P. C. Heinz,

Burning Hydrocarbon.

No. 59,602. Patented Nov. 13, 1866.

Fig. 2.

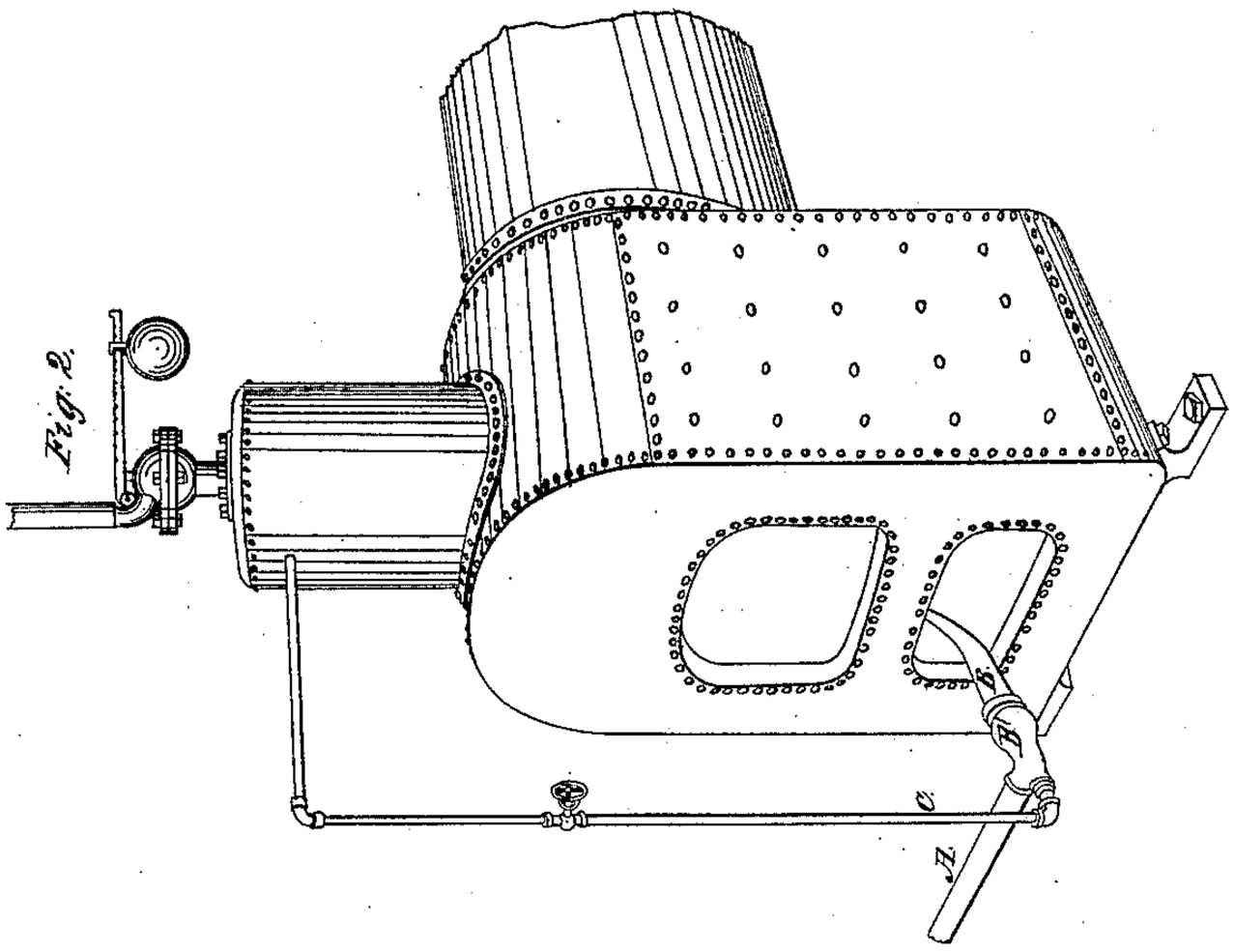
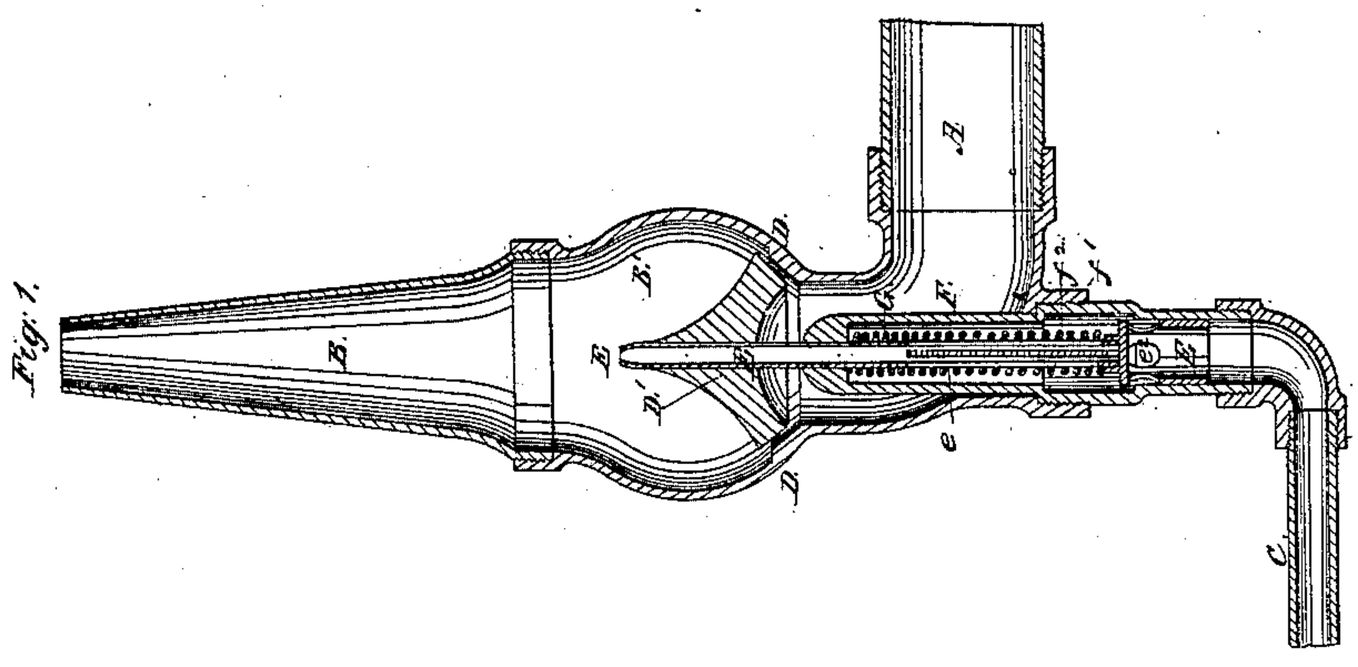


