

(No Model.)

L. SERPOLLET.
LIQUID FUEL BURNER.

No. 597,028.

Patented Jan. 11, 1898.

Fig. 3.

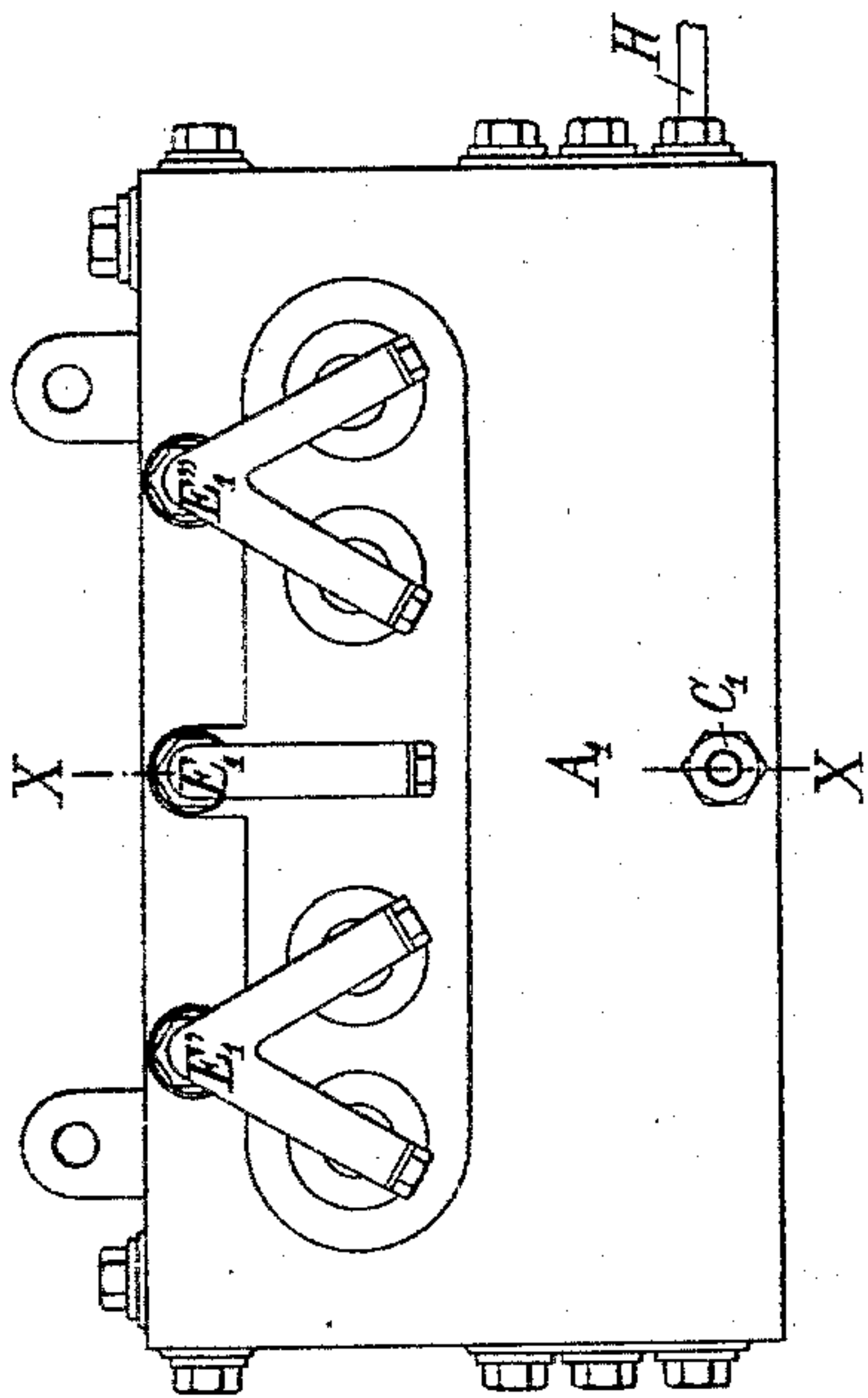


Fig. 2.

