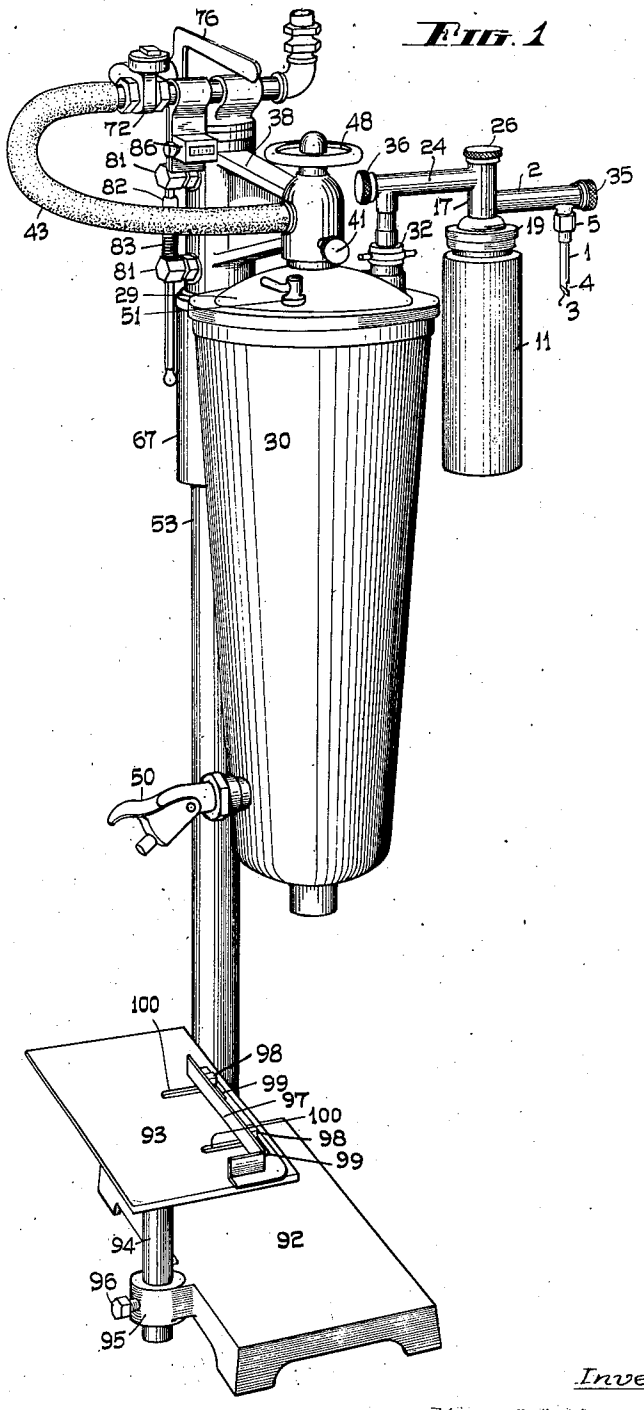
Jan. 6, 1942. H. H. CRIBB 2,269,254

MACHINE FOR MANUFACTURING EGG PULP

Filed Oct. 16, 1940 3 Sheets-Sheet 1

Fig. 1



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MACHINE FOR MANUFACTURING EGG PULP

