

No. 797,972.

PATENTED AUG. 22, 1905.

J. B. MORELAND.
VAPORIZER FOR EXPLOSIVE ENGINES.
APPLICATION FILED JAN. 16, 1904.

Fig. 1.

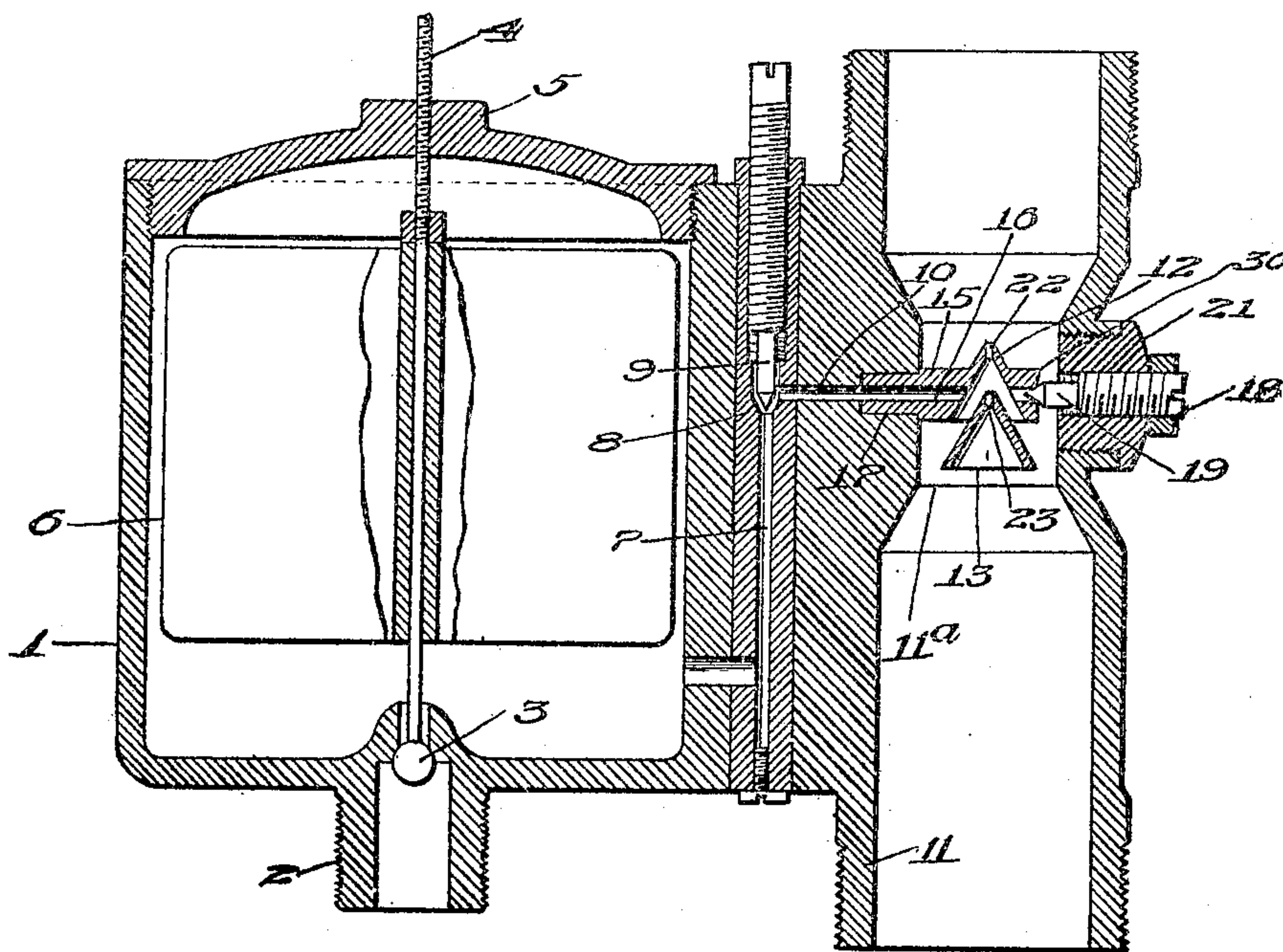


Fig. 2.

