

UNITED STATES PATENT OFFICE.

JESSE C. CHISHOLM, OF DALLAS, TEXAS.

PROCESS OF REFINING CRUDE COTTON-SEED OIL.

1,056,262.

Specification of Letters Patent.

Patented Mar. 18, 1913.

No Drawing.

Application filed October 26, 1911. Serial No. 656,811.

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 designed to 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 hydrate and finally separating the oil from the soap stock formed. Now I have discovered that this process may in some cases be advantageously changed by employing a mixture of an alkaline silicate and another alkaline compound preferably an alkaline carbonate instead of the alkaline silicate alone, for the initial neutralization of the oil.

In the practice of my process crude cotton seed oil is treated with an aqueous solution of a water soluble alkaline silicate, preferably sodium silicate ($\text{Na}_2\text{Si}_2\text{O}_5$) mixed with an aqueous solution of another alkaline compound preferably an alkaline carbonate as sodium carbonate (Na_2CO_3) until the acidity of the oil is approximately overcome. The proportion of the alkaline silicate to the alkaline carbonate in the mixture may vary widely. I have found however that satisfactory results may be obtained by employing a mixture of equal parts by weight of an aqueous alkaline silicate solution of approximately 50° Baumé and an aqueous alkaline carbonate solution of approximately 30° Baumé. The mixture is added to the oil until the latter is approximately neutralized. This ordinarily requires from one to three parts by weight of the mixture to 100 parts by weight of crude oil. After the alkaline solution is added to the oil the mixture is stirred or otherwise agitated at a temperature of 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 entirely neutralized by the action of the alkaline solution which has been added thereto. There is then gradually added to the mixture from two to eight per cent. by weight of a solution of alkaline hydroxid, preferably sodium hydroxid of from 12° to 22° Baumé. This alkaline hydroxid solution is added until a filtered sample of the mixture shows an oil of the required color. Having obtained oil of the required color the addition of the alkaline hydroxid 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 hydroxid 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 hydroxid is made. The oil is stirred or otherwise agitated while being treated with the alkaline hydroxid. 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 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 subjecting 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. At other seasons of the year and in other sections of this country, some measure of success may be obtained by prolonged treat-

ment with the reagents set forth, without any application of heat whatever, but the 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 solutions and the proportions 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 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 of the crude cotton seed oils received for refining.

Having thus described my invention, I claim:—

1. The process of refining crude cotton seed oil which consists in subjecting it to the action of an alkaline silicate and another alkaline compound until the acidity of the oil is approximately overcome, then subjecting it to the action of an alkaline hydroxid and 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 a mixture of an alkaline silicate and an alkaline carbonate, the mixture being added until the acidity of the oil is approximately overcome, then subjecting it to the action of an alkaline hydroxid and separating the oil from the soap stock formed.

3. The process of refining crude cotton

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

4. The process of refining crude cotton seed oil which consists in agitating the oil at a temperature of about 80° F., an aqueous solution of an alkaline silicate and an alkaline carbonate being added thereto until the acidity of the oil is approximately overcome, maintaining the temperature of the mixture at from approximately 75° to 90° F., until the separation of the soap stock is apparent in the oil, adding an aqueous solution of an alkaline hydroxid, maintaining the temperature of the oil until a test sample of the mixture shows the required color, adding additional alkaline hydroxid until in a test sample of the mixture removed and heated to approximately from 120° to 140° F., the soap stock precipitate separates readily and completely from the oil, then heating the mass of treated oil to preferably from 100° to 120° F., such heating being continued until the soap stock 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 do affix my signature in presence of two witnesses.

JESSE C. CHISHOLM.

Witnesses:

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