

April 20, 1926.

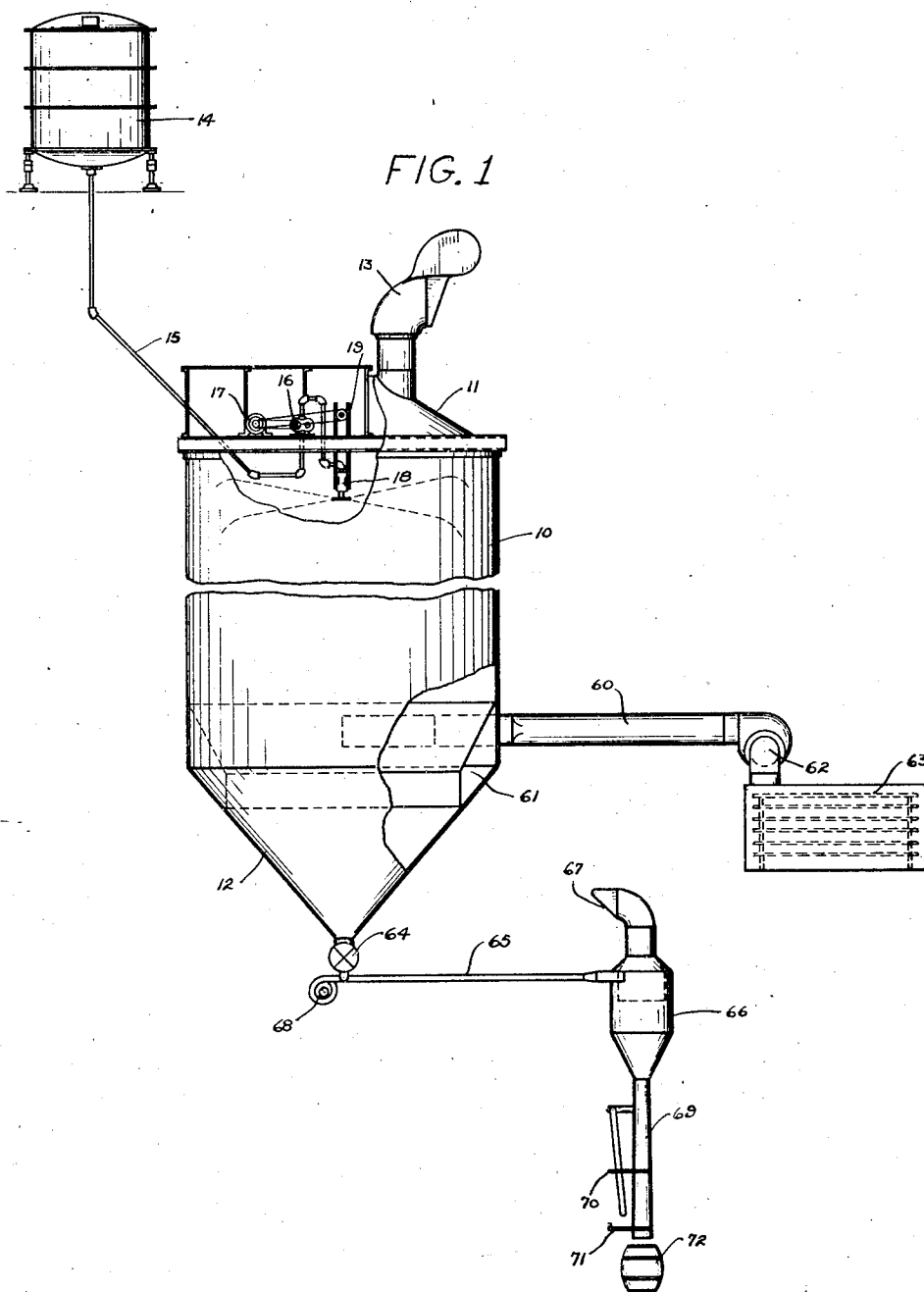
1,581,664

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APPARATUS FOR SHREDDING AND DRYING SOAP

