

No. 825,923.

PATENTED JULY 17, 1906.

L. J. MONAHAN.
GAS ENGINE CONDENSER.
APPLICATION FILED OCT. 23, 1905.

Fig.1.

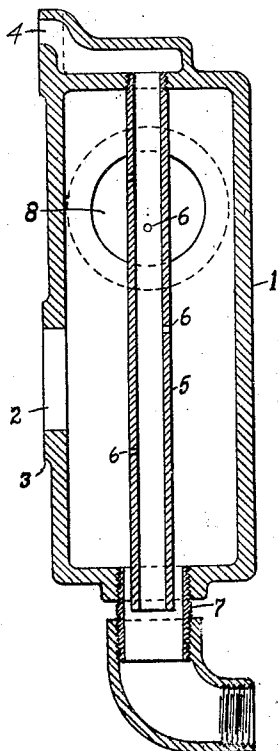
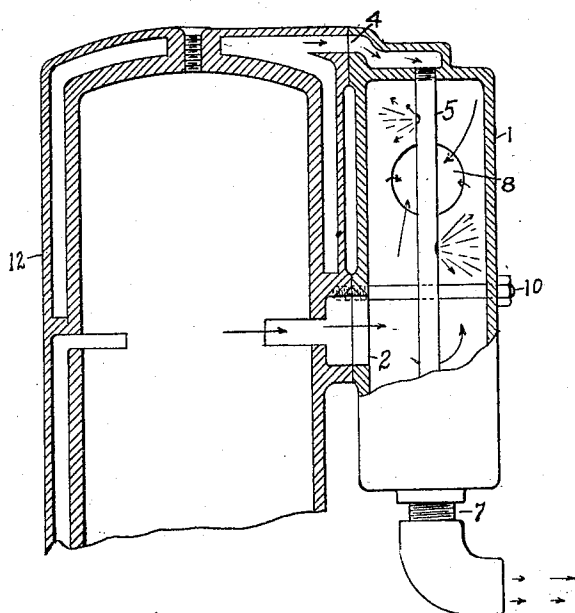


Fig.2.

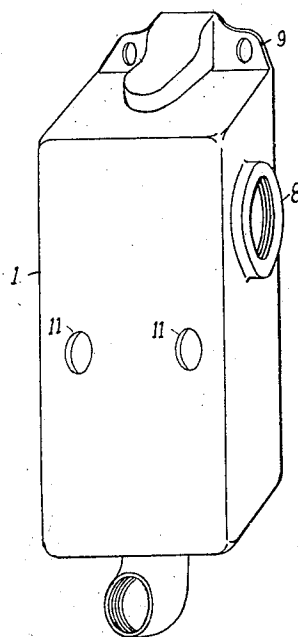


Fig.3.

WITNESSES:

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GAS-ENGINE CONDENSER.

No. 825,923.

Specification of Letters Patent.

Patented July 17, 1906.

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To all whom it may concern:

Be it known that I, LOUIS J. MONAHAN, a citizen of the United States, residing in the city of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Gas-Engine Condensers, of which the following is a specification.

This invention relates to a new device or attachment for muffling the noise and cooling or condensing the exhaust-gases in explosive-engines.

The object of the invention is to provide a neat-appearing attachment to the cylinder of explosive-engines which will perform the office of keeping the exhaust-pipes cool, as well as cooling and condensing the burned gases.

A further object is to provide a means for relieving the cylinder of back pressure during the exhaust-stroke of the engine.

In the drawings, Figure 1 is a sectional view of an engine-cylinder with the condenser attached, the latter being in part section. Fig. 2 is a sectional view of the condenser, showing the general arrangement. Fig. 3 is an outside view of same.

Referring to the drawings, the numeral 1 represents the casing or shell of the condenser or muffler. 2 is an opening for the entrance of the exhaust gases and has a projecting part or boss 3 around the opening for the purpose of holding packing between same and the cylinder or object it is bolted to. A port or passage 4 is arranged on top of the shell, as shown, for the passage of water, and this chamber or passage is of sufficient area to admit the passage of all of the discharge-water from the cylinder. An iron pipe 5 is screwed into the upper wall of the shell, as shown, with opening through into the water-passage on top. This pipe has one or a number of small holes 6 drilled therethrough, as shown, for the escape of a portion of the water descending through the pipe. At the bottom of the shell a large hole is tapped in line axially with the said pipe, and a pipe or nipple 7 is screwed therein. This nipple has a large enough internal diameter to receive the pipe 5 loosely, as shown, and on the lower end of the nipple 7 a pipe, L, or other suitable coupling or connection can be made for the discharge-water. The pipe 5 is of sufficient length to extend a short distance into the nipple 7 for the most efficient working of the de-

vice; but this is not absolutely necessary. A large hole 8 is tapped in one side toward the top of the condenser or muffler for the escape of the exhaust-gases and is of sufficient size for the efficient working of the engine immediately connected.

