UNITED STATES PATENT OFFICE.

HAROLD M. CHASE AND JOHN L. GRAFFLIN, OF WILMINGTON, NORTH CAROLINA, ASSIGNORS TO NATIONAL WOOD DISTILLING COMPANY, OF WILMINGTON, NORTH CAROLINA, A CORPORATION OF NORTH CAROLINA.

PROCESS OF REDISTILLATION OF PRODUCTS RESULTING FROM DESTRUCTIVE DISTILLATION OF RESINOUS WOOD.

1,162,036. Specification of Letters Patent. Patented Nov. 30, 1915.

No Drawing. Application filed April 17, 1915. Serial No. 22,031.

To all whom it may concern:

Be it known that we, HAROLD M. CHASE and JOHN L. GRAFFLIN, citizens of the United States, residing at Wilmington, in the county of New Hanover, State of North Carolina, have invented certain new and useful Improvements in Processes of Redistillation of Products Resulting from Destructive Distillation of Resinous Wood, of which the following is a description.

Our invention relates to a process of redistillation of products produced from resinous woods by destructive distillation, and has for its object to produce from such products, which are necessarily so characterized by creosote odor or tarry odor and by heavy residual matter, as to render them incapable of use except for preserving wood or other material and other uses in which their odor is not objectionable, oils which are clear, viscid, free from creosote or creosote odor and capable of use for purposes such as those for which so-called rosin oil is used. By subjecting these products, such as creosote oil, pitch and tar, or mixtures thereof, to redistillation at a temperature not above 500 degrees Fahrenheit a light creosote oil may be driven off which carries all of the creosote odor, and by then further distilling at a higher temperature, not over 700 degrees Fahrenheit, a clear, viscid oil is driven off which is free from creosote odor and resembles rosin oil in appearance and characteristics, and which is of relatively high value compared with the market value of the creosote oil or pitch or tar. This process is not broadly claimed herein, being the subject-matter of a separate application for patent filed by us under date of April 17, 1915, Serial No. 22,030.

We have discovered that by using superheated steam blown directly into and through the contents of the still or retort to effect the distillation, either with or without the use of heat from other sources applied to the exterior of the retort or otherwise, the light creosote oil may be driven off at a much lower temperature than can be done where the contents of the retort are treated without the use of the steam, and in driving off the clear, viscid oil the use of superheated steam makes it possible to accomplish this at a lower temperature than is otherwise possible.

Our present invention consists in the modification of the broad process above referred to, in which superheated steam is used to heat the material being distilled, either with or without other heat, in one or both of the steps of the process as hereinafter described and particularly pointed out in the claims.

In carrying out our invention we introduce the material which is to be subjected to redistillation, and which may be ordinary wood creosote oil, pitch or tar, or any product containing any of these substances, into a still or retort, which may be of any usual construction, but which is preferably provided with heating means capable of regulation so as to heat the contents of the still or retort to a predetermined temperature and maintain such contents at such temperature, and is also provided with a pipe leading into it, through which superheated steam may be blown into and through the contents of the still. The still or retort being properly charged the superheated steam is turned on and the distillation process begins. The contents of the still or retort being heated by the superheated steam, either with or without additional heat applied to the exterior of the still or retort or otherwise, to a temperature not exceeding 390 degrees Fahrenheit, a light creosote oil is driven off. By maintaining the heat for a suitable length of time all of this light creosote oil contained in the material in the still or retort may be driven off without raising the temperature above 390 degrees, the amount of light creosote oil driven off depending on the character of the contents of the still or retort, the amount being comparatively small if the contents of the still or retort consist wholly or mainly of pitch or tar and comparatively large if the contents consist wholly or largely of creosote oil. The initial temperature required will also vary somewhat with the character of the contents of the still or retort, the drawing off of the light creosote oil beginning at a lower temperature when the contents are made up wholly or largely of creosote oil than when they consist largely of pitch or tar. And

the same is true in the drawing off of the clear, viscid oil, the heat required being less when the proportion of creosote oil in the original charge is greater.

After the light creosote oil has been driven off, the contents of the still is raised by the superheated steam either with or without additional heat applied to the exterior of its retort or still or otherwise, to a temperature not exceeding 500° F., during which period of the process, a large proportion of the remaining contents of the still is driven off as a clear viscid oil, leaving a comparatively small residue.

Having thus described our invention, what we claim is:

1. The process of treating the products resulting from destructive distillation of resinous wood characterized by creosote odor which consists in heating such products to a temperature not exceeding 390 degrees Fahrenheit, by forcing superheated steam through them until all substances having a creosote odor have been driven off, raising the remainder to a temperature to not exceeding 500 degrees Fahrenheit and forcing superheated steam through them to distil off oil free from creosote odor.

2. The process of treating the products resulting from destructive distillation of resinous wood characterized by creosote odor which consists in heating such products to a temperature not exceeding 390 degrees Fahrenheit by forcing superheated steam through them and by applying other heat to them, maintaining them at such temperature until all substances having a creosote odor are driven off, raising the remainder to a temperature not exceeding 500 degrees Fahrenheit and forcing superheated steam through such remainder to distil off oil free from creosote odor.

This specification signed and witnessed this 18th day of May A. D. 1914.

HAROLD M. CHASE.
JOHN L. GRAFFLIN.

In the presence of—
C. B. HARRISS,
M. I. HARRISS.