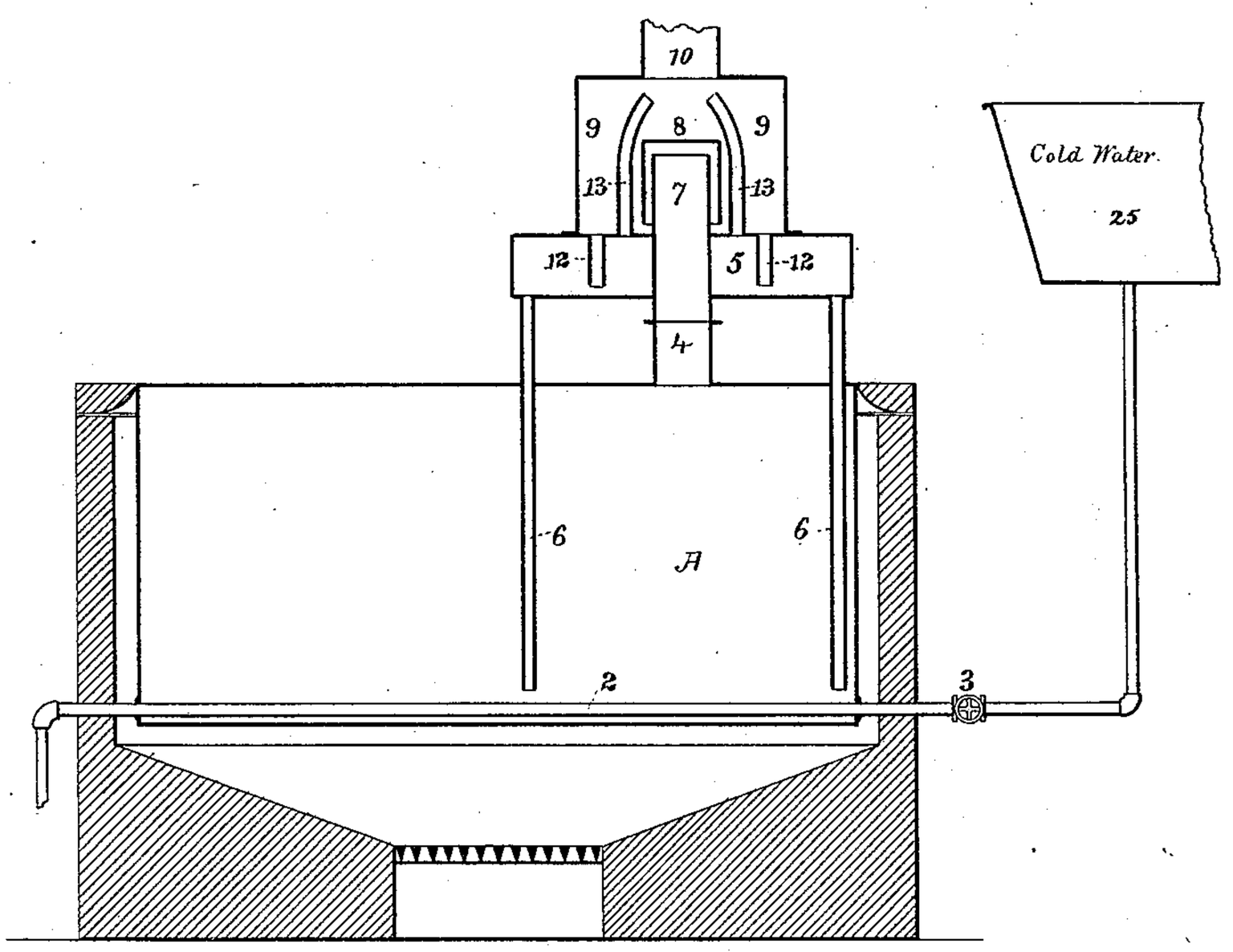
(No Model.)

J. M. KRIESER.

PROCESS OF AND APPARATUS FOR DISTILLING PETROLEUM.

No. 366,487. Patented July 12, 1887.



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UNITED STATES PATENT OFFICE.

J. MORITZ KRIESER, OF BROOKLYN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE MYSTIC OIL COMPANY, OF NEW YORK, N. Y.

PROCESS OF AND APPARATUS FOR DISTILLING PETROLEUM.

SPECIFICATION forming part of Letters Patent No. 366,487, dated July 12, 1887.

Application filed December 15, 1886. Serial No. 221,641. (No model.)

To all whom it may concern:

Be it known that I, J. MORITZ KRIESER, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Methods of and Apparatus for Distilling Petroleum, which improvement is fully set forth in the following specification.