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FIG. 2

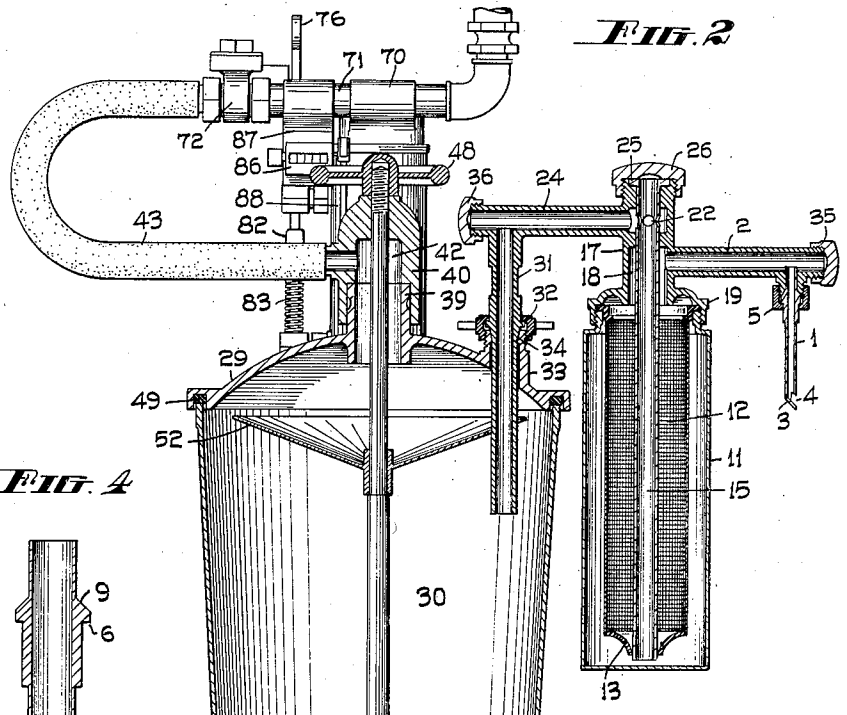
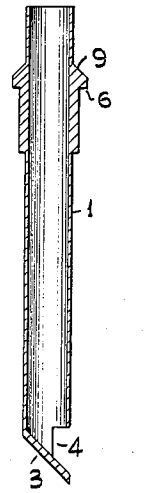


FIG. 4



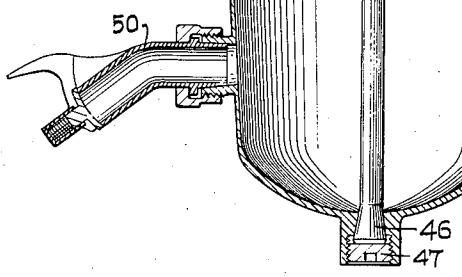
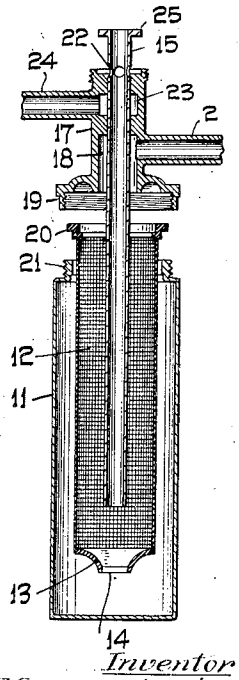


FIG. 3



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MACHINE FOR MANUFACTURING EGG PULP

