

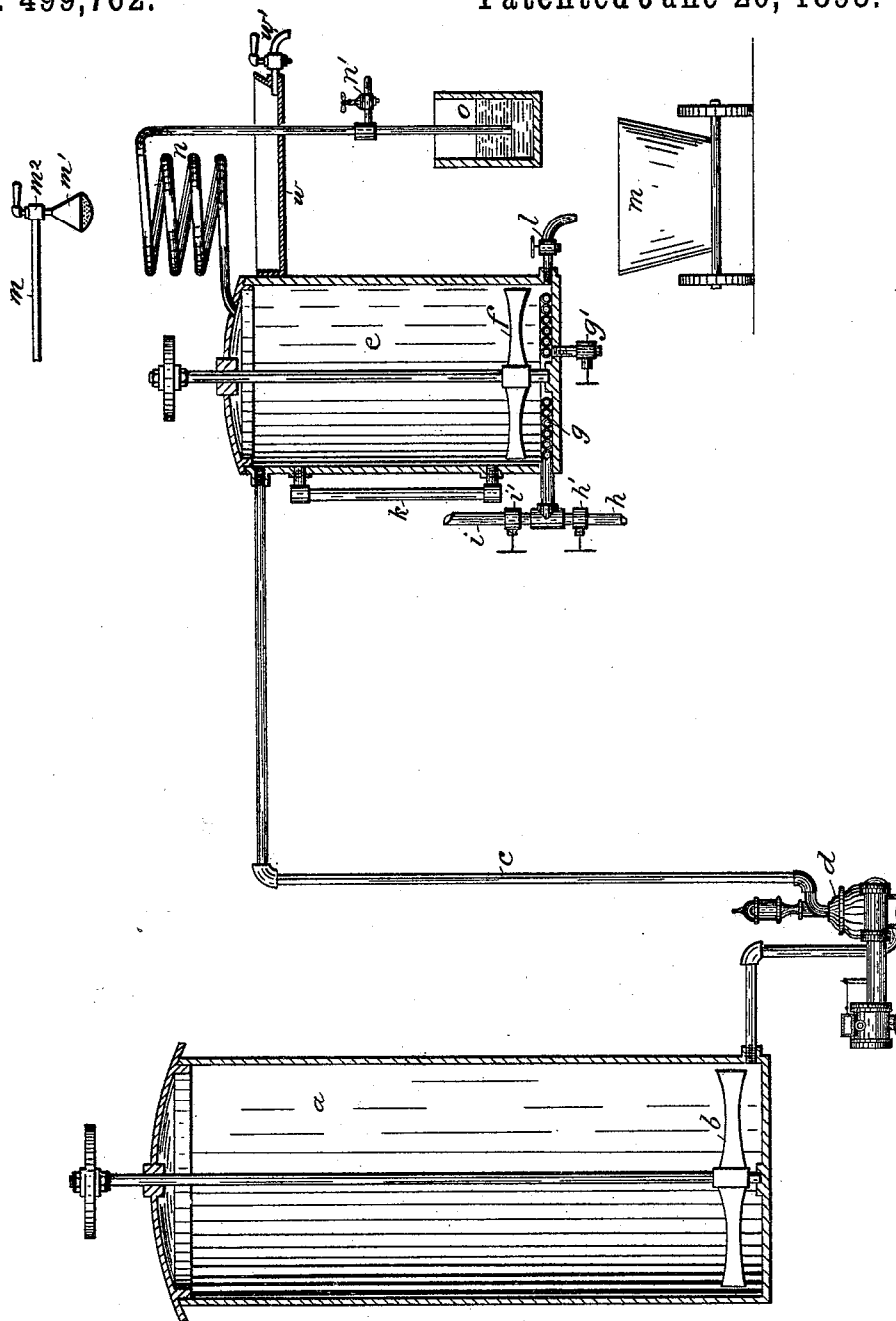
(No Model.)

E. W. STANTON.

METHOD OF AND APPARATUS FOR PRODUCING NAPHTHA SOAP.

No. 499,762.

Patented June 20, 1893.



WITNESSES:
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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR PRODUCING NAPHTHA-SOAP.

SPECIFICATION forming part of Letters Patent No. 499,762, dated June 20, 1893.

