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PARTING COMPOUND

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This invention relates to improvements in parting compounds and method of producing the same.

In foundry practice, as is well known, a parting compound is dusted upon the pattern and upon the meeting surfaces of the mold sections to facilitate the ready separation of the sections of the mold and the withdrawal of the pattern therefrom.

The parting compounds in use generally at the present time have a base consisting of minerals such as tripoli, phosphate rock, marl, clay, whiting, and the like. In compounds produced from such bases, the individual particles have sharp pointed, jagged edges and projections because of the fact that they are finely pulverized crystalline minerals. These minute particles float in the air as dust and are breathed in by the workmen, and because of the sharp jagged projections on the particles, become lodged in the lung tissues and membranes and cannot be removed by coughing. Instead, said particles accumulate in the lungs and are the cause of diseases such as silicosis. This objectionable feature is particularly true with any parting substance made from tripoli or other materials containing free silica.

It is a general object of the present invention to provide an improved parting compound which contains no free silica and only traces of mineral matter and which is not injurious to the health of the worker.

A further object of the invention is to provide a compound in which the basic material is powdered nut shells.

A further object of the invention is to provide an improved method of producing a parting compound from nut shells.

A further object of the invention is to provide a parting compound which is relatively inexpensive, easy to handle and use, which is more efficient than parting compounds now in use, and which is well adapted for the purpose described.

With the above and other objects in view the invention consists of the improved parting compound and method of manufacturing the same, and all its parts and combinations as set forth in the claims and all equivalents thereof.

As a basic material waste shells obtained after removing the kernel from nuts such as English walnuts, walnuts, pecans, almonds, Brazil nuts, filberts, hazelnuts, and such other nuts which are readily obtainable in quantities are used.

The shells so obtained are first pulverized to a

desired degree of fineness and such fineness preferably varies between the limits of 90% passing a 200-mesh sieve and 70% passing a 325-mesh sieve. Other degrees of fineness may be employed.

The preparation of parting compounds from the above described basic material is effected by impregnating the pulverized material with a water repellent or waterproofing substance. Various materials may be used for this purpose, but it is preferred to use materials of a fatty or waxy nature having a relatively high melting point and these materials may be either fats, fatty acids, or waxes such as tallow, stearic acid, palmitic acid, a commercial mixture of stearic and palmitic acids, beeswax, candelilla wax, and carnauba wax. Metallic-salts such as aluminum acetate, aluminum stearate, calcium stearate and magnesium stearate and the like may also be employed with good results for water repellent purposes.

There are several preferred methods of preparation of parting compounds from the above materials, as follows:

1. The nut shells are pulverized to a desired degree of fineness and there is added 1½ to 10 per cent of a fat, fatty acid, waxy, or metallic-salt water repellent material, the water repellent material being preferably dissolved in a suitable solvent. The materials are then mixed together and the solvent is then evaporated by the application of heat preferably with simultaneous agitation of the mixture during the application of heat. Stearic acid may be advantageously employed as the water repellent material in the above method. Any suitable solvent such as butyl alcohol, ether, acetone, carbon tetrachloride, di-chlor-ethylene, or the like may be employed. In the application of heat it is not desirable to apply a direct flame to the receptacle for the mixture for the reason that the organic basic material is likely to burn. The mixture is therefore preferably placed in a receptacle in an oven.

2. The powdered nut shells are first dried by the application of heat, preferably in an oven, to remove moisture therefrom. This heating preferably takes place in a shallow pan with a temperature of approximately 230° Fahrenheit for approximately 30 minutes, a suitable solvent, such as one of those listed in the first method is then added to completely wet the material and to form a thin mud of solvent and pulverized shell. This mud is then placed through any standard type of filter press to

remove the solvent as completely as possible. The press cake is then preferably treated with fresh solvent and is again filter pressed. This pressing is for the purpose of removing the natural fat from the pulverized shell material and two or three extractions are usually sufficient for this purpose. After the last extraction the press cake is treated with another portion of solvent to which has been added a suitable water repellent substance such as those heretofore listed, the water repellent substance being preferably in the range of $1\frac{1}{2}$ to 10% of the original weight of the pulverized shell material. Approximately 3½% water repellent substance is found to produce good results in all of the methods. The mass is then thoroughly mixed and next the solvent is removed by the application of heat, as heretofore described in connection with method 1, preferably with simultaneous agitation of the material.

3. The nut shell basic material is not previously dried or extracted in this method but is immediately mixed with a water repellent substance, preferably being first mixed with water. The mixture is then heated, preferably in an oven to a temperature of 250 to 300 degrees Fahrenheit with slow agitation for a period of 30 minutes to one hour until the pulverized shell material has completely and uniformly absorbed the water repellent substance. In this method no solvent is employed. A solution of aluminum acetate in water may be advantageously employed.

It will be seen that the first method is embodied in the second method and that the second method adds to the first principally in that there is drying of the nut shells and in that there is press filtering. The third method is embodied in both the first and second methods but is broader than either in that no solvent is employed other than water. The three methods are, therefore, different specific aspects of the same broad method. The product prepared by the second method is superior in quality to those prepared by the first and third methods but the latter methods produce products of sufficiently good quality to meet all practical requirements in the foundry.

In view of the fact that it is impossible to list

all of the water repellent materials which can be successfully used, those specified are not to be considered as the only ones which are practical. As before mentioned any wax, fat, or fatty acid may be used which has a sufficiently high melting point, and in addition, various metallic salts may be utilized such as those specified. In any of the methods the water repellent material may vary from $1\frac{1}{2}$ to 10 per cent of the weight of the initial pulverized shell but approximately 3½% produces very desirable results.

Sufficient water repellent material must be used so that the powdered shell will not absorb moisture and on the other hand the water repellent material cannot be in a sufficiently large percentage to prevent the finished product from dusting out of a bag in dusting the mold, this being the common way of applying parting material. While various nut shells may be employed as heretofore mentioned, English walnut shells are readily obtainable in quantity and are highly efficient for the purpose.

It is to be understood that any of the commonly used basic ingredients may be used with the powdered shell without departing from the spirit of the present invention, and said basic ingredients may be tripoli, phosphate rock or calcium carbonate.

What we claim is:

1. A parting compound comprising a powdered base material formed of the shells of hard shelled nuts, said powdered base being impregnated with water proofing material, and said parting compound having the property of readily passing through the dusting bag and being heavy enough to fall onto the pattern without being dispersed into the air.

2. A parting compound comprising powdered English walnut shells impregnated with water proofing material.

3. A parting compound comprising powdered pecan shells impregnated with water proofing material.

4. A parting compound comprising powdered almond shells impregnated with water proofing material.

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