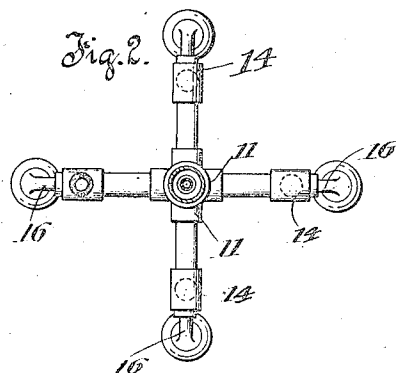
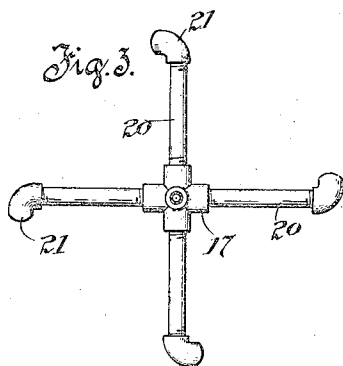
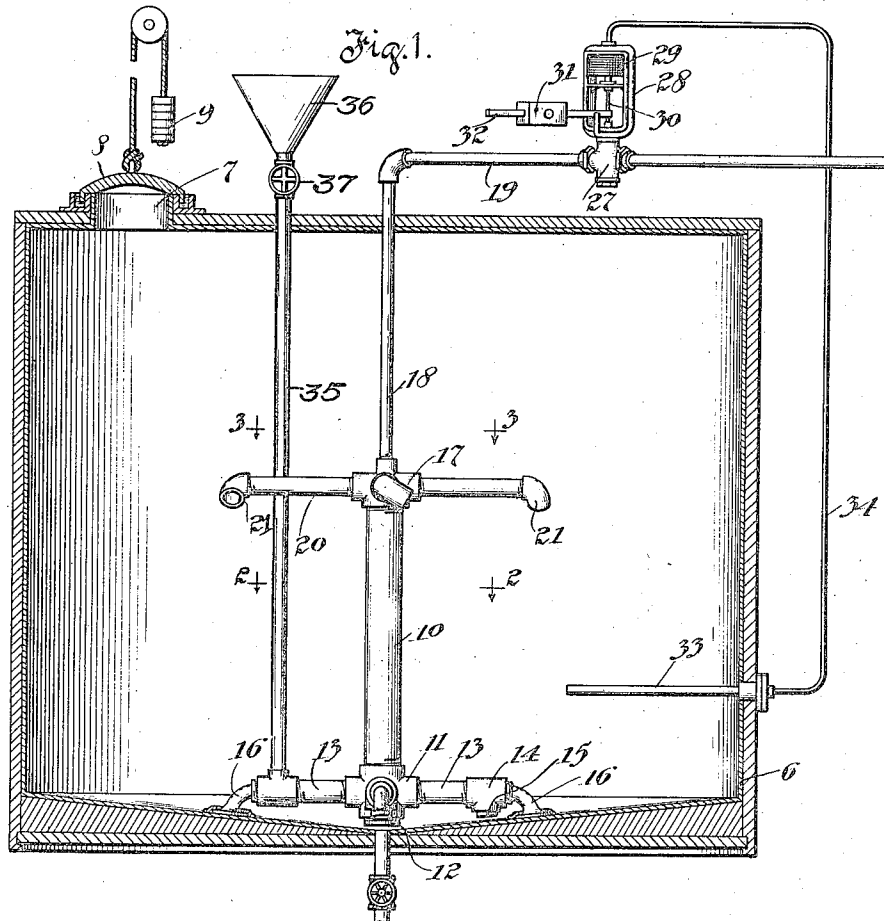


P. G. KAISER & B. E. REUTER.
 APPARATUS FOR TREATING FATS AND OILS.
 APPLICATION FILED NOV. 20, 1913.

1,156,905.

Patented Oct. 19, 1915.

2 SHEETS—SHEET 1.



Witnesses
 Leonard C. Boque
 August H. L. Arndt.

