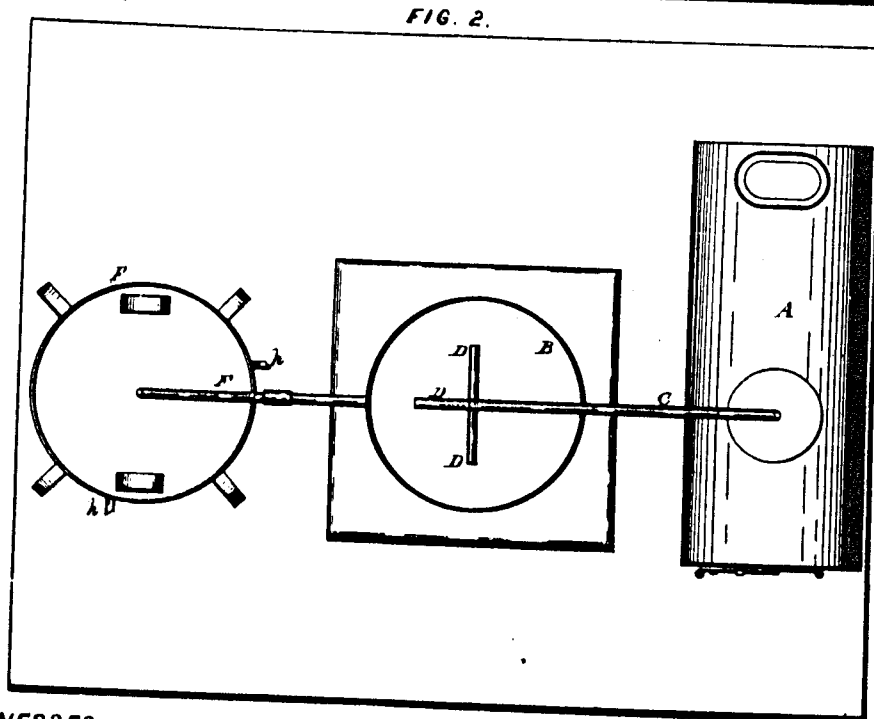
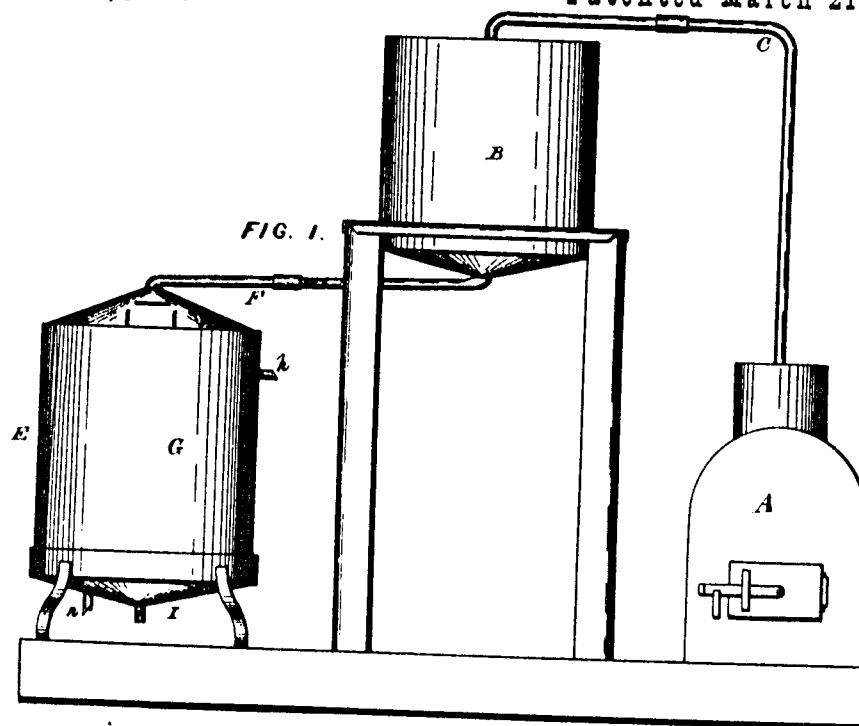


C. L. MOREHOUSE.
 PROCESS AND APPARATUS FOR MANUFACTURING ILLUMINATING
 OILS.
 No. 174,921.

2 Sheets—Sheet 1.

Patented March 21, 1876.



