UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN KEROSENE BURNING-FLUIDS.

Specification forming part of Letters Patent No. **11,203**, dated June 27, 1854.

To all whom it may concern:

Be it known that I, ABRAHAM GESNER, late of the city and county of New York, now of Williamsburg, in the county of Kings, and State of New York, have invented and discovered a new and useful manufacture or composition of matter, being a new liquid hydrocarbon, which I denominate "kerosene," and which may be used for illuminating and other purposes, of which the following is a specification.

I obtain this product from petroleum, maltha, or soft mineral pitch, asphaltum, or bitumen, wherever found, by dry distillation and subsequent treatment with powerful reagents and redistillation.

This process, which will presently be described, yields kerosene of three different qualities or proofs, each of which, in my opinion, is a mixture in certain proportions of a spirituous, light, and highly volatile and inflammable liquid, with an oily, heavy, and less volatile and inflammable liquid. I have not succeeded in completely separating these liquids in the manufacture, and I see no practically-useful object to be gained by doing so. Neither have I ascertained the exact proportions in which the two liquids are mixed; but I suppose the lightest fluid, which I denominate "A" kerosene, to be composed of two parts, by measure or equivalent proportions, of the heavy and eight of the light fluid. Its specific gravity is .750, water being 1, and it boils at 150° Fahrenheit. It is not a solvent of such gums as I have tried to dissolve in it, among which I may mention india-rubber. Sixty-five parts, by measure, of alcohol of specific gravity .844, at a temperature of 60° Fahrenheit, will dissolve thirty-five parts, by measure, of this liquid. By itself the "A" kerosene is highly volatile and inflammable, so much so that even in cold winter weather a good light is produced by forcing a current of atmospheric air through it, circulating the same in pipes and burning it in jets like gas.

The second or medium-proof fluid I call "B" kerosene, and suppose to be composed of four parts or equivalents of the heavy and six of the light fluid. Its specific gravity is .775 and its boiling-point 250° Fahrenheit. It is not a solvent of gums, but will soften them very slightly. Seventy-five parts of alcohol, of specific gravity .844 at a temperature of 60° Fahrenheit, will dissolve twenty-five parts of this liquid. By itself the "B" kerosene is moderately volatile and inflammable, but will not, like the "A," yield a good light by having a current of air passed through it and burned.

The third or low-proof fluid I call "C" kerosene, and suppose it to be composed of six parts or equivalents of the heavy and four of the light liquid. Unlike the "A" and "B," the heavy liquid preponderates in and gives character to the "C" kerosene. Its specific gravity is .800, and its boiling-point is 350° Fahrenheit. Unlike "A" and "B," it is not soluble in alcohol, but it is a good solvent of gums, as india-rubber dissolves in it readily. It is not very volatile or inflammable; but in an Argand lamp, with a button over the wick, it burns with a brilliant white light without smoke or the naphthalous odor so offensive in many hydrocarbons having some resemblance to this but possessing very different properties. As burning-fluids for the purpose of artificial illumination, these are highly useful and economical, either separately, mixed together, or "A" and "B" mixed with alcohol. The "C" kerosene has also proved very good as a lubricant for machinery where it has been tried; but, being a new and almost untried thing, the kerosene doubtless has very numerous uses besides its adaptation to illumination and lubrication that will soon be discovered after it is manufactured on the large scale and put into the market as an article of trade. Moreover, as the rocks whence the kerosene is most abundantly obtained are widely disseminated, and the deposits of them are of almost unlimited extent, an immense mass of hitherto useless matter will by means of this invention be rendered available for the uses of mankind as a cheap and convenient substitute for illuminating purposes for the oils and fats which are yearly increasing in scarcity and price.

The process and apparatus I employ in producing the kerosene I will now proceed to describe, premising that I do not confine myself to any particular form or arrangement of apparatus, but intend to use whatever may prove most convenient in any given case.

The first part of the process consists in submitting the raw material to dry distillation at the lowest temperature at which the kerosene will volatilize, care being taken not to raise the temperature so long as tolerably-rapid evaporation continues, and the heat must not in any case be raised above 800° Fahrenheit, a