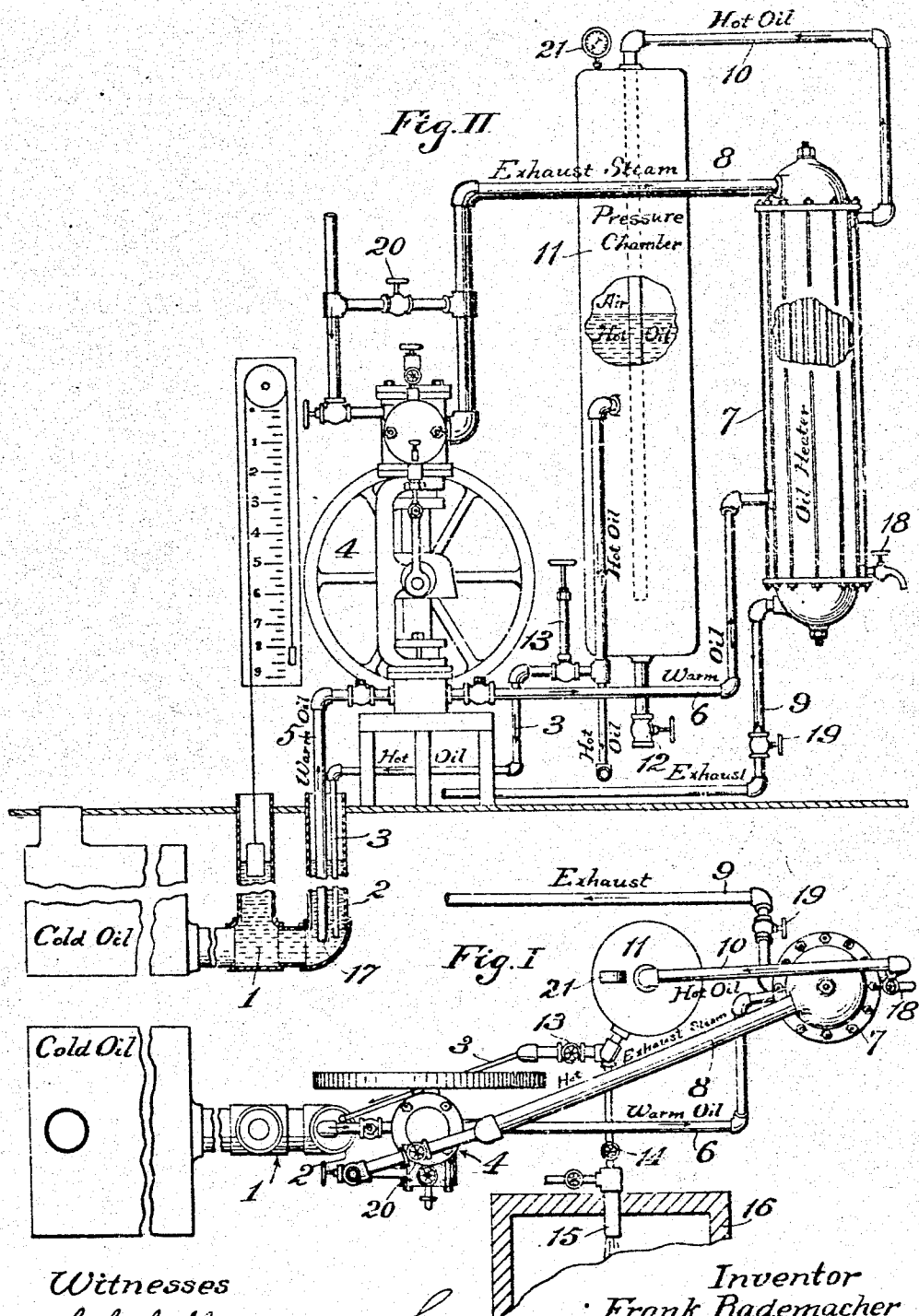


F. RADEMACHER.
METHOD OF TREATING OILS FOR COMBUSTION PURPOSES.
APPLICATION FILED FEB. 3, 1903.

971,142.

Patented Sept. 27, 1910.



Witnesses
C. C. Keohly
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Inventor
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by Townsend Bros.
his attys.

UNITED STATES PATENT OFFICE.

FRANK RADEMACHER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO JOSEPH MAIER AND GEORGE ZOBELEIN, OF LOS ANGELES, CALIFORNIA.

METHOD OF TREATING OILS FOR COMBUSTION PURPOSES.

971,142.

Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed February 3, 1903. Serial No. 141,754.

To all whom it may concern:

Be it known that I, FRANK RADEMACHER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Method of Treating Oils for Combustion Purposes, of which the following is a specification.

