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PROCESS OF RECOVERING CORK AND OTHER PRODUCTS FROM BARK.

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To all whom it may concern:

Be it known that I, GUY C. HOWARD, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Processes of Recovering Cork and Other Products from Bark.

The object of this invention is the provision of an improved process of treating bark of trees whereby a valuable cork product is obtained and the production of other valuable by-products are facilitated.

The bark of the Douglas fir, for example, growing largely on the Pacific slope of the United States is characterized by distinct cork-cell aggregates which take the form of regular sinuous concentric seams or veins throughout the bark outwardly of the cambium layer. In horizontal cross-section these cork veins appear as a lattice surrounding and interlaced with bundles of fibrous material. This fibrous material resides in lens-like bodies of fibre-bundles separated by the cork viens.

Said cork viens are of characteristically true cork-cell composition having substantially all the physical and chemical properties of the well-known Spanish cork. The cork-cell aggregates are very tough and resistant to separation and comminution, as by abrasion. On the other hand the interlaying flattened lens-like bodies of fibrous material are not compactly aggregated but are porous and loosely cemented together while the fibre is quite brittle and easily reduces to an individual fibre or powder, especially if dry. Through this difference in physical properties of the two constituents of the bark I am enabled to effect a separation whereby a commercial cork product is obtainable and the fibrous residue removed therefrom is rendered more suitable for treatment in the extraction of tannin, or for other purposes.

The process embodied in my invention consists essentially in the following steps:

The bark as removed from the tree is first reduced, as by crushing or shredding, to small pieces of one inch or less superficial area so that the bark is thoroughly shattered and split to open up the fibre lenses so that they may be more readily dried.

The material is then dried to air-dry weight or less under properly regulated conditions to avoid overheating the cork-cells. When suitably dried the fibrous matter will become relatively brittle and friable and hence more easily reduced and separated, while the cork aggregates will be preserved in their most compact form and in condition most resistant to grinding.

The resulting dry product is then subjected to a series of grinding and screening operations wherein the cork and fibrous components are separated. The mechanical action sought in this treatment is a crushing, shredding and abrasive action which will completely break up the vein and lens formations into individual pieces of cork to which adhere more or less of the fibre followed by an abrasive action which results in the final removal of the adhering fibres. The material may be subjected to repeated grinding or abrasive operations each suited to the state of the material and intermediate or simultaneously of said grinding operations the product is screened through a mesh suitable to its condition to remove the reduced fibrous material with the result that the separation may be more economically carried on.

In practice, I find that a substantially complete separation can be made by grinding and screening steps which reduce the fibrous material so that it will pass a 30 mesh screen and leaving the cork pieces of various sizes larger than a 30 mesh. The cork aggregates resulting from these operations are flakes or pieces of cork in varying sizes and of thickness substantially as existing in the original bark.

The particular form or type of equipment used in said grinding, shredding or abrasive operations is not material or essential to this invention other than to give the defined action and result. The final grinding operation, however, may preferably be a cleaning or polishing treatment whereby the last particles of fibre are brushed or dusted off the cork flakes. Said cleaning or polishing action may be given before or after the treatment mentioned in the following paragraph.

The cork product thus resulting is in the form of flakes or bits of cork which are available for sale as such, or may be subjected to further mechanical or chemical treatment whereby its properties are altered to suit specific uses in a manner analogous to the present well-known methods of treating cork. This material contains a wax or resin similar to the Spanish cork and behaves in all respects as such in its character-

istic properties. It responds to the mechanical and chemical treatments given Spanish cork whereby its various qualities are regulated. For some purposes it appears to be better suited than the Spanish cork.

The tannin content of the bark is carried almost entirely by the bark fibre. The bark fibre thus separated by the described operations is available for the extraction of tannin and in its reduced state it is in most favorable form for the quick and economical extraction of the tannin content, and in addition through the removal of the cork the quantity to be leached is lessened and its tannin percentage per ton treated is increased. Furthermore said fibrous material separated from the cork aggregates is in form suitable for use as a filler in making various paper products.

While it is not intended to confine this process to treatment of Douglas fir bark alone, this material because of its abundance and high cork content is apparently the most favorable supply for treatment. The application of the invention to this bark alone is distinctly a conservation of materials now wasted in large quantities in the western timber regions.

What I claim, is

1. A process of treating bark containing cork, consisting in crushing the bark, drying the bark, subjecting the dry, crushed bark to repeated grinding and screening operations until the adhering fibrous matter is removed.

2. A process of treating bark containing cork and an interlaced fibrous material, consisting in crushing the bark until the fibrous material is exposed, subjecting the bark to an abrasive action, and screening the particles removed until the cork content is cleaned of fibrous matter.

3. A process of treating bark containing cork and an interlaced fibrous material consisting in reducing the bark to small pieces so that the lenses of fibrous matter are exposed, then drying the bark to render the fibrous material more readily reducible, then subjecting the bark to a series of grinding and screening operations whereby the fibrous material is abraded away and separated.

Signed at Seattle, Washington, this 5th day of November, 1921.

GUY C. HOWARD.