

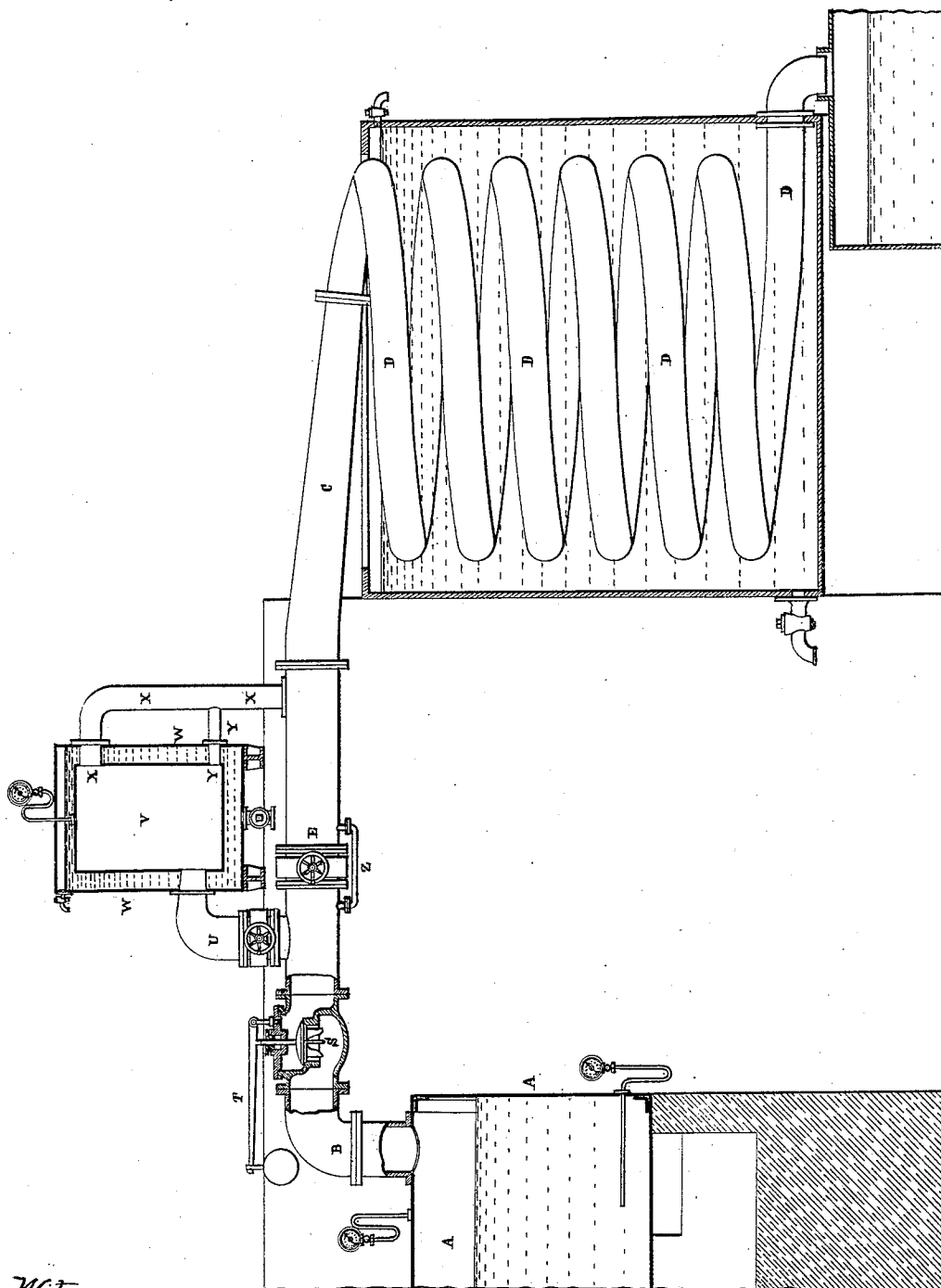
(No Model.)

