

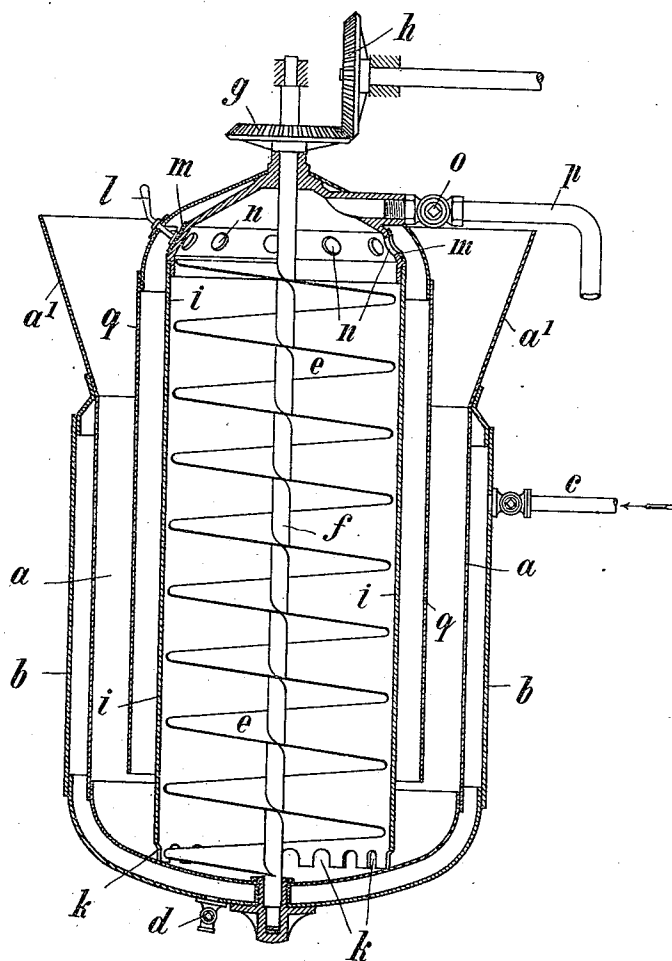
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APPARATUS FOR MAKING SOAP.

(No Model.)

(Application filed July 13, 1900.)



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING SOAP.

SPECIFICATION forming part of Letters Patent No. 664,130, dated December 18, 1900.

Application filed July 13, 1900. Serial No. 23,515. (No model.)

To all whom it may concern:

Be it known that we, CHARLES LOUIS CULMANN and CARL AUGUST LOUIS WILHELM WITTER, subjects of the German Emperor, and residents of Hamburg, Germany, have invented certain new and useful Improvements in Apparatus for Producing Soap, of which the following is a specification.

The present invention relates to improvements in apparatus for producing rosin-soap of acid reaction and rich in free carbonic acid.

The rosin-soap adapted to be used particularly in the manufacture of paper acts when employed for sizing the same all the better the more free rosin is contained in it. Another property looked for in such soap abounding in free rosin is the extremely fine and equal distribution of said free rosin when the soap in question is dissolved in warm water for the purpose of producing rosin-size. As is well known, the precipitation of free rosin is still increased when the water used for the solution of the rosin-soap contains carbonic acid.

Hitherto two methods have been in use for the production of rosin-soap—first, boiling in open pans; but this method takes an unduly long time to produce a good result, and, second, boiling in closed vessels under relatively high pressure and temperature. Although this latter method is more speedy than the former, it shows the disadvantage that all the carbonic acid is driven out by the high temperature used, and consequently the product obtained does not show a trace of carbonic acid.

The object of the present invention is now to procure an improved apparatus by means of which a rosin-soap of acid reaction and rich in free carbonic acid may be produced in an extremely short time, combining thus the advantages of the two methods above mentioned, yet avoiding their disadvantages and surpassing them as regards economy of time.

In the accompanying drawing we have shown as an example a vertical central section of a preferred form of the improved apparatus embodying the present invention.

The improved apparatus consists of an open boiler *a*, surrounded by a mantle *b* and heated by steam, which is admitted into the jacket

formed by the said mantle through an inlet *c*.