Filed Nov. 17, 1924

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

FIG. 2

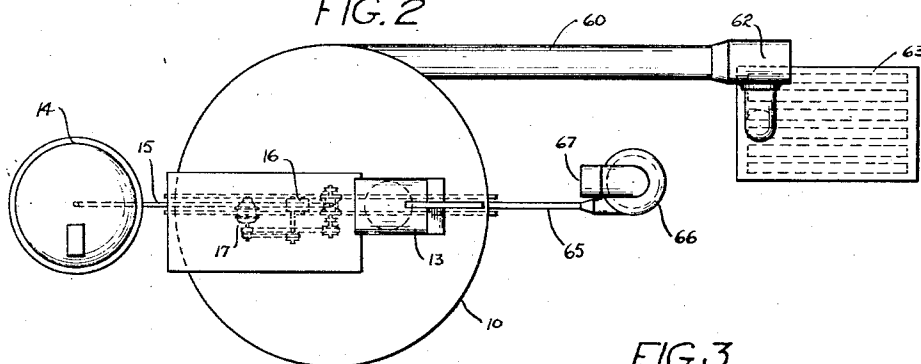


FIG. 3

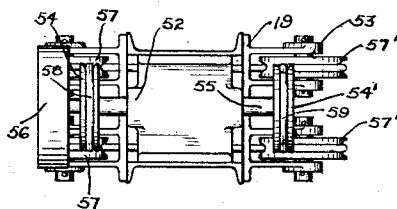
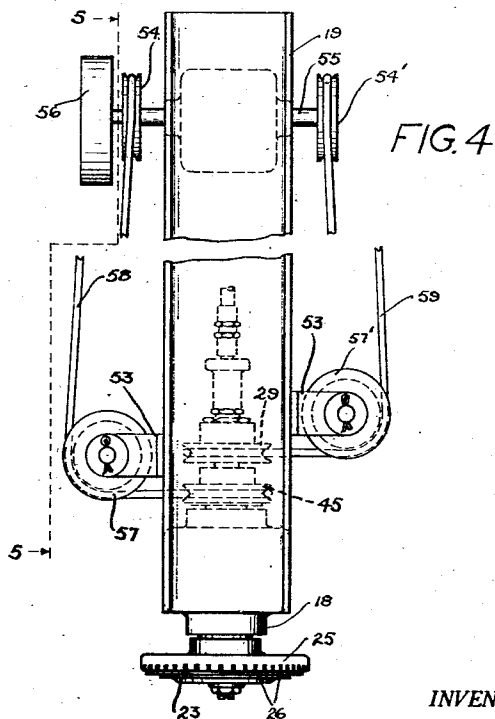
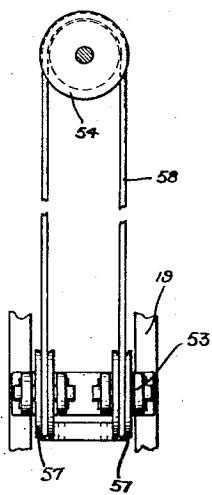


FIG. 5



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3 Sheets-Sheet 3

FIG. 6

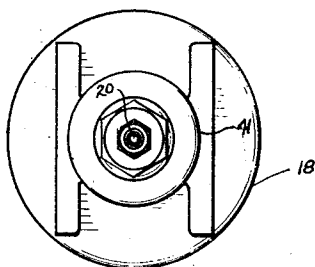


FIG. 7

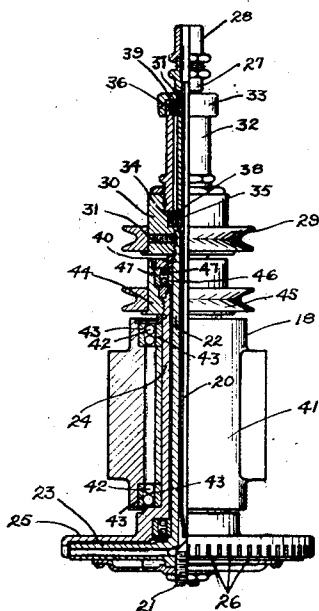
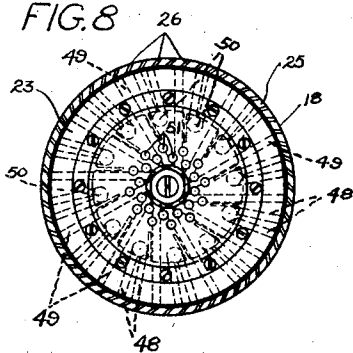


FIG. 8



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR SHREDDING AND DRYING SOAP.

Application filed November 17, 1924. Serial No. 750,506.

To all whom it may concern:

Be it known that I, JULIUS A. SCHWANTES, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Apparatus for Shredding and Drying Soap, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to improvements in soap machinery and more particularly to an apparatus for shredding and drying soap.

Heretofore, it has been very difficult, if not impossible to shred soap, and shredded soap has peculiar qualities which make it very more desirable for certain forms of use than powdered soap.

Hence, it is the principal object of the present invention to provide a device for efficiently shredding soap.

A further object of the invention is to provide a device arranged to thoroughly dry the soap shreds immediately after their formation, so that the shredded soap can be readily packed without danger of the shreds adhering to each other.

