

No. 656,307.

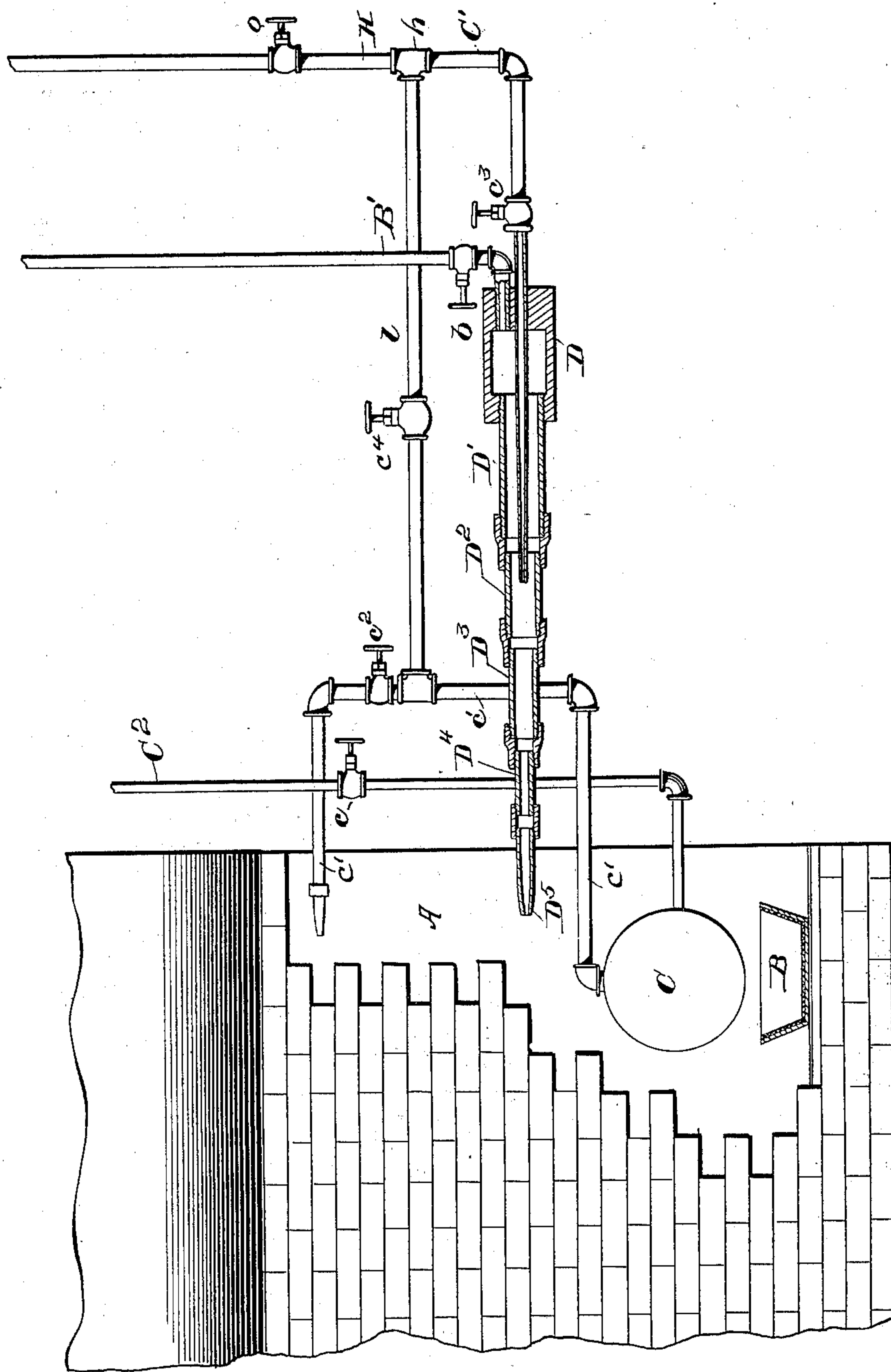
Patented Aug. 21, 1900.

J. TYLER.

OIL AND GAS BURNER FOR FURNACES.

(Application filed June 7, 1897.)

