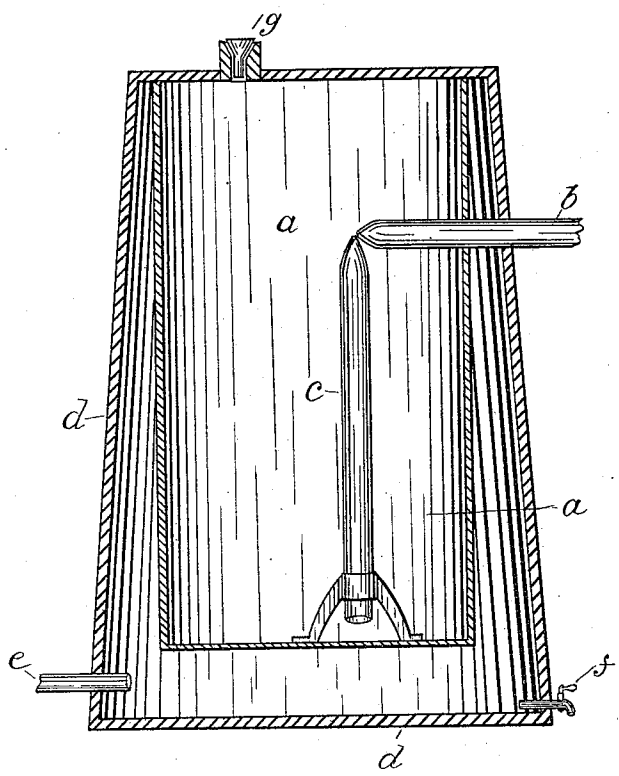
(Specimens.)

J. W. & F. R. HOARD.

PROCESS OF OXIDIZING LINSEED AND OTHER OILS.

No. 312,351. Patented Feb. 17, 1885.



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UNITED STATES PATENT OFFICE.

JOHN W. HOARD AND FREDERICK R. HOARD, OF PROVIDENCE, R. I.

PROCESS OF OXIDIZING LINSEED AND OTHER OILS.

SPECIFICATION forming part of Letters Patent No. 312,351, dated February 17, 1885.

Application filed August 9, 1884. (Specimens.)

To all whom it may concern:

Be it known that we, JOHN W. HOARD and FREDERICK R. HOARD, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in the Process of Oxidizing Linseed-Oil and other Oils and Liquids; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

Our improvement consists in the process, hereinafter more particularly described, of oxidizing linseed-oil or other oils or liquids by passing and repassing the same through an atomizer by the agency of a blast of air. Raw linseed-oil, as is well known, requires for many purposes in the arts to be changed from its fluid state to a gummy consistency, and this consistency needs for some purposes to be much greater than in others. Several methods have heretofore been practiced, one of which is to pump or pour boiled linseed-oil upon a cloth and allow the oil to run down both sides of the cloth, the pumping being continued until the required thickness or "skin" of gum is produced by this exposure of the oil to the oxygen of the atmosphere, which serves in this way to oxidize the oil. This is a very slow, tedious process, and requires about four months' time. Another mode has been to coil a pipe inside a cylinder, this pipe being pierced with holes, and then to blow air into the coil and out of these holes into the boiled oil in this cylinder, and this process is not so slow as the one first above named. Other modes have been devised, such as stirring the oil in a closed tank by means of a set of revolving blades or paddles and admitting air. In none of the methods known to us is the process capable of being practiced as rapidly as is desirable; nor is the mixture of air and oil as intimate or as thorough as is needed in order to secure perfectly satisfactory results and with economy of time and money.

As an efficient but yet simple and inexpensive means by which our new process of oxidizing may be practiced, we illustrate in the drawing an atomizer within an oil-tank and a heating-jacket surrounding the sides and bottom of the tank. In this drawing the tank or kettle is shown at *a*, the atomizer-pipe or air-pipe at *b*, and the oil-pipe for lifting from the tank the oil to be atomized at *c*. *d* is the heating-jacket; *e*, a steam-pipe leading into this jacket; *f*, a cock to let off the water condensed from the steam, and *g* a valve to allow the escape of air used in the process. With such or any equivalent apparatus in which the liquid can be drawn up through the agency of a pipe, and then at the small exit-mouth of such pipe be finely atomized in the air above the surface of the body of the liquid, our process may be successfully practiced. The process, it will be observed, is in marked contrast with any in which air is carried by tubes down into the body or mass of the oil or liquid, for in such case but a small amount of air is at any given moment brought into conjunction with the whole body of liquid, while by our process a continuous small stream or current of the liquid is lifted into the air in the upper part of the vessel, and at the instant of leaving the pipe or tube is minutely atomized into the finest spray, thus affording the most complete possible presentation of every minute portion of the oil or liquid to the action of the air, and every particle of the liquid in the vessel becomes subjected to the same atomizing and exposure to the air, for the process is continuous as long as the air is injected. Thus if the process be continued, not only must all the liquid pass up through the tube and be similarly and equally treated and changed in its character and consistency, but this treatment is repeated, the oil being worked over and over again with fresh air constantly forced in. As the oil thickens as it oxidizes, any degree of thickness desired may be attained according to the length of time the operation is kept up, even to the consistency of a gum, which will hold itself together in solid mass, like a jelly. We find that by this our process as good results can be accomplished in one day as can be secured in a week by any other process known to us. To keep the oil thin enough to be worked during the process we apply steam heat to the vessel containing the oil, and preferably use a steam-jacketed vessel to hold the oil. Sometimes a

small quantity of litharge or manganese may be added to the oil to facilitate the operation. It is generally desirable to use a large atomizer to prevent the thickened oil as the process is going on clogging it so as to preclude the proper passage of the oil through it. So completely is the character of the oil changed by our process that the resultant gum stands unaffected by ordinary heat and cold.

Our process, as already indicated above, may be used to treat or oxygenate other oils as well as linseed-oil, and also for the aging or maturing of liquors.

We claim—

The process of oxidizing linseed-oil and other liquids by passing and repassing the same by the agency of a blast of air through an atomizer within the vessel containing the liquid under treatment, substantially as above set forth.

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