June 9, 1931. L. H. MACOMBER 1,809,130

APPARATUS FOR TREATING PARAFFIN

Filed May 13, 1929 2 Sheets-Sheet 1

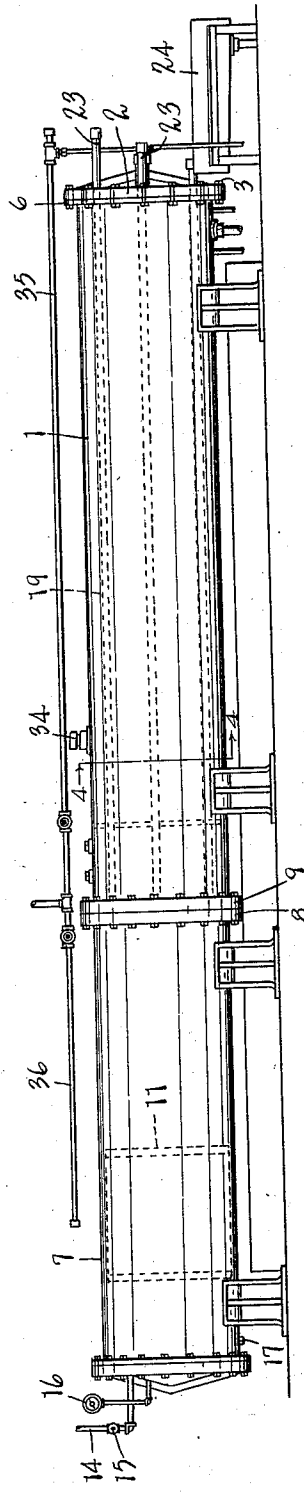


Fig. 1

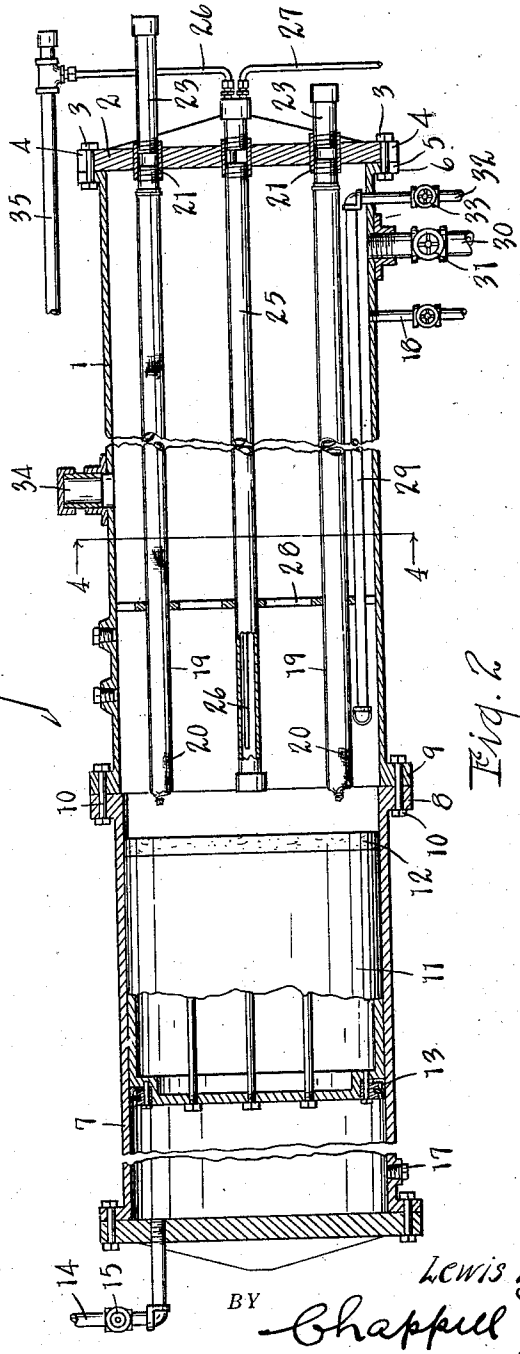


Fig. 2

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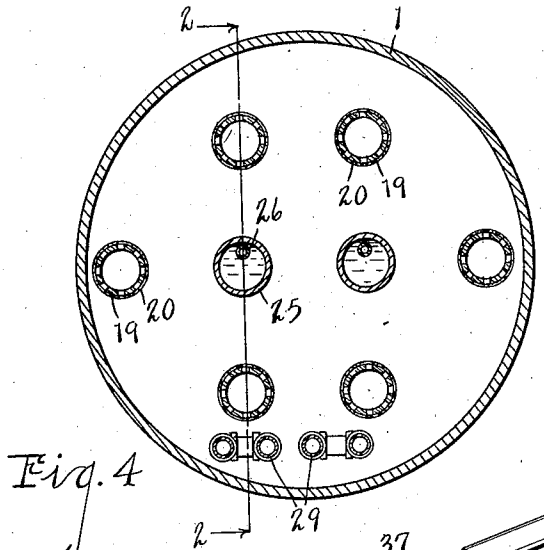


Fig. 4

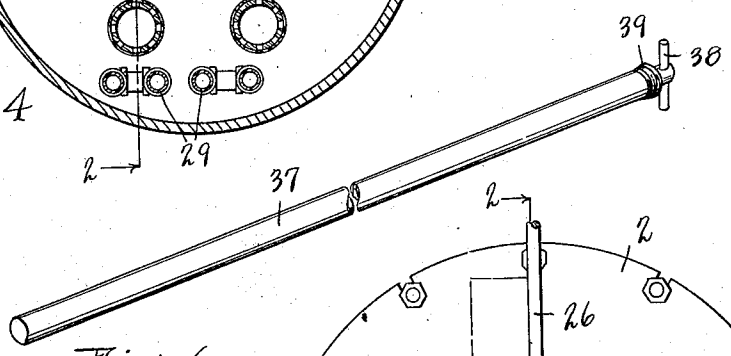


Fig. 6

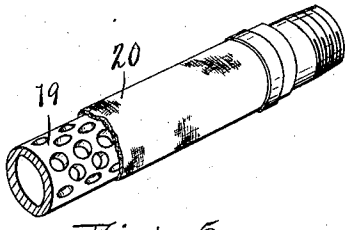


Fig. 5

