

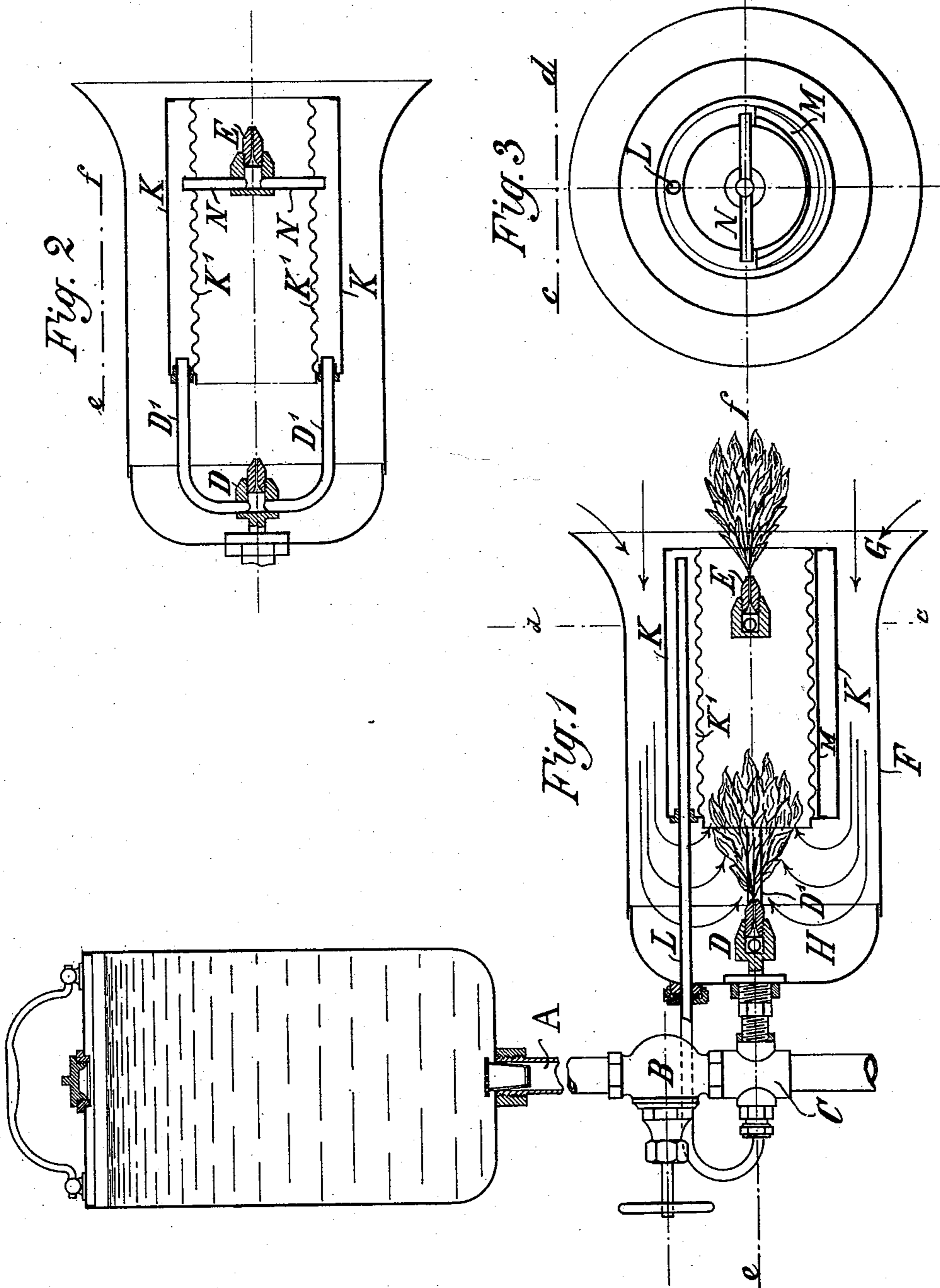
(No Model.)

L. DÜRR.

PETROLEUM VAPOR BURNER WITH OVERHEATER.

No. 568,842.

Patented Oct. 6, 1896.



Witnesses:

William Schulz.  
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by his attorneys  
Roeder & Briesen

# UNITED STATES PATENT OFFICE.

LUDWIG DÜRR, OF BREMEN, GERMANY.

## PETROLEUM-VAPOR BURNER WITH OVERHEATER.

SPECIFICATION forming part of Letters Patent No. 568,842, dated October 6, 1896.

Application filed July 8, 1893. Serial No. 479,931. (No model.) Patented in Germany March 28, 1893, No. 73,613, and June 17, 1893, No. 74,274; in Switzerland June 28, 1893, No. 7,254; in England June 29, 1893, No. 12,771; in France July 5, 1893, No. 231,339; in Belgium July 5, 1893, No. 105,415; in Austria-Hungary October 10, 1893, No. 34,848 and No. 54,403; in Italy December 31, 1893, XXVIII, 35,188, LXIX, 89, and in Denmark June 20, 1895, No. 83.

