J. NELSON.

Apparatus for Burning Hydrocarbon.

No. 167,352. Patented Aug. 31, 1875.

Fig. 1

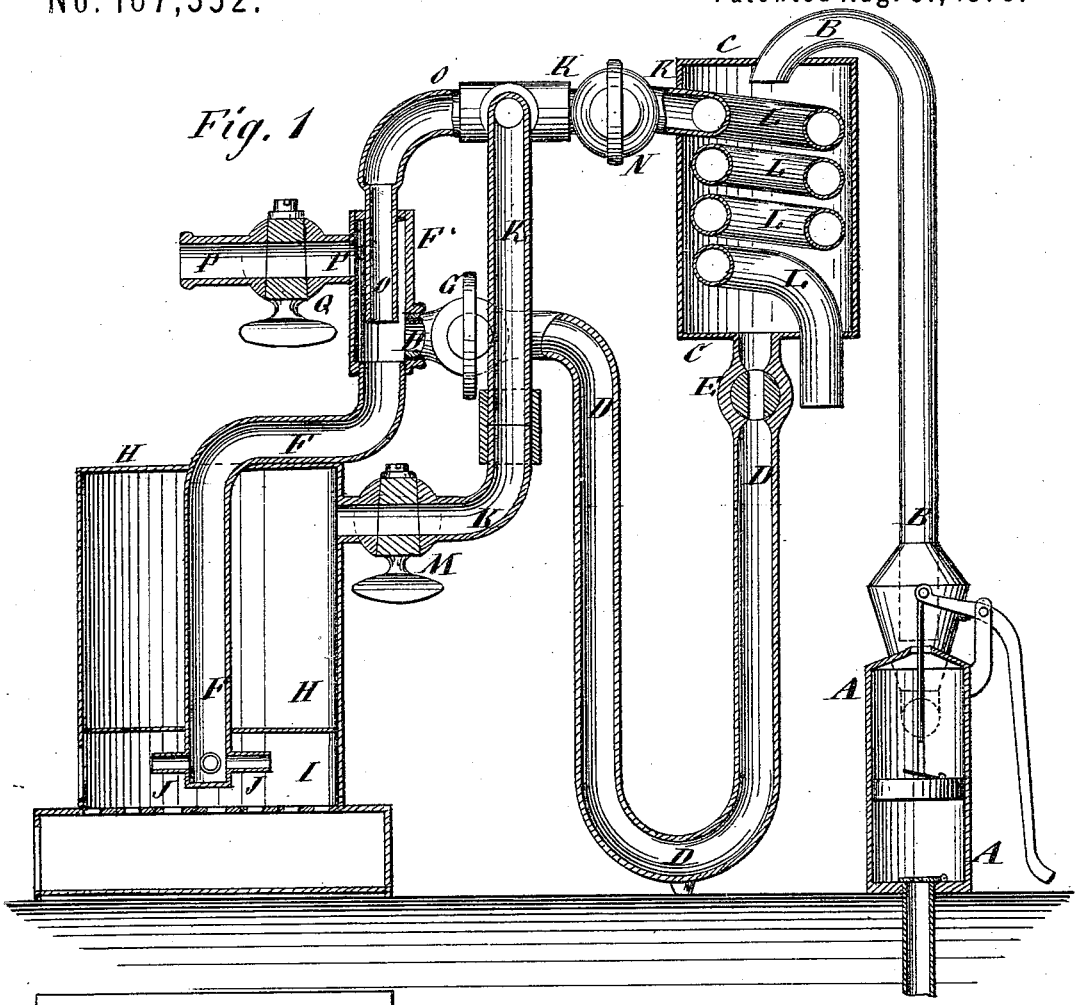


Fig. 2

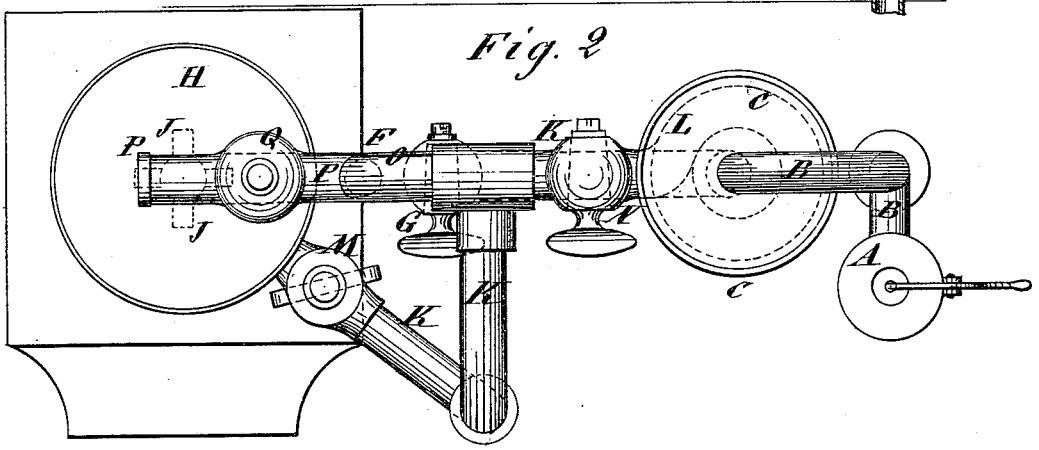
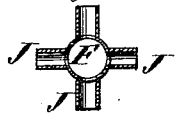


