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PROCESS OF MAKING FUEL BRIQUETTES

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My invention relates particularly to an improved fuel and the process of making the same and refers more particularly to a composition of matter or combination of materials so processed as to make the same readily combustible.

More particularly it relates to the production of a fuel composition derived from waste and more or less worthless material, which may be inexpensively and easily made up either in immense quantities, batches or limited quantities.

The invention has among its objects the production of a fuel of the kind described that is efficient, of high caloric value, easily ignited, readily combustible, that is slow burning, that will burn leaving a minimum of ash, that is substantially odorless and smokeless, that is not inconvenient to handle and is substantially clean during handling, which may be most economically made without requiring expensive and complicated apparatus, and which may be used wherever found applicable.

Many other objects and advantages of the invention will appear to those skilled in the art from the disclosures herein given.

As is well known, large quantities of vegetable and animal refuse, fibrous material, generally termed garbage, is constantly available as a waste product from hotels, restaurants, homes, canneries, and various manufacturing establishments, which possess considerable fuel or B. t. u. values, which products have not heretofore been used to any considerable extent as a fuel, because either of the rapidity with which they burn or in other cases, due to the difficulty in igniting the same and difficulty to maintain the burning of the same, as well as the difficulty in handling. In many instances these waste products represent a loss which are hauled off to dumps for filling purposes or are burned in incinerators at a great expense, to get rid of the same, and in most cases when disposed of create unpleasant odors, generate dangerous, unpleasant and unhealthful gases or vapors, and if burned create much odor and smoke and often leave much ash.

I have found that by taking these waste products, generally termed as garbage, and which may include various fibrous materials and waste products of all kinds, and thoroughly grinding or macerating the same, so that it is in comminuted form, the same may be easily and readily handled and forms a most satisfactory body or base for the fuel. In order to sweeten the same to prevent fermentation and the usual decomposition, rotting or spoiling, I treat the same with a suitable deodorizer and sweetener, generally chloride of lime, it being understood that any equivalent that will serve the purpose may be employed. This is mixed with the garbage during the grinding process. I also take, what I may term, a filler, which may consist of wood saw dust in granular form, or similar material, as for example, peat or the like which is thoroughly comminuted or macerated, and add this to the waste material. In the case of saw dust, I prefer to moisten the same so that it is to some extent, well impregnated or wet.

I also employ a binder of bituminous material, such as coal tar, asphalt or like pitchy substance. In making up the product, I first take an amount of garbage or waste product and thoroughly grind or macerate the same, having added the chloride of lime or like material, which will tend to prevent decomposition, fermentation, etc. I also take saw dust and wet the same down, wood saw dust being preferred, or take some other material which may be used as a filler and which is readily combustible. The garbage or waste material is placed in a container or tank together with the saw dust, and to this mixture, I add the bituminous binder which, as before mentioned may be coal tar, asphalt or the like. The mixture is heated to a temperature of substantially 200° Fahrenheit, and maintained at that temperature for a period of time, generally five or six minutes is sufficient for the purpose. At this same time, I thoroughly agitate or stir the mixture so that the materials are thoroughly and completely intermixed, and all the particles of the body or waste and the filler are thoroughly coated with the bituminous product, sealing the same. The refuse products are sealed against oxidation by contact with the air, and the particles of the filler are sealed so that the moisture is to a large extent sealed in. The batch or intimate mixture is then drawn off or removed from the container and placed in molds in any suitable manner, or extruded in the form of a ribbon which is cut before the ribbon or bar solidifies, so that the material is in the form of briquettes or blocks of the desired size and shape.

While the proportions of the materials may vary, generally speaking, the mixture contains substantially between 80 and 85 percent of garbage or waste material, substantially 10 to 15 percent of filling material or the saw dust and approximately 5 to 10 per cent of the bituminous binder, it being understood of course, that the relative portions may vary. The amount of chloride of lime used is substantially 2 to 5 percent of the body.

These bricks or briquettes may be handled readily and ignited and burned in any convenient manner similar to coal or like products. The material ignites much quicker than coal, or even wood, and while it burns readily, does not burn with undue rapidity. The fire may be quenched with water and again be readily relighted. Owing to the fact that it is composed almost wholly of a waste product, it is very inexpensive. On the whole, the product has been found to be superior to coal and very materially lower in cost.

Throughout the specification and claims, by fibrous material or garbage, I wish to include any and all oleaginous waste materials, and by the term filler or binder, I wish to be understood as including the materials hereinbefore mentioned. It is to be particularly noted that all of the several component particles or materials are intimately mixed at a relatively high degree of temperature, substantially 200° Fahrenheit, and this is sufficient to measurably cook the same and produces results which are impossible to attain were they merely mixed cold or at a substantially lower temperature. This also enables me to use a heavier binder which does not have the same tendency to flow or loosen up in warmer weather or when the fuel is stored in a warm place. The briquettes so formed are not easily disintegrated in handling nor do they dust off and become messy.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact combination of materials and method of making herein described or uses mentioned.

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

1. The process of making a fuel briquette, which consists in thoroughly grinding undried garbage and waste products of vegetable or animal matter and treating the same with chloride of lime, thence mixing the same with wood saw dust which has been previously wetted down and a bituminous binder, the entire mass being subjected while in a wet state to a temperature of substantially 200° Fahrenheit for a limited time, the mixture being thoroughly agitated while cooking at said temperature, whereby the particles of the material are well distributed throughout the mass and coated with a binder, and thence forming the mixture into briquettes of the desired size and shape.

2. In a process of making fuel briquettes comprising as a principal constituent garbage containing animal and vegetable matter, the steps consisting of grinding said garbage in undried condition, treating said garbage with chloride of lime to neutralize the same, adding to said treated garbage a ground fibrous previously moistened saw dust, then adding thereto a bituminous binder material and subjecting the resultant mass while wet to a temperature of substantially 200° Fahrenheit and agitating the same to mix said constituents thoroughly while cooking the garbage particles contained therein and to dissolve said bituminous binder material, and then forming from the resultant mixture said fuel briquettes, said dissolved binder sealing said garbage particles against oxidation and sealing said filler particles and the moisture contained therein.

3. In a process of making fuel briquettes comprising as a principal constituent 80 to 85% garbage containing animal and vegetable matter, the steps consisting of grinding said garbage in undried condition, treating said garbage with chloride of lime to neutralize the same, adding to said treated garbage 10 to 15% of a ground fibrous previously moistened saw dust, then adding thereto 5 to 10% of a bituminous binder material and subjecting the resultant mass while wet to a temperature of substantially 200° Fahrenheit and agitating the same to mix said constituents thoroughly while cooking the garbage particles contained therein and to dissolve said bituminous binder material, and then forming from the resultant mixture said fuel briquettes, said dissolved binder sealing said garbage particles against oxidation and sealing said filler particles and the moisture contained therein.

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