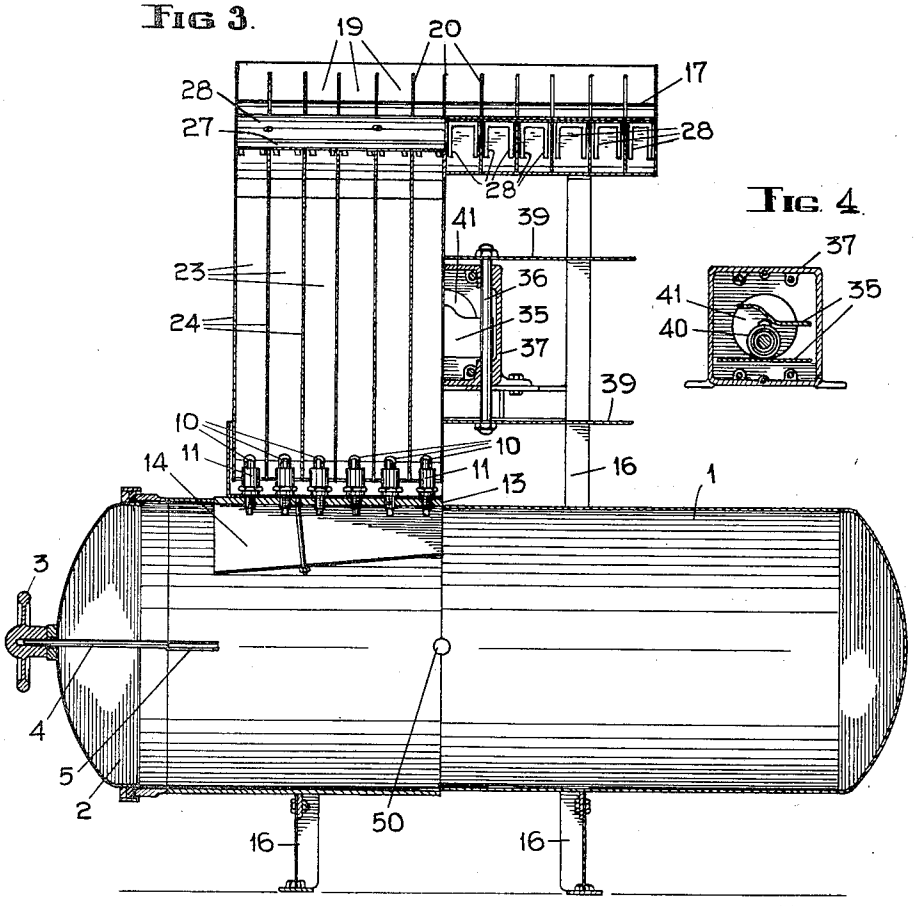


FIG. 4.

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SUCTION EVACUATOR FOR REMOVING THE FLUID CONTENT OF EGGS

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In Australia June 4, 1945

12 Claims. (Cl. 146—2)

1

This invention relates to improvements in suction evacuators for removing the fluid content of eggs.

In suction evacuators as used at the present time it is customary to utilize a hollow needle over which the eggs to be evacuated are placed, the suction through the needle drawing the contents out of the eggs and discharging same to a suitable container.

The objects of this invention are to provide certain improvements to machines of the above type, the chief object being to provide a machine which will be automatic in operation and which will feed eggs to the suction needles and will remove the shells from the needles after the content has been withdrawn, a further object being to provide simplicity of construction and an arrangement wherein cleaning can be readily effected.

A device according to this invention comprises a mechanism which feeds eggs from a table into channels or other guiding means in which the eggs fall freely onto needles placed in the path of the falling eggs, the needles being associated with suction means so that the content of the eggs is rapidly removed through the needles, the device including means which remove the empty shells from the needles.

In order, however, that the invention may be more clearly understood, it will now be described with reference to the accompanying drawings in which:

Fig. 1 is a front elevation of the unit constructed according to this invention, the unit comprising twelve needles,

Fig. 2 is a transverse section of same on line X—X of Fig. 1,

Fig. 3 is a compound section the left hand side being taken on line Y—Y of Fig. 2 and the right hand side being taken on line Z—Z of the same figure.

Fig. 4 is a sectional front elevation showing the cam mechanism of the machine, and

Fig. 5 is an enlarged central section of one of the needles.

The pulp receiving tank 1 is provided with a removable end 2 held in place by means of a locking wheel 3 on a threaded shaft 4 secured to a cross bar 5 within the container 1.

A suction line 6 is provided on the pulp container, as well as a pulp withdrawal line 7, the latter line being adapted to be connected to a pump having sufficient suction to withdraw the liquid content from the container 1 against the suction applied through the line 6.

2

Disposed along the top of the container 1 are a series of needles 10 which have a body portion 11 of larger diameter and which have a screw threaded portion 12 whereby they are screwed into a supporting member 13 formed integrally with the top of the container 1.