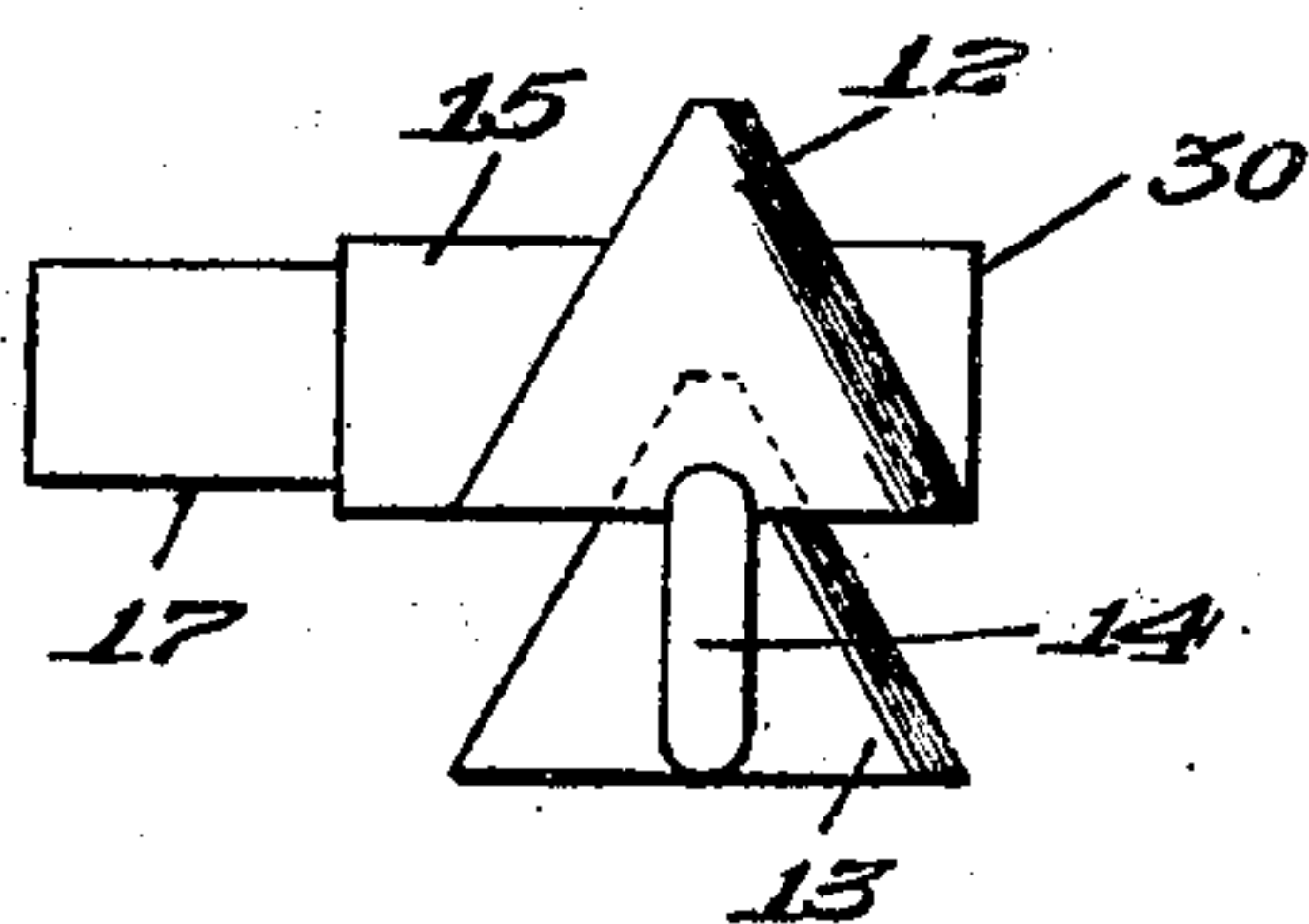