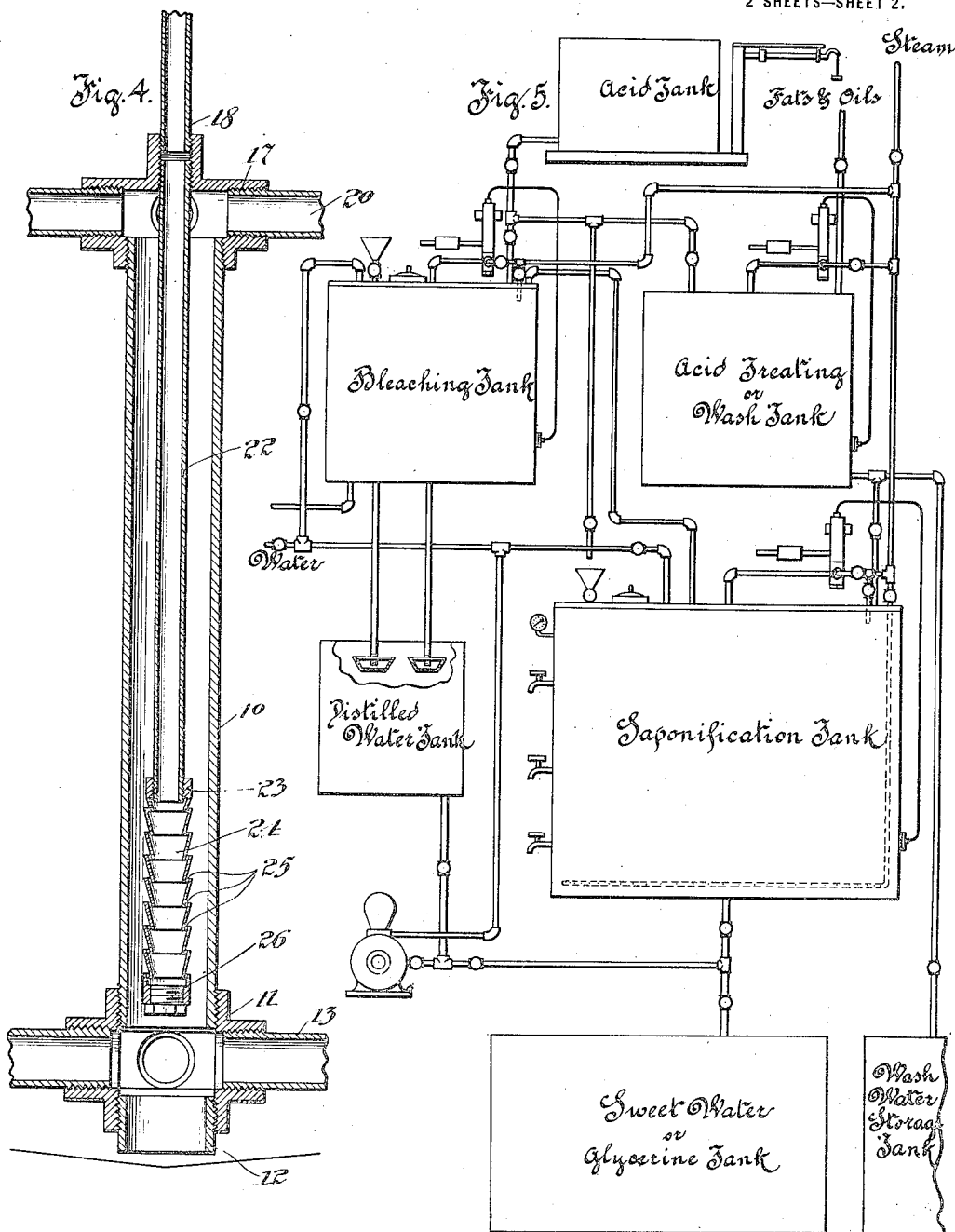
Inventors
 Paul G. Kaiser
 Balthasar E. Reuter
 By Brown, Williams, Bell, Hanson & Bortcher
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UNITED STATES PATENT OFFICE.

PAUL GUSTAV KAISER AND BALTHASAR E. REUTER, OF CHICAGO, ILLINOIS.

APPARATUS FOR TREATING FATS AND OILS.

1,156,905.

Specification of Letters Patent.

Patented Oct. 19, 1915.

Application filed November 20, 1913. Serial No. 802,025.

To all whom it may concern:

Be it known that we, PAUL G. KAISER and BALTHASAR E. REUTER, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Treating Fats and Oils, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to apparatus for treating fats and oils, and its object is to provide improved mechanism for heating and agitating fats and oils while they are undergoing treatment in the process of making soap.

