

UNITED STATES PATENT OFFICE.

JESSE C. CHISHOLM, OF DALLAS, TEXAS.

PROCESS OF REFINING CRUDE COTTON-SEED OIL.

1,056,263.

Specification of Letters Patent.

Patented Mar. 18, 1913.

No Drawing.

Application filed October 26, 1911. Serial No. 656,812.

To all whom it may concern:

Be it known that I, JESSE C. CHISHOLM, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Processes of Refining Crude Cotton-Seed Oil, of which the following is a specification.

This invention relates to processes of refining oil and has particular reference to a process of refining crude cotton seed oil.

The principal object of this invention is to provide a process of refining crude cotton seed oil which will increase the yield of refined oil of the required color, odor and flavor.

In Letters Patent No. 1,007,642, for a process of refining crude cotton seed oil, granted to me under date of October 31, 1911, I have described and claimed a process of refining cotton seed oil which consists in subjecting the oil to the action of an alkaline silicate until the acidity of the oil is approximately overcome, then subjecting it to the action of an alkaline hydroxid and finally separating the oil from the soap stock formed. Now I have discovered that in some cases improved results may be obtained by neutralizing the oil with an alkaline silicate and then treating the oil with a mixture of alkaline hydroxid and alkaline carbonate.

In the practice of my process in its preferred form crude cotton seed oil is treated with an aqueous solution of a water soluble alkaline silicate preferably silicate of sodium ($\text{Na}_2\text{Si}_4\text{O}_9$) although any other sodium silicate or mixtures of sodium silicates may be used.

I have found that in place of using sodium silicates I may employ the corresponding potassium silicates and obtain satisfactory results.

The strength of the solution of the alkaline silicate and the proportion of such silicates to the crude oil under treatment vary widely according to the character of the oil. I have found however that satisfactory results can be obtained by the addition of from one to three parts by weight of an alkaline silicate solution of from 15° to 20° Baumé to one hundred parts by weight of crude oil. After the silicate solution is added to the oil, the mixture is stirred or otherwise agitated at a temperature of from approximately 75° to 90° F., the agitation

being continued and the temperature maintained until the oil "grains", from the separation of soap stock and the yellow color of the foam on the oil changes to a darker shade. This effect takes place when the fatty acids contained in the oil are neutralized by the action of the alkaline silicate which has been added thereto, the oil being rendered neutral or alkaline. There is then gradually added to the mixture from two to eight per cent. by weight of a mixture of preferably equal parts by weight of a solution of alkaline hydroxid, preferably sodium hydroxid of from 20° to 22° Baumé, and a solution of alkaline carbonate preferably sodium carbonate of from 20° to 33° Baumé. This alkaline mixture is added until a filtered sample of the treated oil shows an oil of the required color.

Having obtained oil of the required color the addition of the alkaline mixture is continued and tests are made from time to time upon removed samples, by heating such samples to preferably from approximately 120° to 140° F., the alkaline solution being added until such samples are found to reach the "critical point," that is to say, the point at which the soap stock precipitate in the sample will settle rapidly and completely from the oil and be practically free from contained oil. When this point is reached no further addition of the alkaline mixture is made. The oil is stirred or otherwise agitated while being treated with the alkaline mixture. The mass of treated oil is then heated to preferably from 100° to 120° F., the mixture being agitated during such heating. The heating and agitating are continued until the soap stock particles agglomerate and a test of a removed sample of the oil shows that the soap stock therein will settle rapidly and completely from the refined oil. The oil is then allowed to stand preferably from two to twenty-four hours until the soap stock has completely settled. The supernatant oil is then drawn off or otherwise separated from the soap stock and heated to preferably about 150° F., to free the same from water. If desired, air may be pumped through the refined oil to accelerate the drying operation. The refined oil is then filtered.

While in the practical operation of my process I prefer to heat the oil as indicated, some measure of success in the practice of the process may be obtained without sub-

jecting the oil to artificial heat. In summer a considerable measure of success may be obtained throughout the Southern States without any application of artificial heat.

5 At other seasons of the year and in other sections of this country, some measure of success may be obtained by prolonged treatment with the reagents set forth, without any application of heat whatever, but the
10 practice of the process can be carried out most effectively under the conditions of temperature hereinbefore set forth.

While I have set forth in detail the strength of the solution and the proportions
15 of the various reagents which I prefer to employ, it is to be understood that my process is not restricted thereto, but that the strength of such solutions and the proportions may be widely varied, without departing from the spirit of my invention or
20 the scope of the appended claims. This wide variation in the strength of solution and the proportions of the reagents is necessitated by reason of the widely varying characters
25 of the crude cotton seed oils received for refining.

Having thus described my invention, I claim:—

30 1. The process of refining crude cotton seed oil which consists in subjecting it to the action of an alkaline silicate until the acidity of the oil is approximately overcome then subjecting it to the action of an alkaline hydroxid and an alkaline carbonate and
35 separating the oil from the soap stock formed.

2. The process of refining crude cotton

seed oil which consists in subjecting it to the action of heat and an alkaline silicate, the silicate being added until the acidity
40 of the oil is approximately overcome then subjecting it to the action of heat and a mixture of an alkaline hydroxid and an alkaline carbonate and separating the oil from the soap stock formed. 45

3. The process of refining crude cotton seed oil which consists in subjecting it to the action of an alkaline silicate until the acidity of the oil is approximately overcome, maintaining the temperature of the
50 mixture at from approximately 75° to 90° F., until the separation of soap stock is apparent in the oil, adding an aqueous solution of an alkaline hydroxid and an alkaline carbonate thereto, maintaining the tempera-
55 ture of the oil until a test sample of the mixture shows the required color, adding additional alkaline hydroxid and alkaline carbonate until in a test sample of the mixture removed and heated to approximately from
60 120° to 140° F., the soap stock precipitate separates rapidly and completely from the oil, then heating the mass of treated oil to preferably from 100° to 120° F., such heating
65 being continued until the soap settles rapidly and completely from the oil, allowing the soap stock to settle, and separating the oil from the soap stock.

In testimony whereof I affix my signature in presence of two witnesses.

JESSE C. CHISHOLM.

Witnesses:

M. M. CRANE,
N. M. COOK.