A further object of the invention is to provide an apparatus of the class described which receives soap in a liquid or semi-liquid state and discharges minute particles of perfectly dried, shredded soap.

A further object of the invention is to provide an apparatus for shredding and drying soap which is of very simple construction, is strong and durable, is efficient, and is well adapted for the purpose described.

With the above and other objects in view, the invention consists of the improved apparatus for shredding and drying soap, and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawing in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a side view of the improved shredding apparatus;

Fig. 2 is a plan view thereof;

Fig. 3 is an enlarged plan view of the shredder showing the belt and pulley arrangement for drawing the same;

Fig. 4 is a front view similar to Fig. 3;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is an enlarged plan view of the shredder;

Fig. 7 is a front view thereof partly in longitudinal section; and

Fig. 8 is a bottom view thereof.

Referring now more particularly to the drawings it will be seen that the numeral 10 indicates a cylindrical tank with a conical bottom 12 and a top 11, the top of the tank being formed with a ventilator 13.

The numeral 14 indicates a tank or vat preferably positioned on a level above the tank 10 and said tank 14 is arranged to hold melted soap to discharge the same through a feed pipe 15 to the main tank 10. The soap is caused to feed through the pipe 15 by gravity and by means of a geared pump 16 which intersects the lower portion of the feed pipe, the pump also serving to regulate the flow of soap. The pump is operated by means of a motor 17, mounted on the top portion of the tank 10, with which it is in belted connection.

The feed pipe 15 enters the top portion of the tank 10 and is connected to a shredding member 18 which is held by a frame 19. The shredding member is shown in detail in Figs. 6, 7 and 8 and includes a central tubular stem 20 into the lower end of which an adjusting screw 21 is threaded. Immediately surrounding the stem 20 is an elongated sleeve 22 and its lower end is formed with a disc 23 provided with a plurality of apertures and slots, to be later explained. A somewhat similar member 24 surrounds the member 22 and its lower end portion is formed with a rimmed disc portion 25 which overlies the disc 23, as shown in Fig. 7. The rim of the disc portion 25 is provided with a plurality of spaced slots 26.

The upper end portion of the stem 20 is threaded into an adjusting member 27 which in turn is threaded to a nipple member 28 arranged to receive the lower end of the feed pipe 15. Motion is imparted to the member 22 and its disc end portion by means of a pulley 29 held fast to the member 22 and a bushing 30, by a screw 31. The bushing 30 has the upper end portion of the member 22 threaded therinto and into the upper end portion of the bushing, a sleeve

member 32 is threaded, the member 32 having a cupped member 33 threaded thereon. It should be noted that the members 30 and 32 are recessed and in each recess, pairs of rings 34, 35, 36, 37, and ball bearings 38 and 39, respectively, are positioned, said rings and ball bearings serving to facilitate the turning of member 22. By means of the members 32 and 33 just described, the position of the pulley carrying bushing 30 can be adjusted, to take up play when necessary, the bushing resting on an annular collar 40. The member 24 is revolubly mounted between the member 22 and an attaching frame portion 41 and ball bearings 42 and collars 43 are positioned in recesses in said frame portion for the member 24 to turn on. The upper end portion of the member 24 is surrounded by and threaded into a bushing 44 carrying a pulley 45, ball bearings 46 and rings 47 facilitating the turning of the bushing.

As was mentioned heretofore, the disc 23 is formed with a plurality of apertures and vents. The vents are radially extending and spaced and comprise two classes, short vents 48 extending from the edge of the disc inwardly and terminating intermediate the edge and center of the disc, and long vents 49 extending inwardly comparatively close to the center of the disc. Intermediate apertures 50 extending transversely and from the top of the disc, communicate with the vents 48. Communication with the longer vents 49 is afforded by means of a group of apertures 51 positioned near the center of the disc and extending upwardly from the bottom thereof, each aperture opening into one or more of the vents 49.

