

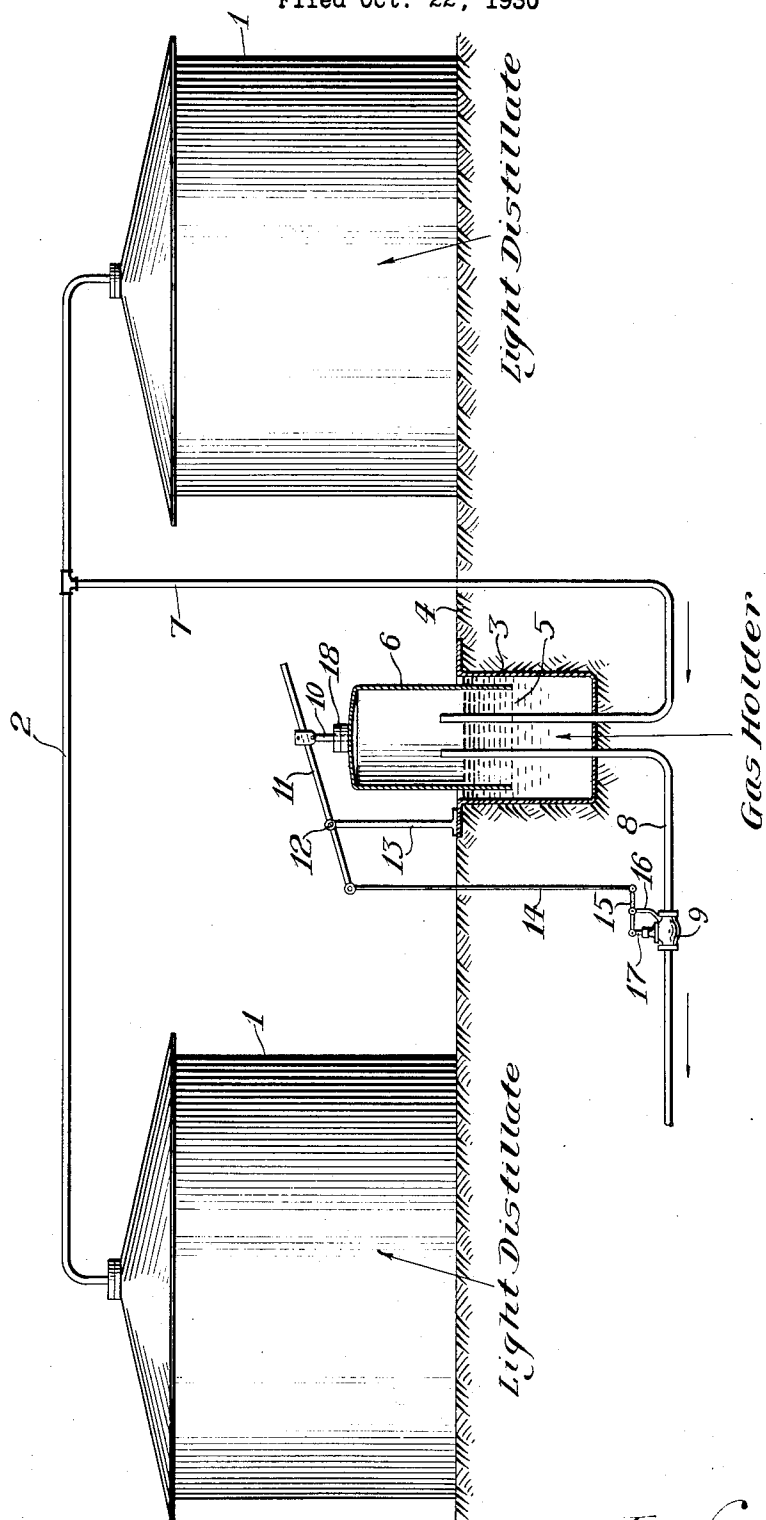
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TREATMENT OF HYDROCARBON OILS

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Witness:

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UNITED STATES PATENT OFFICE

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TREATMENT OF HYDROCARBON OILS

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3 Claims. (Cl. 220—85)

This invention relates to improvements in a method and means for reducing the loss by evaporation of relatively volatile fluids, such as the light constituents of oils or the like, by automatically maintaining a substantially constant self-generating pressure in the vapor space of the vessels containing the fluid, thereby decreasing evaporation of said fluid.

The utility, objects and advantages of my invention will be more apparent from the accompanying drawing and following detail description.

In the single diagrammatic drawing suitable apparatus for carrying out my invention is shown.