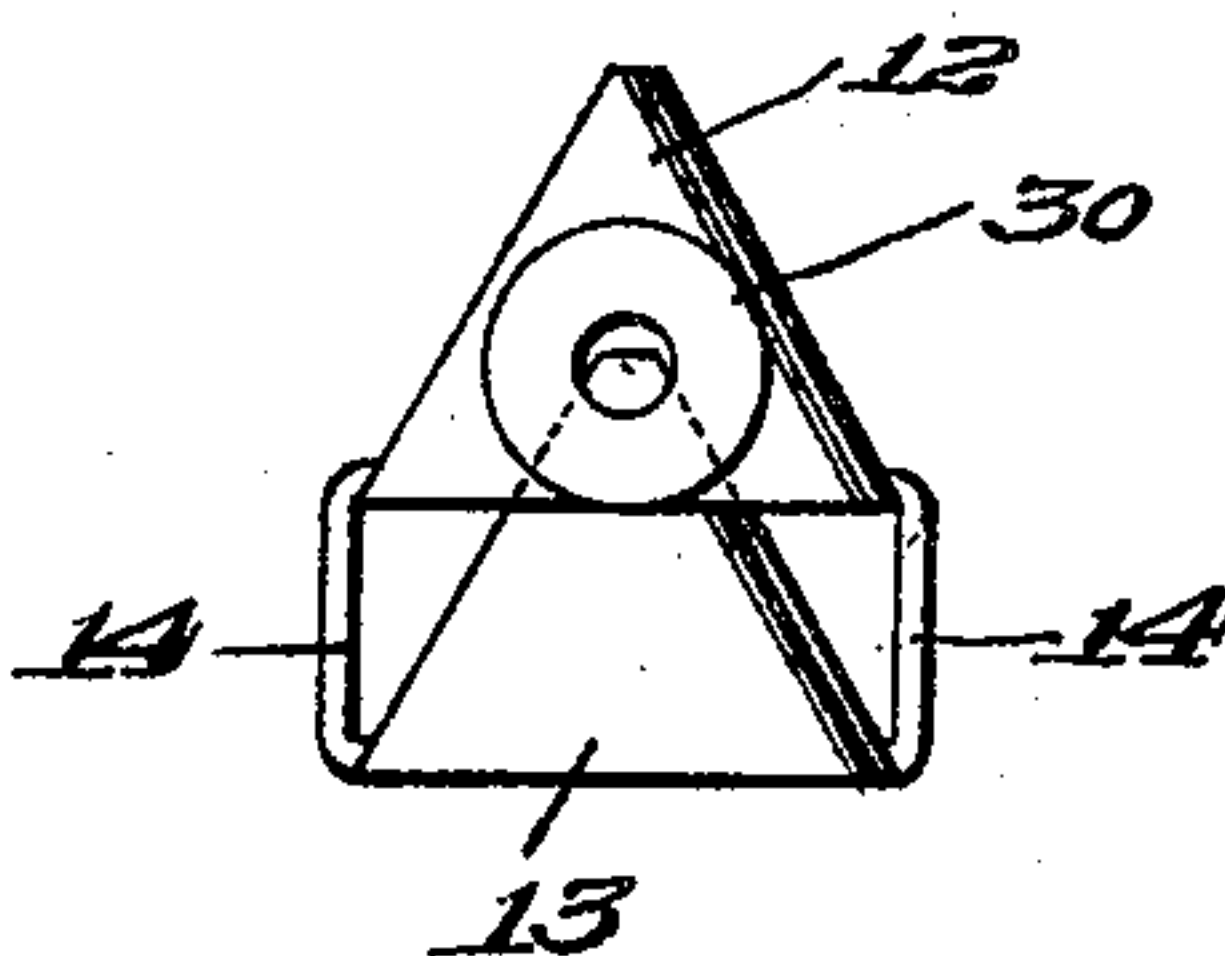