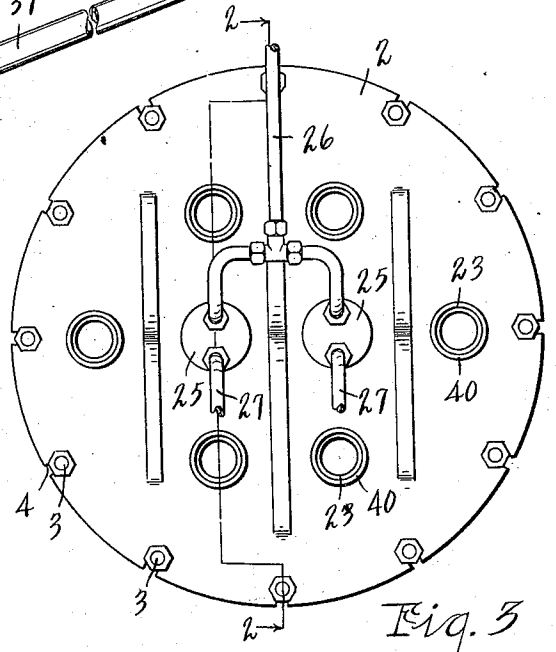


Fig. 3

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Patented June 9, 1931 1,809,130

UNITED STATES PATENT OFFICE

LEWIS H. MACOMBER, OF KALAMAZOO, MICHIGAN

APPARATUS FOR TREATING PARAFFIN

Application filed May 13, 1929. Serial No. 362,569.

The main objects of this invention are:

First, to provide an apparatus for treating paraffin to facilitate the removal of oils and soft or amorphous waxes.

