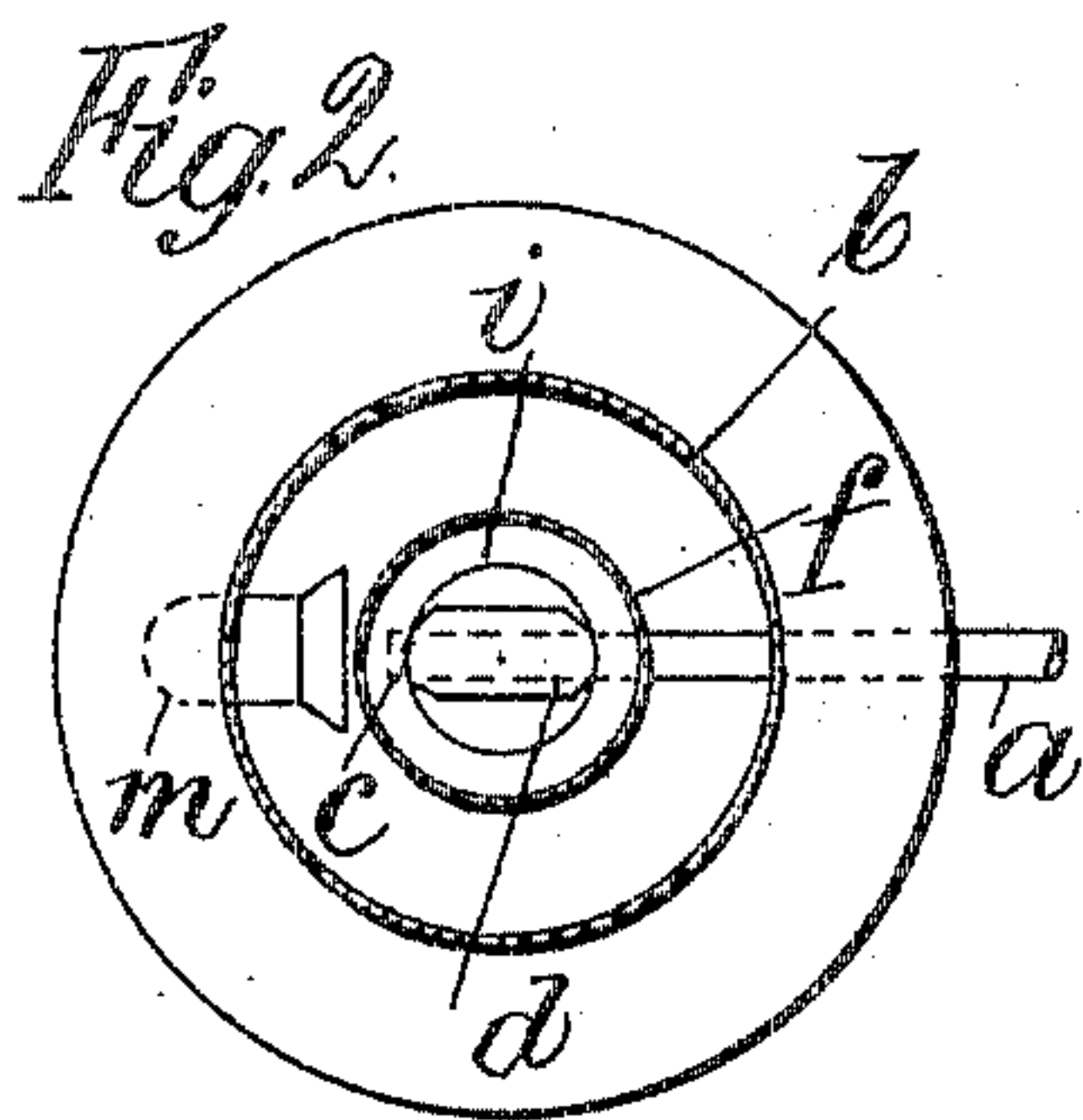
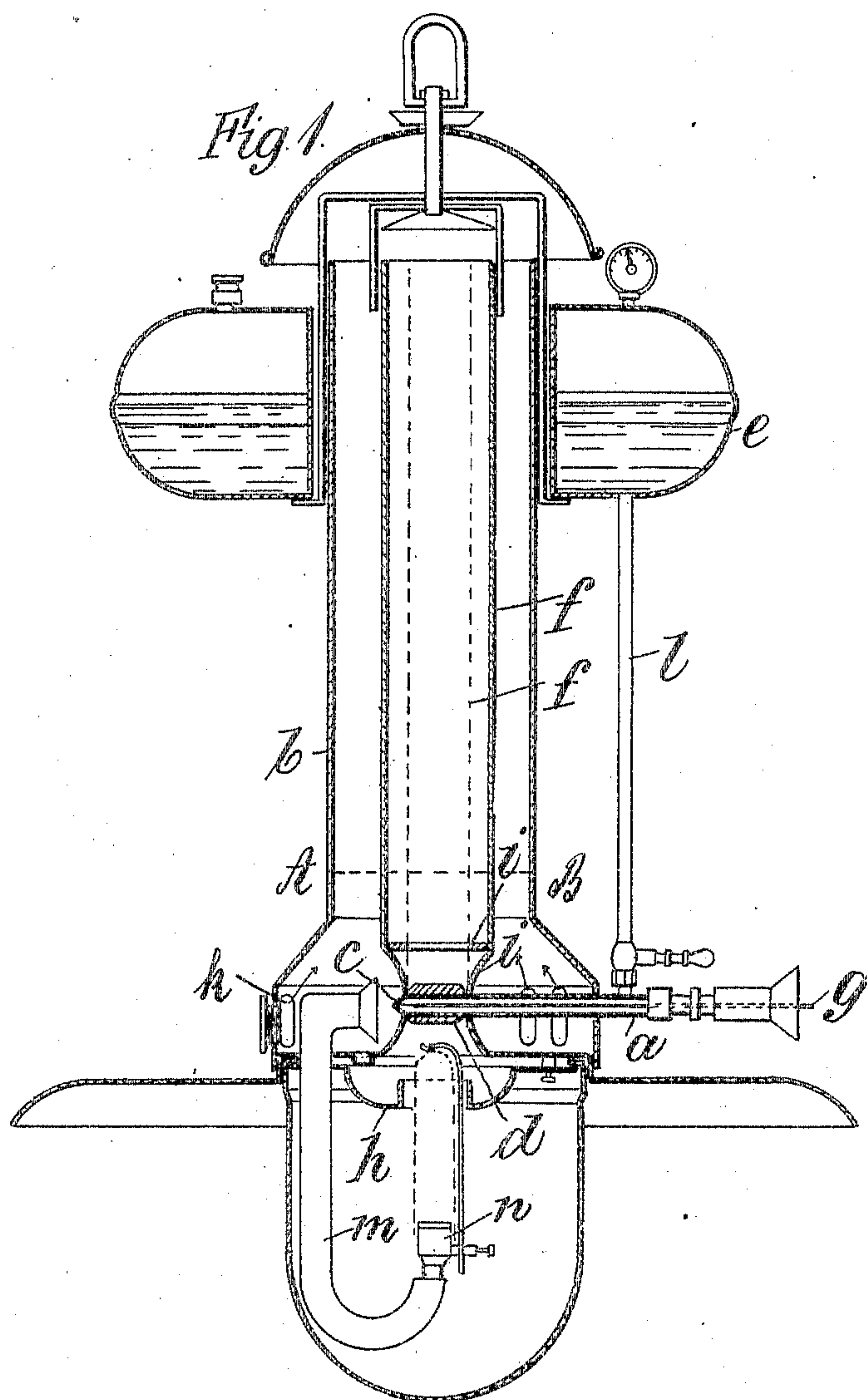


