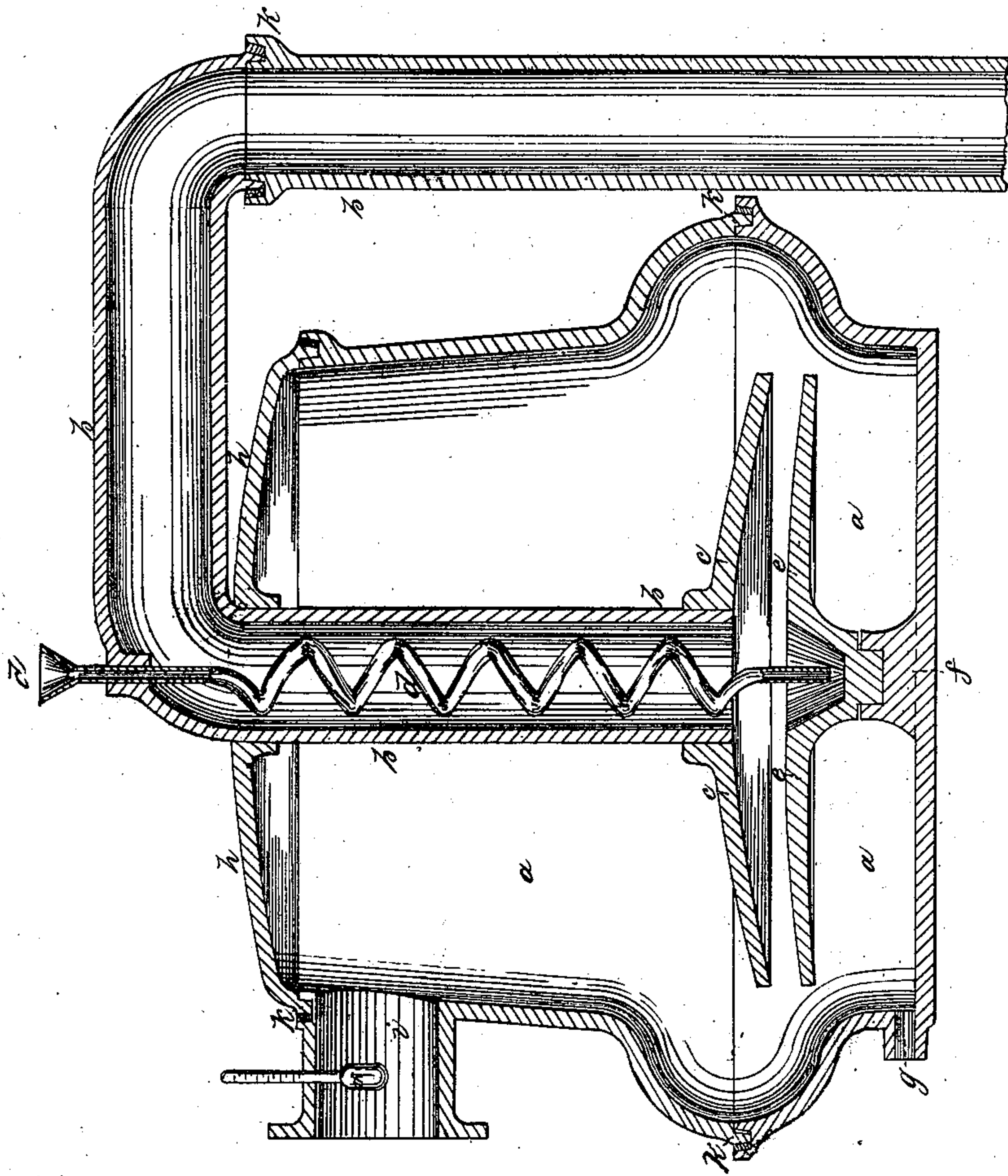


W. Archer.

Refining Oils.

N^o 44,137.

Patented Sept. 6, 1864.



Witnesses.

Wm. L. McGe

Cor. J. Rooney

Inventor.

William Archer

UNITED STATES PATENT OFFICE.

WILLIAM ARCHER, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND WM. P. DOWNER, OF SAME PLACE.

IMPROVEMENT IN DISTILLING HYDROCARBON OILS.

Specification forming part of Letters Patent No. 44,137, dated September 6, 1864.

To all whom it may concern:

Be it known that I, WILLIAM ARCHER, of the city, county, and State of New York, have invented a New Mode of Distilling Hydrocarbon Oils; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The process of distilling "hydrocarbon oils" heretofore has been by applying heat to the bottom of the containing vessel or reservoir, thereby evaporating them and separating the product by what is known in chemistry as "fractional distillation." In the employment of such a method there have arisen very many inconveniences, delay, and much waste, and the design of my method of distillation is to obviate these objections. Hydrocarbon oils before distillation contain many volatile and highly inflammable and explosive substances, which may be thrown off at different temperatures, and which are necessary to be separated in order to produce a safe, valuable, and uniform article.

The nature of my invention consists in a method by which superheated steam or hot air is applied to the continuous and fractional distillation of hydrocarbon oils in such a manner that each grade or product shall be evolved and deposited in a separate apparatus.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The drawing exhibited is a cross-section of my invention.

a is a metallic still vessel or base, cylindrical in form, put together in sections or cast complete, and as large as is most desirable. When made in sections, the joints *k k k k* are close sealed with fusible metal.

b is a leading-pipe connected with the steam or hot air apparatus and running down into the lower chamber of the vessel. This tube is provided at the lower end and passes into an inverted metallic saucer or deflector, *c*, the diameter of which is slightly less than the greatest diameter of the still-vessel.

e is also a metallic disk, conforming to the deflector *c* in shape, diameter, and size, and is secured within from two to three inches of the deflector by a step, *f*, in the center of the floor of the vessel.

d is a feeding-tube, which may be either

straight or spiral, the lower end of which opens upon the lower disk, *e*, while the upper end passes through the steam or hot air tube *b*, in manner as shown:

h is a removable cover, which, when the apparatus is in operation, is sealed by a joint and fusible metal packing at *k*.

i is the exhaust-pipe, which connects with any ordinary condensing apparatus.

th is a thermometer inserted in the exhaust-tube for the purpose of determining the temperature of the distilling-vapor.

When I wish to operate my invention, I admit a continuous volume of superheated steam or hot air through the tube *b* upon the lower disk, *e*, until the desired temperature is indicated by the thermometer. When the necessary temperature is raised, I admit a stream of oil through the tube *d*, which is received upon the disk *e* and flows in a thin sheet of film toward its outer edge. All the volatile matter the boiling-point of which is not higher than the specific heat applied will mingle and rise with the steam or hot air applied and pass off through the exhaust-pipe into the condenser, while the oils whose boiling-point is higher than the specific heat applied will drop from the outer edge of the disk *e* to the floor of the distilling-vessel, and will be discharged through the tube *g*, and therefrom pass into the feeding-tube *d* of the succeeding apparatus, in which the heat will be raised to the required degree necessary to volatilize the next heavier product, and so on till the various specific products are all separated.

Having thus fully described the nature and operation of my invention, what I claim herein as new, and desire to secure by Letters Patent, is—

1. The manner herein described of continuously and fractionally distilling and separating the various parts of hydrocarbon oils by the application of superheated steam or heated air, substantially in the manner described.

2. The combination of the heating-tube *b*, with the deflecting and receiving disks *c* and *e*, with the spiral or straight feeding-tube *d*, in the manner and for the purposes as described.

WILLIAM ARCHER.

Witnesses:

W. E. SLOCUM,
CHAS. A. PERKINS.