

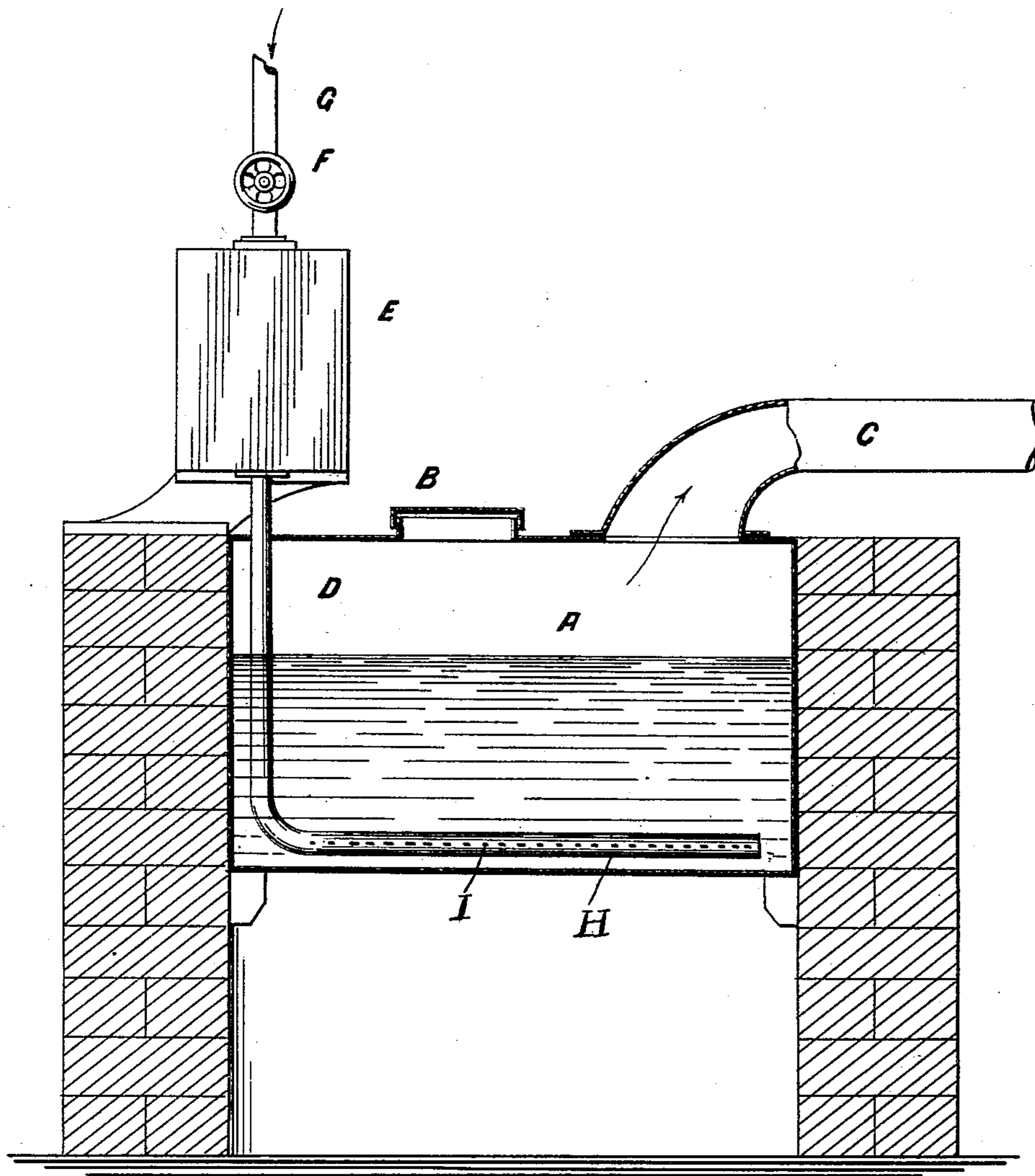
No. 664,813.

Patented Dec. 25, 1900.

T. MACALPINE.
PROCESS OF DISTILLING AND REFINING OILS.

(Application filed Sept. 10, 1900.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS MACALPINE, OF LONDON, ENGLAND.

PROCESS OF DISTILLING AND REFINING OILS.

SPECIFICATION forming part of Letters Patent No. 664,813, dated December 25, 1900.

Application filed September 10, 1900. Serial No. 29,591. (No specimens.)

To all whom it may concern:

Be it known that I, THOMAS MACALPINE, a subject of the Queen of Great Britain, residing at Chiswick, London, in the county of Middlesex, England, have invented certain new and useful Improvements in Processes of Distilling and Refining Oils; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the treatment of oils during their distillation with steam, or perhaps it might better be called "vapor of water," at a low temperature—that is to say, wet steam or vapor at about 180° Fahrenheit or even lower is introduced into the still during the distillation. To obtain steam of this character, steam at a low pressure—say twenty pounds—is allowed to flow from a boiler into an expansion-chamber and from thence into a still, in which still a partial vacuum is maintained.

The invention consists in the features hereinafter pointed out, and substantially mentioned in the claims.

In the accompanying drawing the figure represents a still in cross-section for carrying out my improved process.

In said drawing, A represents a still adapted to be heated by external means and sustained in brickwork in the usual way.

B is a cover therefor, and C is a pipe connected to the condenser. To this condenser is connected a vacuum-pump or fan, so that in the upper part of the still a partial vacuum will be maintained. The degree of the vacuum should be sufficient to enable the steam to be drawn through the still. The pressure in said still may be reduced to half an atmosphere, or even lower.

G is a pipe leading from a steam-boiler, in which steam at a low pressure—say, for example, twenty pounds—is generated. This pipe is provided with a valve F. The pipe delivers into an expansion-chamber E, and the steam as it enters said chamber instantly expands, and this expansion cools it down to the desired temperature—say 180° or lower. From this expansion-chamber a pipe D passes into the still, which pipe has a horizontal portion H, provided with numerous small orifices I.

The operation is as follows: The still being

charged with a suitable amount of oil is heated by fire from without. A partial vacuum is maintained in the still A by the use of the vacuum-pump. The steam is allowed to flow through the pipe G into the expansion-chamber E, where it is cooled, and finally passes out of the orifices I through the body of the oil as wet steam, or rather vapor, of a low temperature. The fact that a partial vacuum is maintained in the still A sucks the steam or vapor out through the holes I, and it thoroughly commingles with the oil.

The result of my process is that the commercial value of the distillate is greatly increased, that the density and viscosity of the oil obtained are higher than by other methods of refining, that all liability of burning the oil in the still and injuring the still by overheating is prevented, that the time required for distilling is lessened, and thereby the distillation effected at less cost, and that the formation of deleterious products in the still is largely prevented.

My process is intended primarily for use in distilling petroleum-oils, and for oils of this character a condenser and vacuum-pump are necessary.

While I have mentioned 180° as a suitable temperature for some oils, I do not wish to confine myself to that exact temperature. A temperature as low as 150° will effect good results with some kinds of oil. In all cases, however, the temperature should not be much over 180°.

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

1. The process of treating oils, which consists in heating said oils in a closed vessel, maintaining a partial vacuum in said vessel, and introducing into said vessel steam below 212° in temperature, substantially as described.

2. The process of treating oils, which consists in heating said oils in a closed vessel, maintaining a partial vacuum in said vessel, and injecting directly into said oil steam below 180° in temperature, and condensing the products given off from said vessel, substantially as described.

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Witnesses:

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