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MUFFLER FOR INTERNAL COMBUSTION ENGINES.

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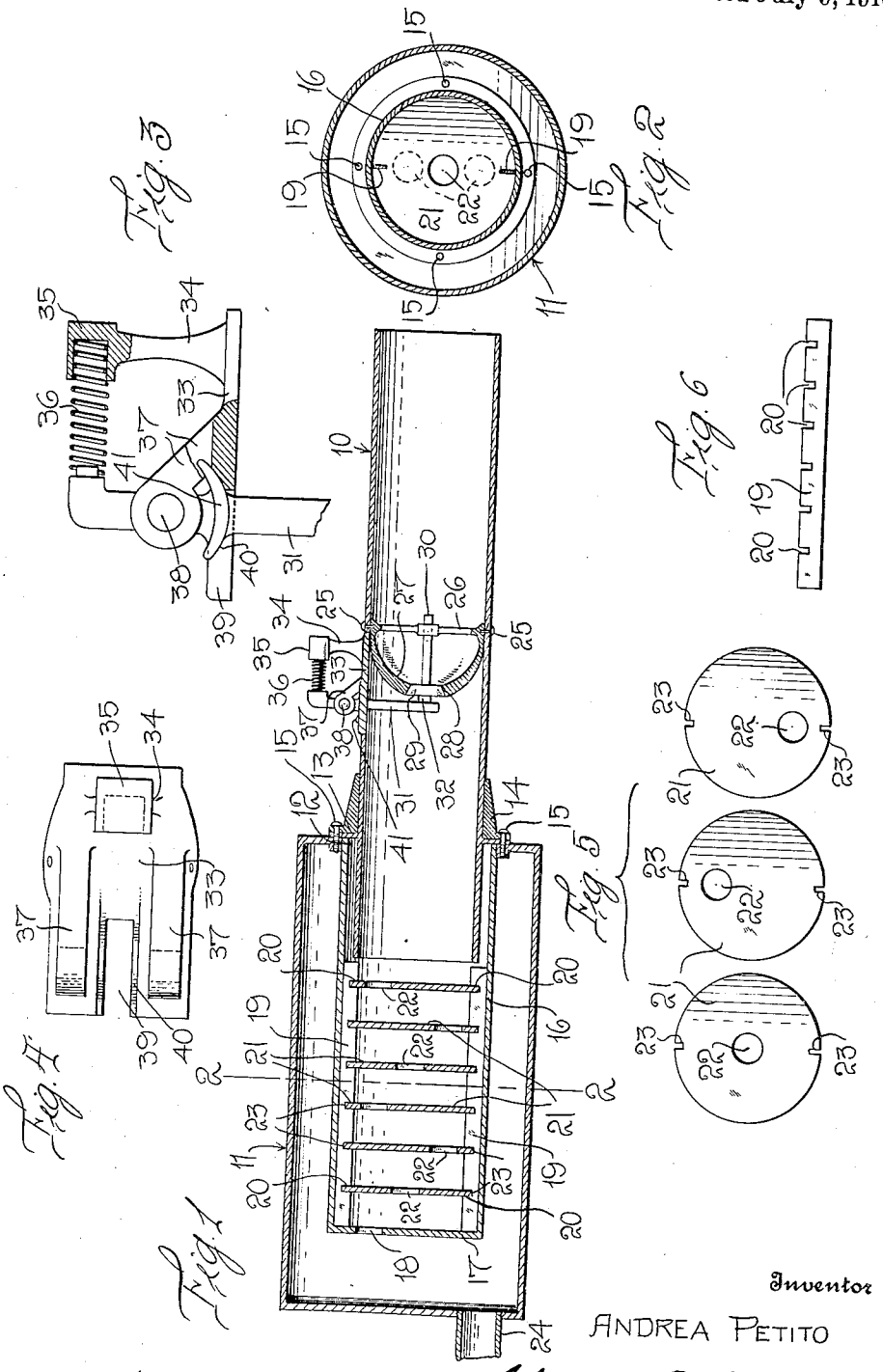


Fig. 3

Fig. 2

Fig. 6

Fig. 4

Fig. 5

Fig. 1

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MUFFLER FOR INTERNAL-COMBUSTION ENGINES.

1,271,758. Specification of Letters Patent. Patented July 9, 1918.

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To all whom it may concern:

Be it known that I, ANDREA PETITO, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Mufflers for Internal-Combustion Engines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to mufflers for internal combustion engines such as are used on motorcycles, automobiles, etc., and the general object of the invention is to provide an improved form of muffler of such construction that the explosive sound of the exhaust will be very much deadened.

