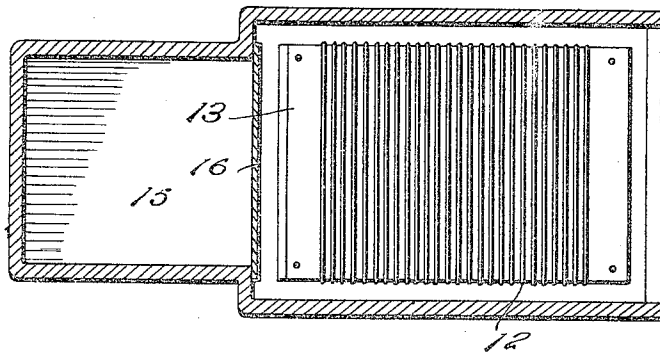
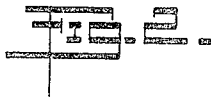
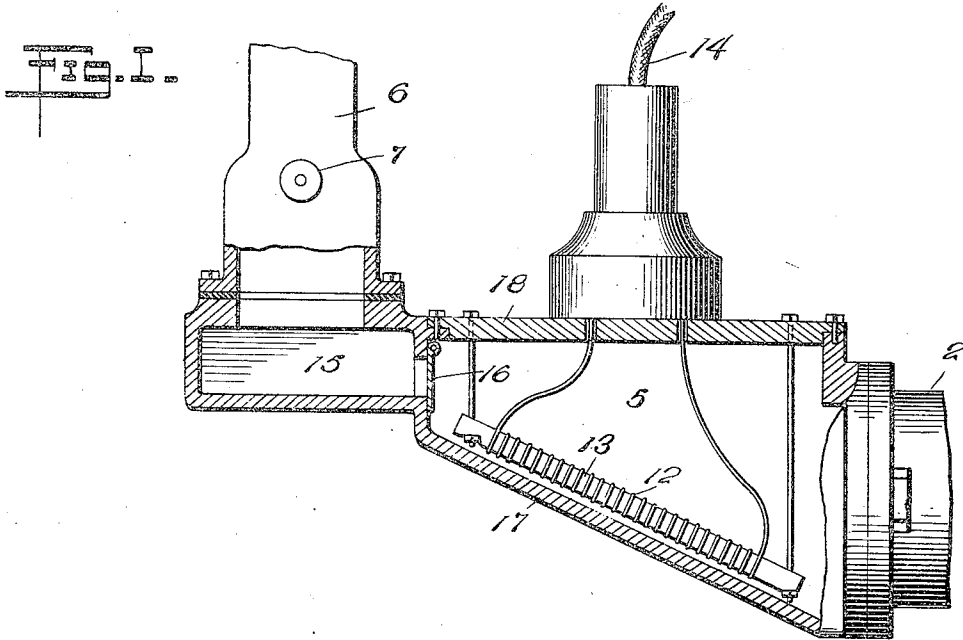


A. A. LOW & H. HERTZBERG.
INTERNAL COMBUSTION ENGINE.
APPLICATION FILED JUNE 16, 1908.

946,239.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 1.



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By their Attorney Lewis J. Doolittle