The condensed steam formed in the jacket may be drawn off through an outlet *d*, attached to the bottom of the mantle. A feeding-screw *e* is arranged vertically in the boiler *a*, the shaft *f* of this screw or conveyer being driven by a suitable gear—for instance, by a pair of bevel or miter wheels *g h*. The screw is covered by a bell-shaped cup or vessel *i*, the lower open end of which, resting on the bottom of the boiler, is provided with suitable notches or recesses *k*. The upper part of the bell is fitted with several openings or perforations *n*, which may be closed by an annular slide or valve *m*, the latter being moved or operated by the handle *l*, passing through a suitable slot in the outer cup or bell *q*, described later on. A discharge-pipe *p*, controlled by a valve *o*, is in communication with the dome of the bell *i*. A second somewhat larger bell *q* is placed over the bell *i*, but does not reach down to the bottom of the boiler. It is advisable to arch the bottom of the boiler for the purpose that the impurities contained in the soap solution may collect in the cavity thus formed without being stirred up and carried upward by the screw *e*. It is likewise advisable to suitably enlarge the top or upper part of the boiler to avoid the boiling and running over of the soap solution. This enlargement of the upper part of the boiler is preferably obtained by a funnel-shaped attachment *a'*.

The mixture of a heated solution of soda and melted rosin in the known proportions requisite for the formation of rosin-soap of acid reaction is poured into the open boiler. Then the conveyer or screw *e* is set in motion, the temperature of the steam circulating around the boiler being kept at 75° to 85° centigrade. The annular slide or valve *m* is open and the valve *o* closed. The extremely quick motion of the screw causes the mixture to be continually conveyed upward in a vertical direction. It then flows laterally and outward through the openings *n* of the inner bell and downward between the walls of the latter and the outer bell to the bottom of the boiler to again complete the same circulation. The fact that the liquid soap mass when flowing in a continuous stream through the upper part of the

bell *i* carries away and takes up or absorbs the carbonic acid collected there causes the bulk of the gas to be retained in the mixture. When the soap is in a finished state—*i. e.*, when the mixture has been sufficiently mixed—the annular slide *m* is closed and the valve *o* of the discharge-pipe *p* opened, whereupon the soap mixture by means of the screw or conveyer *e* is driven upward and out through the pipe *p* to be further treated in well-known manner.

By means of the improved apparatus a soap of acid reaction and rich in carbonic acid is produced at a low temperature and pressure in a very short time. The presence of such a large proportion or amount of carbonic acid in the soap causes when dissolving such soap or soap mixture in warm water a partial splitting of the neutral resinate, whereby the quantity of free rosin already existing in the mixture or solution is increased.

Having fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A soap-making machine, comprising a vessel, a pair of concentric bells therein, communication between the interior of said bells near the top, and means to move the contents of the vessel to the top of the inner bell, substantially as and for the purpose set forth.

2. A soap-making machine comprising a vessel, a pair of bells therein one within the other, communication between the bells near their closed ends, a screw for lifting the contents of the vessel to the top of the inner bell and forcing it through the communication between the bells down between the walls thereof into the vessel again, substantially as set forth.

3. A soap-making machine, comprising a vessel, a pair of bells therein, one within the other, and of different length, valves in and

a valve-controlled pipe from the upper end of the inner bell, and means for forcing the contents of the vessel to the top of the inner bell, through the valves and down between the two bells into the vessel again, substantially as set forth.

4. A soap-making machine comprising a vessel, a pair of concentric bells therein, the outer one the shorter, openings at the top of the inner bell, a slide for closing said openings, a valve-controlled outlet-pipe and a screw arranged to force material from the bottom of the pan to the top of the inner bell and either through the outlet-pipe or through the openings in said bell down into the pan again, substantially as set forth.

5. A soap-making machine comprising a double-bottom steam-heated vessel, a pair of concentric bells therein, the inner bell notched at its lower end and resting on the bottom of the vessel, and the outer bell shorter than the inner bell, means for causing the contents of the vessel to circulate up through the inner bell and down the outer bell, substantially as set forth.

6. A soap-making machine comprising a double-bottom steam-heated vessel, a truncated conical top thereon, two concentric bells in said vessel, the outer one the shorter, slide-controlled openings near the top of the inner bell, a valve-controlled outlet from the top of said inner bell, and a power-driven conveyer-screw stepped in the bottom of the vessel for discharging the contents and causing a circulation thereof, substantially as and for the purpose set forth.

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