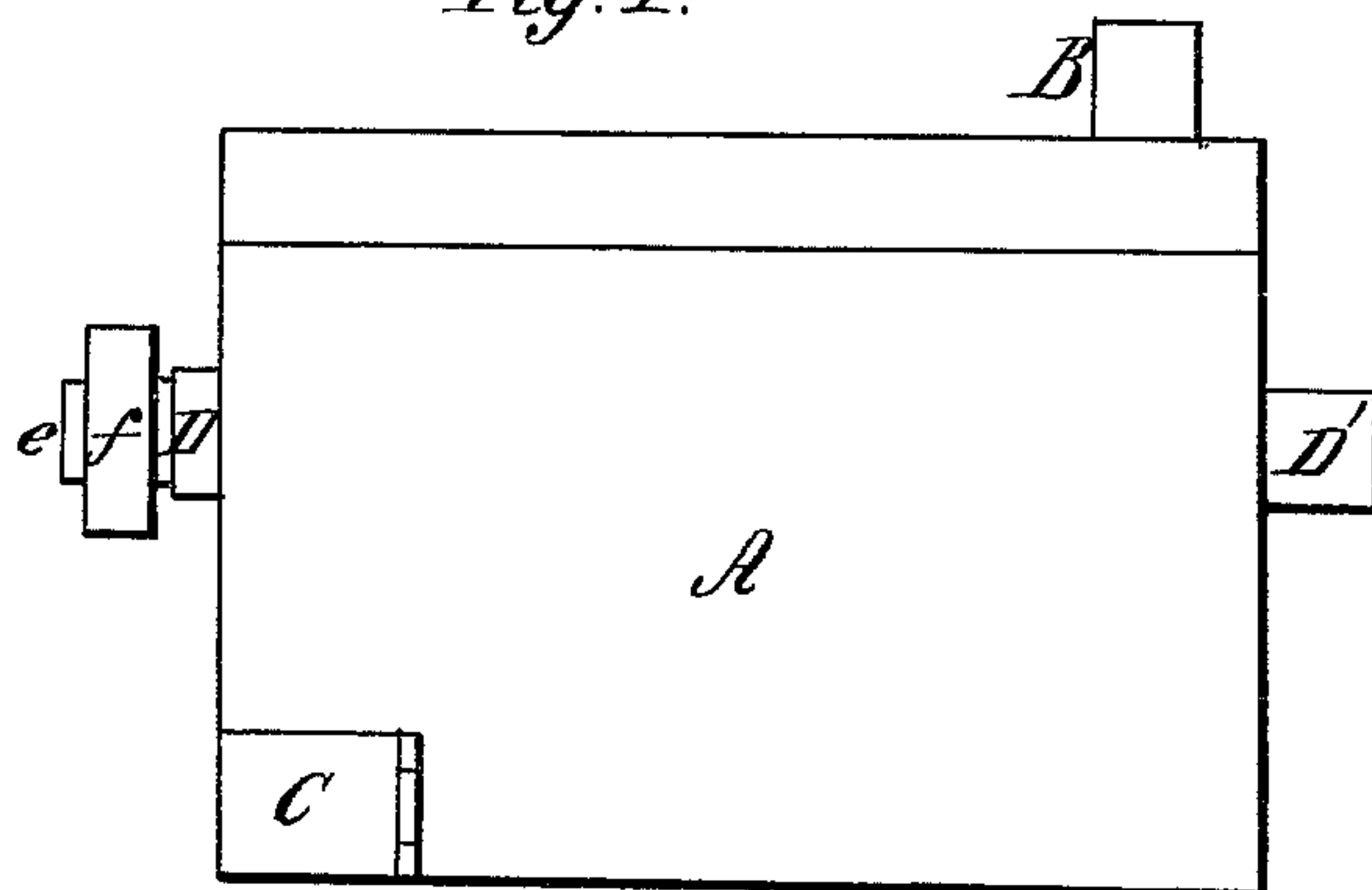
