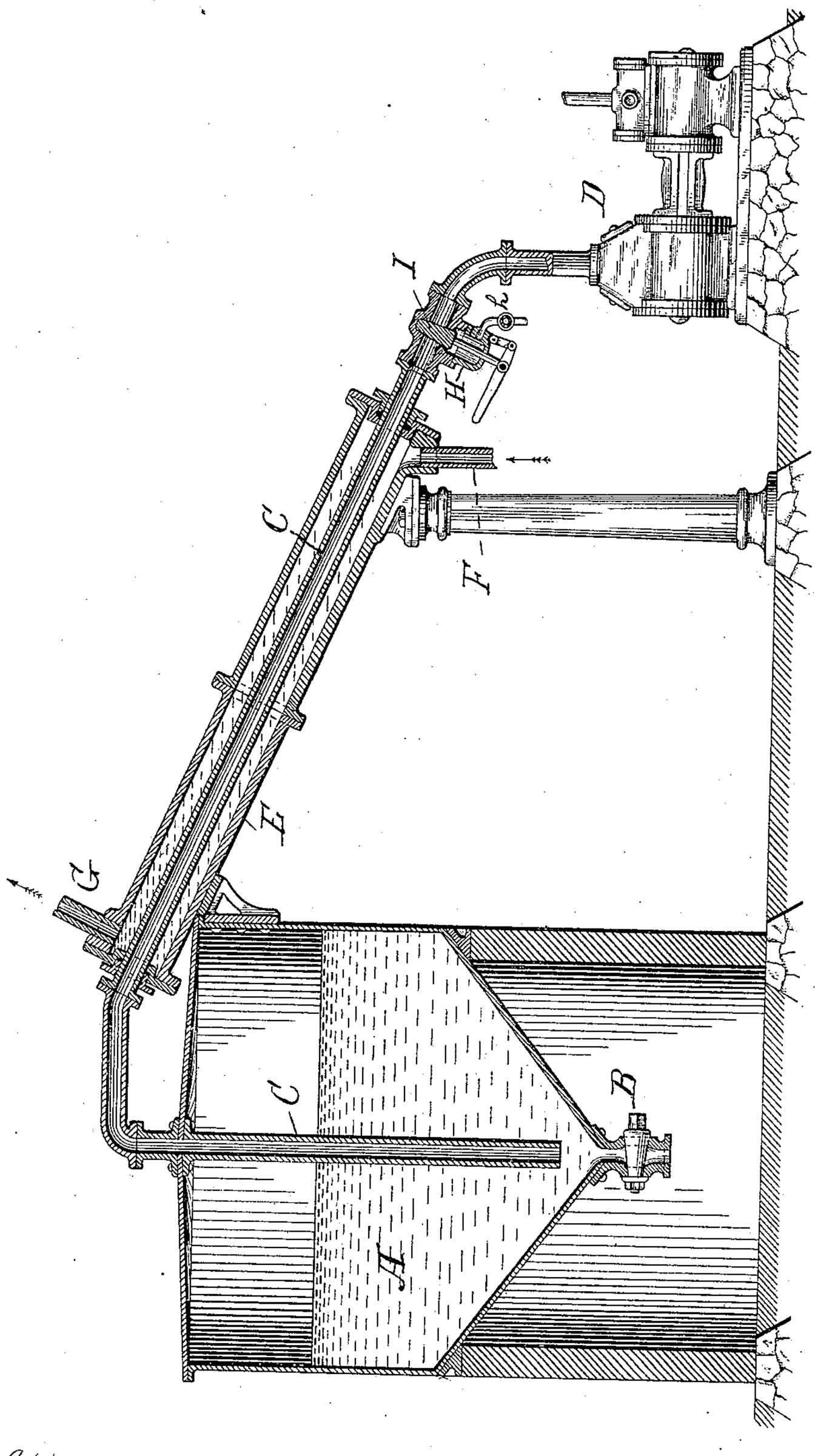
(No Model.)

W. G. WARDEN.

Apparatus for Cooling and Drying the Air Blast Employed in the Process of Cooling and Refining Oil.

No. 240,937. Patented May 3, 1881.



Attests.
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UNITED STATES PATENT OFFICE.

WILLIAM G. WARDEN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE ATLANTIC REFINING COMPANY, OF SAME PLACE.

APPARATUS FOR COOLING AND DRYING THE AIR-BLAST EMPLOYED IN THE PROCESS OF COOLING AND REFINING OIL.

SPECIFICATION forming part of Letters Patent No. 240,937, dated May 3, 1881.

Application filed November 4, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. WARDEN, of the city of Philadelphia, in the State of Pennsylvania, have invented an Improvement in Apparatus for Cooling and Drying the Air-Blast Employed in the Processes of Cooling and Refining Oil, of which the following is a specification.

The object of my invention is the agitation of oils in such manner and by such means that the temperature of the mass of oil during agitation is kept at so low a point as to facilitate the separation of tar and other impurities therefrom.

Heretofore the process of agitating oil for purifying purposes has consisted, essentially, of the following steps, viz: Warm distillate, or oil from the still, is mixed with cold water in an agitator. The mixed mass is agitated by means of a blast of air forced through it. The water is then drawn off from the bottom of the agitator, and the cooled oil is dried or freed from moisture, as well as from tar, by the addition of sulphuric acid and by agitation together therewith by means of a blast of air forced into and through the mixture in the agitator. By the above treatment the water and tar have been caused to separate from the oil, and to fall to the bottom of the agitator, at which point they are drawn off. In the above operation, however, the temperature of the oil is gradually raised by reason of the increase of temperature of the air-blast due to the force and velocity with which it is forced into the agitator, and by reason of the action of the sulphuric acid upon the water or moisture in said air-blast, with the result that the separation of tar from the oil is rendered more slow and incomplete as the temperature of said mass increases.

My invention consists in providing an apparatus for cooling and drying the air-blast employed in connection with oil-agitators.

The drawing is a vertical longitudinal central view, partly in section and partly in elevation, of my improved apparatus.

A is an agitator, in the present instance shown with conical top and bottom, and provided at its bottom with an outlet and cock, B.

C is an air-blast pipe, which extends from a point in close proximity to the inner surface of the bottom of the agitator vertically upward through the top of the agitator, and then downward and into the blower D, which latter may be of any suitable construction.

E is a water-jacket surrounding the blast-pipe C, provided at its lower end with a water-inlet, F, and at its upper end with a water-outlet, G, and arranged in such manner as to be constantly fed with a supply of cold water, by means of which the air, in its passage through the pipe C, is cooled and the moisture in said blast is, to a large degree, condensed.

H is a drip-cup or downwardly-extending pocket formed in the blast-pipe C near the lower end of said pipe, the office of which is to catch the water of condensation from the pipe C and to discharge the same through the cock *h*.

I is an air-valve to regulate the blast.

Having thus described my invention, I desire to secure by Letters Patent—

An apparatus for cooling and purifying oil, which consists in a vessel or agitator for containing oil, an air-blower, an air-blast pipe extending from said blower to a point within said agitator in proximity to the bottom thereof, and a water-jacket surrounding said blast-pipe and adapted to contain cold water, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name this 25th day of October, A. D. 1880.

WILLIAM G. WARDEN.

In presence of—

GEO. H. PERKINS,

J. BONSALL TAYLOR.