No. 789,570.

PATENTED MAY 9, 1905.

J. SPIEL.
VAPOR LAMP.
APPLICATION FILED FEB. 18, 1904.



Witnesses:
Max Becker.
Paul Albrecht.

Inventor
Johannes Spiel
By *[Signature]*
Attorneys.

UNITED STATES PATENT OFFICE.

JOHANNES SPIEL, OF BERLIN, GERMANY.

VAPOR-LAMP.

SPECIFICATION forming part of Letters Patent No. 789,570, dated May 9, 1905.

Application filed February 18, 1904. Serial No. 194,127.

To all whom it may concern:

Be it known that I, JOHANNES SPIEL, a subject of the Emperor of Germany, residing at No. 85 Turmstrasse, Berlin, Germany, have
 5 invented certain new and useful Improvements in Vapor-Lamps, of which the following is a specification.

This invention relates to a lamp burning liquid fuels for producing light by incandescence; and it has for its chief object the production
 10 of a more intense generation of vapor, which is effected according to this invention by constructing and arranging the vapor-generating device (hereinafter referred to as the "vaporizer") and the starting or heating-up device
 15 in such a manner that the entire heat of the lamp-flame, as well as the heat of the heating-up device, is conducted to a small portion of the vaporizer, which is thereby raised to
 20 bright red heat, so that an efficient generation of vapor is insured, while choking of the vaporizer-nozzle due to partial condensation of the fuel is prevented. The supply of fuel is effected by means of compressed air in the
 25 usual manner. An essential feature of the lamp is that the compressed air and the fuel are contained in one and the same receptacle, arranged at a suitable height above the burner, the said receptacle having a capacity such that
 30 when charged with fuel to burn for, say, twenty hours sufficient space will be left for an amount of compressed air sufficient to supply the said fuel to the lamp at an approximately constant or but slightly-diminishing
 35 pressure.