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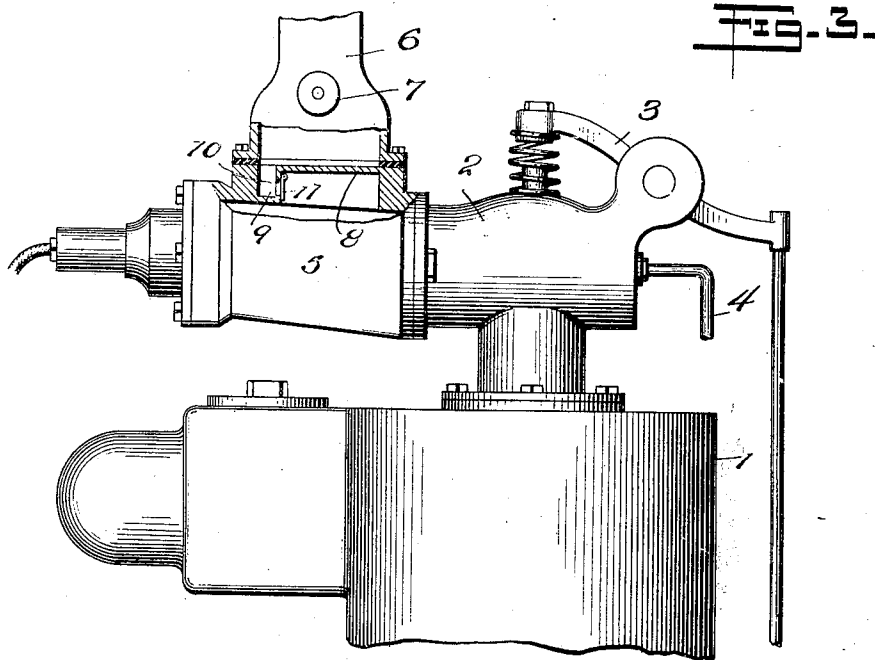


FIG. 4.

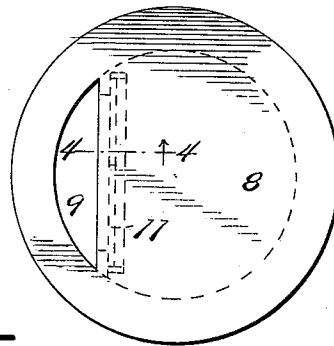
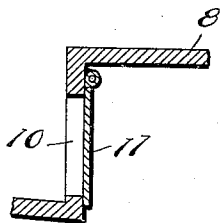


FIG. 5.

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UNITED STATES PATENT OFFICE.

ABBOT A. LOW, OF HORSESHOE, AND HARRY HERTZBERG, OF NEW YORK, N. Y.; SAID
HERTZBERG ASSIGNOR TO SAID LOW.

INTERNAL-COMBUSTION ENGINE.

946,239.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed June 16, 1908. Serial No. 438,772.

To all whom it may concern:

Be it known that we, ABBOT A. LOW and HARRY HERTZBERG, citizens of the United States, and residents, respectively, of Horse-shoe, county of St. Lawrence, and State of New York, and of the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Internal-Combustion Engines, of which the following is a specification.

This invention relates to internal combustion engines and more particularly to that portion of the engine where the fluid is vaporized and mixed with the proper amount of air to form the explosive charge.

The invention as illustrated in the accompanying drawings is shown as a design for use with explosive engines using kerosene oil. In engines of this type the oil is injected against a suitable vaporizer and the air is admitted and mixed with the oil vapor. The explosive charge thus formed is then admitted to the operating cylinder through suitable admission valves. In order to form a uniform mixture it is important that the oil vapor shall be continuously carried out from the vaporizing chamber with the air.

The object of this invention is to accomplish this result and also to prevent any of the explosive mixture formed by the oil vapor and the air from being carried back into the air chamber and pipes by any back pressure that may follow the explosion.

The advantage of these features will be evident.

In the several views like parts have been given the same reference numbers.

Figure 1 is a side elevation partially in section of a portion of an engine illustrating one embodiment of the invention. Fig. 2 is a plan view in section of Fig. 1. Fig. 3 is a side elevation partially in section of an engine showing a modification of the invention. Fig. 4 is a side elevation on line 4-4 of Fig. 5. Fig. 5 is an enlarged plan view of the air admission valve.

