UNITED STATES PATENT OFFICE.

HERMAN FRASCH, OF CLEVELAND, OHIO, ASSIGNOR TO THE SOLAR REFINING COMPANY, OF OHIO.

TREATMENT OF PETROLEUM FOR REMOVING SULFUR COMPOUNDS.

SPECIFICATION forming part of Letters Patent No. 572,676, dated December 8, 1896.

Application filed July 14, 1890. Serial No. 358,712. (No specimens.)

To all whom it may concern:

Be it known that I, HERMAN FRASCH, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in the Treatment of Petroleum for the Removal of Sulfur Compounds, of which the following is a full, clear, and exact description.

My improvement is designed for the treatment of that class of oils found at Lima, Ohio, and some other places, which contain sulfur compounds, the presence of which gives to said oils the peculiarly offensive and persistent odor known as "skunk," and also the physical characteristic of being a solvent of lead oxid and other metals and metallic compounds. This treatment effects the destruction of the skunk by the breaking up of the peculiar sulfur compounds present in this class of oils by means of, or at any rate resulting in, the formation of a sulfid of the metal or metallic base of the oxid employed, such sulfid being readily separable and being capable of revivification by reoxidation and burning out of the sulfur.

My improvement consists in the preparation and use of a metallic oxid especially adapted for the purpose before mentioned. For this purpose I take copper matte, or partially-reduced native sulfid of copper, containing about sixty per centum of copper and forty per centum of iron and sulfur, and after grinding it to a powder I place the powdered matte in a furnace and roast it until the sulfur is eliminated as much as is possible by such treatment. The roasted powder is again reduced to a pulverulent condition by grinding, and is then bolted, so as to remove the larger particles and lumps. The resulting powder is then in a condition for use as a purificator of petroleum-oils containing skunk, and may be used by mixing with and dissolving in the oil (either crude or distillate) in a still and distilling the oil therefrom, the powdered purificator being kept in solution and admixture with the oil by distillation, or by bringing the vapors of distillation of such oil in contact with the purificator in any convenient manner which will thoroughly subject the oil-vapor to the action of my improved purificator. The use of copper matte thus prepared as a purificator of petroleum containing skunk is not only an important improvement economically, inasmuch as the use of a natural sulfid before it has been brought to a metallic state effects a great saving in cost of material, but it is also a decided improvement in the art, inasmuch as the iron which forms a constituent part of the matte, having been melted and thoroughly mixed with the copper, acts as a carrier for the copper and thus practically exposes a larger surface of copper to the sulfur compounds or skunk in the oil and furnishes a very energetic purificator of the oil.

I do not herein claim, broadly, the method of treating petroleum containing skunk either in a liquid or vaporous condition with metals or metallic oxids or compounds, as these methods form the subject-matter of other applications for patents; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In the art of distilling petroleum-oils containing sulfur compounds of the character specified, the improvement which consists in eliminating the sulfur by subjecting the oil during the process of distillation either in a liquid or vaporous condition to roasted and pulverized copper matte, substantially as described.

2. The process of treating oil of the Lima class, for removal of the skunk, by subjecting the skunk-bearing oil during a distillation thereof to a pulverulent purifying material of metallic oxid having a basis of iron and copper in the intimate union resulting from a melting together of their compounds and admixture in the molten state and consisting of roasted and pulverized copper matte; the purifying material being used in the body of oil in distillation or brought into contact with the vapors after they have been given off from said body; substantially as described.

In testimony whereof I have hereunto set my hand this 14th day of June, A. D. 1890.

HERMAN FRASCH.

Witnesses:

F. W. LOTHMAN,

A. C. TILDEN.