Fig. 1.



Witnesses:
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B H Muehle

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UNITED STATES PATENT OFFICE.

PETER C. HEINZ, OF FUNKVILLE, PENNSYLVANIA.

IMPROVEMENT IN INJECTORS.

Specification forming part of Letters Patent No. **59,602,** dated November 13, 1866.

To all whom it may concern:

Be it known that I, PETER C. HEINZ, of Funkville, county of Venango and State of Pennsylvania, have invented a Gas-Injector for gas-burning furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is a longitudinal section of my improved instrument, and Fig. II is a perspective view of same, showing its connection to a steam-boiler.

The object of this invention is to utilize as fuel the inflammable gases which flow from oil-wells.

Its nature consists in the application of a steam-injector at the end of the gas-supply pipe, by which the gas is drawn from the reservoir or well and injected into the furnace, the injector being an effectual check to the fire passing back into the gas-pipe and causing an explosion.

Letters of like name and kind refer to like parts in each of the figures.

A represents the gas-supply pipe, leading from the well or gas-reservoir to the furnace.

B represents the injector-nozzle, which is applied to the end of the gas-pipe (standing at right angles thereto) and is inserted into the furnace, as shown in Fig. II.

C represents the steam-pipe, which passes centrally into the nozzle B, its orifice being so much contracted as to give a high velocity to the steam issuing therefrom, which steam, in its passage through the nozzle B, draws the gas from the gas-pipe behind it and injects the same into the furnace.

While the injector is in operation it is manifestly impossible for the gas in the pipe to take fire from the flame in the furnace; but when the steam is shut off from the injector this might occur were the supply of gas not shut off at the same time. To effect this the nozzle B is enlarged, as shown at B′, and a valve-seat formed therein, as shown at D, to which is fitted a valve, D′, the stem E of which is formed by a small tube, an extension of the steam-pipe. The stem E passes into a cylinder, F, screwed into the nozzle, as shown at f^1, and has a hollow piston-head, E′, at its end which nicely fits said cylinder F.

The cylinder F is enlarged above the piston, as shown at f^2, and the piston has lateral openings e^2 e^2, so that when steam is admitted through the steam-pipe its pressure will force up the piston until its openings e^2 reach the enlargement f^2, and allow it to escape past the piston and into the valve-stem E through slits or openings e^3 in the sides thereof. The rising of the piston E, which admits steam into the nozzle B, also raises the valve D′ and permits the entrance of gas from the pipe A.

When the steam is shut off a spring, G, coiled around the stem E seats the valve D′ and shuts off the supply of gas.

By these means the admission of gas follows the admission of steam to the injector, and the shutting off of the steam involves the immediate stoppage of the gas-supply, so that all danger of explosion is overcome.

Heretofore the gas has been fed into the furnace by pressure simply, and many explosions and accidents have occurred by the gas in the pipes taking fire and communicating the same to the reservoirs.

I have contemplated the use of a stop-cock in the supply-pipe A, to be under the control of the engineer, which, by great care upon his part to shut off the supply of gas before the steam is shut off, would obviate the necessity of the valve D′.

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

1. A gas-injector for furnaces, constructed and operating in the manner substantially as herein set forth.

2. The valve D′, in combination with the steam-pipe E and gas-supply pipe A for the purpose and substantially as described.

P. C. HEINZ.

Witnesses:
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