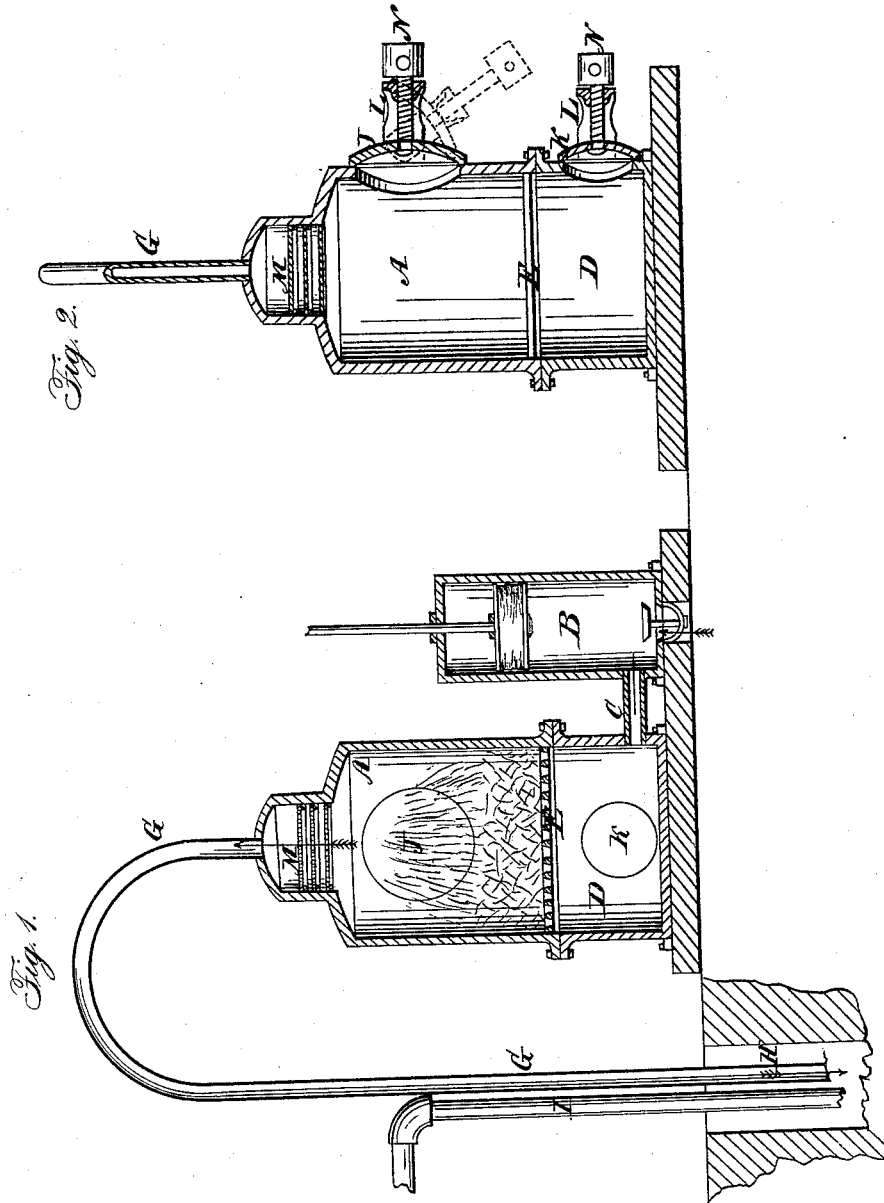


J. FRASER.

Treating Oil Wells with Chemicals.

No. 49,995.

Patented Sept. 19, 1865.



Witnesses:

L. Chas.
J. A. Davis.

Inventor:

J. Fraser.

UNITED STATES PATENT OFFICE.

J. FRASER, OF BUFFALO, NEW YORK.

IMPROVED METHOD OF TREATING OIL-WELLS FOR THE REMOVAL OF PARAFFINE.

Specification forming part of Letters Patent No. 49,995, dated September 19, 1865.