Second, to provide an apparatus for this purpose which is of large capacity and greatly reduces labor and waste.

Objects pertaining to details and economies of my invention will definitely appear from the description to follow. The invention is defined in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings in which:

Fig. 1 is a side elevation of my improved filtering apparatus, parts being shown more or less conventionally.

Fig. 2 is a fragmentary view partially in longitudinal section on broken lines 2—2 of Figs. 3 and 4.

Fig. 3 is a fragmentary end view looking from the right of Fig. 1.

Fig. 4 is a transverse section on line 4—4 of Figs. 1 and 2.

Fig. 5 is a fragmentary perspective view of one of the filter pipes.

Fig. 6 is a fragmentary perspective view of one of the filter pipe closure bars.

The embodiment of my invention illustrated comprises a cylindrical filter chamber 1 of substantial length and capacity which is provided with a head 2 at one end, the head being secured for ready detachment by the bolts 3, engaging slots 4 in the head and alined slots 5 in the flange 6 on the end of the cylinder. To the other end of the filter chamber I secure the plunger cylinder 7, the cylinder and filter chamber being provided with abutting flanges 8 and 9 to receive the bolts 10.

The plunger 11 is of substantial length and is provided with packings 12 and 13 at its ends. The details of the plunger, however, form no part of my present invention. The plunger is actuated in the embodiment illustrated by fluid under pressure, the inlet pipe 14 being provided with a valve 15. The head end of the cylinder is provided with a pressure gage 16.

To return the plunger the fluid supply is cut off and the valve 15 opened, or the drain plug 17 opened, and air admitted through the valved pipe 18. Disposed longitudinally within the filter chamber is a plurality of foraminated filter pipes 19 provided with fabric coverings 20 preferably of strong heavy material, eight-ounce canvas hose cover having been found satisfactory. These filter pipes are mounted in couplings 21 secured in the head 2 and provided with extensions 23 discharging at the outside of the head. These extensions are preferably of varying length, the upper extensions being longer than the lower so that the drippings from the upper will fall directly into the discharge trough 24.

The cooling pipes 25 are also mounted on the head, the water inlets 26 being disposed within these pipes to discharge at the inner ends thereof. The pipes 25 have discharge pipes 27 so that a circulation of cooling water may be maintained in these pipes 25. The inner ends of the filter pipes and the cooling pipes are supported by a spider or perforated plate 28 disposed transversely of the filter chamber.

Heating coils 29 are arranged in the bottom of the filter chamber. The drain or discharge pipe 30 is provided with a valve 31. The steam inlet pipe 32 is provided with a valve 33.

The material may be introduced either in the form of liquid or semi-solid through the inlet 34 which is provided with a suitable closure.

To further facilitate cooling a spray pipe 35 is disposed longitudinally above the filter chamber and this preferably has a valve controlled extension 36 extending above the cylinder 7.

My apparatus is especially designed by me for refining paraffin, that is, for the removal of oils and the like. The unrefined paraffin is heated and naphtha in suitable quantities added thereto. After thorough mixing this material is introduced into the filter chamber, either in a liquid or semi-solid condition, cooled to a suitable degree and the plunger actuated to subject the mass to the desired pressure which forces the naphtha and the oils and amorphous waxes into the filter pipes

to be discharged therefrom. The discharge is suitably treated to recover the naphtha and the oils and amorphous waxes may be further treated.

To prevent clogging of the filter pipes during the filling and cooling I provide closure bars 37 adapted to removably fit within the filter pipes so that they are effectively plugged and the openings therein closed. These filter pipes are provided with end pieces 38 at their outer ends and are threaded at 39 to be threaded into the couplings 40 on the outer ends of the filter pipes.

With the parts thus arranged the operation of the apparatus is as follows:

Assuming that the plunger has been returned to its initial or outer position and the closure bars inserted in the filter pipes, the material is introduced either in the form of liquid or semi-solid to fill or substantially fill the filter chamber and also the cylinder in advance of the plunger. The material is then cooled and the plunger actuated gradually to subject the material to pressure, with the result that the naphtha, amorphous waxes and oils are gradually discharged through the filter pipes. When this has been completed steam is admited to the heating coils to melt the paraffin which is drawn off through the pipe 30.

