

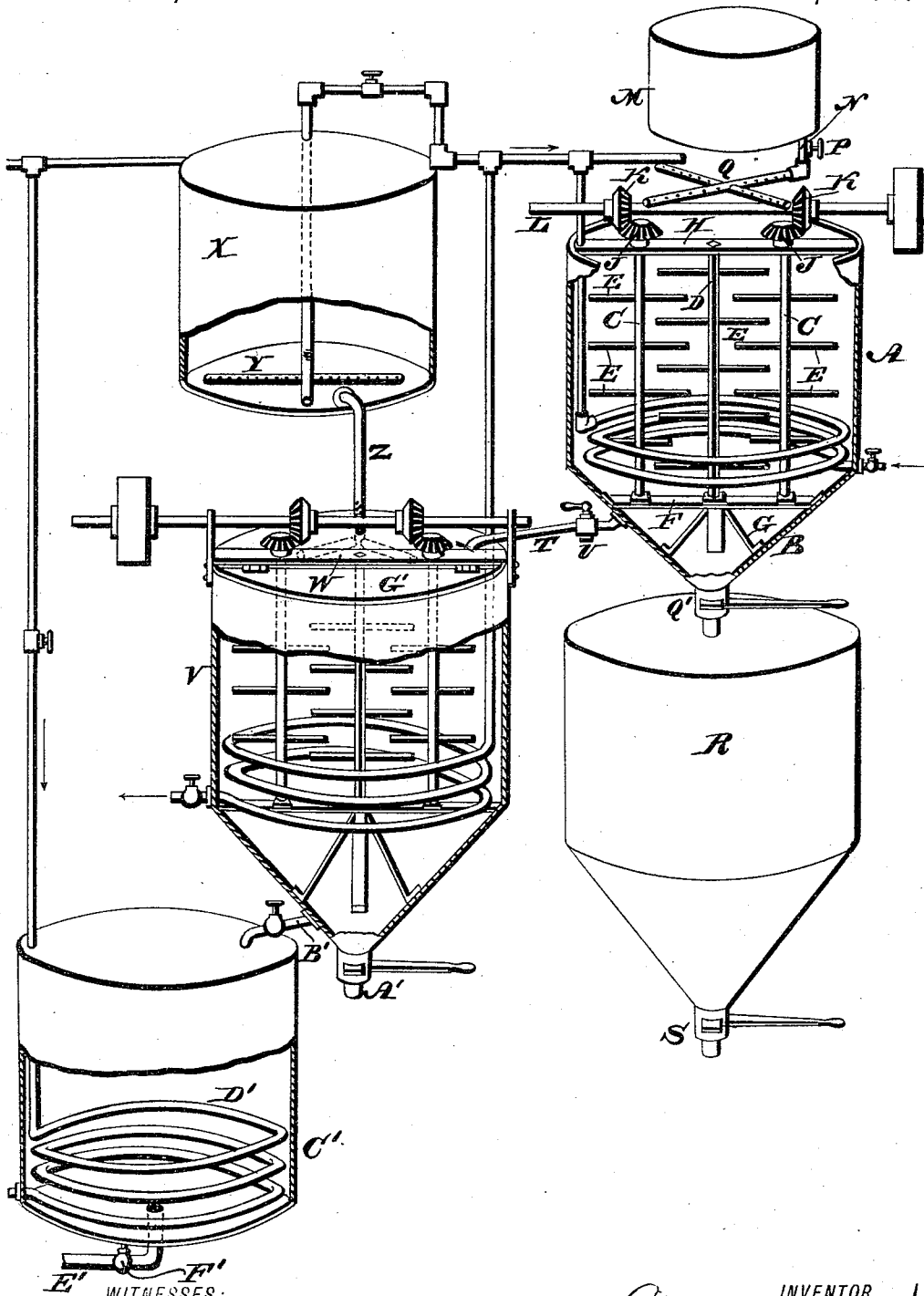
(No Model.)

