

UNITED STATES PATENT OFFICE.

JOSEPH B. UNDERWOOD, OF FAYETTEVILLE, NORTH CAROLINA.

PROCESS OF DISTILLING TURPENTINE.

SPECIFICATION forming part of Letters Patent No. 393,942, dated December 4, 1888.

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To all whom it may concern:

Be it known that I, JOSEPH B. UNDERWOOD, of Fayetteville, in the county of Cumberland and State of North Carolina, have invented a new and useful Improvement in the Process of Distilling Turpentine, of which the following is a specification.

My invention is in the nature of a process of distilling spirits of turpentine, designed to increase the yield from a given quantity of crude turpentine and to improve the character of the product.

To this end it consists in distilling the crude turpentine in the presence of refined petroleum having about the same specific gravity as spirits of turpentine or less.

In carrying out my invention I take one barrel (two hundred and eighty pounds gross weight) of crude turpentine, and to it add about six gallons of refined petroleum of about 150° fire-test, and having about the same specific gravity of spirits of turpentine or less. If the turpentine is dry, I also add about one gallon of water and mix these materials thoroughly together, preferably the turpentine and petroleum first, and then add water if it should require it. This mixture I prefer to let stand for some days; but it may be distilled at once and the addition of water may be omitted. To some "dip" turpentine it is not necessary to add water, but to "scrape" it is always necessary as a matter of safety, since it is always dry as it comes to market.

When "virgin" turpentine is used, a larger quantity of petroleum may be used, as it is richer in the lighter hydrocarbons than the others.

If the crude turpentine used be what is known as "yellow dip," I employ a smaller charge of material in the still than is usually employed. The object of this is to reduce the liability to foam and boil over, which is increased by my process, and which is liable to produce disastrous results. The still being supplied with a quantity of the mixture, the distilling is allowed to proceed in the usual way, a constant stream of water being allowed to run into the still till the rosin is ready to be discharged, which water keeps down the temperature and prevents boiling over.

When the operation is complete, it will be

found that an increase of a very large per cent. in the yield of distilled spirit is secured, the petroleum acting as an auxiliary solvent for the principles of the turpentine, and securing a more perfect extraction from the rosin of all the valuable properties inherent in spirits of turpentine, and as all these distilled matters go over together they have the same vaporizing-point as the spirits of turpentine, and do not after cooling separate, as a mere mixture of petroleum and spirits of turpentine would. Furthermore, the petroleum elements unite chemically with the resinous acids, and form a stable compound as a distillate, which is not only not separable, but which for industrial uses is more valuable than the simple spirits of turpentine, since the new product possesses greater solvent properties and better drying properties. The rosin which is left by my process is also changed in character for the better, as it contains among other new elements a proportion of paraffine, which imparts a toughness and body to it that gives it an increased commercial value as a base for the formation of a varnish that will not crack, an excellent varnish being formed by simply dissolving this rosin in a proportion of my new product after it has been freed from all its water.

Another advantage secured by my process is, that I am enabled to effect the distillation at a lower temperature, and thus protect the rosin against coloring, as it is well known that the coloring takes place quickly under high heat in the ordinary distillation, which color depreciates the quality and value of the rosin.

By my process the spirits may be all expelled in the presence of water, as the addition of the petroleum to the crude mass dissolves it to that extent even before the heat is applied (if it is allowed to stand for a while) that the lighter properties forming the spirits come over with the water when the heat is applied, thus leaving the rosin with the heavier oils to be expelled or distilled over at a higher heat as a separate distillate in the absence of water, making rosin-oil of it; or, if preferred, when the water-supply is cut off, the rosin may be discharged, as in the ordinary manner, having been all the time pro-

ected by the water, while spirits were being
expelled, by which process, as before stated,
the coloring is prevented in the rosin. Thus
it may be seen that the heavy oils of both the
5 crude turpentine and the oils in the petroleum
remain together, while the lighter oils or
spirits come over together with the water and
separate by specific gravity from each other,
while the heavy oils of each may be retained
10 in the rosin or distilled over separately, and
as a separate compound, without water.

Having thus described my invention, what I
claim as new is—

The process herein described of increasing
the yield of spirits of turpentine by thoroughly 15
mixing with the crude turpentine a refined
petroleum, as described, and distilling the
mixture, thereby obtaining not only an in-
creased yield of spirit, but also toughening
the rosin left as a residuum, substantially as 20
described.

JOSEPH B. UNDERWOOD.

Witnesses:

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