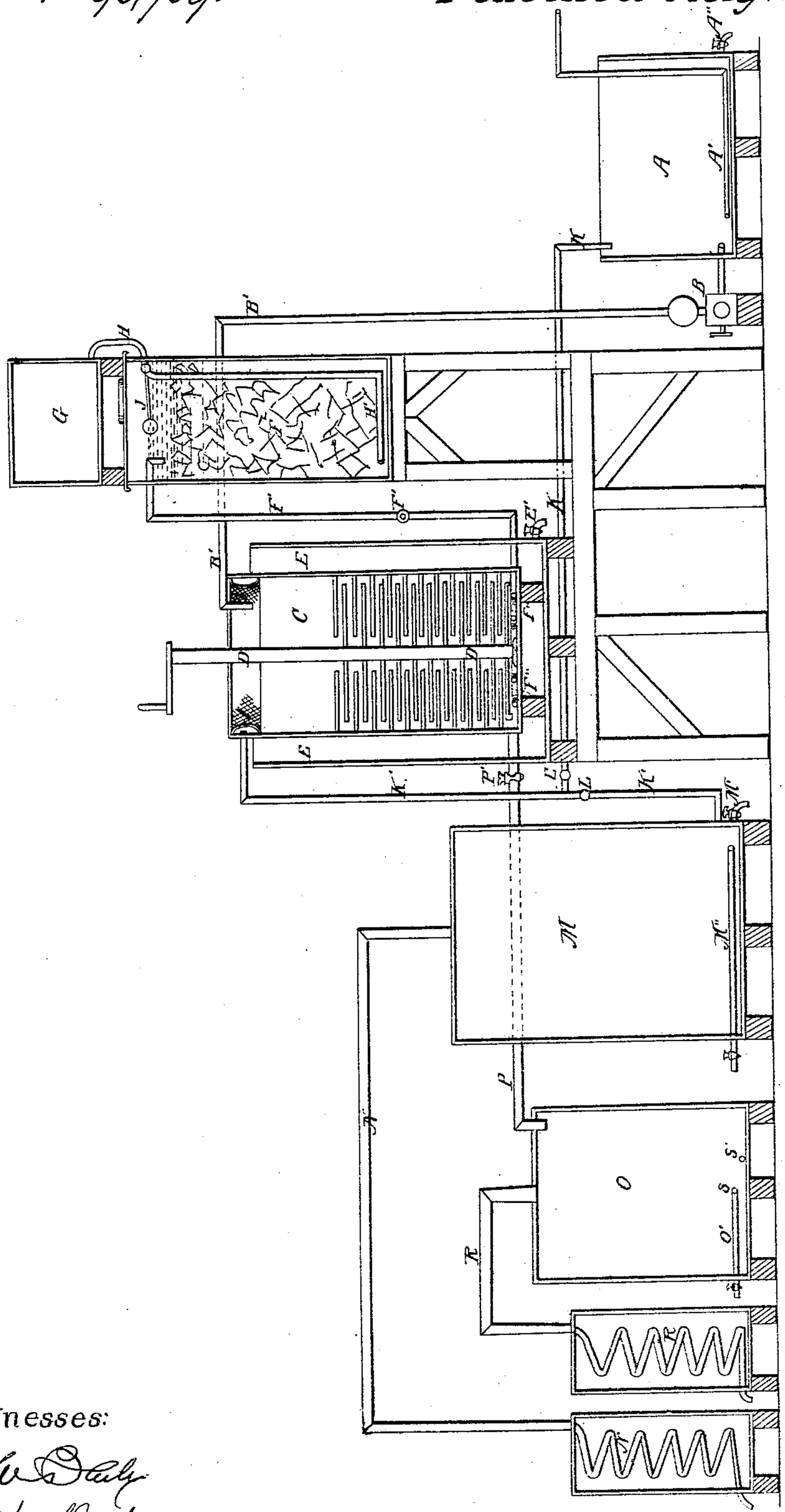
C. C. Parsons.

Refining Oils.