While our invention is particularly adapted for use in treating fats and oils in the process of making soap, we wish it to be understood that certain features of our apparatus may be adopted for a variety of purposes. Our improved heating and agitating apparatus may be, in fact, employed for heating and agitating any suitable materials whether they be fats and oils or not.

The present invention is particularly concerned with the provision of apparatus for carrying out the process described in patent to Balthasar E. Reuter No. 1,068,079, dated July 22, 1913.

Our invention provides improved apparatus whereby the contents of a saponification or other tank may be heated by steam under pressure and agitated by the steam supplied for heating purposes. The contents of the tank are very effectually and economically heated and agitated, and the agitation is accomplished without necessarily employing any movable parts whatsoever.

Our invention is more fully set forth in the following description and is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view of a tank equipped with the improved heating and agitating devices of our invention; Fig. 2 is a view taken on the line 2—2 of Fig. 1; Fig. 3 is a view taken on the line 3—3 of Fig. 1; Fig. 4 is a fragmentary sectional view of the heating and agitating devices; and Fig. 5 is a diagrammatic representation of an arrangement of apparatus for carry-

ing out a process of treating fats and oils in the process of making soap.

Similar reference numerals refer to similar parts throughout the several views.

Referring first to Fig. 5, it will be seen that we have shown an arrangement of apparatus comprising an acid-treating or wash tank, a saponification tank and a bleaching tank, together with a tank arranged to contain a supply of acid which may be supplied to any of the first-mentioned tanks, a distilled water tank, a sweet water or glycerin tank, and a tank arranged to receive wash water from the acid-treating or wash tank. Suitable pipe connections between the several tanks are provided as illustrated, and we also provide a pump for forcing the contents of the tanks from one tank to another.

Our invention is not concerned with the particular arrangement of the tanks, so it will not be necessary for us to go into a detail explanation of the same at this time, as the functions of the several tanks will be made readily apparent by referring to patent to Balthasar E. Reuter No. 1,068,079 before mentioned. One or more of the tanks shown in Fig. 5 may be provided with improved heating and agitating devices of our invention, and if a plurality of tanks are equipped with the said heating and agitating devices, the said heating and agitating devices are preferably connected with a common steam supply pipe.

In Figs. 1 to 4, inclusive, we have illustrated the improved heating and agitating devices of our invention associated with a tank which may be a saponification or other tank, the said tank being provided with a bottom sloping toward the center and a lining of lead at 6 to resist the acid employed in carrying out the process of treating the contents of the tank. The tank shown in Fig. 1 is air-tight and is provided with an opening 7 and a cover 8 for said opening, the cover 8 comprising a flange projecting into a water seal and so effectually preventing the admission of air to the tank. The cover may also be provided with a suitable counterweight 9, as illustrated. Vertically disposed within the tank is a pipe 10, having threaded upon its lower end a coupling 11. Threaded into the lower end of the coupling 11 is a short pipe section

12 which terminates slightly above the bottom of the tank. Threaded into the said coupling 11 and radiating therefrom substantially at right angles to the axis of the pipe 10 are the pipe sections 13, each of which is threaded into a T 14. Threaded into all of the T's 14 and but one disposed substantially at right angles to the axis of the pipe sections 13 are the short pipe sections 15 which terminate slightly above the bottom of the tank. Also threaded into the T's 14 are the brackets 16 which act as supporting legs to retain the pipe 10 in vertical position, the lower ends of said brackets 16 being soldered or otherwise secured to the lead lining 6 of the tank. From the above description it will be seen that the contents of the tank may enter the pipe 10 through the pipe section 12 and through the T's 14 and pipe sections 13. Threaded upon the upper end of the pipe 10 is a coupling 17, into the upper portion of which is threaded a pipe 18 passing through the top of the tank and having suitable connection with a steam supply pipe 19. Screw-threaded into the coupling 17 and radiating therefrom at substantially right angles to the axis of the pipe 10 are the pipe sections 20, each one of which is provided at its outer end with an elbow 21, said elbows being so disposed that fluid discharged through the said elbows will have a whirling motion in a downward direction imparted thereto. Suspended from the coupling 17 and disposed within the pipe 10 is a smaller pipe 22, which has threaded upon its lower end a nozzle 23 arranged to discharge steam into the pipe 10 in an upward direction. The said nozzle preferably comprises a plurality of superposed inverted hollow cones frustums 24 connected by integral webs. Through each of the said webs is drilled a plurality of comparatively small holes 25. The lower end of the nozzle is preferably closed by means of a plug 26, as shown. Interposed in the steam supply pipe 19 is a valve 27 controlled by a regulator 28, said regulator comprising a metal bellows 29, a stem 30 interposed between the bellows 29 and the movable element of the valve 27, and a weight 31 mounted upon a lever 32 attached to the stem 30. Supported by the wall of the tank and projecting into the tank is a tube 33 closed at its inner end, and affording communication between the tube 33 and the bellows 29 is a tube 34 of relatively small cross-section. The tube 33 is designed to contain any suitable volatile fluid. As the temperature within the tank increases, the volatile fluid within the tube 33 is expanded and operates the bellows 29 to control the valve 27.

