

UNITED STATES PATENT OFFICE

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MANUFACTURE OF FUEL BRIQUETTES FROM WASTE WOOD

No Drawing.

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This invention relates to the utilizing of waste wood for the purpose of making fuel briquettes.

The principal objects of the invention are to provide a method of manufacturing a useful product for fuel from by-products of various wood industries and to provide a new fuel product.

Other objects and advantages of the invention will appear hereinafter.

In the preparation of pulp wood for the paper manufacturing industry, a considerable accumulation of waste bark or wood refuse is obtained as a valueless by-product which is at the same time an expensive nuisance to get rid of. The utilization of this waste material is the subject of this invention. The invention is also applicable to the utilization of waste wood products from other industries, such as wood shavings, sawdust or any waste wood by-product.

All of the bark in the preparation of wood pulp is literally saturated with moisture, and the cost of drying it has been one of the principal deterring factors to its economical utilization. By my process the moisture present, by reason of having a lower boiling point, is a decided help in distilling off the more valuable fractions of the oil used as a binder for subsequent recovery. Ordinarily it hardly pays to dry this extremely wet bark simply to utilize it for steam raising in boilers of special design to handle the large bulk. On the other hand this same bark converted into fuel briquettes by my process acquires a greatly enhanced form value as a high grade domestic fuel commanding a market price that fully warrants the entire operation.

The method consists in shredding or grinding the by-products, such as bark or various refuse from the wood pulp industry, sawdust, shavings or the like, and kneading the same thoroughly with a sufficient quantity of heavy asphalt base oil, a residuum from the same, or any other binder of similar properties.

For this purpose, any asphalt base, crude oil, bunker fuel oil, or still bottoms, having an asphalt content of over twenty-five per-

cent can be used. It can be mixed with the wood material in the proportion of from ten percent up to thirty percent of the total weight of the fuel, according to the particular oil chosen as a binder.

This kneading process is carried on to produce a plastic mass which can be formed into briquettes in molds under pressure. These briquettes are then subjected to a heat, preferably below 600° F., by direct contact with products of combustion which are of such a nature as to harden the briquettes sufficiently to enable them to be used as a fuel of considerable merit. This hardening operation can be performed in an oven into which the heated products of combustion are introduced from a furnace.

If the oil used as a binder has light fractions in sufficient quantity to warrant recovery in the process, I prefer to subject the briquettes to indirect heat in the first place for the purpose of driving off and recovering, through condensers, these lighter fractions and incidentally to drive off the moisture. This brings the product to a stage where it will harden very quickly by direct contact with the heated products of combustion as I have described above. This heating can be obtained by introducing the briquettes into an oven heated by pipes through which the products of combustion from a furnace flow.

I have described this method as applicable particularly to waste bark or wood refuse from the wood pulp industry, but it is obvious that the process has a valuable application to any other industry in which wood shavings, sawdust or other waste wood constitutes a by-product. In the wood pulp industry these by-products are produced in such quantities that they constitute a serious expense for their storage and disposal at the present time and they are always wasted. By means of my invention they can be utilized and all this expense avoided and some degree of profit obtained from this by-product.

I find that the heat value, as well as the density of these products, can be materially increased and their general quality improved by combining the bark or other waste wood

with coal in any proportions desired to produce fuel having various burning characteristics as desired. This is an additional and not an alternative feature, as the same process is carried out in this case as before.

Although I have described a specific process and the use of specific proportions, I am aware of the fact that the invention can be carried out with modifications by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited in these respects, but what I do claim is:—

1. A method of making briquettes of waste wood and bark which includes mixing it with a heavy asphalt base oil in the proportion of from ten to thirty percent by weight, kneading it to bring it into a plastic and uniform condition, forming the plastic mixture into briquettes and subjecting the briquettes to direct contact with products of combustion to harden the same sufficiently to produce a fuel which can be handled.

2. The method of making a fuel which consists in taking the refuse wood and bark constituting a by-product of the wood pulp industry, mixing it with a heavy asphalt base oil, kneading it into a plastic mass, forming it into briquettes, subjecting it to the action of indirect or radiant heat to drive off and recover the lighter fractions of the oil and drive off the moisture, and then subjecting it to the direct heat of products of combustion to harden it so that the briquettes can be handled.

In testimony whereof I have hereunto affixed my signature.

HENRY F. MAUREL.