The hollow in the needle 10 communicates directly with the inside of the container 1 and is at all times in open communication with the chamber 1 so that suction is maintained within the needle which will withdraw the content of an egg so soon as such egg falls onto the needle 10 and is pierced thereby.

The container 1 is fitted with a guard 14 which slopes downwardly towards the one end and serves to prevent surge in the main body of pulp within the container which could be induced if the jets of air and pulp from the needles could impinge directly onto the surface of the pulp in the container.

Disposed above the container 1, and supported by the frame 16, is a table 17 onto which the eggs are fed by the operator, the table having a downwardly sloping floor 18 at its discharge end, the downwardly sloping floor being divided into a series of channels 19 by division members 20 which are spaced so that each channel has a width only slightly exceeding the length of an egg whereby the eggs are aligned in rows having a spacing the same as the spacing of the needles 10 in the suction apparatus of the machine.

Disposed across the front of the machine is a reciprocating frame member 22 which is similarly divided into channels 23 by dividing members 24 secured to the frame member 22. A front plate 25 closes the front of the channels 23 so that eggs entering these channels will be guided vertically to fall directly onto the needles 10.

The front plate 25 has an upwardly and rearwardly extending section 27 at its top which carries a shutter 28 comprising a main body having downwardly projecting sections against which the eggs lying in the channels 19 normally rest, but by means of which they are released when the reciprocating section moves upwardly to bring the lower edge of the shutter 28 to a sufficient height to allow the eggs to pass beneath same.

As the shutter 28 and the frame member 22 move together, the lifting of the shutter 28 to allow eggs to pass beneath, automatically brings the top of the frame member 22 above the level of the end of the sloping floor 18 of the table, so that the eggs are stopped from entering the channels 23, the space 29 between the reciprocating frame member 22 and the shutter 28 being

such that only one egg can enter this locality in each channel, the downward movement of the reciprocating frame member **22** then causing the shutter **28** to move down to isolate the eggs on the feed side from those carried in the space **29**, continued downward movement bringing the upper edge of the frame member **22** below the lower edge of the sloping floor **18** and allowing the eggs from the spaces **29** to fall down the channels **23** and onto the needles **10**. The dimensions of the channels **23** are preferably such that the eggs must fall end first.

So soon as the eggs fall onto the needles **10** they are evacuated by the suction maintained through these needles, and the empty shells are subsequently dislodged from the needles by stripping means **30** formed by the out-turned lower portion of the frame member **22**, the shells then falling onto the chute **32** from which they are discharged.

Movement of the reciprocating frame member **22** is effected by a cam follower **35** which is secured to a pair of guide rods **36** which are slidably carried in a housing **37** in turn supported from the main frame **16**, the guide rods **36** being secured to brackets **39** attached to the frame member **22**.

The cam follower **35** is disposed in the path of a roller **40** which is eccentrically mounted on a crank disc **41** carried on a shaft **42** projecting from a gear box **43** driven from the motor **44**.

From the foregoing it will be appreciated that eggs are successively fed to the channels **22**, falling freely by gravity down these channels to be pierced by the needles **10**, the operation being very simple and rapid to allow a large quantity of eggs to be treated in a given time.

Cleaning can be readily effected by washing the needles **10** and also the inside of the container **1**, the latter, as said, having a removable end plate **2** through which access is gained to the inside of such container.

The aperture **50** in the container **1** serves to take a float regulator of any usual or approved construction if it is desired to limit the height of the liquid level within the container, this float control stopping the motor **44** should the level in the container exceed the desired height.

What we claim is:

1. For removing the fluid content of eggs, a suction evacuator comprising; hollow needles projecting upwardly, means to support the needles, means to transmit suction to the needles, means to support the eggs at a higher level than the needles, a frame movable to a feed position to release eggs to fall from the supporting means, means to periodically move the said frame to the feed position, means to guide the eggs on to the needles when falling from the feed position, and means to strip the egg shells from the needles when the said frame is not in the feed position.

2. For removing the fluid content of eggs, a suction evacuator comprising; a container for the egg pulp, hollow needles projecting upwardly and in communication with the inside of the container, a suction inlet to such container, means to support the eggs at a higher level than the needles, a frame movable to a feed position to release eggs to fall from the supporting means to periodically move the said frame to the feed position, means to guide the eggs on to the needles when falling from the feed position, and means to strip the egg shells from the needles when the said frame is not in the feed position.

3. For removing the fluid content of eggs, a

suction evacuator comprising; hollow needles projecting upwardly, means to support the needles, means to transmit suction to the needles, means to support the eggs at a higher level than the needles, a movable frame to cause eggs to fall from the supporting means when the frame is moved, means to move such frame, means to guide the eggs on to the needles when falling, and means on the frame to encircle the needles to remove the egg shells from the needles when the said frame is moved.

4. For removing the fluid content of eggs, a suction evacuator comprising; hollow needles projecting upwardly, means to support the needles, means to transmit suction to the needles, means to support the eggs at a higher level than the needles, a frame movable to feed position to release eggs to fall from the supporting means, means to periodically move such frame to the feed position, means to guide the eggs on to the needles when falling from the feed position, said guide means having a lesser cross-sectional dimension than the length of the eggs to cause the eggs to fall end first, and means on the frame to strip the egg shells from the needles when the said frame is moved.

