

H. MILLER.
EXHAUST MUFFLER OUT-OUT VALVE.
APPLICATION FILED JULY 30, 1907.

966,345.

Patented Aug. 2, 1910.

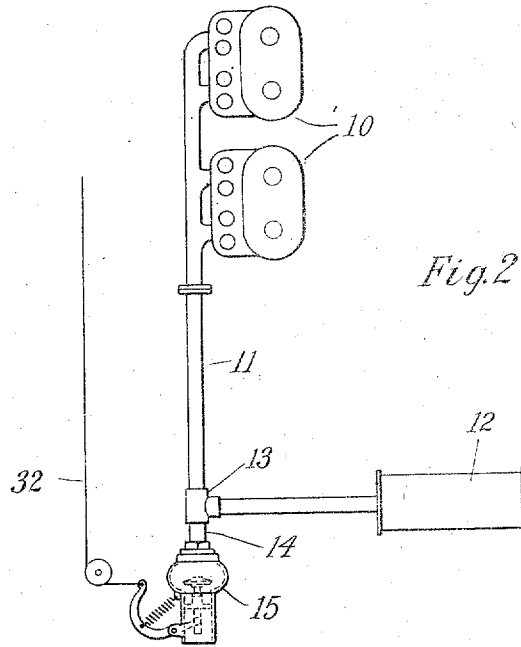


Fig. 2

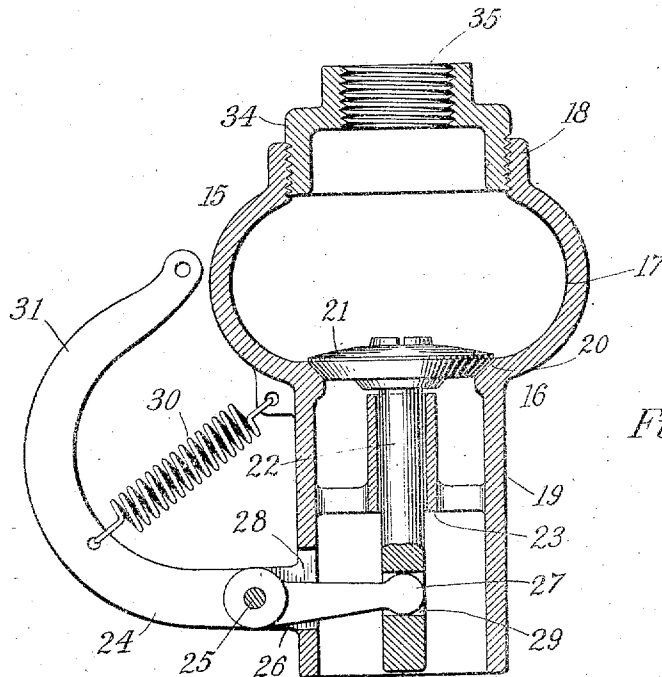


Fig. 1

Witnesses:
Raphael better
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Inventor
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By his Attorney
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UNITED STATES PATENT OFFICE.

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EXHAUST-MUFFLER CUT-OUT VALVE.

966,345.

Specification of Letters Patent.

Patented Aug. 2, 1910.

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To all whom it may concern:

Be it known that I, HUGH MILLER, a citizen of the United States, residing at Attica, in the county of Wyoming and State of New York, have invented certain new and useful Improvements in Exhaust-Muffler Cut-Out Valves, of which the following is a specification.

This invention relates to devices for cutting out the muffler of an explosion-engine and allowing the exhaust to take place directly into the atmosphere. Owing to the nature of the gas-engine exhaust it has been a difficult matter with prior cut-out devices to secure proper durability, to keep the valve tight and free from leakage when closed, yet capable of opening easily and fully by a slight application of power, and to protect the spring from overheating.

It is the aim of my invention to combine these desirable requisites in a valve of low constructive cost as will be made apparent from the succeeding description which sets forth a preferred embodiment.

Of the accompanying drawings, Figure 1 represents a longitudinal section of my exhaust cut-out valve. Fig. 2 represents a plan view showing the way in which it may be located with relation to the engine and muffler.