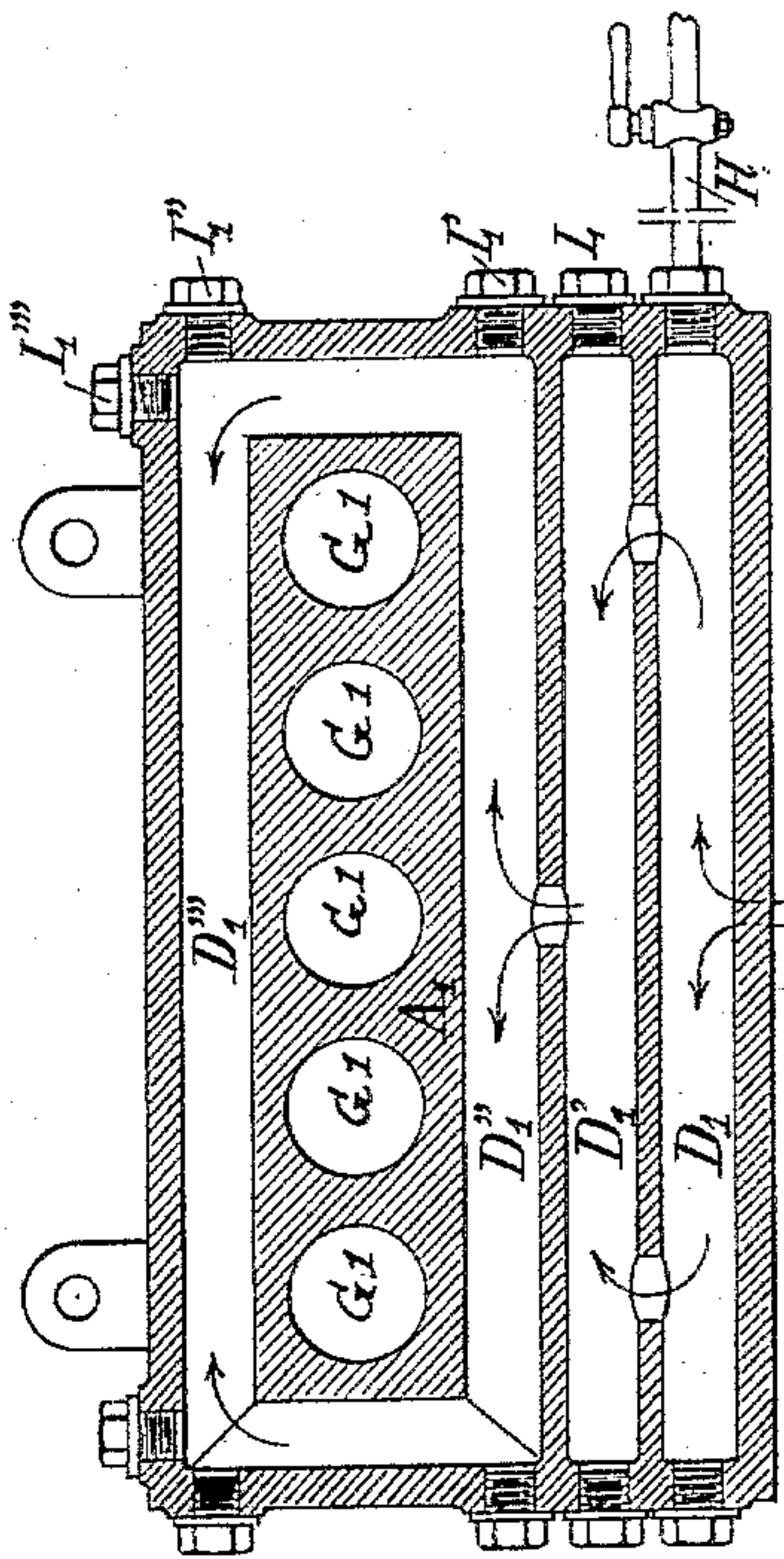