WITNESSES.

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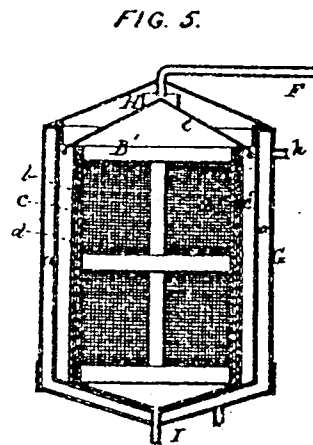
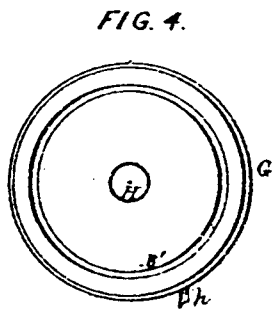
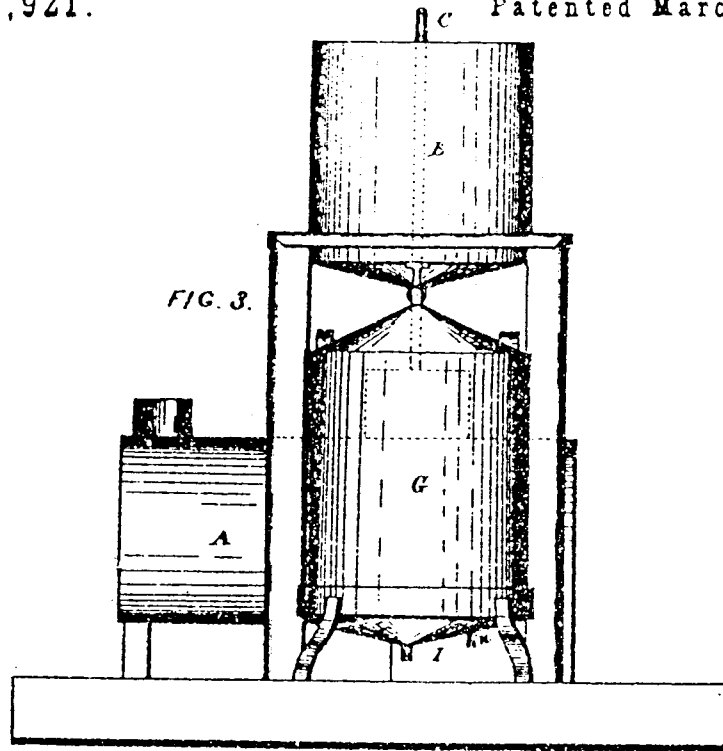
C. L. Morehouse.
 Per. Burridge & Co.
 Attys.

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PROCESS AND APPARATUS FOR MANUFACTURING ILLUMINATING
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**174,921. PROCESSES AND APPARATUS FOR
MANUFACTURING ILLUMINATING-OILS. C.
L. Morehouse, Cleveland, Ohio. [Filed
Oct. 16, 1875.]**

To all whom it may concern:

Be it known that I, CHARLES L. MOREHOUSE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Process and Apparatus for Manufacturing Illuminating Oils; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings, making part of the same.

Figure 1 is a side elevation of an apparatus for conducting the process. Fig. 2 is a plan view. Fig. 3 is an end view. Figs. 4 and 5 are detached sections.

Like letters of reference refer to like parts in the several views.

The invention consists of a peculiar form of filter for refining oils, composed of a double jacket or shell, so as to be kept warm by steam, a wire gauze or frame, which supports on its outside a woolen cloth, and outside of the woolen cloth a covering of filter-paper. The invention also consists of the combination of a steam-generator, a tank for treating the oil with steam and chemicals, and a filtering apparatus, so that the oil may be treated with steam, so as to remove the lighter portions, treated with chemicals, so as to be bleached, then washed, and finally filtered, all by a continuous series of operations, as herein more particularly specified, whereby is obtained a clear white illuminating-oil, having a fire-test of about 300° and upward.