Application filed October 31, 1892. Serial No. 450,479. (No model.)

To all whom it may concern:

Be it known that I, EPHRAIM WINTWORTH STANTON, a citizen of the United States, residing at Sharon Hill, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Methods of and Apparatus for Producing Naphtha-Soap, of which the following is a specification.

The principal objects of my invention are first, to provide a simple, expeditious and inexpensive method of permanently and completely impregnating or infusing soap or soap stock with naphtha; and second, to provide simple, durable and efficient apparatus for the conduct of the method of producing such a soap or soap stock.

My invention comprises the method of permanently impregnating or infusing soap or soap-stock with naphtha, which consists first in thoroughly commingling a saponifiable mixture or soap-stock with naphtha, then conveying the saponifiable mixture or soap-stock containing the naphtha into a vessel and while so confined therein heating the same to ebullition and preventing the escape of the volatile components of the naphtha and so as to permanently or lastingly incorporate the same in and with the resultant product.

My invention further comprises the method of permanently impregnating or infusing soap or soap-stock with naphtha, which consists in thoroughly commingling or mixing a saponifiable mixture or soap-stock with naphtha, then conveying the saponifiable mixture or soap-stock into a closed vessel, and while so confined heating to a high temperature and preventing the escape of the volatile components of the naphtha and cooling in the same vessel the resultant product having the naphtha permanently incorporated in and with the same.

My invention further consists of the improvements hereinafter described and claimed.

Naphtha soap or soap-stock produced according to my invention is distinguished from ordinary petroleum soap or soap-stock made from the heavy hydrocarbon oils by reason of the fact that in this instance, the naphtha

which is highly volatile and which it has heretofore been supposed could not be retained in a soap or soap-stock by reason of its volatile nature, is permanently and lastingly infused or impregnated therewith; and such a soap or soap-stock is produced according to my invention in the following manner: A saponifiable substance or mixture and naphtha are thoroughly mixed. Excellent results have been attained in practice by mixing the following ingredients in the proportions specified hereunder:—naphtha, at 65° gravity, one hundred gallons and a saponifiable substance or mixture comprising pulverized rosin, seven hundred and fifty pounds; caustic potash dissolved in lime water and reduced to about 60°, one hundred pounds; caustic soda in solution at 38° Baumé, one hundred pounds. This mixture may be effected by agitation, without which the ingredients would tend to separate by gravity. The mixture is then heated to ebullition in a closed vessel from which the naphtha cannot escape and is subsequently permitted to cool or may be artificially cooled therein, with the result that a sirup or soap-stock thoroughly and permanently impregnated or infused with naphtha, is obtained. This sirup or soap-stock constitutes a soft soap which may be converted into a hard soap by mixing it in the cold state or condition with a solution of caustic-soda at 38° Baumé, more or less, and in the proportion of about three parts of sirup to one of the soda solution. This sirup or soap-stock also constitutes a substance or mixture that may be advantageously combined with soaps produced from grease and fatty matter in a well understood manner, thereby improving their quality and reducing their cost. In practice this result may be accomplished by crutching one part of the sirup or soap-stock with about three parts of soap, in the ordinary manner.

In the accompanying drawing is illustrated a view partly in section and partly in elevation of an apparatus embodying features of my invention and especially designed and arranged for the conduct of the method of making a naphtha soap or soap-stock.

In the drawing *a*, is a tank adapted for the

reception of a saponifiable substance or mixture and naphtha provided with an agitator *b*, by means of which these ingredients may be thoroughly mixed.

5 *c*, is a pipe communicating with the tank *a*, and through which the mixture is forced by gravity or by a pump *d*, to the closed vessel *e*.

10 *g*, is a coil of pipe located in the vessel *e*, and provided with an off-take pipe *g'*.

h, is a pipe provided with a cock *h'*, and adapted to convey steam to the coils *g*, in order to heat the contents of the vessel *e*, to ebullition.

15 *i*, is a pipe provided with a cock *i'*, for supplying water to the coil *g*, in order to cool the contents of the vessel *e*.

k, is a glass gage applied to the wall of the vessel *e*, in order to show the height of the contents thereof.