A suitable construction of lamp according to this invention is illustrated, by way of example, in the accompanying drawings, in which—

40 Figure 1 is a vertical central section of the lamp, and Fig. 2 is a section on the line A B of Fig. 1.

The fuel passes from the receptacle *e*, through the pipe *l*, into the vaporizer *a*, which
 45 is composed of a tube of the smallest possible thickness of wall, having at its front end a thick piece in which a nozzle *c* is inserted and protected against burning away at the place which is exposed to the heating-gases by means
 50 of a metal case *d* slipped over it. This nozzle

may be of the usual or any construction, as the specific structure of its parts forms no part of my present invention. This case serves also to store up heat, so that the action of the vaporizer is not affected by drafts, &c.
 55 The fuel which is vaporized in the vaporizer passes out of the nozzle *c*, mixes with the air that flows in through the apertures *k* in the outer chimney *b*, and passes through the pipe
 60 *m* to the burner *n*.

At a suitable height above the burner *n* is arranged the heating-up device *h*, which is constructed in the form of a dish-shaped reflector and has a central aperture of a size
 65 such that the upper part of the glow-mantle can have room therein and the gases of combustion can escape without hindrance.

The heating-up dish *h* forms the lower closure of the inner chimney *f*, which must have a diameter at least equal to the diameter
 70 of the aperture in the dish *h*, as indicated in dotted lines in Fig. 1. A space is left between the inner chimney *f* and the heating-up dish *h* to admit atmospheric air to the heating-up
 75 flame. The lower end of the inner chimney must always be widened in the manner of a funnel or of a cone, so that when starting the lamp the entire heat of the fuel burning in the dish shall be conducted to the vaporizer *a*.
 80 The inner chimney may, however, have a larger cross-section; but in such a case it is necessary by contracting the same in any suitable manner, such as by making it of funnel shape or with a double-conical contraction at
 85 a level with the passage of the vaporizer or by the insertion of a ring therein above the vaporizer, to lead the heating-gases in such a manner that they shall come in contact only with the short piece of the vaporizer. This
 90 arrangement has the particular advantage of causing the Bunsen flame of the burner and the heating-up flame to develop a blowpipe action, because by contracting the passage for the gases of combustion to the smallest allowable limit the entire heat is compelled to concentrate
 95 itself upon the small portion of the vaporizer having the nozzle mounted on it.

The fuel-receptacle *e* is made of a size such that after being charged with fuel intended to burn for a determined time sufficient space
 100

is still left for a volume of compressed air (which may be introduced by any suitable means) which is sufficient to supply the vaporizer with fuel at a but slightly diminishing pressure until the receptacle is quite empty.

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

1. A fuel-burning device comprising a vaporizer, means for conducting fuel thereto, a burner, a casing inclosing said vaporizer and burner, means for conducting air within the casing, means for conducting air and vapor to the burner, a stationary cup-shaped initial-heating device having a passage therethrough and centrally located above the burner, and a chimney above the vaporizer, having a flared lower end immediately above the initial-heating device.

2. A fuel-burning device comprising a casing having openings for the admission of air, a burner, a vaporizer having a nozzle, a tube for conducting vapor and air to the burner, said tube having a flared extremity located in front of said nozzle, a chimney above the vaporizer, an annular initial-heating device above the burner, constituting a closure for the lower end of said chimney, and having a central passage for the entrance of products of combustion.

3. A fuel-burning device comprising a burner, a vaporizer having a nozzle above the burner, means for conducting air and vapor from the vicinity of said nozzle to the burner, a cup-shaped initial-heating device having a passage therethrough, a chimney above said

heating device and the vaporizer, said heating device and chimney having a space between them for the admission of air, and a heat-retaining medium upon said vaporizer in the lower part of said chimney.

4. A fuel-burning device, comprising a burner, a vaporizer having a nozzle located above the burner, means for conducting air and vapor from the vicinity of said nozzle to the burner, means for supporting a mantle above the burner and below the vaporizer, a cup-shaped initial-heating device having a passage therethrough for the reception of said mantle, a chimney above said heating device and vaporizer, said heating device and chimney having a space between them for the admission of air, and a heat-retaining medium upon said vaporizer in the lower part of said chimney.

5. A fuel-burning device, comprising a vaporizer, a burner located below the vaporizer, means for conducting air and gas from the vaporizer to the burner, an initial-heating cup between the burner and vaporizer and having a passage therethrough, and means for supporting a mantle above the burner partly within said passage and below the vaporizer.

In witness whereof I have hereunto signed my name, this 28th day of January, 1904, in the presence of two subscribing witnesses.

JOHANNES SPIEL.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.