J. LAING.

APPARATUS FOR THE DESTRUCTIVE DISTILLATION OF MINERAL OILS.

No. 471,291.

Patented Mar. 22, 1892.



Witnesses
John Revell
George Baumann

Inventor
John Laing
by his attorneys
Hornum and Hornum

UNITED STATES PATENT OFFICE.

JOHN LAING, OF EDINBURGH, SCOTLAND.

APPARATUS FOR DESTRUCTIVE DISTILLATION OF MINERAL OILS.

SPECIFICATION forming part of Letters Patent No. 471,291, dated March 22, 1892.

Application filed May 29, 1891. Serial No. 394,483. (No model.)

To all whom it may concern:

Be it known that I, JOHN LAING, a subject of the Queen of Great Britain and Ireland, and a resident of Edinburgh, in the county of Mid-Lothian, Scotland, have invented certain Improvements in Apparatus for Destructive Distillation of Mineral Oils, of which the following is a specification.

My said invention has for its object the treatment of mineral oils by destructive distillation under high pressure in order to convert them into lighter products.

In carrying out my invention I apply a regulation or escape valve to the outlet from the oil-still and load it to the required pressure at which the oil is to be distilled. As the oil, gases, or vapors exceed the pressure to which the valve is loaded, they pass through the valve into a large iron vessel, which I term the "relief-tank," as it relieves the pressure by distributing it over a large area. An outlet-pipe from the relief-tank is connected to a condensing-worm, which has a free terminal outlet. The relief-tank may be placed in an outer vessel and be submerged in cold water made to flow continuously through the vessel, the relief-tank being thereby made to act as a condenser. The relative aggregate capacity of the condensing-worm and relief-tank, when the latter is used as a condenser, should be such that all the oil, gases, or vapors will be condensed and the distillate will run off at atmospheric pressure, and in order that my said invention and the manner of performing the same may be properly understood, I hereunto append a sheet of explanatory drawings, to be hereinafter referred to, and representing by way of example, a modification of my improved apparatus.

The figure on the sheet of drawings is a longitudinal vertical section, showing a part of the primary oil-still A and the apparatus connected therewith. This oil-still A may be constructed and may operate like what is described in the specification filed with my application for United States patent on January 8, 1891, Serial No. 377,121, in which case the part shown will be the last compartment of the still, the oil having undergone success-

ive stages of destructive distillation in the several compartments; or the still A may be of ordinary construction. The gas or vapor evolved in the still A passes off by a pipe B, a continuation C of which leads to a condensing-worm D. A stop-valve E is interposed between the parts B and C, and in the part B there is arranged a valve S, loaded by means of a weighted lever T, acting on the valve-spindle, which extends through a stuffing-box. Between the valves S and E a branch pipe U communicates with a relief tank or vessel V, which is placed inside of an outer vessel W, having cold water flowing continuously through it. The relief-tank V communicates by a pipe X, connected to its upper end with the pipe C, leading to the condensing-worm D, and there is also a smaller pipe Y, connected to the bottom of the relief-tank, to lead off condensed oil either to the pipe C and condensing-worm, as shown, or it might be to a separate receiver. A small inverted siphon-pipe Z is fitted under the valve E to allow any oil which may condense in the part of the pipe between the valves E and S to pass on to the condensing-worm D. A suitable pressure to which to load the valve E will depend upon the kind of oil operated on and will be best ascertained by trial. It may, however, be stated, by way of example, that I believe eighty pounds per square inch will be found a suitable pressure for operating on a mineral oil of .970 specific gravity in order to obtain therefrom an oil of about .700 specific gravity.

What I claim as my invention is—

The combination, with a still for the destructive distillation of mineral oils, of a loaded outlet-valve and a relief-tank interposed between the said outlet-valve and an ordinary condenser, the said relief-tank being used more or less as a condenser, substantially as and for the purposes herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN LAING.

Witnesses:

EDMUND HUNT,
DAVID FERGUSON.