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Fig. 5

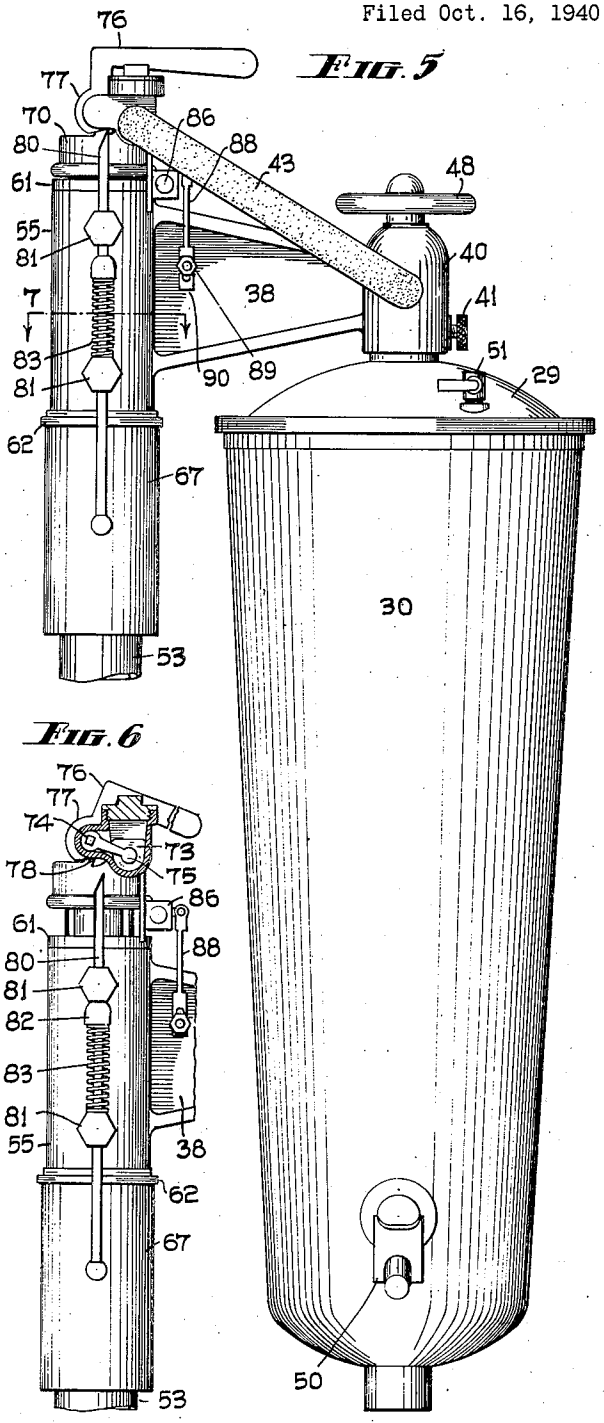


Fig. 7

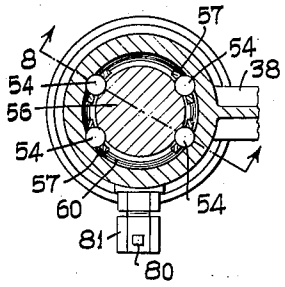


Fig. 8

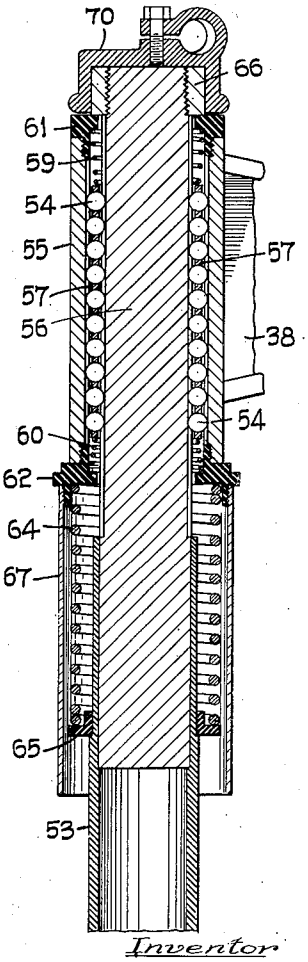


Fig. 6

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2,269,254

MACHINE FOR MANUFACTURING EGG PULP

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Application October 16, 1940, Serial No. 361,416
In Australia November 11, 1939

20 Claims. (Cl. 146—2)

This invention relates to improvements in machines for manufacturing egg pulp, and in particular it relates to a machine of the suction-operated type.

In machines for manufacturing egg pulp a feature of paramount importance is the minimising of bacterial contamination of the pulp, other important features being rapidity of action and simplicity of construction.

The object of this invention therefore is to provide a machine which will have the necessary low contamination factor and will at the same time be rapid in action and simple in construction.

To attain the objects I have found for instance that the needle through which the content of the eggs is withdrawn should be such that it will quickly and effectively withdrawn the content of the egg, means should be embodied to prevent excessive introduction of shell fragments into the pulp, the pulp should be passed through conduits which are readily cleanable and should be isolated from the atmosphere to as great an extent as possible to prevent contamination by bacteria present in the air, and the arrangement of the machine should be such that over-filling of same with egg pulp is prevented.