To all whom it may concern:

Be it known that I, J. FRASER, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and Improved Method of Treating Petroleum-Wells for the Removal of Paraffine and other Obstructions; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of the apparatus which I employ, represented as applied to an Artesian well. Fig. 2 is a vertical transverse section of the generator A.

Like letters designate corresponding parts in both of the drawings.

It is known that a deposition of paraffine and other constituents of petroleum which solidify at low temperatures takes place in many petroleum-wells, and by filling the veins and crevices through which the oil is supplied causes the production to diminish and in time to stop entirely. The remedy in such cases exists in introducing heat for the purpose of elevating the temperature of the well sufficiently to melt the substance forming these obstructions, or, if there be oil present, cause it to redissolve the solid hydrocarbons. For this purpose steam, heated air, hot water, and other liquids have been employed with various degrees of success.

The nature of my invention consists in treating wells thus obstructed with carbonic oxide in a heated condition. This gas is peculiarly adapted to the purpose, inasmuch as it is not dissolved or absorbed by water, oil, or other substance. This property renders it capable of being forced into crevices of the rock where water or oil is present, at remote distances when sufficient power is employed, without being absorbed by those liquids, as would be the case if carbonic acid or other soluble gas were used, so that it acts more efficiently, both mechanically and as a medium for conveying heat to distant points, than air or other known material. It is also very economically and conveniently obtained for the purpose. During ordinary combustion, at the lower part of the grate the oxygen of the air unites with the carbon of the fuel to produce carbonic acid,

(CO₂) and this gas, rising up through the red-hot coal or carbon, has part of its oxygen abstracted by the carbon, and two atoms of carbonic oxide (CO) are produced. This product is again converted into carbonic acid when air is admitted freely above the fire; but when the combustion takes place in a close chamber, where all the air is supplied from below, the product is carbonic oxide alone. I therefore generate this gas in an air-tight cylinder, A, containing ignited coal, into which I force air below the grate entirely. In passing through the coal each atom of oxygen combines with an atom of carbon and fills the chamber above the fire with pure carbonic oxide, which passes immediately into the well by means of a pipe provided for the purpose.

As represented in the drawings, the apparatus which I employ consists of the generator A, being an air-tight furnace, which receives air from the pumping-cylinder B through the pipe C, which enters the ash-chamber D below the grate E. A charge of anthracite or other coal being placed on the grate and ignited, the operation of the pump B forces air in below and upward through the coal. The carbonic oxide which is formed is driven by the action of the forcing-pump out of the generator through the eduction-pipe G, which leads to the bottom of the oil-well represented by H. I is the ordinary tubing for the discharge of oil from the well.

The generator is constructed with air-tight doors J K, the former to be opened to receive a supply of fuel as often as required, at which times the operation of the pump must be stopped. These doors may be conveniently constructed of disk form, and must be ground to fit perfectly at their joints, so as to admit no air. They may be held in place by means of bails L L, with a screw, N, for tightening them. These bails are pivoted to the sides of the generator, so that when the screws which hold the doors are loosened they swing downward and throw open. The upper one is opened to supply fuel, but the lower one only requires to be opened when it is necessary to remove the ashes and cinders. Several thicknesses of wire-cloth, preferably made of copper to resist the heat, are provided in the dome M

of the generator, their use being to prevent ashes and cinders being carried into the well by the force of the blast.

This method possesses these advantages over other modes of introducing heat into oil-wells: The greater economy of fuel, as the gas is formed at a temperature of about 2000°, and may be passed directly into the well, so that if the pipe is protected from radiation the entire heat of the fuel is utilized, whereas it is known that air, when heated by radiation in coils or in contact with a furnace, absorbs but a small portion of the heat actually used. The bulk of the air is increased twofold by being converted into carbonic oxide. It is an insoluble gas, and may be forced to great distances

to convey heat or power, whereas other gases would be absorbed by the water or oil. It does not condense like steam. It is formed at a higher temperature than is attainable with steam or air.

What I claim as my invention, and desire to secure by Letters Patent, is—

The employment of carbonic oxide for treating petroleum-wells to remove obstructions composed of paraffine and other deposits, substantially as set forth.

J. FRASER.

Witnesses:

LOUIS FRASER,
J. A. DAVIS.