*To all whom it may concern:*

Be it known that I, LUDWIG DÜRR, a subject of the King of Bavaria, residing at Bremen, in the Empire of Germany, have invented new and useful Improvements in Petroleum-Vapor Burners with Overheaters, (for which I have obtained the following patents: in Germany, No. 73,613, dated March 28, 1893, and No. 74,274, dated June 17, 1893; in Austria-Hungary, No. 34,848 tom. XLII, fol. 3,938, and 54,403, tom. XXVII fol. 3,912, dated October 10, 1893; in England, No. 12,771, dated June 29, 1893; in Denmark, No. 83, dated June 20, 1895; in Switzerland, No. 7,254, dated June 28, 1893; in France, No. 231,339, dated July 5, 1893; in Belgium, No. 105,415, dated July 5, 1893, and in Italy Reg. Gen., Vol. XXVIII, No. 35,188, Reg. Att., Vol. LXIX, No. 89, dated December 31, 1893,) of which the following is a specification.

This invention relates to a petroleum-burner for lighting and heating purposes in which two burners are so combined that while one is placed in a protected position and serves to heat a superheater body the other is mounted on the free end of the superheater or burner-jar, so that its flame remains uncovered and may be fully utilized for lighting and heating purposes.

In the accompanying drawings, Figure 1 is a longitudinal section of my improved vapor-burner; Fig. 2, a section on line *ef*, Fig. 1; and Fig. 3, a section on line *cd*, Fig. 1.

A is the main petroleum-supply pipe, which is provided with a regulating device B, and leads from a reservoir suspended at a higher level than the burner. This supply-pipe terminates in a metal distributing-head C, preferably arranged at the bottom of the burner-jar. From this distributing-head the pipe passes to the gasifying device.

To gasify the petroleum and to superheat at the same time the petroleum-vapor, I employ an annular vessel K, which may be formed of sheet-copper, and whose inner wall may be smooth, corrugated or ribbed so as to provide the largest possible surface. This gasifying vessel is arranged within a jar F and is preferably secured at its rear end to

the superheater-burner itself, while it carries at its forward end the main burner E.

Into the upper part of the gasifying device there discharges a petroleum-pipe L, that extends nearly to the forward end of the same, Fig. 1, and is provided at its lower side with a series of fine perforations through which the petroleum escapes over the whole inner wall of the gasifying device. In order to produce a uniform gasification in the lower part of the gasifying device, there is provided close to the lower half of its inner wall an evaporating-cup M, which receives the petroleum that has drizzled down, and which offers but a thin layer of petroleum for evaporation.

Rectangularly with respect to the inlet-pipe L there branch off from the gasifying body close to its inner end two pipes D', that conduct the petroleum-gas from the gasifying body K to the superheater-burner D, which may be of ordinary or suitable shape.

In the fore part of the gasifying body is placed the main burner E, having two inlet-pipes N, which are so arranged that petroleum-gas only and not liquid petroleum can be fed to the burner. This result is effected preferably in the manner illustrated in Fig. 3, where the inlet-pipes N extend so far into the interior of the gasifying device that the petroleum drizzling down cannot fall into the inlet-openings of such pipes. The main burner E is placed so far in front that the burning flame clears the jar and is exposed.

To ignite a burner of the above-described construction, I proceed as follows: A burning stopple, wad, or the like is introduced into the gasifying body and the latter is highly heated. The regulating device for the petroleum supply is opened first but little and then a little more, while the petroleum drizzling down on the heated wall K' of the gasifying device is gasified. As soon as a sufficient quantity of petroleum-gas has been produced it flows through the two pipes D' into the superheater-burner and the latter is ignited by the flame of the heating material in the gasifying body. This material is now removed, if not consumed, and the flame of the burner D spreads over the whole inner wall

of the gasifying device, so that the evaporation of the petroleum is accelerated and the supply of petroleum may be correspondingly increased. The flame of the rear burner thus  
5 ignites the main flame by the gas escaping from the front burner. As the heat of the rear burner D affects entirely the inner wall of the gasifying device not only a gasification of the petroleum takes place, but in the highly-  
10 heated gasifying device the petroleum-gas is really superheated, so that liquid oil will not be carried to the burners, the exceedingly high tendency of the petroleum-vapor to condense being avoided by the superheating of  
15 the gas. The burner D can therefore conveniently be designated as a "superheater-burner" and the gasifying body K as a "superheater."

The air necessary for the flame of the superheater-burner flows in the direction indicated by the arrows between the superheater K and the jar F into the space G H, where a preparatory heating is effected. It is then sucked at the side of the burner into the superheater-  
25 flame and thus sufficiently penetrates the flame to produce a complete combustion. As the superheater-flame, when ignited, is

always protected against violent gusts of wind any extinction of the main flame would be only momentary, as the main burner would  
30 be immediately relighted by the superheater-flame without allowing any unburned gas to escape.

I do not restrict myself to the form of vapor-burner illustrated in the drawings, as the same  
35 can be varied. The modifications to be made in the construction will of course depend on the use to which the burner is to be put.

What I claim is—

The combination of a casing with an in-  
40 closed annular drum, a petroleum-feed pipe entering said drum, a burner placed within the casing back of the drum, a second burner placed in front of the casing within the drum,  
45 and with feed-pipes that connect the interior of the drum with the burners, substantially as specified.

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

LUDWIG DÜRR.

Witnesses:

LUDWIG GLASER,  
GUSTAV HÜLSMANN.