As has been shown, the disc portions 23 and 25 are arranged for rotation and are adapted to rotate in opposite directions and by the opposite rotation thereof, soap shreds are severed by the outer disc 25 from the soap masses constantly fed through the vents in the disc 23. Motion is imparted to the discs by the pulleys 29 and 45 connected to the disc extensions 22 and 24 respectively. As shown in Fig. 4 the frame part 41 of the shredding member is secured to an elongated frame 19 and said frame is arranged with upper and lower bearing portions 52 and 53 in which pulleys are rotatably mounted. A pair of upper pulleys 54 and 54' are mounted fast on a shaft 55 which is revolved by a drive wheel 56, the same being in belted connection with the motor 17 formerly mentioned. Two pairs of lower pulleys 57 and 57' are mounted on opposite sides of the lower portion of the frame 19 in the bearing portions 53, the pulleys 57 and 57' being positioned at right angles to the upper pulleys 54 and 54'. To drive the shredder pulley 45 and the outer disc 25, a belt 58 is passed over the upper pulley 54,

around one of the pulleys 57, over the shredder pulley 45 and the other of the pulleys 57 and then back to the pulley 54, this arrangement being shown clearly in Figs. 4 and 5. The belt arrangement to drive the shredder pulley 29 is similar, a belt 59 being carried by pulleys 54', 29 and the two pulleys 57'. By this arrangement, therefore, power is taken from the motor 17 and the disc portions 23 and 25 are revolved in opposite directions.

The lower portion of the tank 10 is provided with a side opening into which an air pipe 60 extends, said pipe being in communication with a warm air chamber 61 positioned within the tank. Warm air is drawn into said chamber 61 through the pipe 60 by means of a blower 62 which draws in air from the atmosphere over a plurality of heating coils 63.

The lower conical end of the tank 10 is provided with a rotating gate 64 to permit soap shreds to be drawn from the tank 10 to a delivery pipe 65. The pipe 65 extends into a cyclone member 66 formed with a vent 67 to create a suction to draw the soap shreds through the pipe 65 and from the tank 10. A blower 68, located at the other end of the pipe 65, introduces cool atmospheric air to the pipe 65 to cool the soap shreds. The lower end portion of the cyclone member 66 is fitted with a downwardly-extending discharge pipe 69 controlled by suitable gates 70 and 71 to permit the discharge of the soap shreds into barrels 72 or other suitable containers.

From the foregoing description, it is obvious that the operation of the improved soap shredding apparatus is as follows: A quantity of melted soap is held in the upper tank 14 and said soap is gradually drawn through the pipe 15 by the motor operated pump 16, entering the shredding member. The soap flows down the tube portion 20 of the shredding member and enters the radial vents in the disc portion 23, the disc portions 23 and 25 being rotated in opposite directions. The warm air from the heating chamber rises in the tank 10 and enters the disc portion 23 through the apertures 51 therein, contacting with the soap and partially solidifying it. As the disc revolves, the soap is thrown out centrifugally and is shredded by passing through the apertures and into the slots 26, being discharged in fine shreds from the disc member 25 by centrifugal force. The warm air within the tank then thoroughly dries each shred during its fall to the bottom of the tank. By means of the gate 64, the discharge of the soap shreds from the tank can be regulated, and as was seen, the shreds are drawn through the pipe 65, cooled, and discharged into suitable containers.

Obviously the improved apparatus for

shredding and drying soap is of very simple and novel construction, and is well adapted for the purposes set forth.

What I claim as my invention is:

5 1. A soap shredding and drying apparatus, comprising a main tank, a soap supply tank, means for conveying soap from said supply tank to the main tank, a mechanical shredding member within the main tank and
10 connected to said conveying means, and means for discharging soap shreds from said main tank.

2. A soap shredding and drying apparatus, comprising a main tank formed with
15 a warm air chamber, a soap supply tank, means for conveying soap from said supply tank to the main tank, a mechanical shredding member within the main tank and connected to said conveying means, and means
20 for discharging soap shreds from said main tank.

3. A soap shredding and drying apparatus, comprising a main tank formed with a warm air chamber, means for heating air
25 and directing it thereinto, a soap supply tank, means for conveying soap from said supply tank to the main tank, a mechanical shredding member within the main tank and connected to said conveying means, and
30 means for discharging soap shreds from said main tank.

4. A soap shredding and drying apparatus, comprising a main tank, a hot soap tank, means for conveying hot soap from
35 said soap tank to the main tank, a revolving shredding device within said main tank and connected to said conveying means for shredding the soap fed thereinto and discharging it centrifugally, and means for dis-
40 charging the shredded soap from said main tank.

5. A soap shredding and drying apparatus, comprising a main tank, a hot soap tank, means for conveying hot soap from
45 said soap tank to the main tank and a revolving shredding device within said main tank and connected to said conveying means for shredding the soap fed thereinto and discharging it centrifugally, means for dry-
50 ing the soap shreds discharged from the shredding device, and means for discharging the shredded soap from said main tank.

6. A soap shredding and drying apparatus, comprising a main tank, a soap supply tank, means for conveying soap from
55 the supply tank to the main tank, a mechanical shredding member within the main tank and connected to said conveying means, and suction means for drawing soap shreds from the main tank to discharge the same into
60 suitable containers.