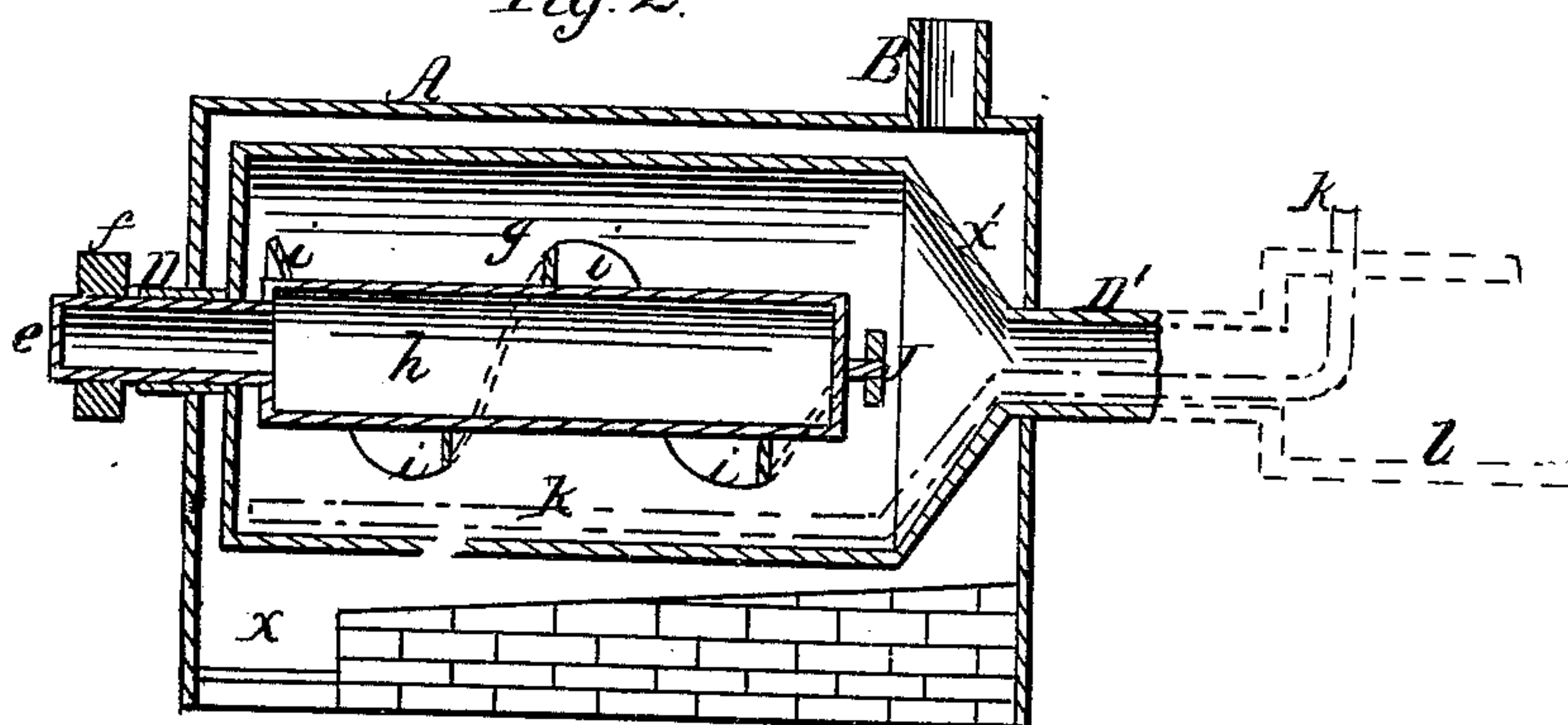


