

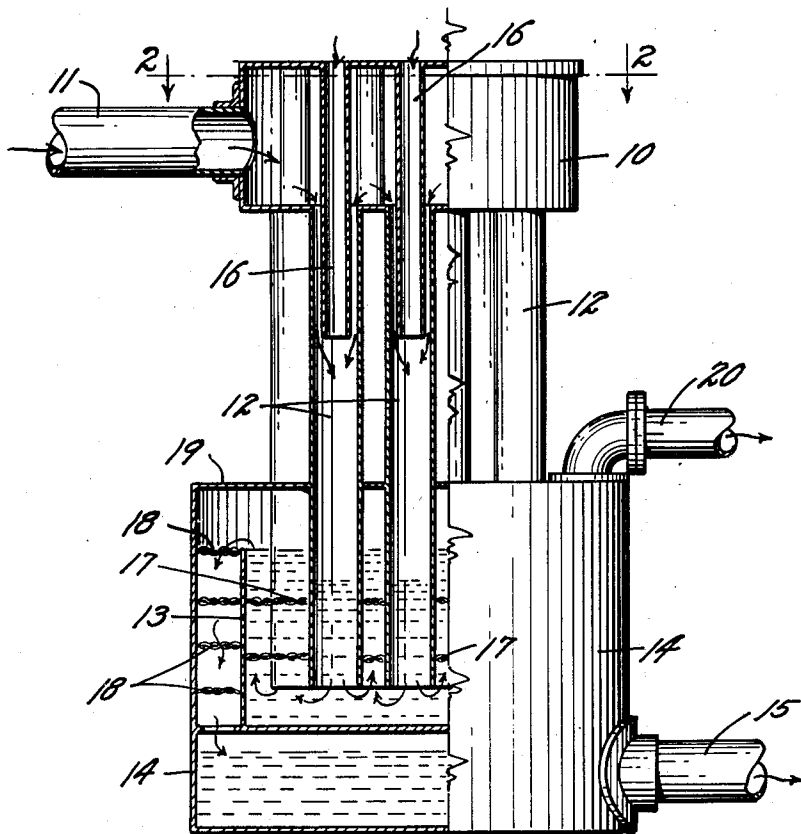
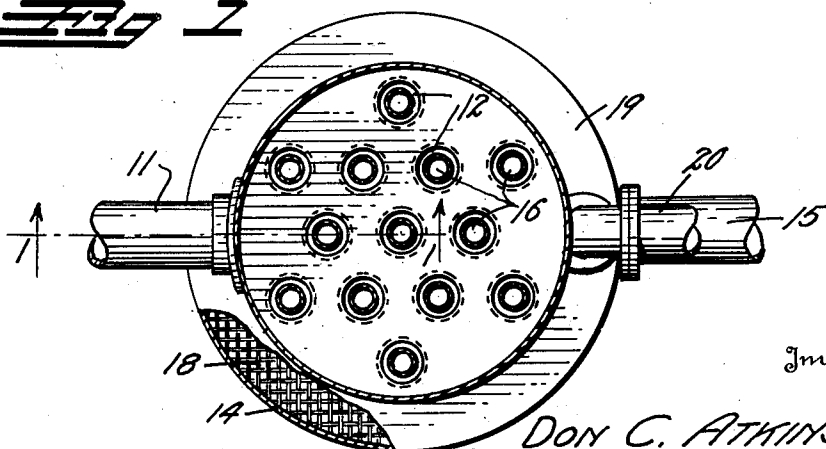
June 21, 1932.

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1,864,037

APPARATUS FOR REMOVING GASES FROM PETROLEUM

Filed Nov. 7, 1929



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APPARATUS FOR REMOVING GASES FROM PETROLEUM

Application filed November 7, 1929. Serial No. 405,516.

This invention relates to means for removing deleterious gases such as hydrogen-sulphide from petroleum. It is well known that the petroleum oils especially those of the southern fields carry large amounts of volatile sulphur compounds, principally hydrogen-sulphide, either in a dissolved state or mechanically retained in the form of minute bubbles. These sulphur compounds corrode the pipe lines, storage tanks, and pumping equipment and introduce complications into the refining of the oils.

The principal object of this invention is to provide a simple and efficient apparatus for removing these deleterious gases from the oils.

Another object of this invention is to so construct the apparatus that it can be connected directly at the casing head so that the injurious gases will be removed before they have had an opportunity to corrode the pipe lines or storage equipment.

A further object of the invention is to provide a simple, economical, and efficient apparatus which will be continuous in operation and which will not obstruct the flow of the oils.