7. A soap shredding and drying apparatus, comprising a main tank, a soap supply tank, means for conveying soap from the
65 supply tank to the main tank, a shredding

member within the main tank and connected to said conveying means, a discharge member including suction means for drawing soap shreds from the main tank, and valves
70 therewithin for controlling the discharge of the soap shreds.

8. A soap shredding and drying apparatus, comprising a main tank, a soap supply tank, means for conveying soap from the supply tank to the main tank, a shredding
75 member within the main tank and connected to said conveying means, means for cooling the soap shreds prior to their discharge, a discharge member including suction means for drawing soap shreds from the main tank,
80 and valves therewithin for controlling the discharge of the soap shreds.

9. A soap shredding and drying apparatus, comprising a main tank formed with a warm air chamber therewithin, an air conducting pipe extending outwardly from said
85 warm air chamber, heating coils in connection with the outer end portion of said conducting pipe, a blower within said conducting pipe for forcing air heated by said coils
90 into said warm air chamber, a soap supply tank, means for conveying soap from said supply tank to the main tank, a mechanical shredding member within the main tank spaced from the air conducting pipe and
95 connected to said conveying means and arranged to shred soap fed thereinto and to discharge it centrifugally, and means for discharging soap shreds from said main tank.
100

10. A soap shredding and drying apparatus, comprising a main tank, a soap supply tank, means for conveying soap from said supply tank to the main tank, a shredder
105 member within the main tank and including a pair of revoluble, slotted and apertured discs, means for conveying soap from the soap tank to the shredder member whereby the soap is fed through the slots and aper-
110 tures of said discs and is cut and discharged centrifugally, and means for discharging soap shreds from said main tank.

11. A soap shredding and drying apparatus, comprising a main tank, a soap supply tank, means for conveying soap from said
115 supply tank to the main tank, a shredder member within the main tank and including a pair of oppositely revoluble, slotted and apertured discs, means for conveying soap from the soap tank to the shredder member
120 whereby the soap is fed through the slot and apertures of said discs and is shredded and discharged centrifugally, and means for discharging soap shreds from said main tank.

12. A soap shredding and drying apparatus, comprising a main tank, a soap supply tank, means for conveying soap from said supply tank to the main tank, a shredder
125 member within the main tank in connection with said conveying means and including a
130

pair of slotted and apertured, juxtapositioned discs, means for revolving said discs in opposite directions, soap being shredded and discharged thereby and therefrom by centrifugal force, and means for discharging soap shreds from said main tank.

13. A soap shredding and drying apparatus, comprising a main tank, a soap supply tank, means for conveying soap from said supply tank to the main tank, a shredder member within the main tank in connection with said conveying means and including a pair of slotted and apertured, juxtapositioned discs, means for revolving said discs in opposite directions, shredded soap being discharged therefrom by centrifugal force, means for drying the soap shreds falling from the shredder member, and means for discharging soap shreds from said main tank.

14. A soap shredding and drying apparatus, comprising a main tank, a liquid soap tank, a shredder member within the tank, a tubular connection between the soap tank and the shredder member, said shredder member comprising a tubular stem in communication with said tubular connection a revoluble disc member there-surrounding and fed by said stem, said disc member having air holes, feed holes and radial discharge vents, a second revoluble serving disc member surrounding the first disc member and formed with a slotted flange, means for revolving said disc members in opposite directions, shredded soap being discharged therefrom by centrifugal force, and means for discharging soap shreds from said main tank.

15. A soap shredding and drying apparatus, comprising a main tank having a motor mounted thereon and formed with a warm air chamber in its lower portion and a ventilator in its upper portion, an air conducting pipe extending outwardly from said warm air chamber, heating coils in connection with the outer end portion of said conducting pipe, a blower within said conducting pipe for forcing air heated by said coils into said warm air chamber, a hot soap tank, a shredding member within the main tank, a tubular connection between the soap tank and the shredding member, said shredding member comprising a tubular stem in communication with said tubular connection, a revoluble disc member there-surrounding and fed by said stem, said disc members having air holes, feed holes and radial discharge vents, a second revoluble disc member surrounding the first disc member and formed with a slotted flange, connections for revolving said disc members in opposite directions, shredded soap being discharged centrifugally by said disc members and being dried by contact with warm air from said warm air chamber, a suction member connected to the lower end portion of the main tank, a gate controlling the connection between the main tank and the suction member, a cooling blower in connection with said suction member, and hand operated valves controlling the suction member discharge opening.

In testimony whereof, I affix my signature.

JULIUS A. SCHWANTES.