W. A. GRANT.

PROCESS OF AND APPARATUS FOR REFINING COTTON SEED OIL.

No. 461,675.

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WITNESSES:

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PROCESS OF AND APPARATUS FOR REFINING COTTON-SEED OIL.

SPECIFICATION forming part of Letters Patent No. 461,675, dated October 20, 1891.

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To all whom it may concern:

Be it known that I, WILLIAM A. GRANT, a citizen of the United States, residing at Houston, in the county of Harris, State of Texas, have invented a new and useful Improvement in Processes of and Apparatus for Refining and Purifying Cotton-Seed Oil, which improvement is fully set forth in the following specification and accompanying drawing.

My invention relates to improvements in process of and apparatus for refining and purifying cotton-seed oil; and it consists, first, in the process hereinafter set forth; second, in novel refining and purifying tanks, as hereinafter set forth; third, in the combination of parts hereinafter set forth.

In the drawing, which represents a side view of the apparatus embodying my invention, having the sides of the different tanks broken away to show the interiors thereof, A designates a refining-tank having a conical bottom B, and provided with two rotary mixer-shafts C C and a stationary mixer-shaft D, each having blades E thereon. The said shafts are stepped in a support F, secured at its end to the conical bottom B, and the said support is strengthened by the tripod G, which is secured thereto and to the conical bottom. The upper ends of the said shafts are fitted in the brace-rod H, which is firmly secured to the sides of the tank, and the two rotary shafts C C have the bevel-gearing J thereon, meshing with the bevel-gearing K K on the shaft L, which is rotated from any suitable motor.

Above the tank A is a lye-tank M, which is provided with a discharge-pipe N, having a stop-cock P, and connected with the cross perforated pipes Q for spraying the lye into the purifying-tank. At the lower end of the tank A is a discharge slide-valve Q', which opens into the soap-stock tank R, which is provided with a discharge slide-valve S. A pipe T, with a cock U therein, connects the tank A with a purifying-tank V, the latter having a conical bottom and being provided with lids hinged at the center, as shown.

The tank T is provided with agitators or mixer shafts and blades similar in construction to those of the tank A, except that a brace-rod W extends across the tank above the top thereof.

The mechanism for operating the mixer-shafts of the purifying-tank V is similar to that for operating the mixer-shafts of the refining-tank A.

Above the purifying-tank V is a tank X, having a steam-pipe Y with a perforated end portion in the lower part thereof, whereby a spray of steam may be injected into the chloride of sodium placed therein, so as to readily form a solution of the proper strength and gravity. An outlet-pipe Z leads from the tank X into the tank V, the lower end of the said pipe being perforated for spraying the solution of the chloride of sodium into the tank V, which latter is provided with a sliding discharge-valve A' and an outlet-pipe B' for emptying the purified oil into the drying-tank C'. The latter has a steam-coil D' for heating, and a discharge-pipe E' with valve F' for drawing the oil.

The purifying-tank is provided with lids G', hinged at the center of the tank, as shown, so as not to interfere with the operation of the mixer-shafts.

The process of refining and purifying the oil is as follows: A quantity of the crude cotton-seed oil is first run into the refining-tank, which latter may be of any size, according to the quantity of oil to be refined at any one time. The oil is heated and is thoroughly agitated by means of the rotary blades E. When heated to a temperature of from 90° to 100° Fahrenheit, caustic-soda lye to the amount of ten per cent. of the oils is sprayed into the latter, which is kept constantly agitated during the spraying. The strength of the soda to be used will vary from 8° to 18°, Baumé's scale, according to the quality of the oil to be refined. As soon as the foreign matter contained in the oil begins to coagulate the agitation is stopped to allow the refuse to settle to the bottom of the tank. This will require about one hour, when the refined oil is drawn through the pipe T into the purifying-tank, the refuse being afterward removed from the tank A into the soap-stock tank R by means of the sliding discharge-valve Q'. When the oil is run into the purifying-tank, the agitators therein, which may have three or more mixer-shafts with blades, as desired, and all of which shafts are preferably rotatable, although one or more may be stationary, are set

