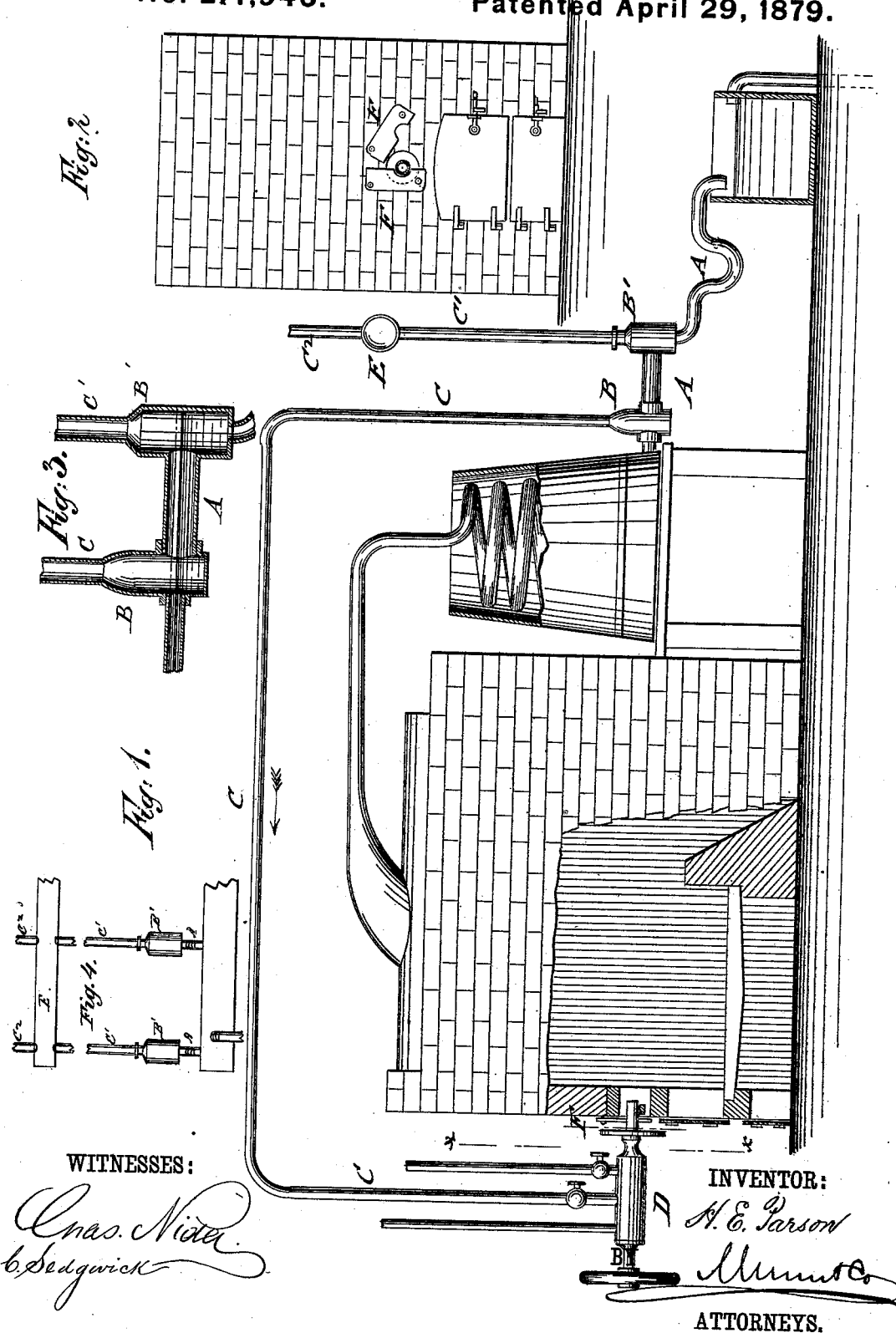


H. E. PARSON.
Apparatus for Utilizing Waste Gases of Distillation
in Refining Petroleum.

No. 214,946.

Patented April 29, 1879.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY E. PARSON, OF NEW YORK, N. Y.

IMPROVEMENT IN APPARATUS FOR UTILIZING WASTE GASES OF DISTILLATION IN REFINING PETROLEUM.