20 *l*, is a spigot or tap through which the contents of the vessel *e*, may be drawn off into a vat or cart *m*.

n, is a condensing coil provided with a pet-cock *n'*, and communicating at one extremity thereof, with the interior of the vessel *e*, and having the other extremity thereof immersed in a water-seal. Above the coil *n*, is arranged a pipe *m*, provided with a rose or sprayer *m'*, having a stop-cock *m²*, for regulating the quantity of water discharged over the coil *n*, into the tank or trough *w*, provided with a discharge-cock *w'*. This coil *n*, serves to condense the volatile constituents of the petroleum and for this purpose is artificially cooled by means of a stream or jet of water as illustrated or in any other preferred manner. Moreover, the slope of the coil *n*, is toward the vessel *e*, so that the liquids resulting from the condensation that occurs therein, flow back into the vessel *e*, it being understood that certain vapors may pass through the coil *n*, in order to relieve any undue pressure therein, and such vapors are condensed in or may escape from the water-seal *o*.

In practice the tank *a*, being properly charged with a saponifiable substance or mixture and naphtha, its contents are commingled by means of the agitator *b*. The resulting mixture is then introduced into the vessel *e*, through the pipe *c*, until the vessel *e*, is about one third full, which fact may be readily ascertained by reference to the gage *k*. Steam is then introduced into the coil *g*, through the pipe *h*, and the contents of the vessel *e*, are brought to the point of ebullition, which is indicated by the rising of the liquid in the gage, whereupon the supply of steam is shut off, and water is introduced into the coil *g*, through the pipe *i*. These operations are facilitated by stirring the contents of the vessel *e*, by means of the agitator *f*, which is also useful for commingling the contents of the vessel *e*, if they should have been accidentally left unboiled long enough to separate

by gravity. During the heating operation a considerable volatilization of the components of the naphtha takes place, which would result in loss and prevent the permanent impregnation or infusion of the soap or soap-stock therewith, if the vessel *e*, were open, and possibly an undue pressure, if it were closed. However, the coil *n*, and its accessories prevent the escape of the volatile components of the naphtha from the vessel *e*, thus insuring the permanent impregnation or infusion of the soap or soap-stock with a large percentage of naphtha. This coil *n*, also permits sufficient air to pass off at the water seal *o*, for relieving the pressure in the vessel *e*. During the cooling operation air may be admitted, if desirable to do so through the pet-cock *n'*.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The process of permanently impregnating or infusing soap or soap-stock with naphtha, which consists in thoroughly commingling a soap-stock with naphtha, then conveying the soap-stock into a vessel and while so confined therein heating the same to ebullition and preventing the escape of the volatile components thereof so as to permanently incorporate the naphtha in and with the resultant product, substantially in the manner and for the purposes described.

2. The process of permanently impregnating or infusing a soap or soap-stock with naphtha, which consists in thoroughly commingling a saponifiable mixture with naphtha, then conveying the saponifiable mixture to a closed vessel and while so confined heating to a high temperature and preventing the escape of the volatile components thereof and cooling in the same vessel the resultant product having naphtha permanently incorporated in and with the same, substantially as described.

3. The combination, in an apparatus for making naphtha soap or soap-stock, of a tank provided with an agitator, a closed-vessel provided with a heating and condensing coil, off-takes, an agitator and pipe-connections between said tank and vessel, substantially as and for the purposes described.

4. The combination, in an apparatus for making naphtha soap or soap-stock, of a tank provided with an agitator, a vessel provided with a cock, an agitator, a heating and cooling coil and an off-take therefor, pipe-connections and a pump between said connections and said tank and vessel, a water-seal, and a condensing-coil provided with a cock and connected with said vessel and water-seal, substantially as and for the purposes described.

5. The combination, in an apparatus for making naphtha soap or soap-stock, of a tank provided with an agitator, and connected by a pipe with a closed-vessel having an agita-

tor, a steam heating and water condensing coil provided with an off-take, a discharge-spigot and gage, and a water-sealed condensing-coil connected with said vessel and provided with an air-cock, substantially as and
5 for the purposes described.

In witness whereof I have hereunto set my signature, in the presence of two subscribing

witnesses, at the city of Philadelphia, in the State of Pennsylvania, this 29th day of October, A. D. 1892.

EPHRAIM WINTWORTH STANTON.

Witnesses:

THOMAS M. SMITH,

RICHARD C. MAXWELL.