Patented May 16, 1933 1,909,069

# UNITED STATES PATENT OFFICE

JOHN WESLEY ORELUP, OF EAST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PATENT FUELS & COLOR CORPORATION, OF CINCINNATI, OHIO, A CORPORATION OF OHIO

## STABILIZING PETROLEUM DISTILLATES

No Drawing. Application filed November 10, 1928. Serial No. 318,593.

My present invention relates to the preserving of gasoline and other petroleum distillates. It is well known that gasoline, for example, particularly when produced by cracking, has a tendency to discolor upon standing usually turning yellow. Furthermore, such discoloration is usually accompanied by the deposition of a gum of acid nature which lowers the salability and value of the products to a marked degree. This tendency to discolor and gum is increased by exposure to light as when the gasoline is vended from the pumps of the visible type which permits the purchaser to view the color and quantity of the gasoline being sold to him. A further difficulty is with reference to the use of coloring matters in connection with gasoline to impart to it a distinctive color, as the effect of the discoloration and gumming is frequently such as to completely destroy the added color and leave the gasoline with a yellow, muddy appearance.

The substances in gasoline producing this discoloration and gumming may be more or less entirely eliminated by an extensive refining operation, but this, in addition to its extra cost, has the disadvantage that other valuable substances, possessing a high anti-knock value, are also removed so that the usefulness of the gasoline is considerably impaired.

I have now discovered that the above mentioned difficulty may be overcome, and gasoline or other petroleum distillate of good keeping qualities produced, by incorporating therewith one or more of a class of organic substances which may be designated as nitrogen bases, including ammonia, provided that such substance or a combination of different members of the class is soluble in the petroleum distillate. As examples of members of this class of substances found to be particularly suitable, I may mention pyridine, picolin, methylamin, ethylamin, chinolin, chinaldin, ammonia including various homologues and derivatives thereof, either singly or in combination. I may also use for the purpose the nitrogen bases naturally occurring in shale oil residues. Pyridin and its homologues including picoline and chinoline are the members of the class of nitrogen bases at present preferred by me and are effective in amounts of 1 of pyridin to 5,000 of petroleum distillate. Thus an example of a fuel embodying my invention would be as follows:

Cracked, or light-sensitive gasoline to which has been added a small quantity of substituted amino anthraquinone to impart a desired shade of color to the fuel and 1/5000 part of pyridin.

The proportions of pyridin and its equivalents may be varied from the illustrative example and a satisfactory result obtained, although it is preferable to use as small amounts thereof as are compatible with the production of the desired stabilizing effect. It is, however, possible to use considerably larger quantities of the stabilizer, and as a further example I have found a proportion of one part pyridin to one thousand parts petroleum distillate to be practicable.

In adding coloring materials to gasoline it is frequently necessary or desirable to use a solvent for the color and such solvent may desirably take the form of the material used as the stabilizer. Thus I find that pyridin accomplishes this additional function very well for various of the amino or substituted amino anthroquinone colors.

The invention is also applicable to other petroleum distillates than gasoline, as for example, lubricating oils and kerosene, both of which suffer in value from the effect of gumming. Thus in the case of kerosene, for example, as extremely minute quantity of gum is sufficient to markedly reduce its illuminating power.

As regards the causes of the discoloration and polymerization mentioned, acidity is believed to play a part, but of particular im-

portance in this regard is believed to be the presence of fulvenes and various aldehydes of unknown composition. I find, however, that the action of the nitrogen base is not simply a neutralization of acidity of the petroleum distillates, but rather is a negative catalyst, retarding the decomposition or polymerization responsible for the discoloring and gumming.

What I claim is:

1. In combination with a cracked, high compression petroleum distillate, a stabilizer soluble therein and comprising the nitrogen bases found in shale oil residues, said stabilizer being in an amount of the order of one part stabilizer and five thousand parts distillate.

2. In combination with a cracked high compression petroleum distillate, a stabilizer comprising pyridine or the methyl homologues of pyridine in an amount of the order of one part stabilizer and five thousand parts distillate.

3. In combination with a cracked high compression petroleum distillate, a stabilizer comprising pyridine or a picoline in an amount of the order of one part stabilizer and five thousand parts distillate.

In testimony whereof I have affixed my signature to this specification.

JOHN WESLEY ORELUP.