

UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING TANNING EXTRACTS.

No. 799,246.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Original application filed July 16, 1896, Serial No. 599,718. Divided and this application filed March 18, 1902. Serial No. 98,828.
(Specimens.)

To all whom it may concern:

Be it known that we, ROBERTO LEPETIT, chemical manufacturer, of Susa, in the Kingdom of Italy, and ERNESTO TAGLIANI, technical chemist, of Lugano, Confederation of Switzerland, both residing in Susa, Italy, have invented an Improved Tanning Material and Process of Producing the Same, of which the following is a specification.

10 This application is a division of our application Serial No. 599,718, filed July 16, 1896.

Our invention consists in the production of a tanning extract containing the tanning principles of tan-woods and which extracts are
15 readily soluble in cold water, forming clear solutions.

It is well known that certain extracts produced from tan-woods—such, for instance, as from quebracho-wood, hemlock, and similar
20 woods—contain the tanning principles in a difficultly-soluble resinous condition which renders their application in the tanning industry disadvantageous.

It is the object of the present invention to
25 produce such tanning extracts in a condition readily soluble even in cold water, and thereby to render the valuable and important tanning principles contained therein available in the tanning art.

30 It has been known for a considerable period of time that woods of the character mentioned, particularly quebracho-wood, contain valuable tanning principles and have been employed in tanning on that account. Where
35 the wood itself has been used by the tanner, extracts have been obtained therefrom in the ordinary manner generally followed in the tanning industry; but these extracts have resulted only in obtaining the more soluble
40 principles, and the most valuable of the tanning constituents being of a resinous glutinous insoluble character have either not been extracted at all or only to a very small extent. It has been known that the entire tanning constituents of such woods may be extracted by
45 boiling under pressure; but extracts so obtained are of a glutinous or resinous character at ordinary temperatures and are only very difficultly soluble in cold water, such solutions being generally of a turbid or cloudy
50 character.

It is the object of our invention to convert such extracts into extracts containing all the valuable constituents of the wood in a condi-

tion in which they are readily soluble in cold
55 water, giving clear solutions.

While our invention as herein described is applied to the extracts themselves, it will be readily understood that the invention may
60 also be applied, with more or less satisfactory results, to the wood from which the extracts are obtained.

Our invention consists in treating either the extracts themselves or the woods from which they are obtained with a salt of sulfur-
65 ous acid. The particular salts which we prefer to employ are the sulfites, bisulfites, or hydrosulfites of the alkali metals, such as sodium sulfite, sodium bisulfite, or sodium hydrosulfite. Any of the corresponding sulfur-
70 ous acid salts of potassium or ammonium may be employed, if desired. When acid salts, such as the bisulfites, are employed, the reaction requires a temperature of 100° centigrade and above, and hence requires to be
75 conducted in a closed vessel under pressure. When, however, neutral salts, such as the sulfites, are employed, the heat required does not exceed 100° centigrade, and hence the process may be performed in an open vessel
80 without pressure.

In order to make a complete disclosure of our invention and to enable others skilled in the art to perform the same, we give below
85 specific examples.

Example I: For the manufacture of a quebracho extract readily soluble in cold water from the ordinary difficultly-soluble quebracho extract:

a. Three hundred kilograms of quebracho
90 extract of 25° Baumé are mixed with eighty kilograms of bisulfite of soda of 35° Baumé and heated in a closed vessel at 130° to 145° centigrade during eight hours.