The following is a full and complete description of the process and of the apparatus for conducting the same.

The apparatus referred to consists of a steam-boiler, A, put in connection with an agitator, B, by a pipe, C, the end of which descends into the agitator near to the bottom, and terminates in radial arms D. Said agitator is put in communication with a filter, E, by a pipe, F. Said filter consists of an outer shell or cylinder, G, the sides of which are hollow, as will be seen at *a* in the transverse vertical section thereof, Fig. 5. In said shell is fitted a cylinder, B', of wire-cloth *a'*, having on the outer side a wrapper of woolen cloth, *b*, over which is a folding of filtering-paper, *c*, bound around by a woolen wrapper-*d*. The bottom of the cylinder is concave, as will be seen in the drawing, conforming in this particular to the bottom of the shell G. The top of the cylinder is convex, and projects slightly over its sides, as will be seen at *e*. At the apex or crown of the top is a cup, H, into which the end of the pipe F terminates. I is an eduction-pipe leading from the wire-cloth cylinder B', through the shell to the outside, the purpose of which will presently be shown.

Having described the construction of the apparatus for conducting the process above referred to, I will now proceed to describe said process, which is substantially as follows: I take refined carbon or petroleum oil, having a fire-test of 150° to 220°, and place the same in the agitator B, which is therein agitated by steam from the boiler A, conducted into the agitator through the pipe C. The steam being admitted into the agitator near the bottom, the oil is therein agitated through the entire mass by the jets of steam from the radial pipes B. From time to time the steam is shut off, and the agitation of the oil for a while ceased, so that the water formed by the condensation of the steam can settle and be drawn off. Steam is then again admitted, and the agitation of the oil resumed, and so on agitating, and resting for drawing off the water, until the oil has attained a fire-test of about 300° and upward. At this point of the process the oil is allowed to stand, and the condensed steam to settle, which is then drawn off, leaving the oil free from water. To the oil is now added a weak solution of caustic soda of about 15° Baumé strength. This mixture is now thoroughly agitated by a blast of air instead of steam. Steam, however, may be used for this purpose, but air is preferable, which may be inducted in the agitator through the steam-pipe C. After being thoroughly mixed by agitating with the air, the mass is allowed to rest, so that the caustic solution may settle, also the condensed steam, if steam has been used for agitating.

When completely settled, the settlement is then drawn off, leaving the oil, which is then run from the agitator into the filter G, through the pipe F. The oil as it flows from the pipe falls into the cup H, from which it overflows, and falls down upon the convex of the cap *e* of the filter, over which it runs into the annular space *c'*, between the filtering-cylinder and the case G. From said annular space it percolates through the woolen wrappers and filtering-paper referred to into the wire cylinder, thence it escapes in a clean and pure condition to barrels or tanks for use.

While the oil is passing through the filter it is kept warm by steam or heated air introduced into the hollow *a* of the shell G, through the pipe *b*, and from which it may be allowed to escape through the pipe *n*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The wire cylinder B', woolen wrappers *d* *b*, filtering-paper wrapper *c*, and hollow case or shell G, all constructed and arranged to operate in relation to each other in the manner substantially as described, and for the

purpose specified.

2. In combination with the herein-described filter, the agitator B, put in connection therewith by the pipe F, as and for the purpose specified.

3. In combination with the filter and agitator herein described, the steam-boiler A, put in connection with said filter by the pipe C, in the manner as described, and for the purpose set forth.

4. The process herein described for refining hydrocarbon oils, consisting in treating them with steam, so as to remove the lighter portions, washing with caustic alkalies, and filtering with a warm filter, all substantially as specified.

CHARLES L. MOREHOUSE.

Witnesses:

J. H. BURRIDGE,

M. C. WARNER.