Referring in detail to the drawing, 1 indicates a storage vessel or tank adapted to contain a volatile liquid such as a light distillate from a cracking process. It is commonly known that when said relatively volatile liquid is maintained in storage for a comparatively long time the lighter components of said liquid evaporate and are lost.

Accordingly, one of the important features of my invention is to maintain a pressure upon the surface of said stored liquid in order to decrease evaporation thereof and to provide suitable means for collecting any excess evaporated liquid and transposing same to a point where it may be utilized. In carrying out my invention I connect the upper portion of one or more storage tanks 1 to a common header 2. It is to be understood that as many storage tanks as desired may be so connected.

A tank or container 3 having an open top may, if desired, be buried in the ground 4 adjacent the storage tanks 1 and may be substantially filled with water 5. A bell 6 having an open bottom may be movably disposed within tank 3 and the open bottom of the same may be sealed by the liquid 5. Liquid 5 may comprise any non-reactive liquid such as water or the like.

A pipe 7 may connect into the header 2 at one end and may open under the bell 6 at the other end above the surface of the liquid 5. A second pipe 8 may also open under the bell 6 above the surface of the liquid 5 and may be connected at its opposite end to a gas burner, gas holder, or to any other point of utilization. A valve 9 may be interposed in pipe 8, the purpose of which will be hereinafter more fully described.

A link 10 may be connected at the upper end of the outer portion of the bell 6 and may be pivotally mounted upon a lever 11 which may be fulcrumed at 12 upon the upper end of a sup-

port 13. The opposite end of said lever may be connected to link 14, which in turn may be pivotally joined to one end of lever 15 fulcrumed upon the end of support 16, which in turn may be mounted upon the body of the valve 9. The opposite end of lever 15 may be operatively connected to the end of valve stem 17.

By this arrangement it can be readily seen that when the liquid within tanks 1 evaporates, the evaporated portion thereof will be transferred from header 2 to line 7, and thence into the interior portion of the bell 6, thereby raising said bell. When the bell 6 raises to a predetermined maximum height lever 15 will be depressed at one end and hence valve stem 17 will be raised, thereby opening said valve and permitting gas or vapor to pass from the interior portion of the bell 6 through pipe 8 to storage or to a point of utilization. Upon the opening of valve 9 bell 6 will begin to descend, thereby closing said valve. This operation will take place automatically, and in consequence a substantially constant pressure will be maintained within the upper portions of the tanks 1 and hence the liquids contained therein will be maintained under a constant pressure. This pressure may be varied or controlled by adding or removing weights 18 from the top of bell 6, and hence the pressure upon the liquids within tanks 1 may be maintained at such a value as to prohibit evaporation of the liquids contained therein. It is to be understood, of course, that the point of utilization or storage to which the pipe 8 discharges will be maintained at a pressure lower than that which will exist in the bell 6 and in the tanks 1.

It is apparent that herein is provided a means and a method of controlling the evaporation of a relatively volatile liquid maintained in storage by automatically subjecting said liquid to a pressure of sufficient magnitude to prohibit evaporation.

I claim as my invention:

1. In combination, a storage receptacle for retaining volatile liquids, a tank having an open top and adapted to retain a body of liquid associated with said receptacle, a vertically movable floating bell disposed in said liquid, communicating means between the interior of said storage receptacle and the interior of said bell and above said liquid for passing volatiles evolved in said receptacle into said bell, means for withdrawing volatiles from the interior of said bell, a valve interposed in said latter withdrawing means, and control means for said valve in association with

said bell and actuated in response to the vertical movement of said bell.

2. In combination, a storage receptacle for retaining volatile liquids, a tank having an open top and adapted to retain a body of liquid associated with said receptacle, a vertically movable floating bell carried by said liquid, an outlet from said storage receptacle in communication with an inlet to the interior of said bell through which volatiles evolved in said receptacle pass into said bell and above said liquid, separate means for removing volatiles from the interior of said bell, a valve in said latter means, and means carried by said bell connected to said valve actuating the latter in response to the vertical movement of said bell.

3. In combination, a plurality of closed storage

receptacles for retaining volatile liquids, a tank having an open top and adapted to retain a body of liquid, associated with said receptacle, a floating bell carried by said body of liquid and adapted to be vertically movable therein, an outlet from the upper portion of said storage receptacle communicating with the interior of said bell and above said liquid body, through which volatiles evolved in said receptacle pass into the interior of said bell, separate means for withdrawing volatiles from the interior of said bell to a point of use, a valve control for said latter withdrawal means, and means mounted on said bell and connected to said valve for actuating the latter in response to vertical movement of the former.

EDWIN F. NELSON.

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35	110
40	115
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60	135
65	140
70	145
75	150