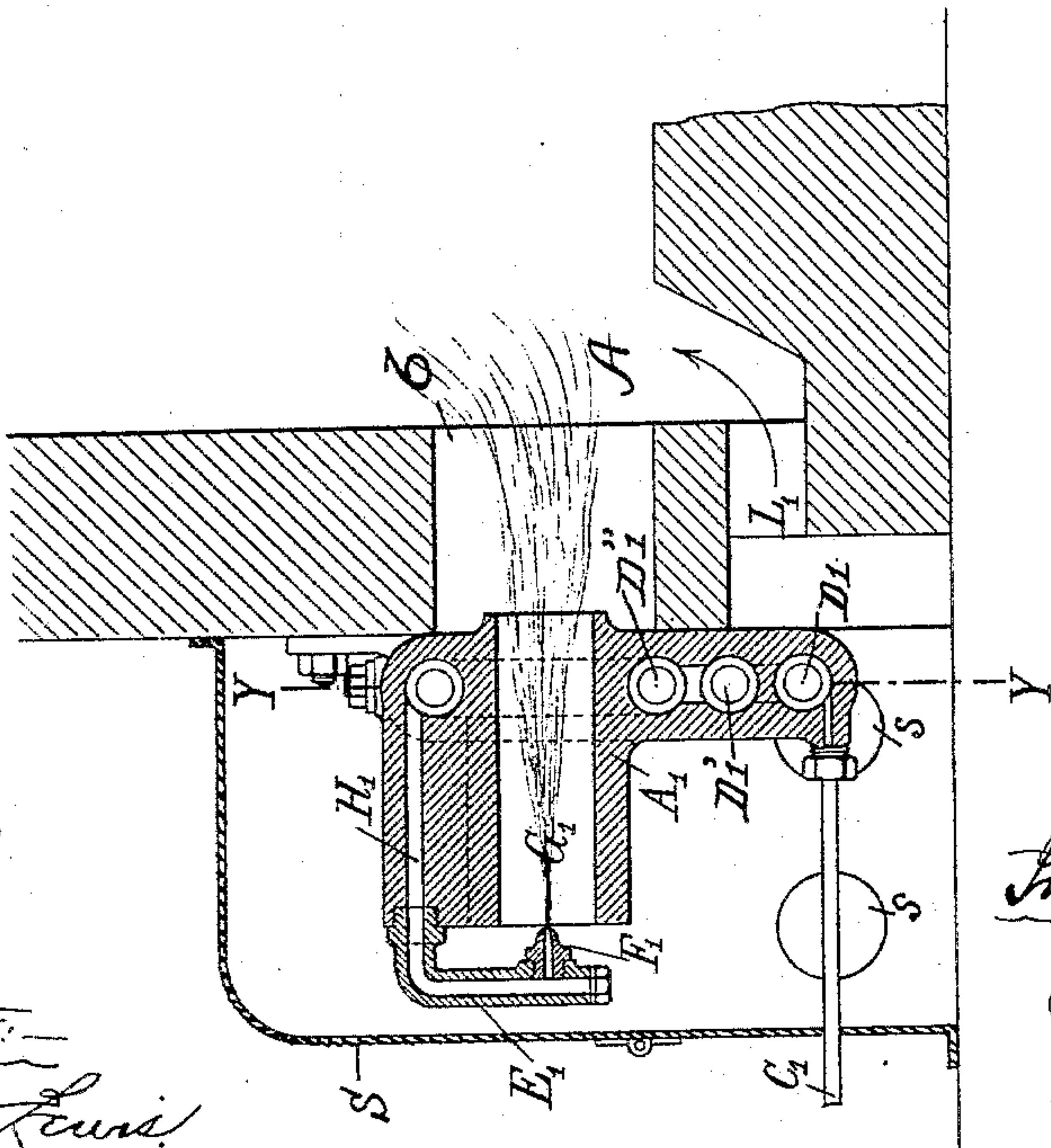


