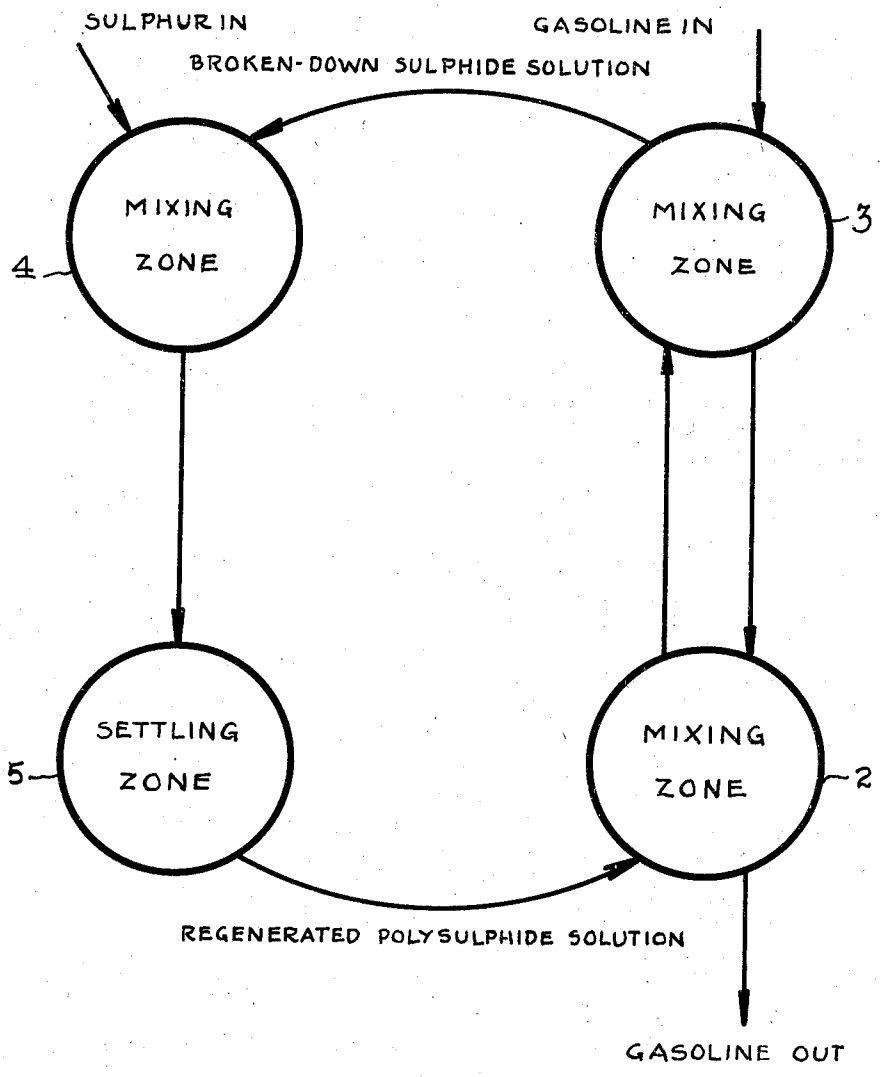
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TREATMENT OF PETROLEUM DISTILLATES

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INVENTORS
Robert E. Burk and
Everett C. Hughes
BY
Fay, Oberlin & Fay
ATTORNEYS.

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TREATMENT OF PETROLEUM DISTILLATES

Robert E. Burk and Everett C. Hughes, Cleveland, Ohio, assignors to Standard Oil Company, Cleveland, Ohio, a corporation of Ohio

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2 Claims. (Cl. 196—30)

In the customary treatment of petroleum distillates with lead doctor solution, it is a usual drawback that the throwing of raw sulphur into the distillate leaves a permanent excess of free elemental sulphur dissolved in the distillate product. Such product is corrosive, and in some instances seriously so, and in all cases is not subject to control. In accordance with the present invention however, it is now possible to treat undesired compounds in petroleum distillates without incurring such risks as are inherent in attempts to add sulphur to distillates.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

The sole figure is a diagrammatic representation of procedure embodying the invention.

The distillate to be treated, as for instance gasoline, kerosene, etc., is mixed with an alkaline aqueous solution of sodium polysulphides, and after subjection thereto, the aqueous solution is separated and the distillate is found corrected as to objectionable organic sulphur compounds. The treatment is preferably carried on in cyclic or circulatory mixing, as by countercurrent introduction and flow inter-mixture of the distillate and the aqueous sodium polysulphide solution, the latter for instance being introduced into mixing column **2** (see drawing) and thence proceeding to mixing column **3**, while the distillate is introduced into mixing column **3** against the aqueous solution and proceeds to the column **2** and thence to discharge, being separated. From mixing column **3**, the aqueous solution is separated off, and this is in altered state by reason of its having reacted with compounds in the distillate. The altered aqueous solution is then cycled around to a mixing chamber **4** where sufficient sulphur is admixed to re-generate it to a sodium polysulphide solution again. From the polysulphide regenerating chamber, the solution is returned into mixture with oncoming petroleum distillate in mixing column **2**, preferably an intermediate settling stage or chamber **5** being interposed. Thus, the petroleum distillate is contacted with the prime sodium polysulphide solution, in finishing stage in the finishing column **2**, and then the treating solution, undergoing depletion in course, contacts with the incoming petroleum distillate in initial mixing column **3**, and on being separated from the distillate is in spent condition for re-generation in re-generating zone **4**. In this manner, raw sulphur is not brought into contact with the petroleum distillate, but action is had by effective sodium polysulphide solution. As the vehicle of the sodium polysulphides, a caustic soda solution of about 4 to 45 per cent for instance is desirable, and the sodium polysulphide content may be 1 to 40 per cent. The amount of sulphur requisite at the re-generating zone is molecularly proportional to the mercaptan content of the distillate to be treated.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims, or the equivalent of such, be employed.

We therefore particularly point out and distinctly claim as our invention:

1. A process of treating petroleum distillates for undesired sulphur compounds, which comprises circulating in a closed circuit an aqueous alkali solution of sodium polysulphides through a series of mixing zones, while contacting the petroleum distillate with the aqueous solution of sodium polysulphides at one part of its closed circuit for reaction on mercaptan compounds, then separating the altered aqueous solution from the distillate, and applying elemental sulphur to the aqueous solution when thus apart from the distillate, separating the aqueous solution and cycling the solution into mixture with on-coming petroleum distillate.

2. A process of treating petroleum distillates for undesired sulphur compounds, which comprises circulating in a closed circuit an aqueous solution of sodium hydroxide and sodium polysulphides through a series of mixing zones, while contacting the petroleum distillate with the aqueous solution of sodium polysulphides at one part of its closed circuit for reaction on mercaptan compounds, then separating the altered aqueous solution from the distillate, and applying elemental sulphur to the aqueous solution when thus apart from the distillate, separating the aqueous solution and cycling the solution into mixture with on-coming petroleum distillate.

ROBERT E. BURK.
EVERETT C. HUGHES.