Specification forming part of Letters Patent No. **214,946**, dated April 29, 1879; application filed September 2, 1878.

To all whom it may concern:

Be it known that I, HENRY E. PARSON, of the city, county, and State of New York, have invented a new and useful Improvement in Apparatus for Utilizing Waste Gases of Distillation in Refining Petroleum, of which the following is a specification.

In the accompanying drawings, Figure 1 represents a sectional side elevation of a still for refining petroleum, shown as arranged with my improved attachment for utilizing the waste gases of distillation. Fig. 2 is a front view of the furnace, partly in section through the injector on line *x x*, Fig. 1, showing the adjustable covers around the air-supply opening; and Fig. 3 is a detail section of the oil-pipe and gas-receiver. Fig. 4 is a front view, in which the storing and distributing pipe and its connections are shown in longitudinal elevation.

Similar letters of reference indicate corresponding parts.

The object of this invention is to utilize the gases that are formed in the process of distilling petroleum after the oil leaves the condensing-coil. A second receiver and escape-pipe connects the oil-main with a larger storing and distributing tube, that connects the escape-pipes of the different stills, the storing and distributing tube being connected with the atmosphere to discharge the surplus gas, and also to draw in air to mingle with the waste gas, and be thrown therewith into the fire.

Referring to the drawings, A represents the main oil-pipe, which conducts the oil from the condensing-coil of a still to the receiving-tank. This main pipe is enlarged after leaving the condenser, so that the oil-vapors may readily collect above the surface of the oil, and the oil be passed off freely without interrupting or retarding the working of the still. An enlarged gas chamber or receiver, B, is arranged at one end of the enlarged section of the main pipe, and connected by a pipe, C, with an injector, D, that is arranged in front of the fire-place, for the purpose of increasing the heat of the fire by a supply of oil-vapor and steam, properly mingled with air.

When the injector is at work the waste gases of distillation that collect in the main pipe and chamber are drawn into the injector by the steam-jet.

The main pipe A has a second gas-chamber or receiver, B', at some distance from the first chamber, B, which second chamber is connected by a pipe, C', with a storing and distributing tube, E, and by a pipe, C'', of the storing and distributing tube with the atmosphere.

The second receiver, B', and pipe C' admit of the escape of the oil-vapors, whenever the injector is not at work, into the storing and distributing tube E, which tube is run along a number of stills, and connected with the escape-pipes of the different oil-pipes of the same. The waste gases are thereby stored up in the tube, and made available for the injector or injectors that happen to be working. When the quantity of vapors accumulating in the storing and distributing tube is too large, they pass through the exit-pipes C'' off into the atmosphere. When the injectors have drawn off all the vapors stored up in the tube E, atmospheric air is drawn in, which mingles with the gases or vapors drawn off from the main pipe, and is forced with the same by the injector into the fire, so as to be fully consumed therein.

The opening in the furnace-wall through which the injector is inserted may be partly or entirely opened or closed by means of pivoted or otherwise adjustable doors F, which regulate the supply of air that is drawn into the fire-place in proportion to the quantity of gas fed to the fire, so as to produce thorough combustion of the same.

Any suitable injector may be used; but I prefer to use the injector patented by me June 5, 1877.

In place of the two gas-chambers B and B', one chamber only may be used, and the return-pipe and escape-pipe applied thereto; or the escape-pipe may be made to branch off from the return-pipe, the operation in all cases being the same.

The same apparatus may also be applied for utilizing the waste gases of oil-wells, the well-

casing and pump being then, in place of the condenser, connected to the apparatus, and then conducted to a furnace.

I am aware that it is not new to heat stills for distilling petroleum or hydrocarbon oil by the gas evolved from the petroleum during the process of distillation, or to relieve an oil-still of its gas and inflammable products by means of currents of steam acting on the gas for the purpose of drawing the gas from the still and forcing it into the furnace with the steam to be burned and utilized; but

What I claim as new and of my invention is—

The combination of an oil-pipe connecting the condensing-coil and receiving-tank, and of an injector of a petroleum-still, the oil-pipe having one or two gas chambers or receivers, with a gas-returning pipe and with a gas-escape pipe, storing and distributing tube, and exit-pipe opening into the atmosphere, substantially as shown and described.

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Witnesses:

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