This newly invented method embodies various steps which will be specifically pointed out and claimed in the appended claim, and as a whole consists in first warming the oil to increase its fluidity, whereby very heavy and stiff crude oils may be used with ease and economy, then introducing the warmed oil into a confined space and subjecting it to heat and pressure, then introducing the oil into a pressure tank and allowing the impurities to settle therefrom, and then introducing the oil into a heated receptacle or converter where it is transformed into a vapor or gas.

It also includes a method which consists in heating oil to a high temperature under pressure and maintaining a circulation thereof, discharging a portion of the heated oil from one part of the circulation and introducing oil at another part of the circulation. The discharged portion of the oil is desirably conducted into a heated chamber for conversion into the high combustible. I will now describe this method as the same may be carried on by the apparatus illustrated in the accompanying drawings which show apparatus for which I have filed an application for patent contemporaneously herewith. Serial No. 141,753.

In the drawings Figure I is a fragmental plan of apparatus which may be employed in carrying out this invention, and Fig. II is a fragmental elevation of the same; parts being shown in section.

In carrying out this invention the stand-pipe 2 communicates with the main body of cold oil 1 so as to isolate in the stand-pipe a small portion of the oil, the stand-pipe being open at the top; the object being to heat the oil in the stand-pipe without heating the main body of oil, said stand-pipe serving as an auxiliary reservoir from which the oil is taken by the pump 4 through the pipe 5, 6, into a steam heater 7 that may be heated by exhaust steam introduced through a pipe 8 and which steam finally escapes through an exhaust pipe 9 after having heated the oil

in the heater 7 to a high temperature. A part of the heated oil is returned to the stand-pipe from the heater through the return pipe or by-pass 3 so as to keep up a local circulation of oil and keep the oil within the stand-pipe hot; the oil in the heater 7 is therein subjected to both heat and pressure. An elastic pressure may be applied by connecting the oil discharge pipe 10 with an air pressure tank 11, the oil being introduced into said tank at the lower end thereof. The oil in the heater 7 and the pressure tank 11 is desirably brought to a high temperature say 200 degrees Fahrenheit more or less and a high state of fluidity, and the same is allowed to stand in the pressure tank 11 under a desired pressure to allow water and other impurities to settle, the same being finally removed by means of a draw-off valve 12. The pressure in the pressure tank 11 may be regulated by a pressure regulator 13 and a discharge valve 14 which may lead to a nozzle 15 by which the heated oil from the pressure tank 11 is introduced desirably in a spray or vapor into a heated receptacle 16 which may be any form of furnace or gas retort or any device or converter by which the liquid is brought into the form of a high combustible. A portion of the oil is allowed to escape past the pressure regulator 13 and through the pipe 3 into the limited supply way 2 close to the inlet 17 of the oil supply pipe 5, thus to warm the oil in the oil way 2 to a desired fluidity. By this means very heavy and stiff crude oil may be utilized.

By referring to the drawings, it will be seen that this method of treating oils for combustion purposes consists in separating a small portion of the oil to be used from a main supply reservoir 1 into an inlet 17, communication being maintained between said inlet 17 and supply reservoir 1; then conducting oil from said separated portion and circulating it through the heating means consisting, in the present embodiment of the invention, in a tank 7, and finally dividing the stream of oil so circulated after the same has been heated; one branch of the divided stream being conducted through pipe 3 in its heated condition to stand-pipe 2 and mixed with the separated portion of oil in said inlet, and the other branch of the stream being conducted to the point of consumption. A mixture of cold oil from the

supply 1 and hot oil from pipe 3 enters inlet 17, said mixture being more fluid and therefore easier to conduct through the conduits and valves of the pump than would be the case if the still crude oil alone were directly drawn into the pump. This effect is increased by reason of there being room for only a small quantity of cold oil in the auxiliary reservoir 2, so that the hot oil entering said small quantity greatly increases the temperature thereof. Circulation of the heated oil is desirably maintained by means of the pump 4. Impurities may settle from the oil in the heater 7 and may be drawn off from time to time through the cock 18. By maintaining a circulation,—that is, by moving the oil in the system, taking in cold oil at one part of the circulation, taking out a portion of the hot oil at another part of the circulation, using another portion of the hot oil for heating the cold oil, and drawing off the settled impurities from the hot oil, it becomes practicable to utilize crude oils of very impure character which are otherwise almost valueless.

Having described my invention, what I

claim and desire to secure by Letters Patent of the United States is:—

The method of treating oil for combustion purposes which consists in providing a main body of cold oil in a suitable reservoir, isolating a small portion of it in an open stand-pipe constituting an auxiliary reservoir, pumping the oil therefrom and injecting it into a steam-heating chamber, heating it therein to a high temperature under pressure, leading a portion of the super-heated oil to the point of consumption, and returning the balance by means of a by-pass or return-pipe to the auxiliary reservoir, for the purpose of heating the oil in said reservoir and setting up a circulation of oil.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles, and State of California, this 23rd day of January, 1903.

FRANK RADEMACHER.

Witnesses:

JAMES R. TOWNSEND,
G. A. TURNER.