The machine the subject of this invention therefore embodies features which will attain the objects stated but so that the invention may be clearly understood it will be described with reference to the accompanying drawings in which is shown an embodiment thereof and in which:

Fig. 1 is a perspective view of the machine,

Fig. 2 is a sectional front view of same,

Fig. 3 is a section of the shell trap and emulsifier but with the several members partly disengaged from each other,

Fig. 4 is an enlarged view of the needle,

Fig. 5 is a side elevation of the head of the machine,

Fig. 6 is a fragmentary sectional view but showing the movable part of the head in its lowered position,

Fig. 7 is an enlarged sectional view on line 7 of Fig. 5, while

Fig. 8 is a section as on line 8 of Fig. 7.

The needle 1 is supported to depend from a suction line 2 and has its lower end closed by a sloping floor 3. Immediately above the lowermost edge of this downwardly sloping floor 3 is an aperture 4 which communicates with the inside of the needle. The needle is held to the suction line 2 by a screwed nut 5 which engages upon a depending threaded portion of the suction line and which bears against a shoulder 6 upon the needle. In this way the needle can be rapidly removed for cleaning or replacement. To ensure a good joint between the needle and the suction line the shoulder 6 has a tapered top 9. To prevent draining of the suction line 2 through the needle when suction is cut off the needle is preferably made of such length that its top projects slightly above the floor of the suction line as shown in Fig. 2 of the drawings.

The egg shell trap comprises a vessel 11 having within it a removable cylindrical screen 12 which is coaxially disposed in such vessel and is located therein to leave an annular space between it and the vessel. The screen 12 terminates some distance above the floor of the vessel and has across it a floor 13 having a central aperture 14. Coaxially disposed within this screen 12 is a tube 15 the lower end of which projects through the aperture 14 in the floor 13 of the screen 12 and terminates immediately above the floor of the vessel 11 so that when suction is applied to the tube it will draw the egg pulp out of the vessel. The vessel 11, screen 12 and tube 15 are all detachably supported upon a head 17 which has through it a central bore down which the tube 15 projects and is provided with an expanded portion 18 the purpose of which is to place the suction line 2 into communication with the inside of the screen 12. The head 17 has a lower internally threaded flange 19 into which a flange 20 upon the top of the screen 12 is adapted to be located, a threaded portion 21 upon the top of the vessel 11 being arranged to engage the threaded flange 19 and hold the flange 20 of the screen 12 in place, the several contacting faces being of a sufficiently goot fit to prevent air leakage. The tube 15 has near its top a series of emulsifying apertures 22 which communicate with an expanded portion 23 of the bore of the head 17, this expanded portion communicating with a continuation 24 of the suction line 2.

By means of the just described arrangement when suction is placed upon the line 24 such suction is communicated to the inside of the tube 15 through the emulsifying apertures 22 and thence through its lower end to the vessel 11. This suction causes a flow into and through the needle and along the suction line 2, through the expanded portion 18 and into the inside of the screen 12 where separation of larger solid particles from the egg pulp takes place, the liquid content flowing through this screen into the vessel and being drawn through the tube 15 to the suction line extension 24. The tube 15 is held in place by having upon its top a flange 25 which

is engaged by a screwed cap 26 upon the top of the head 17.

The egg shell trap is supported upon the top 29 of a container 30 by means of a stem 31 which projects from the suction line extension through an aperture in the top 29 and is locked thereto by means of a nut 32 which engages a projection 33 upon the said top 29, an airtight seal being effected by means of a tapered portion 34 on the stem 31.

The suction line 2 and extension 24 are provided with caps 35 and 36 respectively to facilitate cleaning.