Other objects and advantages will become apparent from the following detailed description of the invention in which reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a side elevation, partly in vertical section, of one form of the invention. The sectional portion of this view is taken on the line 1—1, Fig. 2.

Fig. 2 is a horizontal section taken on the line 2—2, Fig. 1.

The principle upon which the apparatus is based comprises the removal of undesirable gases from petroleum oils by replacing part or all of these gases with a second inert gas such as air. It is, of course, desirable to remove all traces of the objectionable gases but the process is exceedingly valuable if only carried to the point where these objectionable gases will be diluted with the inert gas

to a point where they will do little or no damage.

The above is accomplished by intimately intermixing the air with the oil in such a way that the air will be brought into intimate contact with substantially all of the dissolved or mechanically contained gaseous compounds and then removing substantially all of the introduced air.

The preferred apparatus comprises an oil receiving chamber 10 which is supplied with oil direct from the well or any other source through an oil feed pipe 11. A series of oil tubes 12 extend downwardly from the bottom of the chamber 10 and terminate in an inner receptacle or bowl 13. The inner bowl 13 is surrounded by a receiving reservoir 14 from which the oil flows through a discharge pipe 15.

A series of air pipes 16 extend downwardly through the receiving chamber 10. Each of the air pipes 16 terminates in an open extremity in one of the oil tubes 12. The oil flowing from the chamber 10 forms a complete envelope around the column of air in the air pipes 16 and in falling draws this air downwardly with it in a thoroughly admixed or emulsified state.

The oil from the tubes 12 returns upwardly in the inner bowl 13 and overflows the upper edge thereof into the bottom of the receiving reservoir 14. The oil in rising in the inner bowl 13 must pass through a series of relatively fine mesh screens 17 and in falling to the bottom of the receiving reservoir 14 must fall through a second series of fine screens 18.

The screens 17 serve to collect the contained air into relatively large bubbles which break upon the surface of the oil in the inner bowl 13. The screens 18 act to spread the falling oil into thin films which will readily liberate contained air and allow it to rise to the top of the receiving reservoir 14. The air in leaving the oil will, of course, bring any contained gases with it such as the hydrogen-sulphide or other volatile sulphur compounds such as are usually found in petroleum oils.

The escaping air or gas can be allowed to flow directly into the atmosphere or the top

of the reservoir 14 may be closed at 19 and connected by means of a gas pipe 20 to any suitable recovery or storage device. Petroleum products carried by the escaping gases may be recovered in suitable condensing devices if desired.

The amount of air drawn through the air pipes 16 is directly proportional to the velocity of the oil flowing past their open lower extremities. Therefore, if the device is employed in connection with a forced feed of some character, either the natural pressure from the well or by means of pumps a much higher efficiency will be obtained.

While the preferred form of the invention has been described in some detail herein, together with the theories which it is believed best explain its success, it is to be understood that the invention is not limited to the precise procedure described nor is dependent upon the accuracy of the theories which have been advanced. On the contrary, the invention is not to be regarded as limited except in so far as such limitations are included within the terms of the accompanying claims, in which it is the intention to claim all novelty inherent in the invention as broadly as is permissible in view of the prior art.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:—

1. Means for removing objectionable gases from oils comprising: a series of oil tubes, air pipes terminating within said tubes so that the flow of oil through said tubes will draw air through said air pipes; and a bowl, the lower extremities of said tubes being immersed in said bowl so that the contained air in said oil may bubble to the surface therein; and an oil receiver surrounding said bowl and adapted to receive the overflow therefrom.

2. Means for removing objectionable gases from oils comprising: a series of oil tubes, air pipes terminating within said tubes so that the flow of oil through said tubes will draw air through said air pipes; a bowl, the lower extremities of said tubes being immersed in said bowl so that the contained air in said oil may bubble to the surface therein; an oil receiver surrounding said bowl and adapted to receive the overflow therefrom; and screens placed in the path of said overflow so as to spread the overflowing oil into thin films.

3. Means for removing objectionable gases from oils comprising: a series of oil tubes, air pipes terminating within said tubes so that the flow of oil through said tubes will draw air through said air pipes; a bowl, the lower extremities of said tubes being immersed in said bowl so that the contained air in said oil may bubble to the surface therein; an oil receiver surrounding said bowl and adapted to receive the overflow therefrom;

screens placed in the path of said overflow so as to spread the overflowing oil into thin films; and a closed top extending over both said bowl and said receiver to prevent the escape of gases.

In testimony whereof I affix my signature.
DON C. ATKINS.

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