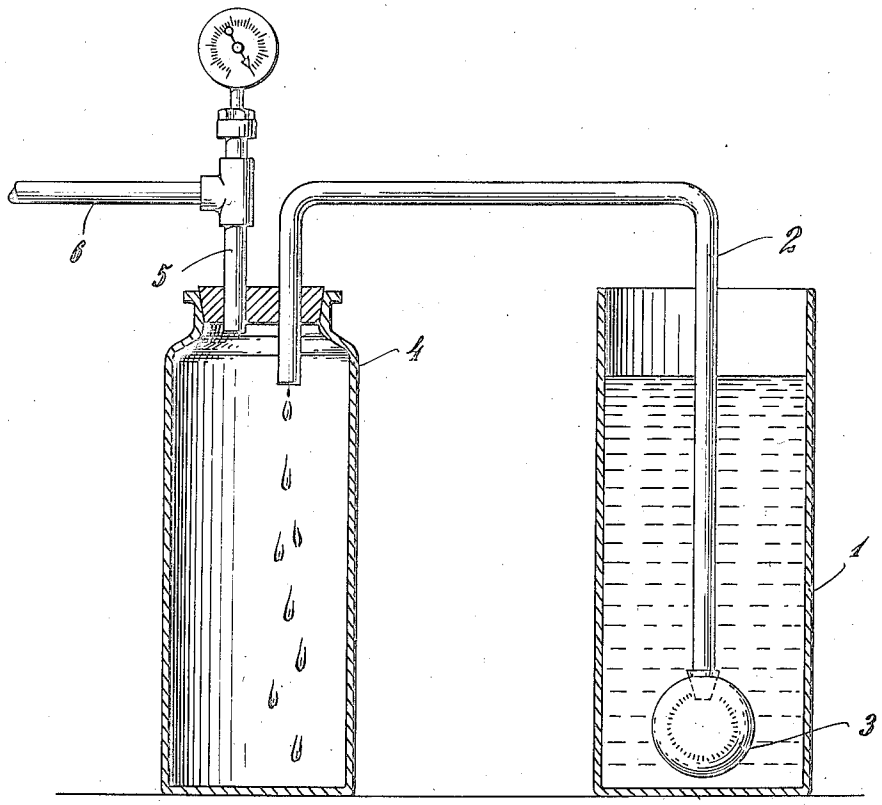
Z. OLSSON.

REFINING ELEMENT AND METHOD OF MAKING THE SAME.

APPLICATION FILED SEPT. 15, 1920.

1,435,972. Patented Nov. 21, 1922.



Inventor
Zacharias Olsson
By his Attorneys
Williamson & Cuteliffe

Patented Nov. 21, 1922.

1,435,972

UNITED STATES PATENT OFFICE.

ZACHARIAS OLSSON, OF NEW YORK, N. Y., ASSIGNOR OF SIX-TENTHS TO AUGUST RUSTOPPENHEIM, OF NEW YORK, N. Y.

REFINING ELEMENT AND METHOD OF MAKING THE SAME.

Application filed September 15, 1920. Serial No. 410,380.

To all whom it may concern:

Be it known that I, Dr. ZACHARIAS OLSSON, a subject of the King of Sweden, residing in the city, county and State of New York, have invented certain new and useful Improvements in Refining Elements and Methods of Making the Same, of which the following is a specification.

My invention relates to the art of refining oils, and has for its object the refining of oils in a simple and economical manner.

By my process it is possible not only to bleach the oil but also to remove the moisture and all volatile matter. While my invention is adapted for refining all kinds of oils, it has been found particularly advantageous in the refining of vegetable oils, such as cotton-seed oil, peanut oil, and the like. Another of the advantages of my process is the fact that very little special apparatus is necessary, and such apparatus as is used is comparatively inexpensive and easy to operate. Another advantage of my process is that it can be carried on continuously.

The apparatus illustrated in the drawing consists of an oil storage tank 1 into which is inserted the pipe 2 to the end of which is secured the bulb 3. The pipe 2 empties into the vacuum chamber 4. The vacuum is maintained by means of a vacuum pump (not shown) attached to the pipe 5 through the pipe 6.