Fig. 3.



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UNITED STATES PATENT OFFICE.

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VAPORIZER FOR EXPLOSIVE-ENGINES.

No. 797,972.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed January 16, 1904. Serial No. 189,248.

To all whom it may concern:

Be it known that I, JAMES B. MORELAND, a citizen of the United States, residing at Belvidere, in the county of Boone and State of Illinois, have invented certain new and useful Improvements in Vaporizers for Explosion-Engines, of which the following is a full, clear, and exact specification.

My invention relates to vaporizers for gasoline and other explosion engines; and it has for its primary object to provide means for producing a very high degree of vacuum in the induction pipe or passage at the point of introduction of the fuel, whereby the latter will be subjected to great rarefaction, and consequently not only atomized, but raised into vapor without the aid of heat, which, as well known, prematurely expands the explosive mixture, and thereby reduces its explosive power per cubic inch.

With these ends in view the invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a vertical sectional view of a vaporizer embodying this invention. Fig. 2 is a detail side elevation of the vaporizer-nozzles, and Fig. 3 is an elevation thereof looking at right angles to the view presented in Fig. 2.

1 is a chamber for containing gasoline or other liquid fuel preparatory to vaporization provided with an inlet 2, which is closed when the level in the chamber 1 rises to a predetermined point by a valve 3, connected to a valve-stem 4, passing loosely through the cap 5 of chamber 1 and also through a float 6, which serves to close the valve 3 when the liquid rises to the predetermined level, according to common practice in this art. From a point near the bottom of chamber 1 leads a duct 7, formed with a valve-seat 8, adapted to receive needle-valve 9 for governing the amount of liquid passing through the duct 7, and from the duct 7, at a point beyond the valve-seat 8, extends a duct 10, which connects it with induction pipe or passage 11, leading to the engine (not necessary to illustrate) and communicating with the atmosphere. The passage 11 in the vicinity of the

duct 10 is formed with a contraction 11^a, and situated centrally within this contraction, but at a distance from the surrounding walls thereof, are two inverted funnels 12 13, the lower one of which has its apex extending partially into the upper one, and this lower one is supported in any suitable way, as by side arms 14, extending downwardly from the upper one. Extending laterally from the side of the upper one is a neck 15, having a duct or passage 16, forming a continuation of or communicating with the duct 10, and to the end that the neck 15 may be better connected with duct 10 and the nozzles securely supported in their proper position the end of the neck 15 is formed with a reduced portion 17, and the end of the duct 10 is enlarged to receive this reduced portion 17. The reduced portion 17 is held in place by means pressing against the opposite side of the upper funnel and introduced from the opposite side of the passage 11, preferably by a set-screw 18, which has a conical end 19, engaging in a boss 20, formed on the side of funnel 12 opposite and in line with neck 15. In forming the duct 16 in neck 15 the drill may be forced entirely through the funnel and the boss 20 as a convenient means of producing by one and the same operation the duct 16 and a seat for the conical end 19 of screw 18, which serves as a valve for closing the drill-passage in the boss 20. The screw 18 is threaded in a bushing 21, which in turn is threaded in the wall of the passage 11 and facilitates the introduction of the funnels. The lower end of each funnel is open and the apex of each is formed with a small aperture, 22 in the upper one and 23 in the lower one.

In operation this device produces a high degree of vacuum and maintains that degree substantially uniform at the point where the gasoline or fuel is introduced between the funnels throughout the time that the engine or other means is producing a draft in the induction-pipe above or beyond the funnels, the air being considerably attenuated in the contraction 11^a of the induction-passage, and this attenuation is still further increased by the air-passages around and through the funnels. The gasoline or other fuel being admitted to the upper funnel through the duct 16 is at once scattered by the air-current passing between the funnels and through their perforated ends and quickly disseminated or dis-

tributed over the interior surface of the upper funnel and also over the exterior of the lower funnel should any surplus fall thereon and being at the same time subjected to the vaporizing influence of the partial vacuum is quickly converted into vapor and carried away through the induction-passage to the motor, any surplus liquid that might follow the current above the upper funnel being driven through the small aperture in the top of the upper funnel, and thereby disseminated or atomized by the great force of the current due to the air first striking the interior of the upper funnel and then crowding through the small aperture in its apex and which is contributed to by a similar action of the air passing through the lower funnel.

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

1. In a vaporizer for explosion-engines, the combination of an induction-passage having air and fuel inlets and a gas-outlet, a funnel arranged in said passage with its apex toward said outlet, and a neck extending from the side of said funnel and having a duct communicating with said fuel-inlet.

2. In a vaporizer for explosion-engines, the combination of an induction-passage having air and fuel inlets and a gas-outlet, a funnel arranged in said passage and having a neck on one side provided with a duct and inserted into the wall of said passage in communication with said fuel-inlet, and means on the other side of the passage pressing said neck into place in said wall of the passage.

3. In a vaporizer for explosion-engines, the combination of a vertical induction-passage

having air and fuel inlets and a gas-outlet, an inverted funnel having an aperture in its apex turned upwardly toward said gas-outlet and supported in said passage at a distance from the walls thereof, and means connecting said funnel with said fuel-inlet, and a member having a conical exterior surface arranged below said funnel with its apex turned upwardly and arranged contiguous to said funnel.

4. In a vaporizer for explosion-engines, the combination of an induction-passage having air and fuel inlets and a gas-outlet, a funnel situated in said passage and having a neck on one side provided with a duct communicating with said inlet and a boss on the other side, said duct being continued through said boss, and a screw screwed into said passage and having its end engaging in the end of the duct in said boss for holding said funnel in place.

5. In a vaporizer for explosion-engines, the combination of an induction-passage having a fuel-inlet, an inverted-cup-shaped member communicating with said inlet and having its bottom turned toward the outlet of said passage and provided therein with a perforation, said cup-shaped member being without communication with the induction-passage excepting through its ends, and a member having an inclined upper surface arranged under the first said member, both of said members being of smaller diameter than said induction-passage whereby a space is left between them and the walls of said induction-passage.

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