Assuming the tank shown in Fig. 1 to contain a supply of fats or oils or other material to be heated and agitated, the valve 27

is opened and a supply of steam under pressure is supplied to the nozzle 23 through pipes 18 and 22. Steam is discharged from the nozzle 23 in an upward direction and this steam carries with it the fats and oils or other materials which have entered the pipe 10 through the pipes 12 and 13 and carries said materials toward the top of the pipe 10 and out through the pipes 20. As the nozzle 23 continues to discharge steam into the pipe 10 a violent circulation of the fats and oils or other materials through the pipe 10 is produced, the said materials being passed out of the pipe 10 through the pipes 20 and discharged downwardly with the whirling motion by the elbows 21. It will thus be seen that the fats and oils or other materials are effectually heated by the steam discharged from the nozzle 23 and also effectually agitated thereby. The whirling motion imparted to the materials discharged from the pipes 20 is also very effective in agitating the contents of the tank.

It is very important in agitating the contents of the tank of the class described that the materials at the bottom of the tank be thoroughly agitated. It will be seen that the device of our invention draws the materials from the bottom of the tank, agitates them violently and projects them back into the tank at a higher elevation with the whirling motion beforementioned, thus effectually agitating the same.

Attention is called to the fact that the materials passed through the pipe 10 are not only heated by the steam brought directly into contact therewith, but that as said materials are forced upwardly in the pipe 10 they are superheated by conduction through the pipe 22, which supplies steam under pressure to the nozzle 23.

While we find it convenient to employ a regulator in connection with the valve interposed in the steam supply pipe, we wish it to be understood that the heating and agitating devices of our invention may be employed without utilizing this regulator if desired.

From the above description it will be seen that we have provided means whereby the contents of a tank may be thoroughly and economically heated and agitated, that the contents of the tank are agitated by the same steam that is utilized to heat the same, and that the agitator does not necessarily comprise any moving parts. Connected with one of the T's 14 and passing upwardly through the top of the tank is a pipe 35 having a funnel 36 at the upper end thereof. The said pipe 35 is controlled by a suitable valve 37. In treating the fats and oils in the process of making soap, it is necessary to treat the material within the tank with various chemicals such, for instance, as the Twitchell catalytic reagent and sulfuric

acid. By admitting the acid or reagent through the pipe 35, we find that the same is thoroughly mixed with the contents of the tank.

5 What we claim as new and desire to secure by Letters Patent of the United States is:

1. In combination, a tank, and combined heating and agitating mechanism for said tank, said heating and agitating mechanism comprising a passage having both ends thereof communicating with the tank, a nozzle in said passage arranged to discharge steam toward the outlet end of the passage, means for supplying steam under pressure to said nozzle and means for supplying treating material through said passage.

2. In combination, a tank, and combined heating and agitating mechanism for said tank, said heating and agitating mechanism comprising a passage having both ends thereof communicating with the tank, the inlet end of the passage located below the normal level of the tank contents, means in said passage for discharging steam toward the outlet end of the passage and a treating material supply pipe terminating in said passage at the intake end thereof.

3. In combination, a tank, and combined heating and agitating mechanism for said tank comprising a passage communicating with the contents of the tank, means for admitting steam under pressure to said passage intermediate its ends to heat and agitate the contents of the tank and means for supplying treating material to said passage.