(No Model.)



witnesses:

J. M. Fowler Jr

Leonora Klions

Inventor:

Joseph Tyler,
by Edwin Cruise,
Atty.

UNITED STATES PATENT OFFICE.

JOSEPH TYLER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO CORNELIUS COLLINS, OF SAME PLACE.

OIL AND GAS BURNER FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 656,307, dated August 21, 1900.

Application filed June 7, 1897. Serial No. 639,790. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH TYLER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Oil and Gas Burners for Furnaces, &c.; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which forms a part of this specification.

The object of my invention is to improve the structure and arrangement of oil and gas burners for furnaces, as will be hereinafter fully set forth, reference being had to the accompanying drawings, in which is shown, partly in section and partly broken away, a portion of a furnace and my improved burner.

The furnace is indicated by A and may be of any approved form. Within the combustion-chamber a pan B is supported, said pan being preferably lined with asbestos. This pan is designed to receive a quantity of oil to be burned in order to generate steam for use when the burner is first started. Immediately over the pan a cylinder C is supported, into which a water-supply pipe C² leads, said pipe having a valve c for controlling the flow of water to the cylinder.

The burner is composed of a series of tubular sections, (indicated at D, D', D², D³, D⁴, and D⁵,) each section being of substantially-uniform diameter throughout its length and the successive sections gradually decreasing in diameter and being connected together by reducing-couplings. The section of least diameter enters the furnace, and the outer end of the larger section D is closed, and through this closed end an oil-supply pipe B' passes to deliver oil to the interior of the burner, the flow of oil being regulated by a valve b. A steam-supply pipe C' also passes through the closed end of the section D to supply steam to the interior of the burner, and the flow of steam may be controlled by a valve c³. A T-coupling h connects the pipe C' to a pipe H, which may lead from the boiler (not shown)

and to a branch pipe l, which latter is also connected to a steam-pipe c', which leads from the cylinder C, extends outside of the furnace, and then enters the furnace again at a point above the burner. The pipe c' is provided with a valve c² above the connection of the pipe l, and the latter is also provided with a valve c⁴. The steam-supply pipe H is also provided with a valve o.

Such being the construction, the operation is as follows: The pan B will be supplied with oil and the latter be ignited. Water will then be admitted slowly to the cylinder C in order that steam may be generated rapidly, the valves c², c³, o, and b being meanwhile closed. When steam of sufficient pressure has been generated in the cylinder C, the valves b and c³ will be opened, thereby admitting oil and steam to the burner, which will be discharged into the furnace and there ignited. As the furnace becomes heated the valve c² will also be opened to discharge steam into the higher part of the furnace, and thereby increase the combustion of the gases generated in the furnace. This will proceed until the furnace becomes hot enough to generate steam in the cylinder C without aid from the burning oil in the pan B. When steam has been generated in the boiler, the valve o may be opened and steam be supplied from the boiler as well as from the cylinder C, and with the additional supply of steam additional oil may be used up to the full capacity of the pipe B'. It is obvious, however, that the burner will operate successfully with steam supplied from the cylinder C only and without steam from the boiler.

Having described the invention, I claim—

1. An oil or gas burner for furnaces composed of a series of tubular sections, each section being of substantially-uniform diameter throughout its length and the successive sections being of gradually-decreasing diameter, the section entering the furnace being of least diameter and the outermost section of greatest diameter, the latter being closed at its outer end, reducing-couplings connecting the several sections together, a steam-supply pipe extending through said closed end into the burner, and a fuel-supply pipe also ex-

tending through said closed end to deliver fuel to the rear end of the burner, substantially as set forth.

2. The combination with a furnace, of a cylinder supported within the furnace, an oil-pan having an absorbent, refractory lining, said pan being supported within the furnace and below the cylinder to preliminarily heat the latter, a water-supply pipe leading to the cylinder, a burner extending into the furnace, an oil-pipe leading to the burner, a steam-

pipe leading from the cylinder and discharging into the furnace above the burner, and a branch pipe leading from said pipe into the burner, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH TYLER.

Witnesses:

CORNELIUS COLLINS,
THOMAS J. LAUREL.