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UNITED STATES PATENT OFFICE.

ARTIS C. CAMPBELL, OF TULSA, OKLAHOMA.

PROCESS FOR TREATING PIPE LINES.

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To all whom it may concern:

Be it known that I, ARTIS C. CAMPBELL, a citizen of the United States, residing at Tulsa, in the county of Tulsa and State of Oklahoma, have invented certain new and useful Improvements in a Process for Treating Pipe Lines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention resides in a process of cleaning pipe lines used for conveying crude petroleum, whereby deposits collecting on the inner walls of the pipes as a result of the settling of impurities in the oil, can be readily removed.

Crude oil as it is taken from the oil wells contains a considerable amount of natural sediment and heavy oily matter, which has been variously termed "waste oil," "cut oil," and "B. S." This natural sediment and the heaviest oily matter contained in crude oil, that is, the so-called "waste oil," "cut oil," or "B. S.," has heretofore always been considered as waste and thrown away as soon as it could be separated from the desirable portions of the crude oil. The waste portions of crude oil has sometimes been thrown into streams and rivers with, not only the result of polluting the same, but also with the consequence of killing the fish therein, or destroying the animal and vegetable life therein. Other times it has been discharged onto the land with a detrimental effect upon the soil and vegetable life. Even before it has been separated from the desirable portions of the crude oil, it has collected and become deposited in all the pipe lines and apparatus through and in which the crude oil has been run and placed prior to being refined, and all those pipe lines and apparatus have been clogged by the deposits of this natural sediment and heavy oily matter.

I have discovered a preparation which will dissolve the natural sediment and the heaviest oily matter contained in crude oil, namely the "waste oil," "cut oil," or "B. S.," and by the use of this preparation the tubings, casings, pipe and shipping lines, receiving tanks, and all apparatus through and in which crude oil is run and placed prior to being refined can be cleansed from the matter deposited therein by the natural sediment and heaviest oily matter contained in crude oil.

I have also discovered a practical use for all of the sediment and heaviest oily matter contained in crude oil, that is, the so-called "waste oil," "cut oil," or "B. S.," and in fact for practically all of the heretofore considered waste portions of crude oil, for I have found that by dissolving this heretofore considered waste portions of crude oil and thinning it by treatment with my preparation, which is an alkaline solution, said heretofore considered waste portions of crude oil will become a highly efficient, useful and desirable crude oil in fluid form, or thin oil, ready for shipment to the refineries to be used for the production of lubricating oil, fuel oil, hard oil, and their by-products. By hard oil is meant an oil which has become so thick that it has a consistency similar to that of grease. By treating said waste portions of crude oil with my preparation, thin and hard oil can be produced. For it must also be remembered that if in the process of treatment as hereinafter set out, said crude oil is boiled too long it will become a hard oil, which as such can be used in cups, etc. Hard oil will also result if after treatment the fluid mentioned above is permitted to stand until congelation. Aside from having an aim to provide a preparation for treating the said waste portions of crude oil, I have as an object of my invention the utilization of said heretofore considered waste portions of crude oil to the production of lubricating and fuel and hard oils, and their by-products.

My preparation preferably consists of a mixture of soda ash, sal soda, bicarbonate of soda and naphtha. These substances may be mixed together in various proportions, but I have found that very good results may be obtained by mixing them together in the proportions of one pound of soda ash, to one pound of sal soda, to one pound of bicarbonate of soda and one pound by weight of naphtha.

To use this preparation which is in dry form, it should be dissolved in water or steam. It is preferable to dissolve it in hot water, and I have found that very good results can be obtained by dissolving about three pounds of the dry preparation in about thirty-one gallons of water. I wish it understood, however, that the solu-

tion of the preparation in water or steam can be made weaker or stronger according to the quality or specific gravity of the waste portions of crude oil with which it is to be treated.

In using the emulsion formed by this pocess for cleansing tubings, casings, pipe and shipping lines, receiving tanks, and all apparatus through and in which crude oil is run and placed and treated, the emulsion should be merely in tank and apparatus, or run through the same, and run through the tubings, casings, pipe and shipping lines. The emulsion has an affinity for the paraffin-like deposits in the pipe and shipping lines, tubings and casings, tanks and other apparatus, and when said emulsion is placed therein and run therethrough it will dissolve such deposits therefrom and cleanse all the said pipe lines, tanks and apparatus; and when run through the tubings and casings it will cleanse same as well as open the clogged pores of the producing sand, thereby increasing production.

When the emulsion is to be used for making the useful crude oil fluid, or thin oil, out of the natural sediment and heaviest oil matter contained in the crude oil as it comes from the earth, the crude oil as it is taken from the earth should be allowed to stand in a tank or the like until the sediment and heaviest oily matter, that is the "waste oil," "cut oil," or "B. S.," has settled to the bottom. The sediment and heavy oily matter should then be separated from the other portion of the crude oil in any appropriate manner, and after that has been done, it should be treated with the emulsion, and when treated the sediment will be dissolved by the emulsion and the heavy oily matter thinned. The resulting mixture or product will be suitable for shipment to the refineries for the production of lubricating, fuel, and hard oil, and their by-products; or if during the process of treatment as hereinbefore mentioned, the portion under treatment is boiled too long, or, if after normal treatment it is permitted to stand until congelation, hard oil will be the resultant product such as can be used in cups, etc.

It is obvious that the waste portions of crude oil may be treated for the production of the useful crude oil fluid or thin oil, either in the receiving tanks at the oil wells or in the storage tanks at the refineries. This crude oil fluid or thin oil is the resultant mixture or product after the waste oil hereinbefore mentioned had been treated with my preparation.

From the foregoing description, it is believed that persons skilled in the art to which the invention appertains will be able to understand and make use of the same. I therefore, consider further explanation to be unnecessary.

I wish it understood that within the meaning and scope of the appended claims, I am to be given the benefit of the doctrine of equivalents and that I am not to be limited to the proportions of the ingredients which I have indicated I prefer to use except as is actually restricted by the claims.

I claim:

1. In a process for removing deposits from pipe lines used for conveying crude oil, the step of passing through the lines a composition consisting of soda ash, sal soda, sodium bicarbonate and naphtha dissolved in water.

2. In a process for removing deposits from pipe lines used for conveying crude oil, the step of passing through the pipe lines a composition consisting of the following ingredients combined in substantially the proportions stated, to wit, soda ash, one pound; sodium bicarbonate, one pound; and naphtha dissolved in water.

In testimony whereof I have hereunto set my hand.

ARTIS C. CAMPBELL.