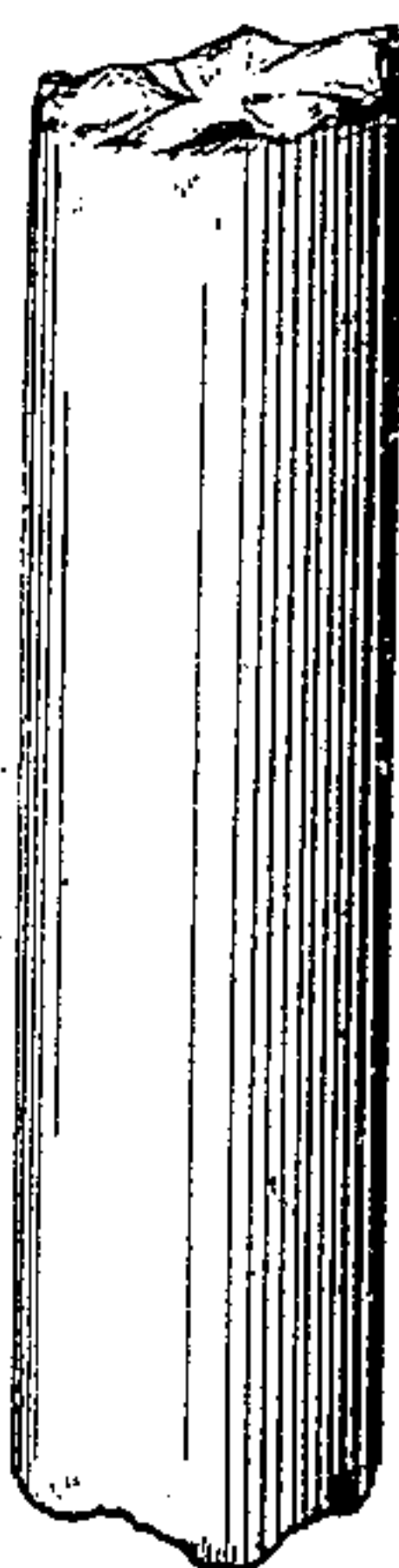


(No Model.)

J. LIVESEY & J. KIDD.  
MODE OF MANUFACTURE OF NAPHTHALINE INTO A FORM FOR CARBURETING.

No. 258,778.

Patented May 30, 1882.



*Witnesses.*

*Robert Everett.*

*J. A. Rutherford.*

*Inventors.*

*James Livesey,*

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*By James L. Norris.*  
*Atty.*

# UNITED STATES PATENT OFFICE.

JAMES LIVESEY, OF WESTMINSTER, AND JAMES KIDD, OF ST. BRIDE'S STREET, LUDGATE CIRCUS, LONDON, COUNTY OF MIDDLESEX, ENGLAND.

MODE OF MANUFACTURING NAPHTHALINE INTO A FORM FOR CARBURETING.

SPECIFICATION forming part of Letters Patent No. 258,778, dated May 30, 1882.

Application filed July 26, 1881. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES LIVESEY, of Westminster, Middlesex county, England, and JAMES KIDD, residing at St. Bride's Street, Ludgate Circus, London, Middlesex county, England, have invented new and useful Improvements in Mode of Manufacturing Naphthaline into a Form Suitable for Carbureting Purposes, of which the following is a specification.

This invention relates to certain improvements in the mode of manufacturing naphthaline into a form suitable for carbureting gas and enriching it for illuminating purposes.

The invention has for its objects to provide a carbureting agent which will possess the advantages of cheapness, and be ready and convenient for application to the purpose desired.

Naphthaline, being at present a waste product of such small commercial value, is not separated from the dead-oil of tar, in which it is chiefly found. We are aware that naphthaline-crystals will form when the dead-oil is left at rest; but those crystals are usually remelted and dissolved in the oil, which oil is afterward burned for lamp-black, or the mixture is used for creosoting timber or like purposes. Dead-oil would be much better for those purposes without the naphthaline; but if it was separated, there at present exists no market for it. Crude naphthaline, though solid, is combined with a given amount of heavy oil of various boiling-points, which unfits it for carbureting gas. When the crude mass is melted and used in a carbureting-vessel, the naphthaline, being lighter, will mix with the gas and pass off first. The heat from the gas-flame, which readily vaporizes the naphthaline, will not vaporize the heavy oil with which it is combined. Every time the vessel is filled more oil is added to what is already there. This accumulation of oil retards carburation of the gas by absorbing and obstructing the heat, and is continually lessening the capacity of the vessel for holding naphthaline, which vessel would finally become filled with heavy oil and be inoperative as a carbureting apparatus.

