

UNITED STATES PATENT OFFICE.

HIRAM B. EVEREST, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN PROCESSES OF DETERMINING THE GRADE OF LUBRICATING-OILS.

Specification forming part of Letters Patent No. **174,506**, dated March 7, 1876; application filed January 6, 1876.

To all whom it may concern:

Be it known that I, HIRAM B. EVEREST, of the city of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in the Art of Determining the Grade of Petroleum-Oils for Lubricating and other Purposes; and I do hereby declare that the following is a full, clear, and exact description of the same.

When crude petroleum is prepared for lubricating, &c., by distilling off, by any known process, the lighter hydrocarbons, it has been customary to determine the condition or quality of the oil in the still by means of a hydrometer test, to show the gravity of the product while the process of reducing is going on.

To do this, samples are taken from time to time from the still and weighed to determine when the desired point in the manufacture is reached. The product when completed is put on the market and designated and sold by "gravity" test.

My invention consists in applying a fire-test to the samples taken from the still during the process of manufacture, and determining the grade of the reduced oil by such fire-test, and in putting the same on the market with such fire-test as its distinguishing feature.

To make the requisite fire-test of the reduced oils requires a thermometer of wide range, say from 200° to 600° Fahrenheit, for testing all grades of oil.

A chemist's sand-bath, with a porcelain cup heated by a Bunsen burner, is sufficient for heating the samples. It is done with the thermometer suspended in the liquid oil; or it may be tested in a plain iron dish, containing about one-half pint of oil, placed over the charcoal fire in a tinker's pot, with the thermometer suspended in the oil. As the heat increases the application of a lighted taper to within one-half inch of the surface of the oil will show, if constantly repeated,

when the oil has reached the point of ignition, which is usual about 10° or 15° above the point of flashing and going out. The degree of heat at which the oil takes fire permanently, as indicated by the thermometer, is called the fire-test. Example: Franklin crude petroleum of 32° gravity Baumé, as produced from the wells, when reduced without burning to 30° gravity, stands 320° fire-test; when reduced to 29° gravity, stands 370° fire-test; 28½° gravity, stands 425° fire-test; 27½° gravity, stands 525° fire-test, or thereabout.

It is comparatively easy to make reduced oils, varying only 10° in fire-test, by the best processes. So it will be seen that, when desirable to do so, more different grades of reduced oils can be definitely fixed upon and determined by my method of manufacture than can be so accurately made by the old method of gravity-test. Again, my process of determining quality or grade of reduced oils is more applicable to the various gravities of crude petroleum, when being reduced, than the old method of gravity-test.

Example: A 45° gravity crude oil reduced to 31° gravity would stand as high a fire-test as a 32° gravity crude reduced to 30° gravity, and would about equal it in lubricating power.

My process or invention consists in making all reduced oils to a fire-test regardless of gravity.

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

The process of determining the grade of lubricating-oils, which consists in applying the fire-test thereto during their manufacture, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HIRAM B. EVEREST.

Witnesses:

R. F. OSGOOD,
E. B. SCOTT.