UNITED STATES PATENT OFFICE.

HARRY C. MYERS, OF CLEVELAND, OHIO.

METHOD OF VULCANIZING WOOD.

SPECIFICATION forming part of Letters Patent No. 537,393, dated April 9, 1895.

Application filed January 19, 1893. Renewed February 28, 1895. Serial No. 540,064. (No specimens.)

To all whom it may concern:

Be it known that I, HARRY C. MYERS, of Cleveland, Ohio, have invented a new and useful Improvement in Treating Wood, &c., which is fully set forth in the following specification.

This invention has reference to the use of carbonic acid gas (carbon dioxide) in processes where wood is treated by exposure to a high temperature, either with or without pressure.

The main object of using the gas is to prevent the ignition and combination of the wood, and thus permit the use of a higher degree of heat than could otherwise be employed, which for certain purposes is of great importance.

The invention is particularly designed to be used in processes of preserving or curing wood, such for example as the well known process of wood vulcanization, wherein the timber to be preserved is heated in a medium of high pressure. In this process, as in other analogous processes, the object is to subject the timber to as high a temperature as possible; but as now carried on, notwithstanding the utmost care in producing uniform heating and a steady circulation of air, ignition and combustion, entailing more or less damage, are matters of frequent occurrence.

By means of my improvement, the temperature of the retort cylinder or chamber may with perfect safety, be raised far beyond the maximum heat heretofore employed, since the presence of the carbon dioxide precludes the possibility of ignition or combustion of the wood. The gas is obtainable in cylinders stored under a pressure of one thousand pounds and upward. It can therefore be easily introduced into the cylinder, even where pressure already exists, and under these conditions it may be used as a means for increasing the pressure. The quantity of gas used will, of course, depend upon the heat to which it is desired to subject the wood, and the nature and condition of the latter. A minimum of five per cent. of carbon-dioxide will permit the safe use of a much higher degree of heat than could be used ordinarily; but since the excess of gas can do no harm, it is recommended to employ a larger quantity than would theoretically answer the required purpose; and but for the item of cost the air might with advantage be replaced entirely by carbon dioxide.

The principal effects of raising the temperature, without ignition or combustion of the wood are, that more tar, creosote, carbolic acid, and antiseptics generally are produced, and these substances, becoming hard and solid upon cooling close the pores of the wood, increasing its strength, rendering it impervious to moisture, and preventing the formation of fungus growths known as decay and "rot." Moreover, the solidified matters thus formed are dark in color and give the appearance of age to the wood (particularly oak) thus improving its value for many uses.

The production of a large quantity of tar and organic acids in the timber has a very important effect in preserving it from the attack of the salt water insect known as the "teredo." It has been found that this insect does not attack tarry matter, and morever that the presence of acids will decompose the calcium carbonate with which the boring of the teredo is always lined, and thus prevent its destructive operations.

The process or improvement is also advantageous in treating wood at a low pressure, as for distillation, the effect of increasing the heat beyond the point at which ignition would ordinarily take place being the production of a larger yield of wood distillate and a better quality of charcoal.

The process may be applied to treating combustible substances other than wood or timber, and in place of carbonic acid gas, I may employ other gases which prevent combustion or oxidation; but for cheapness and efficiency, carbonic acid gas has great advantages, and is therefore preferred.

I claim as my invention—

1. The described process of treating wood by subjecting it to a high heat in the presence of carbonic acid gas, as set forth.

2. The process of treating wood by heating it in a medium of high pressure containing carbonic acid gas, substantially as described,

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

HARRY C. MYERS.

Witnesses:
H. E. CHUBB,
DANIEL MYERS.

Correction in Letters Patent No. 537,393.

It is hereby certified that in Letters Patent No. 537,393, granted April 9, 1895, upon the application of Harry C. Myers, of Cleveland, Ohio, for an improvement in "Methods of Vulcanizing Wood," an error appears in the printed specification requiring correction, viz: In line 13, the word "combination" should read *combustion;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 23d day of April, A. D. 1895.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.