Fig. 3



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN NELSON, OF RED WING, MINNESOTA.

IMPROVEMENT IN APPARATUS FOR BURNING HYDROCARBONS.

Specification forming part of Letters Patent No. **167,352**, dated August 31, 1875; application filed March 6, 1875.

To all whom it may concern:

Be it known that I, JOHN NELSON, of Red Wing, in the county of Goodhue and State of Minnesota, have invented a new and useful improvement in apparatus for burning oils, &c., under steam-boilers, in furnaces, &c., of which the following is a specification:

Figure 1 is a side view, partly in section, of my improved apparatus. Fig. 2 is a top view of the same. Fig. 3 is a detail section of the burner.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved apparatus for burning oils, tar, turpentine, and other liquid combustible substances, mixed with air and steam, under steam-boilers, in furnaces, and in other places, and which shall be simple in construction, easily manipulated and controlled, safe in use, and effective in operation.

The invention consists in the combination of the U-pipe, provided with two stop-cocks, the steam-pipe, provided with two stop-cocks, the coil, the injector-pipe, the air-pipe, provided with a stop-cock, and the pipe leading to the burners, with each other, and with a tank, a boiler, and a fire-chamber, as hereinafter fully described.

A represents a pump, by which the oil or other combustible liquid substance is forced through the pipe B into the tank C, where it is heated to make it more fluid, so that it may flow more readily through the pipe D, which is connected with the lower part of the tank C, and is provided with a stop-cock, E, near said tank, to enable the flow of the oil into said pipe D to be regulated as desired, or wholly prevented. The pipe D is bent into U form, or into the shape of an inverted siphon, and the end part of its outer or longer arm, at or about the level of the bottom of the tank C, is bent into a horizontal position, is connected with a pipe, F, and is provided with a stop-cock, G, near said pipe F, so that the flow of the oil from said pipe D may be regulated as desired. The pipe F is led through the boiler H into the fire-chamber I, and its end is provided with burners J, where the oil is burned. The pipe F may be led in any desired direction into any place where it is desired to produce heat. From the steam-space of the boiler H a steam-pipe, K, leads into the upper end of the tank C, where it is connected with or formed into a coil, L, placed within the said tank C, to heat the combustible substance within said tank, and cause it to flow freely through the pipes D F to the fire-chamber I. The pipe K, near the boiler H, is provided with a stop-cock, M, to enable the entrance of steam into said pipe K, to be regulated at will. The pipe K, near the tank C, is provided with a stop-cock, N, to enable the passage of steam into the coil L to be regulated at will. The lower end of the coil L projects from the lower part of the tank C, and is designed to be connected with a steam-trap, or with one or more other coils and tanks, and then with a trap, as may be desired. With the pipe K, between the stop-cocks M N, and above the pipe D, is connected the end of the pipe O. The other end of the pipe O is inserted in the end of the pipe F above the end of the pipe D, and terminates at the end of said pipe D, so that the steam may be injected into, and may be mixed with or atomize, the oil as they both enter the pipe F. The part of the pipe O that enters the pipe F is made smaller than the said pipe F, so that the entering steam may draw in air through the pipe P, to mix with the oil and steam, and pass on with them to the burner J, where the mixture is burned. The pipe P is connected with the pipe F above the ends of the pipe D and O, and is provided with a stop-cock, Q, to enable the amount of air admitted to be regulated at will.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination of the tank C, containing the coil L, trap-pipe D, for conveying oil to the atomizing-chamber, steam-pipe O, located above the pipe D within the atomizing-chamber F′, and steam-pipe K, which serves the double purpose of conveying steam to the heating-tank, and to the atomizing-chamber, all arranged for operation substantially as shown and described.

JOHN NELSON.

Witnesses:
W. H. PUTNAM,
JORGEN SIMMONS.