Suitable means can be provided for holding the condenser to the engine-cylinder; but I prefer the method here shown—viz., by securing the upper or top end to the cylinder by means of screws through the ears 9 and the middle part by tap-bolts 10, passing through the holes 11. Suitable water-tight packing can be placed between the cylinder and condenser around the said openings.

In Fig. 1 a cylinder 12 is shown and the method of attaching. The cylinder shown is of the ordinary two-cycle type and having a water-outlet at its top and made of a shape to conform with the shape of the condenser at this point to present a neat appearance and bring the condenser close to the cylinder.

The operation is as follows: Exhaust-gases from the cylinder, as shown by the long arrows, pass into the condenser and expand therein before escaping through the outlet 8. The discharge-water from the cylinder enters the passage 4 and flows down through the lower connections at the bottom. A small portion of the water escapes through the small holes of the said pipe 5. This escaping water enters the condenser in the form of a spray and evaporates and passes out with the exhaust-gases in the form of steam and cools the gases, and consequently cools the pipes and other passages for the exhaust-gases. Any excess of water that may enter the large chamber that is not evaporated into steam will drop to the bottom and can run out through the nipple 7 or around the pipe 5 at the bottom, as shown by the space between the pipe 5 and nipple 7, thus doing away with any flooding with water. This system of cooling by spraying water in with the exhaust-gases has the effect of muffling the noise of the exhaust on account of decreasing its volume before it reaches the escape end of the pipe. It is necessary in a two-cycle engine to provide for the immediate escape of the exhaust-gases in a comparatively large volume, for the reason that the whole of the exhaust must escape while the piston is at one end of the stroke and while the port is uncovered. It is evident, then, that with a

small pipe close to the cylinder the gases cannot escape at sufficient velocity to empty the cylinder, and this is also the case where the end of the exhaust-pipe is obstructed by placing it under water. A very important feature of this device is that by virtue of its large volumetric capacity the gases can escape thereinto regardless of the nature of the attached pipes or obstructions and the slow escape of the gases can take place from the condenser. I do not wish to be limited to this particular form and shape of condenser, as many other forms or shapes will readily suggest themselves.

What I claim, and desire to secure by Letters Patent, is—

1. In a condenser or muffler for explosive-engines, a chamber of suitable form to be attached to and supported by an engine-cylinder and having a comparatively large volumetric capacity, an opening thereinto for the entry of exhaust-gases, another opening for the exit of the exhaust-gases, a water-passage arranged at the upper end of the condenser and extending downward through the condenser for the passage of water, the downward-extending passage having a suitable number of small holes therethrough and a large opening at the bottom.

2. A condenser for explosive-engines comprising a chamber having openings for the passage of exhaust-gases, a water-conduit arranged vertically through the said chamber and having means at the top for receiving the discharge-water from the said engine-cylinder, one or more small holes or openings arranged in the said vertical water-conduit, and a larger opening in the bottom thereof, there being a hole or opening in the bottom of the above-said condenser-chamber arranged under or around the said water-conduit substantially as described.

3. A condenser for explosive-engines comprising an outer shell with suitable sized open-

ings therethrough for the passage of exhaust-gases, a pipe arranged vertically within the said shell and screwed into the top thereof, the said pipe having a suitable number of small holes drilled therethrough for the passage of water, a hole in the bottom of the said shell and of larger diameter than the said pipe and arranged axially with the said pipe for the purpose specified.

4. In a condenser or muffler for explosive-engines an outer chamber of comparatively large volume and of rectangular section, one side having an opening about midway of its length and another opening on the same side but near the top and of smaller area, a pipe or passage communicating with the last-said smaller opening and extending downward and having the lower end extending through the bottom of the outer chamber, a pipe connection or other suitable receptacle fitted to the bottom of the outer chamber and of larger area than the said pipe or passage and surrounding the lower end of the pipe or passage.

5. A condenser or muffler for explosive-engines comprising a chamber and adapted to be secured to an engine-cylinder so the exhaust-gases will pass into same and the discharge-water enter at the top, flat surfaces on one side for holding packing around openings therein, and means for conducting the water down through the center through a separate pipe or passage, means for allowing a portion of the water to escape through the sides of the pipe or passage, and means for allowing any surplus water to escape through the bottom of the said chamber.

In testimony whereof I hereby set my hand in the presence of the witnesses.

LOUIS J. MONAHAN.

Witnesses:

M. L. COTTRILL,
R. G. MacKENZIE.