4. In combination, a tank, a pipe within said tank, a nozzle within said pipe arranged to project fluid under pressure toward the upper end of said pipe, and means for supplying heated fluid under pressure to said nozzle to heat and agitate the contents of the tank, said nozzle comprising a plurality of superposed hollow inverted truncated cones, webs connecting said truncated cones and a plurality of apertures through each of said webs.

5. In combination, a tank, a pipe vertically disposed within said tank, a plurality of intake pipes radiating from the lower end of said first pipe, a plurality of discharge pipes radiating from the upper end of said first pipe, a nozzle within said first pipe arranged to discharge fluid under pressure toward the upper portion of said first pipe, and means for supplying the fluid under pressure to said nozzle.

6. In combination, a tank, a pipe vertically disposed within said tank, a plurality of intake pipes radiating from the lower end of said first pipe, a plurality of discharge pipes radiating from the upper end of said first pipe, a nozzle within said first pipe arranged to discharge fluid under pressure toward the upper portion of said first pipe,

and means for supplying the fluid under pressure to said nozzle, each of said discharge pipes comprising means adapted to impart a whirling direction to the material expelled therefrom.

7. In combination, a tank, a pipe vertically disposed within said tank, a plurality of intake pipes radiating from the lower end of said first pipe, a plurality of discharge pipes radiating from the upper end of said first pipe, and means within said first pipe for discharging steam toward the upper end of said first pipe.

8. In combination, a tank, a pipe vertically disposed within said tank, a plurality of intake pipes radiating from the lower end of said first pipe, a plurality of discharge pipes radiating from the upper end of said first pipe, and means within said first pipe for discharging steam toward the upper end of said first pipe, each of said discharge pipes comprising means adapted to impart a whirling direction to the material expelled therefrom.

9. In combination, a tank, and a combined heating and agitating device for said tank comprising a passage open at both ends, said passage having its lower end immediately adjacent the bottom of the tank, a plurality of discharge pipes communicating with said passage, means within said passage for discharging steam toward said discharge pipes, and means carried by each of said discharge pipes arranged to impart a whirling motion to fluid passing therethrough.

10. In combination, a tank, and a combined heating and agitating device for said tank comprising a pipe vertically disposed within said tank, a nozzle within said pipe arranged to discharge steam into said pipe to create a circulation of the contents of the tank through said pipe, means for supplying steam to said nozzle, and a regulating device arranged to shut off the supply of steam when the temperature within the tank has reached a predetermined maximum.

11. In combination, a tank, a pipe vertically disposed within said tank, a second pipe within the first pipe suspended from the upper end of the first pipe, a nozzle carried at the lower end of said second pipe, said nozzle comprising a plurality of inverted superposed hollow cone frustums, webs connecting said frustums, a plurality of apertures in each of said webs, means for supplying steam under pressure to said second pipe, and a regulator adapted to shut off the supply of steam when the temperature within the tank has reached a predetermined maximum.

12. In combination, a tank, a pipe vertically disposed within said tank, a plurality of inlet tubes radiating from the lower end of said pipe, a plurality of discharge tubes radiating from the upper end of said pipe, a

nozzle within said pipe arranged to discharge steam toward said discharge tubes, means for supplying steam under pressure to said nozzle, and a treating material supply pipe having direct communication with one of said inlet tubes whereby treating material may be thoroughly mixed with the contents of the tank in said pipe and discharged through said discharge tubes into the tank.

13. In combination, a tank, a pipe vertically disposed within said tank, a plurality of inlet tubes radiating from the lower end of said pipe, a nozzle within said pipe arranged to discharge steam toward the discharge end of said pipe, means for supplying steam under pressure to said nozzle, and a

treating material supply pipe having direct communication with one of said inlet tubes whereby treating material may be thoroughly mixed with the contents of the tank in said pipe and discharged through said discharge tubes into the tank.

In witness whereof, we hereunto subscribe our names, in the presence of two witnesses.

PAUL GUSTAV KAISER.
BALTHASAR E. REUTER.

Witnesses for Paul G. Kaiser:

LEONARD E. BOGUE,
AUGUST H. L. ARNDT.

Witnesses for Balthasar E. Reuter:

RAYMOND C. KARGE,
GEORGE KOPPENHOEFER, Jr.