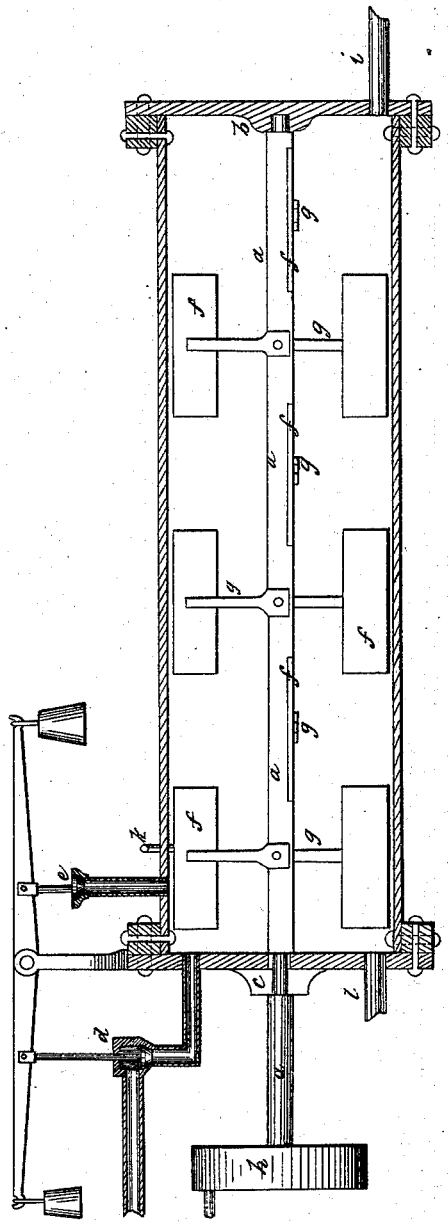
BENNETT & GIBBS.

Boiling Soap.

No. 47,385. Patented Apr. 25, 1865.



Witnesses:

George Burt.

Geo. W. Ford

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UNITED STATES PATENT OFFICE.

JACOB B. BENNETT AND JAMES S. GIBBS, OF BUFFALO, NEW YORK.

IMPROVEMENT IN THE MANUFACTURE OF SOAP.

Specification forming part of Letters Patent No. **47,385**, dated April 25, 1865.

To all whom it may concern:

Be it known that we, JACOB B. BENNETT and JAMES S. GIBBS, of Buffalo, Erie county, New York, have invented a new and useful improvement in manufacturing soap, consisting in the agitation by any suitable machinery of oils, fats, or other saponifiable materials with alkalies or salts of alkali in solution with water in any closed vessel while under heat and pressure, in such a manner as to cause a thorough mixing and commingling of such saponifiable materials with such alkaline solutions while under heat and pressure, causing thereby an instantaneous combination of the acids of the oils with the bases of the alkaline solutions.

In order to illustrate our improvement and to enable others skilled in the arts to use our invention, we will proceed to describe the process, reference being had to the accompanying drawing, and to the letters marked thereon.

Let us, for example, suppose a quantity of tallow, lard, or other oily substance inclosed in a vessel with a solution of carbonate of soda in water and heat applied to produce a pressure of two hundred and twenty to two hundred and eighty pounds per inch and a temperature of 350° to 400° Fahrenheit, a combination between the acids of the oils and the soda of the solution will take place only at the upper surface of the solution where in contact with the under surface of the grease, the heavy lye occupying the lower part of the vessel, and soap will only be produced where the oil and the alkalies unite. If we now agitate in such a manner as to stir together and thoroughly mix and commingle the contents of the vessel, the whole will be instantly converted into a homogeneous and good and even quality of soap. It is advisable to use no more water than is wanted in the soap when cooled.

Several methods of this agitating, &c., will at once suggest themselves, but we prefer to do it thus: We use a boiler or cylinder similar in shape to a plain cylinder steam-boiler, resting horizontally, and heated by any convenient manner. One or both heads of the cylinder is made so as to be conveniently removable, and is about the full size of the inner diameter of the cylinder, so as to admit of the insertion of a revolving shaft, *a a a*, which we prefer should be as long as the cylinder itself. The bearings of this shaft should be in the center of the cylinder, and either or both ends worked through a stuffing-box, *c*, for the convenience of applying to the pulley *h* power to revolve the shaft. On the shaft are fastened arms *g g*, with floats *f*, stirrers, or by whatever terms they may be called, extending nearly to the sides of the cylinder, the arms, floats, or agitators on one side of the shaft when revolved carrying the grease or oil down into the alkali, while the arms, floats, or agitators on the other side carry the alkali up into the oils or grease, thus while under heat and pressure thoroughly commingling the whole, and causing the conversion of the whole contents of the vessel instantly into a uniform, even, and good quality of soap. At the fire end of the cylinder are placed two safety-valves—one, *e*, on top of the cylinder, the other, *d*, on an outlet-pipe inserted in the head of the cylinder. We also use a mercury-bath, *k*, of about four inches in length, of gas-pipe, and which is screwed into the boiler or cylinder in any convenient place for the insertion of the thermometer-bulb. At the opposite end of the cylinder is an opening, *i*, for the insertion of a supply-pipe. At the fire end is also an opening, *l*, for the insertion of a second outlet-pipe, and which is intended to be used only when it is desired to draw off the whole contents of the cylinder.

The contents of the cylinder when operated upon should be subjected to a pressure of about two hundred and twenty to two hundred and eighty pounds per inch, and under a heat of about 350° to 400° Fahrenheit. When the shaft is revolved, all of the ingredients in every part of the cylinder are immediately and thoroughly commingled—and the same will take place by means of any other revolving or vibratory machinery—perfect saponification is at once effected. The soap produced is of uniform and good quality.

When the machinery is first put in operation it is necessary to allow some carbonic-acid gas to escape at one of the safety-valves, if carbonate of soda is used, in order to prevent undue pressure by the liberation of the carbonic acid when combinations of the oils and soda or alkali take place.

If any of the liquid be allowed to escape before the temperature reaches 325° to 375° Fahrenheit it should be returned to the cylinder.

The safety-valve on the outlet-pipe *d* may be so loaded as to allow an escape of soap at a pressure of two hundred and fifty to two hundred and seventy pounds, and a quantity of lye and oil may be pumped in at the opposite end, the agitation by the revolving shaft being still kept up, and thus a continued stream of soap kept up as long as the feeding is continued. The product may then be prepared for market by the refrigeration, molding, and cutting process in ordinary use.

Some of the advantages of using our process are: First, the rapidity of manufacture; second, the improvement in quality; third, the increased quantity; fourth, economy in labor; fifth, saving of fuel; sixth, the use of cheaper materials; seventh, the saponification of all the oils or grease; eighth, the uniform certainty of the result; ninth, the saving of the valuable property of glycerine, which greatly improves the quality of the soap; tenth, the ability to use alkaline salts instead of caustic lye, obviating the necessity of using chloride of sodium, which is required by the common process in order to get rid of the waste lye.

What we claim as our invention, and desire to secure by Letters Patent, is—

The agitation and commingling, by any suitable machinery, of the ingredients used for making soap in a closed vessel while under heat and pressure sufficient to insure the desired new combinations and produce cheaply and quickly a uniform good quality of soap.

JACOB B. BENNETT.
JAMES S. GIBBS.

Witnesses:
ALVIN BURT,
ROBERT SMITH.