

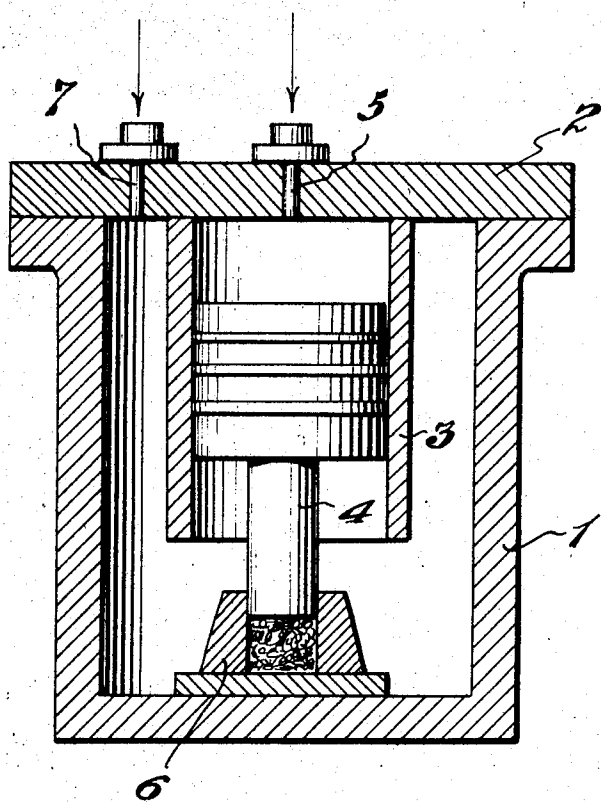
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METHOD OF TREATING WOODY MATERIAL

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METHOD OF TREATING WOODY MATERIAL

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2 Claims. (Cl. 44—10)

This invention relates to a method of treating wood, its constituents, peat, and the like, and to the products thereby obtained.

It is already known to heat wood, its constituents, peat, and the like in closed vessels in the presence of water or steam to 100° C. or still higher temperatures, and to mold under pressure the thus steamed material, after allowing the same to cool and after relief of the pressure thereon. The molded articles thus obtained, which have a relatively high water content, show clearly the structure of the starting materials used.

Now I have found that by suitably increasing the temperature in the pressure-tight vessels during the steaming treatment, and simultaneously bringing a suitably high mechanical pressure to bear, there is obtainable from wood, its constituents, peat, and the like a mass which is practically structureless and which is distinguished by low water content. The temperature of the heating in the presence of steam, and the pressure exerted, must be so high that a complete or at least almost complete homogenizing of the mass occurs. The higher the temperature at which this treatment is carried out the lower the pressure may be, and vice-versa. If the steaming is carried out at a temperature of about 200° C., or at a temperature in excess of this figure, it is sufficient, for the production of the molded articles according to the present invention, to exert mechanically a pressure of the order of the pressure required in shaping the articles, since the mass is already homogenized by the steaming treatment at high temperature. In this conversion the temperature used is also dependent on the material, for example on the kind of wood used, and is generally speaking lower in the case of deciduous woods than in the case of pine wood. The presence of traces of products of the distillation of coal appear, however, to promote the conversion. If on the other hand the steaming is carried out at a temperature of about 150° C. the mechanically exerted pressure required for homogenizing and molding amounts to 100 atm. and more. At temperatures below 150° C. the breaking down of the structure of the starting material occurs but imperfectly, even if the pressures exerted in the press are of the order of several hundred atmospheres. For the obtaining of the final product of the process according to the invention it is relatively immaterial whether cooling takes place or not between the step of producing the pulp and that of molding the same under pres-

sure. It is thus equally possible either first to produce the pulp and then to subject this pulp, if desired after cooling, to heat and pressure in pressure-tight vessels in the presence of steam or water, or to carry out both phases in one and the same working operation and in the same pressure tight vessels.

As an example of a pressure-tight vessel which may be used for carrying out the process of the present invention, reference is made to the attached drawing.

The vessel 1 is closed by a cover 2 carrying a hydraulic cylinder 3 with a piston 4. The inlet of the pressure water to the cylinder 3 is denoted by 5. Within the vessel 1 there is arranged a form or mold 6 receiving the material to be treated and cooperating with the piston 4. Saturated steam is introduced into the vessel through the inlet 7. After the material to be treated has been placed in the form 6 and the vessel 1 has been closed, steam at a temperature substantially between 150° C. and 200° C. is admitted through 7 until the material is sufficiently heated, and then the piston 4 is lowered and the material compressed to form the shaped body desired in the mold 6. In this way heat treatment and compression is effected in one and the same working operation and in the same pressure-tight vessel. Obviously modifications of this vessel may be made without departing from the spirit of the invention.

The molded articles obtained in accordance with the invention are waterproof, of considerable hardness, and have but slight ash content with high carbon content. Owing to its homogeneity and plasticity the mass may be used, either by itself or in commixture with known filling materials, for the production of molded blanks for useful articles of all kinds, such as for instance handles, gun-stocks, and the like. Owing to its high electric resistance the mass is also suitable for the production of insulating material, for which purpose there may also be added to the mass resins or synthetic resins, the latter also in the form of their components. In view of its low ash content this mass, or molded bodies formed therefrom, if desired with the admixture of other high quality fuels, are also suitable, after grinding, for use as fuel in internal combustion engines such as coal dust Diesel engines and the like.

The mass obtained in accordance with the invention is also suitable for use as a binder in briquetting difficultly moldable fuels. The pulpy mass, or a suspension of ground up molded bodies

obtained therefrom, is also distinguished by high reactivity, so that the same may serve as starting material for further chemical working up, for example for hydrogenation.

5 I use the term "woody material" in the following claims to include besides wood also its constituents, peat, and the like.

I claim:

10 1. A process for producing substantially fiberless homogeneous masses from woody material, consisting in steaming the woody material in a pressure-tight vessel at a temperature above

150° C. and under a mechanical pressure of at least 100 atmospheres, until a practically fiberless homogeneous material is obtained, and molding said material by the action of heat and mechanically exerted pressure in the presence of saturated steam in the same pressure-tight vessel to form molded solid masses of low water and ash content.

2. A process as claimed in claim 1, wherein the practically fiberless homogeneous material is cooled before molding.

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