J. J. JOHNSTON.  
 APPARATUS FOR DISTILLING HYDROCARBON OILS.  
 No. 91,448. Patented June 15, 1869.

*Fig. 1.*



*Fig. 2.*



*Witnesses;*

*A. C. Johnston  
 Wesley Johnston*

*Inventor;*

*James Johnston*

# United States Patent Office.

JAMES J. JOHNSTON, OF ALLEGHENY CITY, ASSIGNOR TO JOHN T. TYLER, A. R. HURST, HENRY M. MYERS, AND DAVID M. ARMOR, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 91,448, dated June 15, 1869; antedated June 10, 1869.

## IMPROVED APPARATUS FOR DISTILLING HYDROCARBON-OILS.

The Schedule referred to in these Letters Patent and making part of the same.

### To all whom it may concern:

Be it known that I, JAMES J. JOHNSTON, of the city and county of Allegheny, in the State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Distilling Hydrocarbon-Oils; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in distilling hydrocarbon-oils by distributing them, through the medium of a pipe, in small streams, or jets against the inner surface of a revolving still, in which is placed a shaft, armed with a spiral flange, so arranged and operated that it will force the vapor evolved from the hydrocarbon-oil from the still into the condenser.

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

In the accompanying drawings, which form part of my specification—

Figure 1 is a side view of my improvement in apparatus for distilling hydrocarbon.

Figure 2 is a longitudinal section of the same.

In the drawings—

A represents a furnace, which may be constructed of sheet-metal or other suitable material.

B represents the stack of the furnace.

C represents the fire-door.

g represents a cylindrical still, one end of which is made coniformed, as shown at *x*.

The still *g* is provided with two hollow trunnions, D and D', which have suitable bearings in the end-walls of the furnace.

*h* represents a hollow drum, or shaft, provided with a spiral flange, *i*, which flange should be made sufficiently wide, that by the revolving of the shaft *h*, the wings, or flange *i* will force out, through the hollow trunnion D', into the condensing-device, the vapor evolved in the still *g*.

The end, *e*, of the hollow shaft *h* is supported, and revolves within the trunnions D, and is provided with a pulley, *f*, for revolving it.

The end, *e'*, is supported, and revolves in the cross-bar J, the ends of which are secured to the sides of the still *g*.

The hollow trunnion D' of the still *g* is fitted into the end of a pipe, as indicated by the dotted lines *l*, which pipe is to be connected with the condensing-device, which may be constructed in any of the known forms.

Through the pipe *l*, and through the hollow trunnion D', into, and along the lower side of the still *g*, should be placed a pipe, as indicated at *k* in fig. 2.

The lower side of that portion of the pipe *k* which is inside of the main body of the still should be pro-

vided with a series of small holes, for the purpose of distributing the hydrocarbon-oil evenly, and in small streams on the sides of the still *g*.

The pipe *k* is to be attached to a reservoir for holding the hydrocarbon-oil, and, at some suitable point between said reservoir and the pipe *l*, should be provided with a suitable valve for regulating the flow of oil through the pipe *k*, into the still *g*.

From the foregoing description, and by reference to the accompanying drawings, the skilful mechanic will readily understand the construction of my improvement in apparatus for distilling hydrocarbon-oils, and the relation that the several parts of said apparatus bear to each other. Therefore, without further description of its construction, I will proceed to describe its operation, which is as follows:

Having all things constructed and arranged as hereinbefore described, I make a fire in the fire-chamber *x*; then, through the medium of suitable gearing, which will readily suggest itself to the mind of the skilful mechanic, the still *g* is rotated, and, as it becomes sufficiently heated, the valve of pipe *k* is opened, so as to allow the hydrocarbon-oil to flow through pipe *k*, into the still, in small jets or streams, which must be in proportion to the capacity of the still to evolve the oil into vapor. The small jets or streams, falling on the side of the still, will be, by the revolving of the still, spread in a thin sheet over the inside surface of the shell, or sides of the still, thereby exposing, to the action of the heat, a very thin, and continuous sheet of the hydrocarbon-oil, which will readily be evolved into a vapor, which, by revolving the shaft *h*, will, through the medium of the spiral wings, or flange *i*, be forced from the still *g*, through the hollow trunnion D' and pipe *l*, into the condenser.

The oil, after being distilled, may be separated from its benzole, and treated and manipulated in any of the known methods.

Having thus described my improvement,

What I claim as of my invention, is—

1. Distilling hydrocarbon-oil by distributing it, through the medium of a pipe, in small jets or streams, against the inner surface of a revolving still, in which is placed a revolving shaft, armed with a spiral flange, so arranged that it will force the vapor evolved from the hydrocarbon from the still, into the condenser, as hereinbefore described.

2. The combination and arrangements of the still *g*, provided with the hollow trunnions D and D', the shaft *h*, provided with flange, or wings *i*, and the pipe *k*, constructed, arranged, and operating substantially as herein described, and for the purpose set forth.

JAMES J. JOHNSTON.

Witnesses:

GEO. H. THOMAS,

L. O. THOMAS.