# UNITED STATES PATENT OFFICE.

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## QUICK-ACTING FOAM COMPOUND FOR EXTINGUISHING FIRES.

1,247,803. Specification of Letters Patent. Patented Nov. 27, 1917.

No Drawing. Application filed November 5, 1915. Serial No. 59,733.

*To all whom it may concern:*

Be it known that we, JAMES B. ERWIN and ORLANDO R. ERWIN, citizens of the United States, residing at the city of Milwaukee, county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Quick-Acting Foam Compounds for Extinguishing Fires, of which the following is a specification.

Our invention relates to improvements in fire extinguishing compounds of that class in which a mixture of the ingredients produces a viscous foam adapted to be discharged over a burning surface, whereby an air excluding blanket composed of minute bubbles of a solution filled with carbon dioxid gas is formed by which the fire is extinguished.

The object of our invention is to provide a quick acting compound capable of instantly producing a large quantity of lingering foam, and developing sufficient pressure to cause the instant discharge of such foam in large quantities over burning surfaces.

The formula for our compound is as follows:

To each gallon of water contained in the foam generating tank of our apparatus add 0.61 pounds sodium bicarbonate, and 0.064 pounds powdered soap bark. Stir thoroughly until the soda is all dissolved and let stand for from two to twenty-four hours, then stir again, when the saponin will be extracted from the soap bark, resulting in a combined saturated solution of the soda and the saponin with the water. Or, preferably, the soap bark may be first thoroughly stirred and mixed in about one-tenth of the quantity of water required for the generating tank, while the soda is being dissolved in the remaining nine-tenths of the water. The moistened soap bark is then added to the soda solution in the generator tank and the whole mixture is then thoroughly stirred or otherwise agitated when it should stand for from two to twenty-four hours, when the saponin will be extracted from the bark, then the mixture should be again stirred when it is ready for use. For each gallon of the above soda-saponin solution required for the generating tank, 0.31 pounds of concentrated (66°) commercial surfuric acid is required for our acid receptacle thereto connected. The solution may then be stored for an indefinite period, ready for use upon the addition of sulfuric acid thereto. When the acid is added it is preferably delivered into the solution in a manner to quickly reach all parts thereof, and the best method of doing this is to discharge the acid into the solution at various points or at different elevations, whereupon the violent chemical action which results will diffuse the acid through the entire solution almost simultaneously and instantly convert the entire solution into foam owing to the fact that the saponin has previously been extracted or largely extracted from the fiber in which it was contained. A great increase in the quantity and pressure of the foam developed is secured over that which is obtained by the addition of water to the other ingredients when the latter are in dry form.

In case of fire the acid, being approximately twice the specific gravity of our solution, will, when released, by the aid of our above mentioned apparatus, be injected by gravity direct into the foam producing solution and be therein thoroughly mixed therewith, whereby, as stated, a violent chemical reaction is produced, carbonic acid gas is liberated, which with the saponin forms minute bubbles of lingering foam which rises to the surface of the solution as fast as generated, when the foam is forcibly discharged by its own expansion upon the fire.

The foam produced by our compound is not only instantaneous in generation, being self mixing and consequently more efficient, but the process of its generation is also much simpler and it involves the use of vastly less expensive apparatus, than any known compound or process for the purpose.

So far as we are aware, no attempt has heretofore been made to extract from soap bark, or any of the saponaria species, the saponin or foam producing ingredient and to store the same in a saturated solution of soda and water in position for the instant generation of foam, which requires only the direct introduction of sulfuric acid by injection to produce the foam in large quantities fully adequate to the desired purpose and capable of developing such pressure in a closed receptacle as will cause its discharge through a nozzle to a considerable distance upon a burning surface.

Our invention may therefore, be said to consist in the discovery of a compound which by extracting the saponin from the soap bark, and preparing a solution thereof in combination with suitable gas producing

ingredients a foam may be much more quickly developed as the sulfuric acid is commingled therewith, whereby the same is discharged from a container much quicker and with greater force than that produced by any of the compounds heretofore employed for this purpose.

Having thus described our invention what we claim as new, and desire to secure by Letters Patent, is:—

1. A foam producing solution comprising sodium bicarbonate, powdered soap bark and water.

2. A foam producing solution for fire extinguishing mixing tanks comprising 0.61 pounds sodium bi-carbonate; 0.064 pounds powdered soap bark, and one gallon of water whereby to form a combined saturated solution of sodium bicarbonate and saponin.

3. A foam-producing composition of matter comprising a solution of saponin together with sodium bi-carbonate in water as the solvent.

4. A foam producing solution comprising a single saturated solution of saponin together with a carbonate in water.

In testimony whereof we affix our signatures in the presence of two witnesses.

JAMES B. ERWIN.
ORLANDO R. ERWIN.

Witnesses:
LAURENCE B. ERWIN,
IRMA D. BREMER.