Referring to Fig. 3 a portion of the engine cylinder is shown at 1. Suitable admission valves are positioned in the valve chamber 2 and operated by the lever 3 and connected parts. The oil is admitted through the pipe 4 and injected or sprayed into the vaporizing chamber 5. Air is admitted from the supply pipe 6 and the admission thereof

is controlled by suitable valve 7. Positioned in the upper part of the vaporizing chamber 5 is a partition or wall 8 which extends over a portion of the opening between the vaporizing chamber and the air supply pipe 6. At one side of this opening a recess 9 is provided and an opening 10 in the wall separating this recess 9 from the vaporizing chamber 5. Covering this opening 10 is a valve 11 which may be pivotally mounted at its upper edge so as to permit the same to swing inwardly and allow the air to pass in from the supply pipe 6 to the vaporizing chamber 5 where it is mixed with the gas. This valve is arranged so that any back pressure in the vaporizing chamber 5 will cause the same to close the opening 10 and prevent the explosive mixture in the chamber 5 from being forced back in the air supply pipe 6.

The arrangement of the several parts of the device, as shown in Figs. 1 and 2, have been found to give very good results and the same possess many novel features which will be apparent from the description hereinafter given. In this arrangement the vaporizer in the chamber 5 consists of a coil of wire 12 wound upon a suitable base 13 which is preferably of insulating material. Current is supplied from the lead 14 by means of which the coil 20 is heated. The stream of oil entering through the chamber 2 strikes the heated coil 12 and is vaporized. The air is supplied from the pipe 6 and enters the chamber 15 which is separated from the vaporizing chamber 5 by means of the valve 16. This valve 16 operates in the same manner as the valve 11 just described in connection with the construction shown in Fig. 3.

With the arrangement as shown in Figs. 1 and 2 the air passes from the chamber 15 over the entire surface of the vaporizer 12 and is, consequently, thoroughly mixed with the oil vapor and also assists in forcing all of the mixture out of the vaporizing chamber 5. The inclined lower portion 17 of the vaporizing chamber 12 insures a minimum of dead space in which the oil vapors might accumulate and cause an imperfect mixture. Another feature of this construction is in the arrangement of the removable cover 18 from which the vaporizing coil is suspended by means of the four rods, as shown in Fig. 1. The coil connections are also mounted

upon this cover 18 as shown, and thus the whole may be removed together permitting access to the interior of the vaporizing chamber and will facilitate the repairing and cleaning of the coils, etc.

It will thus be seen that a simple and compact construction is provided in which the air passes over the entire surface of the vaporizer thus insuring a more perfect mixture and that the mixture is prevented from being forced back into the air supply pipe by means of the valve construction above described.

As many changes could be made in the above construction and many apparently widely different embodiments of our invention designed without departing from the scope thereof, we intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative merely of an operative embodiment of our invention and not in a limiting sense.

What we claim is:

1. In combination with an internal combustion engine, a vaporizing chamber having an increasing cross-sectional area toward its exhaust end, a vaporizing coil angularly positioned in said chamber, means for admitting air at the small end of said chamber, and means for controlling the admission of air to said chamber, said means being operative to prevent the escape of the air mixture from said chamber.
2. In combination with an internal combustion engine, a vaporizing chamber having an inclined wall providing an increasing cross-sectional area toward its exhaust end, a vaporizing coil angularly positioned in

said chamber adjacent and parallel to said angular wall, means for admitting air at the small end of said chamber, and a valve for controlling the admission of air to said chamber, said valve being operative to prevent the escape of the air mixture from said chamber.

3. In combination with an internal combustion engine, a vaporizing chamber, a removable cover for said chamber, a flat vaporizing coil attached to said cover and removable therewith, means for injecting the fluid to be vaporized into said chamber and against the flat surface of said vaporizing coil when the same is in position, and means for admitting air to said chamber to form the explosive mixture.

4. In combination with an internal combustion engine, a vaporizing chamber, a removable cover for said chamber, a flat vaporizing coil suspended from said cover in an inclined position and removable therewith, means for injecting the fluid to be vaporized into said chamber and against the flat surface of said vaporizing coil when the same is in position, and an air admission pipe positioned at one end of said chamber, said air admission and vaporizing coil being so positioned that the air passes over the flat surface of said coil.

Signed at Brooklyn, N. Y. city, in the county of Kings and State of New York, this 12th day of June, 1908.

ABBOT A. LOW.
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Witnesses:

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