No. 93,739. Patented Aug. 17, 1869.



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C. CHAUNCEY PARSONS, OF NEW YORK, N. Y.

Letters Patent No. 93,739, *dated August* 17, 1869.

IMPROVED PROCESS FOR PURIFYING PARAFFINE.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, C. CHAUNCEY PARSONS, of New York, county of New York, and State of New York, have invented a certain new and improved Process for Purifying Paraffine; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying diagram.

The old process usually employed for purifying paraffine consists in repeatedly melting the paraffine with naphtha, cooling and submitting to hydraulic pressure; but by this process there is a heavy loss, and a great deal of labor required, besides the expense occasioned by the wear and tear of machinery.

The object I have in view is to avoid the defects of the old process, and to this end the essential features of my invention may be stated to consist as follows:

First, melting the paraffine with naphtha, and cooling it while continually agitated. By this means the paraffine forms small, scaly crystals, which are easily purified.

Second, washing the paraffine by passing cold naphtha up through it, stirring it at the same time, so as to expose all the paraffine to the naphtha, and doing this at such a speed that the paraffine remains in the lower part of the vessel in which this operation takes place.

Third, separating paraffine of a lower melting-point from that of a higher melting-point, by varying the temperature of the naphtha with which it is treated, as described.

In carrying out my process, I make use of an apparatus which will be readily understood from the following description of the diagram accompanying the specification.

Description.

A is a tank lined with lead, with a steam-coil, A′, and a draw-off cock, A″.

B is a pump, for transferring the contents of the tank A to the agitator C, through the pipe B′.

C is a metallic tank, whose height should be about twice its diameter. It is furnished with arms, which reach nearly to its centre.

D is an upright shaft, rotating in the centre of C, and furnished with horizontal arms, so placed that when rotated they will pass between those placed upon the inside of the tank C.

E is a tank, about two feet wider and one foot deeper than the tank C, and the latter is placed in the centre of this tank E, in such manner that its top shall be about four inches above the top of the tank E.

F is a tank of the same depth as C, and one-half its diameter. It should be placed about three feet higher than C.

F″ is an overflow-pipe, from the top of F to the bottom of C, where it is made into two or more coils F F″, and perforated with small holes in its lower side. The end of this pipe which communicates with F is bent down six inches, forming a trap to prevent air from entering it.

G is a small supply-tank, placed above F.

H is a pipe, extending from the bottom of the tank G to the bottom of the tank F, where it is made into several coils, with a great number of very small holes on its upper side.

J is a ball-valve, so regulated that the liquid in F shall always be over the end of the pipe F″.

I is a belt of wire gauze, extending horizontally around the inside of the ank C, at its top. It is six inches wide, and there a space or channel of one inch between it and the tank C. It is to be covered with very coarse felt or flannel.

K′ is an overflow-pipe, attached two inches from the top of C, inside of the gauze I. This pipe has two branches at its lower end, and by means of the cocks L L′, it communicates with both tanks A and M.

M is a tight tank or still, with a draw-off cock, M, a steam-coil, full of holes, M″, and gooseneck and condensing-worm N. The pipe K′ enters its bottom.

O is a still, with a perforated steam-coil, O′, two draw-cocks S S′, one two inches above the other, and a gooseneck and condensing-worm, R. This communicates by the pipe P and cock P′, with the bottom of C.

P is closed by the cock P′, and should be at least four inches in diameter.

Operation.

The manner in which my invention may be carried into effect with the apparatus is as follows:

I put into the tank A the charge of crude paraffine, which should not exceed one-third of the capacity of the vessel C. I treat the paraffine with acid and alkali, if necessary. Having treated it, I draw off the impurities through the cock A″.

I then introduce one hundred and fifty per cent. of the weight of paraffine, of naphtha, which should be about 70° Baumé. I mix this with the paraffine at the lowest temperature at which it will dissolve it. I let it stand until all the dirt and other extraneous matters have settled to the bottom, and then pump it into the tank C.

The tank E, around C, should be previously filled with broken ice and salt.