Our improvements are intended to remedy these defects; and they consist in distilling or vaporizing crude naphthaline by first heating it

in a closed boiler; then passing a current of air over its surface for collecting the naphthaline; then conducting the air impregnated with the naphthaline into a condensing-chamber, where the naphthaline is freed from the air; then reheating the collected naphthaline, and finally molding the same in refrigerated molds, all as more fully hereinafter set forth.

The figure on the accompanying drawing is a perspective view of a molded naphthaline stick for carbureting purposes, both ends being shown as broken away.

Our invention is carried out as follows: We take the crude naphthaline and place it in a closed pan or boiler and melt it by the heat from a fire, or, preferably, by steam heat. When the naphthaline has been sufficiently heated we pass a current of air over its surface in the closed boiler, which current of air licks up the naphthaline vapor. We then convey this current into a condensing-chamber fitted with a number of circuitous screens, so arranged as to make a long continuous chamber and expose a large extent of condensing-surface for the naphthaline to lodge upon. The air-outlet from the condensing-chamber should be covered with flannel or gauze to prevent the escape of particles of naphthaline. In this way the heavy oil is held back and separated from the naphthaline with which it is mixed. We have further found that a small quantity of caustic alkali placed in the boiler with the heated naphthaline will separate a portion of the heavy oil therefrom and cause it to distill over in a much dryer state. We take the naphthaline from the condensing-chamber and remelt it in a suitable boiler, taking care that the temperature is kept only slightly above its melting-point. We pour the liquid naphthaline into molds and form sticks about the size of candles. Each mold is surrounded with a jacket of cold water. The molds must have smooth internal surfaces, and must be wider at the top than at the bottom to allow of free delivery. The liquid naphthaline enters the molds at or near its crystallizing-points. The naphthaline in the water-jacketed molds quickly sets, and any oil present will be deposited on the outside surface of each stick, which must be cleaned off as soon as possible,



or it will be reabsorbed into the naphthaline. We find if cold water does not surround the molds the oil contained in the naphthaline will not separate and appear on the outside of the sticks, and the only reasonable explanation of the separating of the oil is that the naphthaline, being formed into long sticks of small diameter, together with the sudden cooling action of the water, makes crystallization take place so rapidly as to repel or separate any oil that may be in the naphthaline and throw it upon the outside of the sticks.

By our invention we produce a new and useful article suitable as a carbureting agent from a material heretofore regarded as a waste product.

The naphthaline, when cast into sticks according to our invention, differs from other naphthaline in being perfectly crystalline, dry, and free from all oily matter, and being perfectly homogeneous in composition and in evaporating, and leaving no residuum at or about 174° Fahrenheit. This is due partly to the condensing of the naphthaline vapor by the air-currents holding and carrying off the oily matter and the sudden chilling by the water-jacketed molds.

In conclusion we will say that various methods have heretofore been known for producing naphthaline; also, that naphthaline sticks have been produced for dyeing purposes by first pressing out the crude crystals from the dead-oil in which they are contained, melting and

purifying the melted mass by agitation with an alkali and an acid, washing with water, distilling over an open fire, and collecting the products of distillation in a condenser, and finally molding the purified liquid distillate in conical molds; but naphthaline sticks produced in this manner would not be suitable for the purposes of our invention, because watery vapors would pass over with the naphthaline and so impregnate it as to render it almost useless as a carbureting agent for enriching gas.

What we claim is—

The process of obtaining refined naphthaline, consisting in first heating the crude naphthaline in a closed boiler, then passing a current of air over its surface for collecting the naphthaline, then conducting the air impregnated with the naphthaline into a condensing-chamber, where the naphthaline is freed from the air, then reheating the collected naphthaline, and finally molding the same in refrigerated molds, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

JAMES LIVESEY.  
JAMES KIDD.

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