In the operation of my process I use a porous bulb of economical construction and of peculiar composition. I have found that bauxite can be used to bleach oils in place of fuller's earth, as is ordinarily used. I have also discovered that bauxite can be combined with a binder so that it can be made into a refining element. By using my bleaching agent in the form of a porous element I am able to bleach and incidentally filter in one operation. By using my bleaching agent in the form of a porous mass I find that not only can I save practically all of the oil remaining in the bleaching material after it has become exhausted, but that I am able to easily and quickly regenerate my bleaching material and put it in condition for use again.

I have discovered that bentonite has extraordinarily binding properties and that when used with the bauxite reduces the amount of binding material necessary to a very small amount.

I construct my refining element as follows:

I calcine at a temperature of about 800° C. a quantity of bauxite ground to about 100 mesh to dehydrate. To 75 parts of calcined bauxite I add 20 parts of starch and 5 parts of bentonite to bring the mass up to 100 parts. To this I add 55% by weight of water, mixing the mass into a smooth plastic condition. From this I mold my refining mass. The refining elements are then dried, and after drying are kilned at a temperature of about 800° C.

The elements, after being made, should be kept dry, or before using dried in a small furnace. This is done in order to remove any moisture which may be absorbed from the atmosphere. While this moisture would be removed by means of the vacuum, it is more economical to dry them separately.

It is obvious that the refining element may be in a form other than spherical. The refining material may be in the form of a disc adapted to fit in the end of a tubular vessel, for example, a closed cylinder, the walls of which could be composed of metal and the ends closed by refining discs.

The operation of my process is as follows:

I attach one of my bulbs or refining elements 3 to the pipe 2 and lower it into the tank 1 which contains the oil to be refined. The vacuum pump is then started whereby a vacuum is created inside of the bulb 3 drawing the oil through the pores to the inside of the bulb. Since my bulbs have been made so as to form a fine porous mass, the material passing through is incidentally filtered and all the impurities suspended in the oil are removed, although filtering is not primarily the object of my invention. The oil coming in contact with the bauxite in the mass is bleached, the coloring material being absorbed by the bauxite. The oil, having passed through the walls of the bulb 3 to the interior, is subjected to the action of the vacuum whereby all of the moisture and volatile matters are removed, the volatile matter passing with the air through the pipe 2, the top of the receptacle 4, pipe 5, and pipe 6 to the outside air or a receptacle where it may be saved if desired to do so. The refined oil, which has been bleached, and with all the volatile matter

removed, drops into the bottom receptacle 4.

The vacuum which I prefer to use is from 29 to 30 inches, although it is possible that a lesser degree of vacuum can be used.

I have found the refining operation works more readily and satisfactorily in the case of cotton-seed oil, if the oil is heated to between 40 and 60° C.

If it is desired, the oil can be deodorized in the same operation. With some oils the odor will be removed by merely passing the oil through my refining medium. In other instances it may be necessary to let superheated steam in through the bottom of the vessel 4 so as to pass through the refined oil and off with the exhausted air through the pipes 5 and 6. In instances where it is not desired to remove the moisture and volatile matter in the same operation, pressure can be used to force the oils through the porous mass instead of employing a vacuum.

The apparatus which I have shown is merely diagrammatic. In actual practice it would of course be desirable to have an air trap in the receptacle 4 whereby the refined oil could be removed from time to time without stopping the apparatus. I have found that my combined refining element may be regenerated so that it can be used over and over again. In practice I have found that it is practical to use one of the bulbs at least five or six times.

My method of regenerating the bulbs is as follows:

After the bulb has absorbed all of the coloring matter that it will economically, it is removed from the oil. The bulb 3 is disconnected from the pipe 2, connected to another pipe connected to a vacuum pump and placed in a vessel containing gasolene. The gasolene is sucked through the bulb removing all of the oil remaining in the walls of the refining element. The oil may then be saved in any well known manner, such for instance, as distilling off the gasolene. The bulb, after having been cleansed from the oil, is then placed in a furnace and recalcined. In performing this operation, I prefer to heat the bulb up to 700° C. After remaining in the furnace for a sufficient length of time the coloring material is removed and the bulb is left in practically its original condition and is capable of being used over again.

It is obvious that various modifications may be made in the construction shown in the drawing and above particularly described within the principle and scope of my invention.

I claim:

1. A refining element comprising bauxite and bentonite.

2. The method of making a refining element which consists in taking 75% of calcined bauxite, 20% of starch and 5% of bentonite and subjecting the mass to a temperature of at least 700° C.

In testimony whereof, I have affixed my signature to this specification.

ZACHARIAS OLSSON.