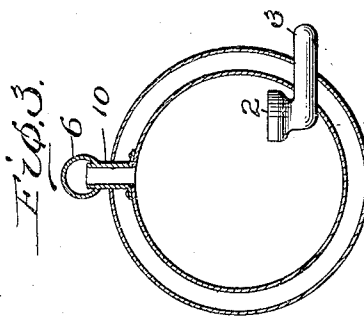
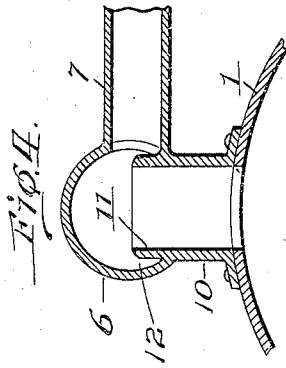
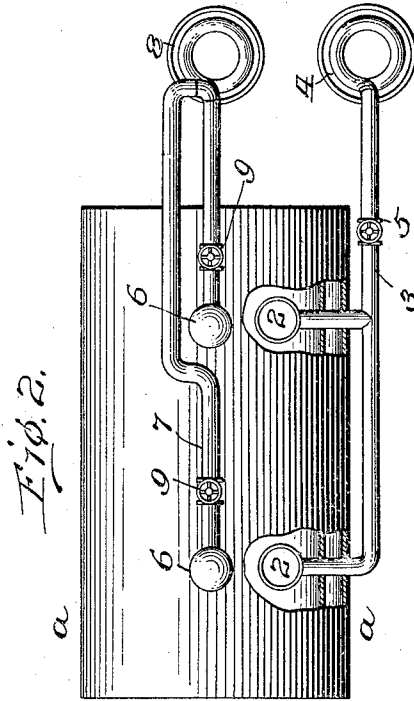
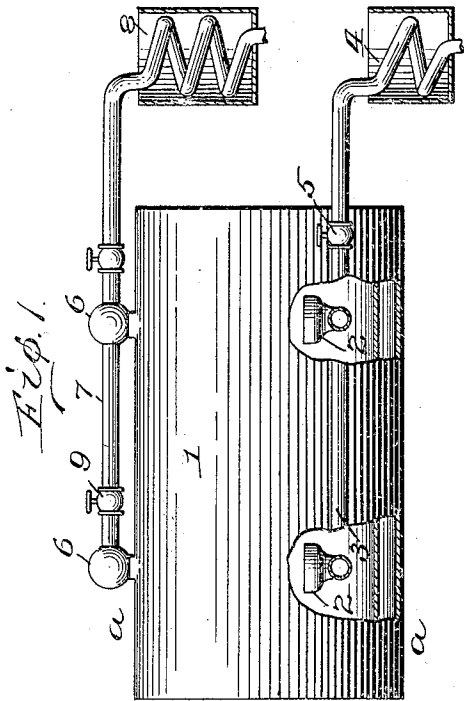


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 RETORT.  
 APPLICATION FILED AUG. 5, 1913.

1,200,606.

Patented Oct. 10, 1916.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## RETORT.

1,200,606.

Specification of Letters Patent.

Patented Oct. 10, 1916.

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*To all whom it may concern:*

Be it known that we, JOHN L. GRAFFLIN and HAROLD M. CHASE, both citizens of the United States, residing at Wilmington, in the county of New Hanover, State of North Carolina, have invented certain new and useful Improvements in Retorts, of which the following is a description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to retorts for use in wood distillation and has for its object to so construct and arrange the off-takes of such retorts as to secure the largest amount possible of the more volatile products of distillation and to prevent the return to the retort of the condensation of vapors once driven off.

With these objects in view our invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawings: Figure 1 is a side view partly broken away of a retort having our invention applied thereto. Fig. 2 is a plan view partly broken away of the retort shown in Fig. 1. Fig. 3 is a cross sectional view on line *a-a* of Figs. 1 and 2; Fig. 4 is an enlarged sectional view of our improved still head or dome.

It will be understood that Figs. 1 and 2 are somewhat diagrammatic and do not show means for heating the retort.

In the drawings 1 is a retort here shown as jacketed to adapt it to be heated by the circulation of a heated fluid medium as described in U. S. Patent, No. 880,466, to Thomas W. Pritchard, dated Feb. 25, 1905, but it will be understood that it is not material to our present invention in what manner the retort is heated, it being essential only that the retort be adapted to be charged with wood and be provided with some means of heating it and its contents to a temperature sufficient to distil off the volatile substances contained in the wood, the heating means being preferably arranged to be capable of regulation in such a manner as to cause the volatile substances, such for instance as turpentine in the distillation of resinous wood, to be driven off without causing destructive distillation of the wood.

In the retort or stills as ordinarily used for wood distillation domes or still heads are placed at the top of the still with pipes lead-

ing from them to condensers so that as the volatile substances are vaporized by the heat the vapors rise into the domes or still heads and flow into the condensers. As usually constructed and arranged the vapors to a greater or less extent condense in the domes or still heads before entering the pipes leading to the condensers, and drop back into the retort and are liable to be broken up and destroyed. By the construction and arrangement of our present invention this dropping back of condensed vapors is prevented. This may be done by arranging out-take openings at a low level, preferably near the level of the bottom of the retort so that the vapors driven off by the heat will enter the open mouth of the out-take in a downward direction. The out-take as shown comprises a bowl 2 with its opening facing upward connected to out-take pipe 3 leading to condenser 4. The out-take pipe is inclined downward toward the condenser so that any condensed vapor will flow into the condenser; a valve 5 in the out-take pipe serves to cut off the flow if desired. We have shown two of these out-take openings and find it desirable to use two, but one or more may be used as desired. The bowl 2 may be dispensed with and the out-take pipe may simply extend through the wall of the retort.

In the distillation of resinous wood the initial heating of the contents of the retort causes the rosin and pitch contained in the wood to melt and flow down to the bottom of the retort and it is of course necessary that the out-take opening should be sufficiently above the bottom of the retort to avoid the possibility of the pitch or rosin entering therein.

In domes or still heads at the top of retorts we prevent the dropping back of condensed vapors by means of a trap arranged to drain into the pipe leading to the condenser. This construction is shown in detail in Fig. 4 in which 6 is a dome or still head having pipe 7 leading from it to condenser 8, this pipe being inclined downward so as to drain into the condenser and provided with cut off valve 9. The upper part of the dome or still head is of larger diameter than the tubular portion 10 which connects it with the retort and this tubular portion is extended up into the upper portion to form a wall 11 so as to leave between it and the inner wall of the upper portion of

the dome a trough or trap 12 which on one side communicates with the pipe 7 so as to drain into it, and which is open at its upper end. It will be understood that any vapors condensing in the inner surface of the dome will flow into the trough or trap 12 and will not be returned into the retort.

In Figs. 1, 2 and 3 we have shown a retort provided with out-takes arranged low down within the retort and also with domes at the top so that either or both may be used, the valves 5 and 9 being provided so that either the domes or the low down out-takes may be shut off as desired. In both the low down out-takes and in the still head constructed as shown any vapors entering the open mouth of the out-take or the open

end of the trough or trap 12 will be prevented from returning.

Having thus described our invention what we claim is:

In a stationary retort for dry distillation, a vapor outlet having an upwardly opening mouth near the bottom of the retort and a vapor outlet having a downwardly opening mouth at the top of the retort.

This specification signed and witnessed this 23rd day of December, A. D. 1912.

JOHN L. GRAFFLIN.  
HAROLD M. CHASE.

In the presence of—  
BESSE C. STRAUB,  
J. O. CORR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."