The agitator is now turned at a moderate speed, and by constantly bringing fresh portions of the melted paraffine and naphtha in contact with the outer surface of the tank, the contents are rapidly cooled.

The agitator must not be allowed to stop now, as the paraffine will become very thick, and sets rapidly.

The tank F is filled, to the height indicated by the

dotted lines, with finely-broken ice and salt, and water is poured in until it rises within four inches of the end of the pipe F'. The tank G is kept filled with pure naphtha of 70° Baumé.

When the temperature of the contents of the tank C is nearly 32° Fahrenheit, the cock F' is slightly opened. The valve J opens, and the naphtha goes from G to the bottom of F, and then coming through the holes in the coils H', rises through the ice and freezing water in F, is at once reduced to a temperature of about 32° Fahrenheit, and then overflows into the tank C, through the pipe F'.

The naphtha is admitted, and the agitator is turned as fast as it can be without causing the paraffine to rise up above the stirrers and arms.

When worked properly, the paraffine should never rise within a foot of the gauze belt I. At the temperature of 32° Fahrenheit, the naphtha will wash out all the oil from the paraffine, and dissolve little, if any, of the paraffine. A little very fine paraffine will occasionally rise, and will be retained by the flannel over the gauze belt I.

When the naphtha runs nearly colorless, the cock L is closed, and L' is opened, and enough naptha is run into A for the next charge.

The operation is completed when the naphtha flows through the pipe K as free from smell and color as when it entered the bottom of C.

When this takes place, the pipe F' is closed, and the agitator is revolved very slowly. After the paraffine has settled to the bottom of C, the cock P' is opened and the mixed paraffine and naphtha drawn through the pipe P into the still O, where the naphtha is distilled off by steam, or otherwise.

The condensed water is drawn off by the cock S', and the melted paraffine is drawn off by the cock S, and formed into moulds.

Steam is also introduced, through the perforations M", into the still M, until the naphtha is entirely removed, when the heavy oils, &c., are drawn off through the cock M'.

It is essential to prevent the air from entering with the naphtha through the pipe F', as, by its bubbling up through the contents of the tank C, a considerable quantity of paraffine is brought to the top of the naphtha, which will clog the flannel on the wire gauze I, and the tank C may thus be caused to overflow.

The naphtha distilled off from the stills O and M, after condensation, can be used again, and so on, indefinitely.

The object of using naphtha as light as 70° Baumé is to save fuel in the distillation. As the temperature of the naphtha introduced through the pipe F rises above 32° Fahrenheit, it will dissolve the paraffine of a low melting-point, and the paraffine left behind in the tank C will have a very high melting-point. The temperature of the naphtha should never rise above 43° Fahrenheit, or it will dissolve too much paraffine. When the naphtha is wanted above 32° Fahrenheit, it should be passed through a pipe immersed in ice, and not as shown in the drawing.

By this process it is thus possible to either retain all the paraffine, so that it will have an average melting point, or to separate it, as may be desired, into two or more paraffines, having varying melting-points. Very often it is desirable to have as high a melting-point as can be obtained.

While describing, for the purpose of more fully illustrating my invention, a specific form of apparatus, it will be understood that the arrangement of the same can be greatly varied, and I contemplate the employment of any apparatus suitable to carry out the process.

Having now described my invention, and the manner in which the same is or may be carried into effect

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

1. Melting the paraffine with naphtha, and cooling the same while continually agitating it, substantially as and for the purposes described.

2. Washing the paraffine by passing cold naphtha up through it, stirring or agitating the mixture at the same time, so as to expose, as nearly as possible, all the paraffine to the naphtha, substantially as herein set forth.

3. Separating paraffine of a lower melting-point from that of a higher melting-point, by varying the temperature of the naphtha with which the paraffine is treated, substantially as set forth.

4. The process for purifying paraffine, substantially as herein described.

In testimony whereof, I have signed my name to this specification, before two subscribing witnesses.

Witnesses: C. CHAUNCEY PARSONS.

A. POLLOK,

WM. J. PARSONS.