UNITED STATES PATENT OFFICE.

LAURITZ PETERSEN-HVIID, OF KASTRUP, NEAR COPENHAGEN, DENMARK.

PROCESS OF TREATING WOOD.

1,186,604. Specification of Letters Patent. Patented June 13, 1916.

No Drawing. Application filed December 30, 1913. Serial No. 809,520.

To all whom it may concern:

Be it known that I, LAURITZ PETERSEN-HVIID, citizen of the Kingdom of Denmark, and residing in the village of Kastrup, near Copenhagen, Denmark, have invented new and useful Improvements in Processes of Treating Wood, of which the following is a specification.

It is a well-known fact that wood which is subjected to boiling during treatment with liquids may easily be partly or entirely destroyed, no matter whether this treatment takes place under normal pressure or under a pressure of several atmospheres, or whether this process is used to soften the wood, or to give it a certain tone of color, or to give it other properties, since a large portion of the woody fiber will be transformed into acetous combinations, and, at high temperatures, will even be transformed into tar-like substances. Attempts have been made to obviate this by boiling the wood in alkaline liquids, which, if present in the proper quantities, constantly neutralize the generated acetous combinations (acetic acid, formic acid, etc.,) the presence of which acids especially cause the wood-fibers to be decomposed, or transformed. This method, however, has the disadvantage that, firstly, the used alkalis or their salts remain in the wood after being subjected to boiling, and, secondly, that the free alkalis present in too great quantities at the beginning of the operation have a decomposing affect on the lignin, at the same time that the dyeing, impregnating, or softening liquid quickly absorbs so many salts from the wood that it becomes useless.

The present invention has as its object to obviate these disadvantages by providing for a constant liberation, during the process, of the alkalis used for the neutralization of the generated acid (or acetous) combinations, so that the alkalis only need to be present in comparatively small quantities.

It is a well-known fact that several kinds of wood, by means of high temperatures, no matter whether these temperatures are attained by means of steam or heated gases, will take a brownish tone, but also, in such cases, there takes place an active destruction of the wood, which destruction is first introduced by the formation of acetic acid and formic acid, etc., after which the destruction of the wood by the presence of these acids first properly makes headway, and the wood, after treatment, becomes brittle and useless for industrial purposes. In order to obviate this, I use, according to my invention, gaseous ammonia which is partly introduced into the wood in any known manner previous to heating, and partly during the heating process, is constantly introduced into the tank where the wood is treated. Whereas in such cases, there would be used too large a quantity of the expensive ammonia, and the surface of the wood also be too strongly affected, the liberated ammonia is regenerated continually on the bottom of the tank in the following manner: At a certain moment during the operation there is introduced into the tank a suitable quantity of non-volatile alkali, for instance sodium hydroxid solution. The ammonia salts formed in the wood are sweated out or driven out by steaming or heating the wood and mix themselves with the sodium hydroxid solution present, when they are decomposed, and the ammonia again becomes free and can neutralize new quantities of acid.

After the treatment is finished, the wood has got the desired color-tone and retains its structure.

What I claim, and desire to secure by Letters Patent, is:

Process of treating wood consisting in subjecting the material to the action of highly heated steam, and introducing ammonia gas into the heated material in the presence of a solution of an alkali hydroxid for regenerating ammonia from the salts formed during the process, by the decomposition of said salts in the presence of said base, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LAURITZ PETERSEN-HVIID.

Witnesses:

CHARLES HUDE,

VILHELM MARTENS.