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ART OF TREATING HYDROCARBONS

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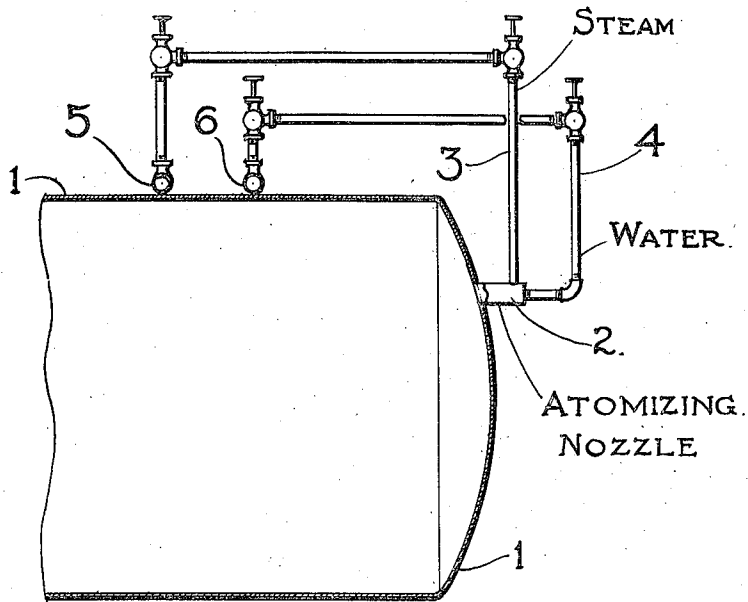


FIG. 1.

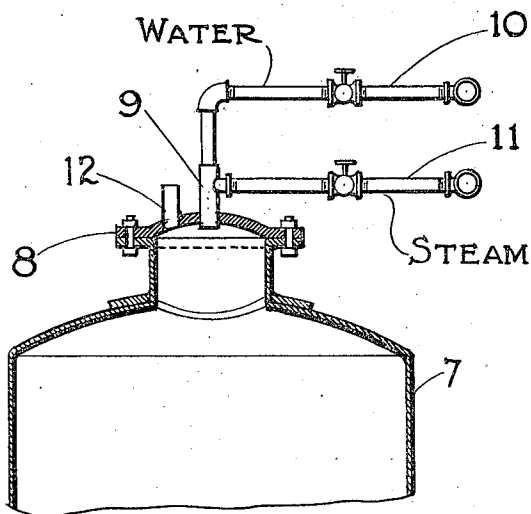


FIG 2

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ART OF TREATING HYDROCARBONS

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This invention relates to improvements in the art of treating hydrocarbons. The invention will be fully understood from the following description, taken in connection
5 with the accompanying drawing, in which

Fig. 1 is a partial vertical section through a pressure still, showing pipe lines for water and steam; and

Fig. 2 is a similar view of a soaking drum.
10 Referring to Fig. 1, reference numeral 1 denotes a pressure still or the like having an atomizing nozzle 2 preferably inserted through one end. Pipes 3 and 4 supply steam and water respectively to the nozzle. The
15 pipes may be connected as shown to main steam and water lines 5 and 6.

Any form of nozzle may be used that will properly atomize the water. Steam atomization is generally most convenient but suitable mechanical means may be used to accomplish the same purpose. The location of the nozzle may be varied, but it should not ordinarily be placed below the liquid level line of the still.

25 I have found that cooling by atomized water has valuable advantages over cooling by injected steam. An important feature of the invention is the utilization of water in very finely divided condition. In this way
30 I avoid the adverse effect of considerable masses of water coming into contact with the hot metal of the still. Heat is rapidly absorbed in vaporizing the water and cooling is effected much more quickly than when steam is used. The expense of generating
35 steam for cooling is substantially eliminated. The amount of steam required when used for atomization is inconsiderable. Water cooling in the manner described substantially
40 decreases the amount of gas with which the cleaners have to contend and makes it possible to obtain a final temperature much lower than when steam is the cooling agent.

It is generally satisfactory to begin the
45 spraying with water as soon as the still is ready for cooling, but in some cases steam alone may be injected at first and followed by the water spray. The water supplied to the nozzle may be at about atmospheric
50 temperature. It is practical, however, to

use water at any temperature short of vaporization.

Another embodiment of the invention is illustrated in Fig. 2, in which 7 denotes a soaking drum having a manhead 8. A nozzle 9 and water and steam lines 10 and 11 are arranged for the injection of atomized water into the drum, in the manner described in connection with Fig. 1. The manhead
55 may have a vent 12.

When a vented manhead is used, it is convenient to install the nozzle and pipe connections so that the manhead and these fittings may be handled as a unit and substituted for the solid manhead used during
60 the operation of the drum. The pressure may of course be relieved and the nozzle installed in other ways.

It will be understood that the cooling of pressure stills and soaking drums has been described only as illustrative of the invention. It is applicable in general to all hydrocarbon treating apparatus now cooled by injected steam, and to analogous apparatus. As further specific illustrations, the cooling
75 of crude stills, vapor separators, and cracking coils may be mentioned. The process of the present invention is primarily intended for cooling, but under some circumstances the injected water may have other
80 physical or chemical effects.

Various changes in the structure and arrangement of the apparatus described may be made within the scope of the appended claims, in which I desire to claim all novelty
85 inherent in my invention as broadly as the state of the prior art permits.

I claim:

1. Process of cooling hot pressure stills, soaking drums, and analogous apparatus for
90 heat-treating oils preparatory to cleaning, which comprises atomizing liquid water and causing it to pass through the apparatus in cooling relation thereto.

2. Method according to claim 1, in which
95 the water is atomized by means of a small amount of steam.

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