Fig. 1.



Attest:
Per Lewis
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Inventor:
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by J. H. H. H. H.
his attorney

UNITED STATES PATENT OFFICE.

LEON SERPOLLET, OF PARIS, FRANCE, ASSIGNOR TO LA SOCIÉTÉ DES GÉNÉ-
RATEURS À VAPORISATION INSTANTANÉE, (SYSTÈME LEON SERPOLLET,) OF FRANCE.

LIQUID-FUEL BURNER.

SPECIFICATION forming part of Letters Patent No. 597,028, dated January 11, 1898.

Application filed June 26, 1897. Serial No. 642,502. (No model.) Patented in France January 30, 1897, No. 263,585.

To all whom it may concern:

Be it known that I, LEON SERPOLLET, of Paris, Republic of France, have invented a new and useful Improvement in Liquid-Fuel Burners, which are fully set forth in the following specification, and for which I have obtained a patent in France, No. 263,585, dated January 30, 1897.

In a liquid-fuel burner according to this invention the vapor of petroleum or other liquid hydrocarbon is injected under pressure into a Bunsen passage and is burned in contact with air, which is drawn in by the jet and is heated by contact with the body of the burner and with the flame.

The invention will be best understood by reference to the accompanying drawings, wherein—

Figure 1 shows a central vertical section of a burner constructed in accordance with this invention. Fig. 2 is a longitudinal vertical section on the line Y Y of Fig. 1, and Fig. 3 is a front elevation thereof.

In the drawings I have shown a burner embodying my invention, in which horizontal Bunsen jets are placed outside the furnace under the eye and hand of the stoker, and thus removed from the action of the heat generated by the ignited jets, which are chiefly consumed in the furnace under the apparatus to be heated.

A represents the fire-chamber of a furnace of suitable construction, having an opening *b* through the wall thereof, through which the flame of the burner enters the furnace.

A₁ is the body of the burner, suspended by suitable ears from the front of the furnace over the opening *b*, having a series of horizontal transverse Bunsen passages G', extending through the upper part thereof from the front to the rear, and a series of longitudinal connecting-passages D₁ D'₁ D''₁ D'''₁, extending at right angles to passages G', the upper passage D'''₁ connecting through small transverse passages H₁ with forked tubes E₁ E'₁ E''₁, carrying injector-nozzles F₁.

The petroleum, coming from a suitable reservoir (not shown) under pressure to the bottom of the body A₁ of the burner, preferably by the pipe C₁, and entering at the center of

the lower passage D₁, flows in the direction indicated by the arrows and becomes gradually heated and vaporized in the passages D'₁ D''₁ by contact with the heated material of which the burner is composed. From the upper passage D'''₁ the hot combustible vapors are distributed by the passages H₁ into the simple or forked tubes E₁ E'₁ E''₁, each provided with a nozzle F₁ for a Bunsen jet. Each nozzle thus projects under pressure along the axis of each of the Bunsen passages G' a jet of hot vapor, which is caused by contact with the surrounding air drawn in by it to form a continuous horizontal jet of flame, which heats the walls, as also the mass of the rear portion of the body of the burner and, becoming in its turn heated by reaction, enters the furnace, where it spreads and heats the parts to be heated.

The burner is provided with a discharge-tube H and cleaning-plugs I₁ I'₁ I''₁.

The body of the burner, suspended by means of lugs against the surface (of refractory material) of the furnace, from the heat of which it is removed, may be covered or inclosed by means of a thin sheet of metal S, which has holes *s* made through it to allow of an abundant supply of air. A passage L₁ allows to be drawn into the furnace a supplementary quantity of air, which may be regulated so as to effect a complete combustion of the combustible petroleum-vapors that would otherwise escape, being burned either in the jet or flame formed at the center of the Bunsen passage or at the outlet of the said passage.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an apparatus for the combustion of petroleum or other heavy oil, comprising a burner-body of refractory material arranged adjacent to the fire-chamber, a series of burner-orifices in said body opening into said chamber, a series of nozzles or burners discharging into and through said orifices, and a series of channels inclosed in said body and communicating one with another and the last with said nozzles, so that the oil is gradually heated as it approaches the burners and

finally converted into high-tension vapor, substantially as described.

2. An apparatus for generating and consuming the vapors of petroleum or other heavy mineral oil arranged contiguously to the fire-chamber, said apparatus consisting of a series of burners axially and centrally located at the outer end of corresponding open orifices horizontally traversing the body of said apparatus, and a series of closed but intercommunicating channels also within the body of said apparatus for the passage of the oil before reaching the burner, said channels being arranged in series underneath the burner-orifice so that the oil may become gradually heated and finally converted into high-tension vapor; and lastly of a channel also in the

body of the apparatus and communicating with the under channels, but located above the burner-orifices and communicating with both the under channels and the burners as described, the whole being arranged for operation as set forth, whereby superheated vapor under high pressure is caused to issue at the nozzle of the burner and perfectly consumed by admixture of air without odor or smoke.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

LEON SERPOLLET.

Witnesses:

EDWARD BENGUIOT,
EDWARD P. MACLEAN.