5. For removing the fluid content of eggs, a suction evacuator comprising; a container for the egg pulp, hollow needles projecting upwardly and in communication with the inside of the container, a suction inlet to such container, means to support the eggs at a higher level than the needles, a frame movable to a feed position to release eggs to fall from the supporting means, means to periodically move such frame to the feed position, means to guide the eggs on to the needles when falling, said guide means having a lesser cross-sectional dimension than the length of the eggs to cause the eggs to fall end first, and means on the frame to encircle the needles to strip the egg shells from the needles when the frame is moved.

6. For removing the fluid content of eggs, a suction evacuator comprising; a container for the egg pulp, hollow needles projecting upwardly and in communication with the inside of the container, a suction inlet to such container, means to support the eggs at a higher level than the needles, a frame movable to a feed position to release eggs to fall from the supporting means, means to reciprocate the said frame, means to guide the eggs on to the needles when falling, means to strip the egg shells from the needles, and means to actuate the stripping means after the eggs are evacuated and before the said frame is moved to its feed position.

7. For removing the fluid content of eggs, a suction evacuator comprising; a container for the egg pulp, hollow needles projecting upwardly and in communication with the inside of the container, a suction inlet to such container, means to support the eggs at a higher level than the needles, a frame movable to feed eggs from the supporting means, means to reciprocate such frame, means to guide the eggs on to the needles when falling, said guide means having a lesser cross-sectional dimension than the length of the eggs to cause the eggs to fall end first, and means to strip the egg shells from the needles, and means to actuate the stopping means after the eggs are evacuated and before the said frame is moved to its feed position.

8. For removing the fluid content of eggs, a suction evacuator comprising; a container for the egg pulp, hollow needles projecting upwardly and

in communication with the inside of the container, a suction inlet to such container, a table to support the eggs at a higher level than the needles, a downwardly sloping floor on such table, guide means on said sloping floor to align the eggs in rows above the needles, a frame in the path of the eggs but retractable below the said sloping floor to cause the eggs to roll from the supporting means when the frame is retracted, means to periodically retract said frame, means to guide the eggs on to the needles when falling, and means to strip the egg shells from the needles, when the said frame is not retracted.

9. For removing the fluid content of eggs, a suction evacuator comprising; hollow needles projecting upwardly, means to support the needles, means to transmit suction to the needles, means to support the eggs at a higher level than the needles, guide means forming channels above each needle down which the eggs can fall on to the needles, a movable frame projectable into such channels, means to periodically retract the top of the frame from the channels, shutter means on the movable frame to project into the channels when the movable frame is withdrawn from the channels, the said shutter means being disposed behind the movable frame a distance to accommodate an egg in the space between same, and means to strip the egg shells from the needles when the said frame is projected into the channels.

10. For removing the fluid content of eggs, a suction evacuator comprising; a container for the egg pulp, hollow needles projecting upwardly and in communication with the inside of the container, a suction inlet to such container, means to support the eggs at a higher level than the needles, guide means forming channels above each needle down which the eggs can fall on to the needles, a movable frame projectable into such channels, means to periodically move the top of the frame out of the channels, shutter means on the movable frame to project into the channels when the movable frame is withdrawn from the channels, the said shutter means being disposed behind the movable frame a distance to accommodate an egg in the space between same, and means to strip the egg shells from the needles when the said frame is projected into the channels.

11. For removing the fluid content of eggs, a suction evacuator comprising; a container for the egg pulp, hollow needles projecting upwardly

and in communication with the inside of the container, a suction inlet to such container, a table to support the eggs at a higher level than the needles, a downwardly sloping floor at the discharge end of the table, guide means forming channels to align the eggs in rows above the needles, a movable frame projectable into such channels, means to periodically retract the top of the frame from the channels, shutter means on the movable frame to project into the channels when the movable frame is withdrawn from the channels, the said shutter means being disposed behind the movable frame a distance to accommodate an egg in the space between same, and means to strip the egg shells from the needles when the said frame is projected into the channels.

12. For removing the fluid content of eggs, a suction evacuator comprising; a container for the egg pulp, hollow needles projecting upwardly and in communication with the inside of the container, a suction inlet to such container, a table to support the eggs at a higher level than the needles, a downwardly sloping floor on said table, guide means on the sloping floor forming channels to align the eggs in rows above the needles, a movable frame projectable into such channels, means to periodically retract the top of the frame from the channels, shutter means on the movable frame to project into the channels when the movable frame is withdrawn from the channels, the said shutter means being disposed behind the movable frame a distance to accommodate an egg in the space between same, vertical guide means in register with the first said guide means to form vertical channels down which the eggs fall on to the said needles when the movable frame is retracted from the sloping channels, and means to strip the egg shells from the needles when the said frame is projected into the channels.

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