

# UNITED STATES PATENT OFFICE.

JULIUS DEHNST, OF HALENSEE, NEAR BERLIN, GERMANY.

## PROCESS OF PREPARING WOOD-IMPREGNATING LIQUIDS.

999,013.

Specification of Letters Patent.

Patented July 25, 1911.

No Drawing.

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*To all whom it may concern:*

Be it known that I, JULIUS DEHNST, a subject of the King of Prussia and the German Emperor, residing at 15 Joachim Friedrichstrasse, Halensee, near Berlin, Kingdom of Prussia, German Empire, have invented new and useful Improvements in Processes for Preparing Substances for Impregnating Wood, of which the following is a specification.

The tar obtained by destructive distillation of coal contains a large proportion of bituminous substances. If one subjects the coal tar to distillation one can only obtain the substances of low boiling points in an undecomposed state whereas the bituminous substances especially valuable for impregnating wood are decomposed by distillation. The distillates obtained by distillation of coal tar show therefore the valuable properties of bitumen only in a small degree if any and are not very suitable for impregnating wood. I have now found that one may extract the bituminous substances from coal tar by treating it with a certain proportion of low boiling hydrocarbon solvents boiling up to 100 degrees centigrade; as for instance benzene  $C_6H_6$ , toluene; and may obtain the bituminous substances from the extract by evaporation of the solvent. The solution thus obtained may be separated from the undissolved constituents of the coal tar by filtration or decantation. The proportion of the solvent suitable for extracting the bituminous substances from coal tar is one liter of benzene to one kilogram of coal tar. From the solution thus obtained one separates the solvent by distillation and obtains as residue a clear oil having the valuable portions of bitumen soluble in hydrocarbons and being very suitable for impregnating wood and for similar purposes.

I may proceed in the following way: 1 kilogram of coal tar is mixed with 1 liter of benzene, whereupon a heating to 30 degrees centigrade may be useful. The mix-

ture is filtered and from the clear filtrate, the benzene is evaporated. The residue is a clear product very suitable for impregnating wood.

The following table shows the solubility of the bitumen in benzene.

Kilograms of coal tar.....	1	1	1	1	1	1	1	1	
Liters of benzene.....	1	2	3	4	5	30	40		55
Insoluble per cent.....	3.25	4.77	5.09	6.9	6.7	6.1	5.45		

The properties suitable for impregnating wood may be increased by dissolving the bituminous substances extracted from coal tar in coal tar oils of the boiling points between 150 and 300 degrees centigrade. The oil thus obtained is proof against low temperatures and does not lose its fluidity. It is completely clear and has no solid undissolved substances which would be detrimental in the impregnation of wood. A suitable proportion is to dissolve 1 part by volume of the bituminous substances in 4 parts by volume of the so called heavy oils from coal tar.

The impregnation of wood by means of the described bituminous substances is effected in the usual way by forcing them into the wood by means of alternate pressure and vacuum.

I claim—

The process of preparing bituminous oils suitable for impregnating wood which consists in mixing one part of coal tar with up to one part of a hydrocarbon having a boiling point not over 100 degrees centigrade, separating the liquid from the undissolved constituents of the coal tar, evaporating the hydrocarbon from the liquid and adding to the remaining residue coal tar oils having boiling points between 150–200 degrees centigrade.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JULIUS DEHNST.

Witnesses:

HENRY HASPER,  
WOLDEMAR HAUPT.