The container 30 depends from an upper bracket 38 to which it is held by having a tubular extension 39 engaging in a socket 40 upon the bracket 38, the socket being provided with a clamping screw 41 whereby the extension may be locked in position. The socket 40 has within it a chamber 42 which communicates with a flexible air line 43.

The container 30 is held to the top 29 by means of a central rod 45 which is secured to the bottom of the container 30 by a tapered portion 46 and a lock nut 47, the rod having its top projecting through the socket 40 upon the bracket 38 and engaged by a hand wheel 48 which has a threaded portion engaging the threaded top of the rod. A resilient packing 49 is interposed between the rim of the container 30 and the top 29 to effect an airtight seal. The container is provided with an outlet tap 50 of any usual or approved construction, which tap is preferably located some distance above the floor of the container as shown so that the lower part of the container forms a sump for any small particles of shell which might pass the shell trap.

The top of the container is preferably provided with a closable air inlet 51 the purpose of which is to permit the vacuum in such container to be more effectively broken when removing the egg pulp through the tap 50.

A guard 52 carried upon the rod 45 prevents splashing of the pulp from the container against the top 29.

The bracket 38 is supported upon a vertical column 53 to be movable axially thereon, rows of ball bearings 54 disposed between a supporting stem 56 upon the top of the column 53 and a cylindrical bearing member 55 upon the bracket 38 facilitating such movement and ensuring a support having very low frictional resistance. The ball bearings 54 are held in cages 57 and engage in vertical grooves in the cylindrical bearing member 55 and the associated supporting stem 56. To balance the cages their ends are confined between upper and lower springs 59 and 60 respectively such springs bearing against screw ends 61 and 62 which engage the upper and lower ends respectively of the bearing member 55. A spring 64 between the screw end 62 of the bracket and a rest 65 upon the column 53 normally serves to project the bracket upwardly, such upward movement being limited by a stop nut 66 upon the stem 56, the purpose of the spring 64 being to serve as a weighing device to prevent the filling of more than the predetermined amount of pulp into the container 30. The spring is enclosed in a cover 67. The tension of the spring 64 may be made adjustable by interposing a collar between it and the rest 65 and supporting the collar on set screws passing through the rest.

Supported by the stem 56 of the column 53 is a headpiece 70 which supports upon it an air line 71 in which is a control valve 72. The valve comprises a gate 73 operated from a shaft 74 by a finger 75, the shaft 74 having upon it a lever 76 upon which is a cam 77 having a notch 78.

The means which control the valve 72 comprise a vertical rod 80 supported in bearings 81 upon the cylindrical bearing member 55, the rod being provided with an adjustable stop 82 and a spring 83 arranged to normally project the rod upwards. When the container 30 is empty or contains egg pulp below the amount at which it is set to operate the valve is held open by the end of the rod 80 engaging the notch 78 as shown more particularly in Fig. 5. When however the weight of pulp within the container reaches a predetermined amount the downward movement of the bracket 38 causes the stop 82 to contact with the upper bearing 81 under influence of the spring 83 whereupon continued downward movement of the bracket 38 withdraws the end of the rod 80 from the notch 78 and permits the lever 76 to fall to the position shown in Fig. 6, this action shutting off the suction line from the container and consequently causing the machine to cease operation.

The device is preferably provided with a counter 86 which is mounted upon a bracket 87 depending from the air line 71 and has its operating arm coupled by means of a link 88 to a stud 89 upon the bracket 38, the link having a slot 90 to permit some amount of downward movement of the bracket 38 before the counter is operated.

The column 53 is secured to a base 92 which base also supports a platform 93 upon which a tin may be placed when filling same from the container 30. The platform is secured upon a stem 94 which slidably engages a boss 95 upon the base 92 but is lockable thereon by means of a set screw 96. A guide 97 is held to the platform 93 by means of bolts 98 and serves the purpose of ensuring alignment of the tin relatively to the tap 50, the guide 97 and the platform 93 being provided respectively with slots 99 and 100 to enable the position of such guide to be adjusted.