In the drawings, 10 is an explosion-engine, 11 is the exhaust-pipe, and 12 is the muffler at the end of the exhaust-pipe for silencing the noise of the escaping gases. At 13 in said pipe is a T-fitting having two branches connected with portions of the exhaust-pipe and a third branch connected by means of a screw-threaded nipple 14 with my improved cut-out device 15. This device, as shown, is made with a body-casting 16 which includes a swelled or enlarged valve-chamber 17 having an entrance-branch 18 and a discharge-branch 19. Between the valve-chamber and the discharge-branch is a valve-seat 20 with which coöperates a puppet-valve 21 opening and closing in the axial line of the inlet and outlet branches 18, 19. The stem 22 of said valve is located in the outlet-branch 19 and guided by a spider-bearing 23 forming a part of the casting. An operating lever 24 is pivoted at 25 between two ears 26 on the casting and one arm 27 projects through an opening 28 in the side of the outlet-branch to enter a slot 29 formed near the free extremity of the valve-stem. A spring 30 con-

nected with the other arm 31 and with a fixed point on the outside of the body-casting normally draws the valve 21 to its seat and the lever may be oscillated by a suitable cord or chain 32 leading to a point within reach of the operator, whereby the valve may be unseated whenever desired and thus cause the engine to exhaust directly into the atmosphere. The opening in the inlet-branch 18 is made of sufficient diameter to admit the passage of the valve 21 in assembling or taking apart the device and said branch is internally threaded to receive either the end of the exhaust-pipe nipple 14 directly, or a coupling nipple 34 having a smaller internal thread 35 whereby a smaller pipe nipple may be used as a connection with the exhaust-pipe. The fitting 34 may be interchanged to fit different sizes of pipe nipples.

Among the advantages of my improvement are the fact that the valve is seated by the exhaust pressure as well as by the spring 30, has no sliding contact with its seat, and all the operating connections are on the discharge side of the valve, its stem 22 being protected within the discharge-branch 19 and not subject to the heat of the exhaust gases except when momentarily opened to cut out the muffler. This makes it very durable and pressure-tight but capable of opening to its full extent with a comparatively small exertion of force on the lever 31. The enlarged valve-chamber 17 permits a free access of the gases to the valve without strangling, and by making the valve removable through the inlet-branch 18 I can form the body 16 all in one casting. This chamber also tends to collect soot and oil from the exhaust and such sediment may be deposited in considerable quantity without interfering with the seating or unseating of the valve. When the valve is opened the sediment is blown out by the exhaust. The valve should preferably have a horizontal position in use as indicated in Fig. 2 but may also be used vertically or at a slanting angle.

It will be understood that the attachment of my cut-out device to the exhaust-pipe by means of a branch connection composed of separate members such as the T 13 and nipple 14, is not an essential feature of the invention since it may be convenient in practice to vary this arrangement, and the form of the member 34 whereby connection is

effected between my device and the exhaust-line may be suitably varied, as may also the particular form and shape imparted to the casing body 16 and the particular form of coupling which connects the members 16 and 34. I consider it however important to make the casing in two parts having a separable connection, one part carrying the inwardly-opening valve and the other part being formed for connection with the exhaust-line at any point anterior to the gas-obstructing or silencing portions of the muffler, the opening at the joint between the two members being large enough to admit the passage of the valve in assembling the latter with the other parts of the cut-out device.

I claim:

1. The combination with an explosion motor and an exhaust-muffler therefor, of a cut-out device located between the motor and the muffler and comprising a puppet valve adapted to open inwardly against the pressure of the exhaust, a casing having a discharge-outlet for the escape of the gases posterior to the valve, said casing being composed of two parts having a separable connection, one of said parts carrying the valve and the other having means connecting it with the exhaust-line of the engine, and operating means for said valve mounted on the casing and having connection with the valve through said discharge-outlet.

2. The combination with an explosion motor, its exhaust pipe and the exhaust muffler, of a cut-out device located on the exhaust pipe between the motor and the muffler and

adapted to discharge the exhaust directly into the atmosphere, said device comprising a casing formed with an outlet-branch and a valve-seat at the entrance thereof, an inwardly-opening puppet-valve cooperating with said seat, valve-operating connections mounted on the casing and reaching the valve through said outlet-branch, and means forming a separable connection between said casing and the exhaust-pipe.

3. The combination with an explosion motor and an exhaust-muffler therefor, of a cut-out device located between the motor and the muffler and comprising a casing in two parts one of which connects with the exhaust-pipe, the other being detachably connected with the first part and formed with an outlet branch and a valve-seat, an inwardly-opening puppet-valve cooperating with said valve-seat and having a stem guided in the outlet-branch, said valve being removable when the parts of the casing are separated, an operating lever pivoted on the outlet-branch and having an arm engaging the valve stem, and an external spring connected with the casing and with a second arm of the lever for normally seating said valve.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses, the 17th day of July 1907.

HUGH MILLER.

Witnesses;

O. H. HOPKINS,
HENRY B. FLASH.