This invention relates more particularly to the distillation of crude petroleum—that is to say, the oil just as received from the wells—though it is also applicable to petroleum distillate and to refined petroleum, and has for its object to effect a thorough separation from each other of the oils of different grades or gravities and to produce from the same quantity of crude petroleum a larger proportion of the so-called "water-white" or high-grade illuminating-oil than can be obtained by the methods now in use. With the stills now in general use more or less inconvenience and loss are incurred by reason of the vaporization of the denser portions of the oil, tarry matters, paraffine, &c., and the mingling of these vapors with the lighter vapors from which the high-grade oils are produced. Various devices and expedients have heretofore been employed to arrest these heavy vapors and return the same to the still; but though this may be accomplished in a measure the returned vapors are again distilled and pass off, the lighter vapors having a tendency to carry off with them more or less of the heavier vapors and of liquid particles in suspension.

By my invention the tarry matters, paraffine, &c., are kept at the bottom of the still, and not permitted to rise to the top and pass off to the condenser, while at the same time any lighter vapors contained in these matters are liberated and permitted to rise to the surface, where they are distilled off. This is accomplished by passing through a pipe which extends across the still, near the bottom thereof, a current of a cooling medium, such as cold water. The heavier constituents of the oil cool very quickly, and I have found that by such circulation of water or other cooling medium through the bottom of the still these matters can, for the greater part, be kept near the bottom in proximity to said pipe.

This improvement can be easily applied to stills now in use. It is specially advantageous in connection with a still having pipes for returning the condensed vapors to the still, which pipes extend below the surface of the liquid therein and discharge at about the level of the cold-water pipe.

The invention includes certain details of construction, hereinafter set forth and claimed.

The accompanying drawing, which forms a part of this specification, illustrates in vertical section a still constructed in accordance with and for the purpose of carrying out the invention.

The still A, which may be otherwise of any ordinary or suitable construction, is provided with a pipe, 2, passing through the same from side to side near the bottom thereof. The pipe is connected with a water-main or other source of supply of cold water, though of course other cooling medium may be employed. The pipe 2 is provided with a cock, 3, for stopping the flow when desired.

For convenience of illustration I have shown the cold-water pipe 2 connected with a tank, 25, for containing cold water; but it will of course be understood that this is shown simply by way of example, and that in practice the pipe 2 would ordinarily be connected with a water-main.

The pipe 4 or outlet of the still leads to a shallow chamber, 5, which is fastened thereto, and from which pipes 6 return to the bottom of the still, their lower ends being about on a level with the cooling-pipe 2. The pipe 7, which forms a continuation of pipe 4, conducts the vapors through the shallow chamber 5, and the said vapors, issuing from the orifice of pipe 7, strike against a cap, 8, whereby the liquid particles and heavier vapors will be arrested, and these, together with the light uncondensed vapors, will pass down between the tube 7 and cap 8 into the vapor-chamber 9, the vapors escaping thence by the tube 10.

The condensed vapors collecting in vapor-chamber 9 pass by pipes 12 into the shallow chamber 5. In most cases these arrested vapors are composed in part of matters so volatile as to give off light vapors during the period of their return to the still. To conduct these away from chamber 5, I provide tubes 13. The heat in chamber 5, due to its proximity to the still, produces therein a gentle dis-

tillation, whereby light vapors are disengaged and rise through tubes 13 to the top of the vapor-chamber 9, and thence pass off by tube 10.

The remaining liquid descends through the pipes 6, and is discharged in the vicinity of the cooling-pipe 2, by the action of which, as already explained, the heavier constituents of the petroleum are retained in the bottom of the still.

In my application for improvements in distilling petroleum and other liquids, filed December 17, 1886, and numbered 221,889, I have described and claimed a shallow chamber directly above the still, in connection with means for arresting the heavy vapors and particles of liquid, the return-pipes leading to the still, and the tubes leading upwardly from said chamber to carry off any light vapors that may be disengaged therein. As therein shown and described, however, the said chamber rests directly on and is secured to the top of the still, whereas it is herein shown as placed upon and secured to the discharge-pipe 4 of the still. This arrangement is preferred. It can be more easily and quickly adapted and applied to ordinary forms of stills now in use than that described in my aforesaid application.

I do not claim herein any matter claimed in my said pending application, No. 221,889.

In the products of ordinary stills the oils of each grade or gravity are composed in reality of a mixture of oils of different gravity, some a little above and others a little below the average of the whole. By the use of my invention the different grades or gravities of oil are completely separated from each other, the vapors passing off from the still separately and unmixed with vapors of a different density.

It is obvious that the details of construction herein described may be modified without departing from the spirit of the invention, and that the invention, at least in part, may be employed in the distillation of oils or liquids other than petroleum.

I claim—

1. In the process of distilling petroleum, the improvement consisting in passing a current of a cooling medium through the still near the bottom thereof without coming into immediate contact with the oil, whereby the tarry matters and heavy oils are kept at the bottom of the still, substantially as described.

2. The combination, with the still, of a pipe passing through the still near the bottom thereof, and a cold-water supply, with which said pipe is connected, substantially as described.

3. The combination of the still, the pipe passing through the still near the bottom thereof, said pipe being connected with a cold-water supply, the condensing-chamber, and the pipes for returning the condensed vapors to the still, said pipes extending nearly to the bottom of the still and discharging at about the level of said water pipe, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

J. MORITZ KRIESER.

Witnesses:
M. M. BUDLONG,
J. P. OSBORNE.