My apparatus is efficient, of large capacity and may be operated with a minimum of labor.

I have not attempted to illustrate and describe certain modifications and adaptations which I contemplate as it is believed that this disclosure will enable those skilled in the art to embody or adapt the same as may be desired.

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

1. In a structure of the class described, the combination of a cylindrical filter chamber provided with a head at one end, a plunger cylinder opening to the opposite end of said filter chamber and constituting an extension therefor, a plunger within said cylinder a plurality of perforated filter pipes provided with fabric coverings disposed longitudinally of said filter chamber and mounted on said head to discharge on the outside thereof, a foraminated support for the inner ends of said filter pipes disposed transversely within said filter chamber, closure bars removably insertable into said filter pipes at their open outer ends to constitute closures for the perforations of the filter pipes, said bars being threaded into the outer ends of said filter pipes.

2. In a structure of the class described, the combination of a cylindrical filter chamber provided with a head at one end, a plunger cylinder opening to the opposite end of said filter chamber and constituting an extension therefor, a plunger within said cylinder, a plurality of perforated filter pipes provided with fabric coverings disposed longitudinally of said filter chamber and mounted on said head to discharge on the outside thereof, cooling pipes disposed centrally and longitudinally of said filter chamber and mounted on said head, closure bars removably insertable into said filter pipes at their open outer ends to constitute closures for the perforations of the filter pipes, said bars being threaded into the outer ends of said filter pipes, and a spray pipe disposed longitudinally above said filter chamber and cylinder to discharge therefrom.

3. In a structure of the class described, the combination of a cylindrical filter chamber provided with a head at one end, a plunger cylinder opening to the opposite end of said filter chamber and constituting an extension therefor, a plunger within said cylinder, a plurality of perforated filter pipes provided with fabric coverings disposed longitudinally of said filter chamber and mounted on said head to discharge on the outside thereof, and closure bars removably insertable into said filter pipes at their open outer ends to constitute closures for the perforations of the filter pipes, said bars being threaded into the outer ends of said filter pipes.

4. In a structure of the class described, the combination of a cylindrical filter chamber provided with a head at one end, a plunger cylinder opening to the opposite end of said filter chamber and constituting an extension therefor, a plunger within said cylinder, a plurality of perforated filter pipes provided with fabric coverings disposed longitudinally of said filter chamber and mounted on said head to discharge on the outside thereof, cooling pipes disposed centrally and longitudinally of said filter chamber and mounted on said head, a foraminated support for the inner ends of said filter and cooling pipes disposed transversely within said filter chamber, means for heating said filter chamber, and a spray pipe disposed longitudinally above said filter chamber and cylinder to discharge thereon.

5. In a structure of the class described, the combination of a cylindrical filter chamber provided with a head at one end, a plunger cylinder opening to the opposite end of said filter chamber and constituting an extension therefor, a plunger within said cylinder, a plurality of perforated filter pipes provided with fabric coverings disposed longitudinally of said filter chamber and mounted on said head to discharge on the outside thereof, cooling pipes disposed centrally and longitudinally of said filter chamber and mounted on said head, a foraminated support for the inner ends of said filter and cooling pipes disposed transversely within said filter chamber, and means for heating said filter chamber.

6. In a structure of the class described, the combination of a cylindrical filter chamber provided with a head at one end, a plunger cylinder opening to the opposite end of said filter chamber and constituting an extension therefor, a plunger within said cylinder, a plurality of perforated filter pipes provided with fabric coverings disposed longitudinally of said filter chamber and mounted on said head to discharge on the outside thereof, a foraminated support for the inner ends of said filter and cooling pipes disposed transversely within said filter chamber, and means for heating said filter chamber.

In witness whereof I have hereunto set my hand.

LEWIS H. MACOMBER.