In operation the eggs which are to be evacuated are struck upwardly on to the needle 1 so that the needle is inserted therein. As suction is applied to the container 30, which suction is communicated through the several lines to the needle 1, the content of the egg is drawn out of shell and passes through the hollow of the needle into the inside of the screen 12 and thence through same into the vessel 11 and out through the tube 15 into the container 30. The pulp is here removed from the air and deposits in the container. As the weight of the pulp in the container increases the bracket 38 moves down upon the supporting stem 56, the initial movement causing the rod 80 to remain in engagement with a notch 78, the spring 83 expanding to maintain such position. When however the stop 82 contacts with the upper bearing 81 the rod 80 is caused to move with the bearing member 55 and its end is thereby disengaged from the notch 78 allowing the valve 72 to close under influence of the weight of the lever 76. Immediately the valve 72 closes the suction is cut off from the container 30 and no further pulping can take place until the container 30 has been emptied, which is effected by positioning a tin or other storage receptacle upon the platform 93 and opening the tap 50. As the weight within

the container **30** decreases the spring **64** expands and moves the bearing member **55** and consequently the bracket **38** upwardly, this again making the machine ready for operation. To start pulping it is then only necessary to reset the lever **76** to apply the suction to the container **30**. If the pulp does not flow out of the container **30** freely enough the air inlet tap **51** is opened to permit a greater flow of air into the container to break the partial vacuum therein.

The machine can be readily cleaned after operation by drawing a cleansing fluid through same or by dismantling which as will be seen from the drawings can be easily carried out, the needle **1** being removable from the suction line **2** and the screen **12**, vessel **11** and tube **15** being all removable from the head **17**, the entire needle and egg shell trap section being removable from the container **30** by disengaging the nut **32**. The container itself is removable by unscrewing the hand wheel **48** to release the rod **45** whereupon the container will be free for removal.

What I claim is:

1. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a sloping floor closing the lower end of the needle, an aperture in the side of the needle communicating with the hollow therein and disposed immediately above the lower part of the sloping floor, a container for the egg pulp, means for placing the container into communication with suction means, and a connection between the needle and the container for placing the hollow of the needle into communication with the container.

2. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a sloping floor closing the lower end of the needle, an aperture in the side of the needle communicating with the hollow therein and disposed immediately above the lower part of the sloping floor, a container for the egg pulp, means for placing the container into communication with suction means, a connection between the needle and the container for placing the hollow of the needle into communication with the container, and an egg shell trap disposed between the needle and the container for removing fragments of shell from the pulp.

3. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a container in which the egg pulp is temporarily stored, means upon the said container to permit withdrawal of the pulp, means for placing the container into communication with suction means, a valve for closing off the suction from the container, a connection between the needle and the container for placing the hollow of the needle into communication with the container, an egg shell trap in such suction line, weighing means supporting such container, and coupling means between such weighing means and the said valve for closing the valve when a predetermined amount of pulp has been stored in the container.

4. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a sloping floor closing the lower end of the needle, an aperture in the side of the needle communicating with the hollow therein and disposed immediately above the lower part of the sloping floor, a container in which the egg pulp is temporarily stored, means upon the container to permit withdrawal of the pulp, means for placing the container into communication with suction means, a valve for closing off the suction from the container, a connection between the needle and the container for placing the hollow of the needle into communication with the container, weighing means supporting such container, and coupling means between such weighing means and the said valve for closing the valve when a predetermined amount of pulp has been stored in the container.

5. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a container in which the egg pulp is to be stored, a vertical support column, a bracket axially movable upon such column and supporting the container, spring means between the column and the bracket to normally project the bracket upwardly, means for placing the container into communication with suction means, a connection between the needle and the container placing the hollow of the needle into communication with the container, a valve for closing off the suction, and a connection to such valve to close the valve when the bracket moves down to a predetermined position.

6. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a container in which the egg pulp is to be stored, means for placing the container into communication with suction means, a vessel supported from the container, a screen disposed within such vessel, a suction line placing the hollow of the needle into communication with one side of the screen, a suction line placing the other side of the screen into communication with the container, and means to permit withdrawal of the pulp from the container.

7. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a container in which the egg pulp is to be stored, means for placing the container into communication with suction means, a vessel supported from the container, a screen disposed within such vessel, a suction line placing the hollow of the needle into communication with the one side of the screen, a suction line placing the other side of the screen into communication with the container, means to permit withdrawal of the pulp from the container, a vertical support column, a bracket axially slidable upon such column and supporting the container, means between the column and the bracket to normally project the bracket upwardly, a valve for closing off the suction, and a connection to such valve to close the valve when the bracket moves down to a predetermined position.

8. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a sloping floor closing the lower end of the needle, an aperture in the side of the needle communicating with the hollow therein and disposed immediately above the lower part of the sloping floor, a container in which egg pulp is to be stored, means for placing the container into communication with suction means, a vessel supported from the container, a screen disposed within such vessel, a suction line placing one side of the screen into communication with the container, a suction line placing the other side of the screen into communication with the hollow of the needle, and means to permit withdrawal of pulp from the container.

9. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a sloping floor closing the

lower end of the needle, an aperture in the side of the needle communicating with the hollow therein and disposed immediately above the lower part of the sloping floor, a container in which egg pulp is to be stored, means for placing the container into communication with suction means, a vessel supported from the container, a screen disposed within such vessel, a suction line placing one side of the screen into communication with the container, a suction line placing the other side of the screen into communication with the hollow of the needle, means to permit withdrawal of pulp from the container, a vertical support column, a bracket axially movable upon such column and supporting the container, means between the column and the bracket to normally project the bracket upwardly, a valve for closing off the suction, and a connection to such valve to close the valve when the bracket moves down to a predetermined position.

10. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a container in which the egg pulp is to be stored, means upon the container to permit withdrawal of the pulp, means for placing the container into communication with suction means, a valve for closing off the suction from the container, a suction line between the needle and the container for placing the hollow of the needle into communication with the container, a vertical support column, a bracket exially movable upon such column and supporting the container, means between the column and the bracket to normally project the bracket upwardly, a rod supported upon the bracket to be axially movable thereon, means to limit the movement of such rod relatively to the bracket, and a cam upon the said valve said cam being arranged to be engaged by the rod and hold the valve in open position until the bracket moves down a predetermined amount.

11. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a sloping floor closing the lower end of the needle, an aperture in the side of the needle communicating with the hollow therein and disposed immediately above the lower part of the sloping floor, a container in which the egg pulp is to be stored, means upon the container to permit withdrawal of the pulp, means for placing the container into communication with suction means, a valve for closing off the suction from the container, a suction line between the needle and the container for placing the hollow of the needle into communication with the container, a vertical support column, a bracket axially movable upon such column and supporting the container, means between the column and the bracket to normally project the bracket upwardly, a rod supported upon the bracket to be axially movable thereon, means to limit the movement of such rod relatively to the bracket, and a cam upon the said valve said cam being arranged to be engaged by the rod and hold the valve in open position until the bracket moves down a predetermined amount.

12. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a sloping floor closing the lower end of the needle, an aperture in the side of the needle communicating with the hollow therein and disposed immediately above the lower part of the sloping floor, a container in which egg pulp is to be stored, means for placing the container into communication with suction means, a vessel supported from the container, a screen disposed within such vessel, a suction line placing the hollow of the needle into communication with one side of the screen, a suction line placing the other side of the screen into communication with the container, means to permit withdrawal of pulp from the container, a vertical support column, a bracket axially movable upon such column and supporting the container, means between the column and the bracket to normally project the bracket upwardly, a valve for closing off the suction, a rod supported upon the bracket to be axially movable thereon, means to limit the movement of such rod relatively to the bracket, and a cam upon the said valve said cam being arranged to be engaged by the rod and hold the valve in open position until the bracket moves down a predetermined amount.

13. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a container in which the egg pulp is to be stored, means for placing the container into communication with suction means, a valve for closing off the suction from the container, a connection between the needle and the container for placing the hollow of the needle into communication with the container, a vertical support column, a bracket supporting the container said bracket embodying a cylindrical portion arranged over the support column, longitudinal channels upon the outer face of the support column and the inner face of the cylindrical portion of the bracket, ball bearing members disposed between the support column and the cylindrical portion of the bracket and engaging the channels therein to guide the bracket axially upon the support column, means disposed between the bracket and the support column to normally project the support column upwardly, and a connection between the bracket and the said valve whereby downward movement of the bracket closes the said valve.

14. For manufacturing egg pulp a machine according to claim 13 characterised by cages supporting the ball bearing members and a spring at each end of the cages to tend to hold same in a central position.

15. For manufacturing egg pulp a machine according to claim 13 characterised by; supporting means upon the vertical column for the said valve, bearings in the bracket, a rod supported in such bearings, a spring to project the rod upwardly and a stop to limit such movement, a cam upon an operating stem of the valve disposed in the path of the said rod, and means to cause closure of the valve when the rod is withdrawn from the cam.

16. For manufacturing egg pulp a machine according to claim 13, further characterised by; a sloping floor closing the lower end of the hollow needle, and an aperture in the side of the needle communicating with the hollow therein and disposed immediately above the lower part of the sloping floor.

17. For manufacturing egg pulp a machine according to claim 13, further characterised by an egg shell trap comprising; a vessel removably supported by the container, a cylindrical screen removably disposed within such vessel said screen being of smaller diameter than the vessel to leave an annular space between it and the vessel, a suction line placing the hollow of the needle into communication with one side of the cylindrical screen, and a suction line placing the

other side of the screen into communication with the container.

18. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a container in which the egg pulp is to be temporarily stored, means for placing the container into communication with suction means, a socket supported from the container by a suction line, a vessel adapted to be detachably secured to such socket, a cylindrical screen disposed within the vessel and held to the said socket, a tube disposed through the socket and the cylindrical screen and terminating beneath a floor of such screen, a suction line placing the hollow of the needle into communication with an expanded portion communicating with the inside of the cylindrical screen, a further expanded portion within the socket above the first said expanded portion, emulsifying apertures through the said tube within such upper expanded portion, and a suction line placing the upper expanded portion into communication with the said container.

19. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a container in which the egg pulp is to be temporarily stored, means for placing the container into communication with the suction means, a socket supported from the container by a suction line, a vessel adapted to be detachably secured to such socket, a cylindrical screen disposed within the vessel and held to the said socket, a tube disposed through the socket and the cylindrical screen and terminating beneath a floor of such screen, a suction line placing the hollow of the needle into communication through the socket with the inside of the screen, emulsifying apertures through the said tube placing the inside of the tube into communication through the said suction line with the container, a screwed member upon the container through which the suction line is adapted to be positioned, and clamping means whereby the suction line may be locked to such member.

20. For manufacturing egg pulp a machine comprising; a hollow needle adapted to be inserted into an egg, a sloping floor closing the lower end of the needle, an aperture in the side of the needle communicating with the hollow therein and disposed immediately above the lower part of the sloping floor, a container in which the egg pulp is to be temporarily stored, means for placing the container into communication with the suction means, a socket supported from the container by a suction line, a vessel adapted to be detachably secured to such socket, a cylindrical screen disposed within the vessel and held to the said socket, a tube disposed through the socket and the cylindrical screen and terminating beneath a floor of such screen, a suction line placing the hollow of the needle into communication with an expanded portion communicating with the inside of the cylindrical screen, a further expanded portion within the socket above the first said expanded portion, emulsifying apertures through the said tube within such upper expanded portion, and a suction line placing the upper expanded portion into communication with the said container.

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