in operation, and a solution of chloride of sodium is run into the oil from an elevated tank. The necessary strength and temperature of the said solution depends according to the
 5 quality of the oil, the strength varying from 8° to 48° Baumé and the temperature from 75° to 212°. If the oil should be too hot, the heat of the solution should be low, and if the solution is highly heated the oil should be
 10 correspondingly low. After the chloride of sodium has been thoroughly stirred through the oil in the purifier, the time required being from thirty minutes to two hours, according to the quality of the oil, the agitation is stopped
 15 and the oil is left to settle until all the chloride-of-sodium solution and other foreign substances have settled to the bottom of the tank. As soon as this is done the purified oil is drawn off into a drying-tank and all the
 20 water evaporated therefrom. From the drying-tank the oil is pumped through any ordinary filter-press, when the operation is finished.

Having thus described my invention, what
 25 I claim as new, and desire to secure by Letters Patent, is—

1. An apparatus for refining and purifying cotton-seed oil, consisting of a refining-tank with agitators and a steam-coil, a lye-tank
 30 with pipe for spraying the liquor into said refining-tank, a purifying-tank connected with said refining-tank and provided with agitators and a steam-coil, a chloride-of-sodium tank with pipe leading into said purifying-tank,
 35 and a drying-tank connected with said purifying-tank, said parts being combined substantially as described.

2. In an apparatus for the purpose named, a lye-tank with lower crossed spray-pipes, a
 40 refining-tank with conical bottom provided with a slide-valve, a central stationary shaft in said latter tank having blades, rotary shafts on each side of the said stationary shaft and having blades adapted to move between the
 45 blades of said stationary shaft, a steam-coil in said latter tank, and a soap-stock tank in connection with the lower conical end of said refining-tank, said parts being combined substantially as described.

50 3. In an apparatus for the purpose named, a lye-tank having lower crossed spray-pipes, a refining-tank with a conical bottom provided

with a valve and having a central stationary shaft with blades and rotary shafts with
 55 blades moving between the blades of said stationary shaft, a steam-coil in said latter tank, a soap-stock tank in connection with the said latter tank, a purifying-tank of similar construction to said refining-tank and in connection therewith and having top hinged doors,
 60 and a drying-tank in connection with said purifying-tank and having a steam-heating coil therein, said parts being combined substantially as described.

4. In an apparatus for the purpose named, 65 a lye-tank having lower crossed spray-pipes, a refining-tank with a conical bottom provided with a valve and having a central stationary shaft with blades, rotary shafts with blades adapted to move between the blades of the
 70 said stationary shaft, a steam-coil in said latter tank, a soap-stock tank communicating with the said latter tank, a purifying-tank of similar construction to said refining-tank and in connection therewith and having top hinged
 75 doors, a chloride-of-sodium tank having a steam-spraying device in the bottom thereof, and an outlet-spray extending into said purifying-tank, and a drying-tank in connection with said purifying-tank and having a steam-
 80 heating coil in the lower part thereof, said parts being combined substantially as described.

5. The process of refining and purifying cotton-seed oil, consisting of heating and simultaneously thoroughly agitating the crude oil,
 85 spraying caustic soda into said oil when it has attained a sufficient degree of heat and during agitation to coagulate the foreign matter in the oil, ceasing the agitation to allow refuse
 90 matter to settle, drawing off the oil thus treated into a purifying-receptacle, where it is again agitated, introducing a solution of chloride of sodium thereinto, again ceasing the agitation until the chloride of sodium and other
 95 refuse sediment has settled, delivering the oil thus treated to a heating-vessel to evaporate the moisture therefrom, and finally filtering the oil, substantially as described.

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Witnesses:

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