The product obtained differs from the usual
95 quebracho extracts by its perfect solubility even in cold water and by its property of giving a softer pale nicely-pink-colored leather very similar to hides tanned with mimosa bark. An important property of our soluble extract
100 is that it penetrates more rapidly into the pores of hide than usually less soluble quebracho extract.

b. Five hundred kilograms of quebracho extract, one hundred and twenty kilograms of
105 bisulfite of soda at 35° Baumé or of a solution of sulfite of soda of 30° Baumé or one hundred and eighty kilograms of hydrosulfite of

soda of 20° Baumé are treated for from eight to ten hours in an open copper vessel with a double bottom heated by steam and provided with an agitator until a sample taken from the mass is easily soluble in cold water.

c. Soluble quebracho extracts may also be obtained by extracting the quebracho-wood in presence of bisulfite or sulfite of soda—for instance, by boiling under or without pressure one thousand kilograms of quebracho-wood with water to which has been added one hundred and ten to one hundred and thirty kilograms of bisulfite of soda (35° Baumé) or crystallized neutral sulfite of soda and evaporating the decoction until it tests 25° to 30° Baumé.

In every case, working as at *abc*, the extract is perfectly soluble in cold water and tans quicker than the quebracho extracts generally known. The leather becomes softer and of a much paler color of a pleasant pink shade. The palest product is obtained as described at *a*.

Example II: For the manufacture of a hemlock extract readily soluble in cold water from usual hemlock extract:

The ordinary hemlock extracts (which are difficultly soluble in cold water) are changed into soluble extracts by the same processes as used for quebracho extracts—that is to say, working as described at *a* and *b* of Example I. The hemlock extract thus treated dissolves readily in cold water and has to usual hemlock extracts comparatively the same advantages as soluble quebracho has to usual quebracho.

The weights and temperatures mentioned in our description may be altered, of course, to some extent, and sulfites, bisulfites, and hydrosulfites of potash and of ammonia may be used instead of the sodium salts.

The reaction by which the difficultly-soluble extracts are converted into a readily-soluble condition is dependent upon the amount of sulfite and bisulfite employed and the heat under which the reaction is conducted—that is to say, that with equal additions of bisulfite the extent of the reaction increases on an average with the temperature and that at equal temperatures the extent of the reaction increases as the amounts of sulfite or bisulfite employed and also that the extent of the reaction is dependent to a certain extent upon the time of duration of the same. For instance, after a period of, say, six hours' duration there is very little further change noted after a period of eight hours' duration.

By the above-described treatment with a salt of sulfurous acid under heat and pressure resinous and comparatively insoluble tanning extracts are converted into soluble extracts containing resinsates of the soda or other base used.

Leather tanned with our improved extracts is characterized by its clearer color and greater pliability than that obtained with the ordinary extracts, while at the same time its pores are not filled with foreign matter and impurities present in the ordinary extracts.

The great solubility imparted as a result of our process appears, according to investigations made upon the extracts, to be due to the presence of chemically-combined sulfur as a sulfonic group, (SO₃H,) which is not eliminated by heating the extract with sulfurous acid.

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

1. The process of treating tan-wood extracts of the character described which consists in heating said extracts with a salt of sulfurous acid in a manner and to an extent to cause the tanning principles of the extracts to combine with the acid constituent of the salt to produce an extract readily soluble in water.

2. The process of treating extract of quebracho-wood to produce a tanning extract which consists in heating said extract with a salt of sulfurous acid in a manner and to an extent to cause the tanning principles of the extract to combine with the acid constituent of the salt to produce an extract readily soluble in water.

3. The process of treating extracts of quebracho-wood to produce a tanning extract soluble in water, said process consisting in heating said extracts with a salt of sulfurous acid at a temperature of 100° centigrade and above for the period of from six to eight hours.

4. A tanning extract readily soluble in cold water and giving a clear solution therewith and containing chemically-combined sulfur.

5. An extract of quebracho for tanning, said extract containing the normally resinous and difficultly-soluble constituents in a condition soluble in cold water.

6. A tanning extract containing the tanning constituents of quebracho-wood, said extract readily soluble in cold water giving a clear solution therewith and containing chemically-combined sulfur.

7. A tanning extract consisting in the product of the reaction of a sulfite or bisulfite upon a normally resinous and difficultly-soluble tan-wood extract said product being readily soluble in cold water and containing chemically-combined sulfur.

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Witnesses:

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