A further object is to provide a construction of this kind, in which a spring actuated valve normally closes the passage through the muffler, this spring actuated valve being opened by the exhaust gases to permit the exhaust gases to pass into the muffler proper at a reduced pressure.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a longitudinal sectional view of a muffler constructed in accordance with my invention;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged side elevation of the valve operating lever and its support, the support being partly in section;

Fig. 4 is a top plan view of the support for the lever;

Fig. 5 is a face view of several baffle plates;

Fig. 6 is a face view of one of the strips 19.

Referring to these figures, 10 designates a pipe connected to the exhaust pipe of the engine and 11 designates a relatively larger cylindrical casing which may be made of sheet metal, this casing having an opening 12 at one end into which the pipe 10 extends, this pipe being smaller in diameter than the opening. 13 designates a plate detachably connected to the end wall of the casing 11, and attached to this plate is a thimble 14 which engages the pipe 10. The plate is detachably held in the end wall 11 by means of screws 15, which pass through a flange on pipe 10.

Disposed within the casing 11 and operatively connected to the end wall thereof and extending into the opening 12 is a muffler pipe 16, preferably made of sheet metal. The pipe 10 extends into this muffler pipe and is spaced therefrom. The opposite end of the pipe 16 is closed by an end wall 17 having an opening 18. Extending longitudinally along the pipe 16 on its inside are the strips 19 which are notched at intervals as at 20 to receive baffle disks 21. Each of these disks is formed with a passage 22 and each disk is notched at opposite points on its periphery as at 23 to fit over the stop 20. These baffle plates 21 are disposed in such relation to each other that the openings 22 are staggered so that each opening of one disk is opposed to a perforate portion of the next adjacent disk or baffle, thus causing the products of combustion to take a circuitous course. The casing 11 at its outer end is formed with a relatively small opening to which is connected an outlet pipe 24.

Detachably mounted within the pipe 10, as by means of screws 25, is a spider 26, which supports the concavo-convex web 27 having a central opening 28 constituting a valve seat. Seating in this opening is a valve 29 having a stem 30, which has sliding engagement with the spider 26. For the purpose of normally holding this valve closed, I provide a lever designated generally 31, which at its inner end is operatively connected to the valve 39. The extremity of this lever may have a rearwardly extending stud 32 to bear against the valve 29. Mounted on the wall of the pipe 10 is a base plate 33 having an upstanding post 34 formed at its upper end with a socketed head 35 to receive a spring 36. Extending upward from the base plate are the laterally disposed brackets 37, through which a pivot pin 38 passes, this pin passing through the lever 31. The upper end of the lever is laterally turned to face the socket in the head 35 and the spring 36 operatively engages the upper end of the lever. The base plate is slotted as at 39 and the upper face of the base plate is formed with a concave recess 40, which is concentric to the axis of rotation of the lever 31. The lever 31 is formed below its pivotal axis with a convex head 41, which bears in the recess 40 and has close contact therewith. This head 41 bearing at all times upon the concave seat

40 closes the slot 29 and prevents the passage of products of combustion through the slot.

The operation of this muffler will be obvious from the drawing. At each exhaust the pressure of the gases will cause the valve 29 to open and the gases will pass, by way of pipe 10, into the pipe 16 and thence the gases will pass through the perforations 22 in the several baffle plates and out through the opening 18 into the interior of the casing 11 and from thence will be discharged through the pipe 24. It will be seen that this device is very simple, may be cheaply manufactured and is easily installed, and I have found in practice that it provides a very effective muffler. The check valve 29 checks the outward passage of the combustion products and at the same time prevents the return of these products. The baffles 21 still further check the gases and permit them to expand until finally the gases pass into the casing 11 where they are finally expanded and pass quietly out through the passage 24.

While I have illustrated the particular embodiment of my invention, it will be understood that many changes may be made within the scope of the appended claims without departing from the spirit thereof.

Having described my invention, what I claim is:—

1. In a muffler, a pipe adapted to be connected to the exhaust pipe of an engine, a spider detachably mounted within the said pipe and having a concavo convex web formed with a central valve seat, a valve coacting with said seat and having a stem extending through the spider, a lever extending through the wall of the pipe and bearing at its inner end against the valve, and a spring bearing against the outer end of the lever and holding the valve closed.

2. In a muffler, a pipe adapted to be connected to the exhaust pipe of the engine and formed on its interior with a valve seat, a base member mounted upon the pipe and having a longitudinally extending slot and upwardly extending brackets and an upwardly extending post rearward of the brackets, a lever extending through said slot and pivotally mounted upon the brackets, a valve carried on one end of the lever and engaging the seat, and a spring extending from the post to the upper end of the lever and urging the valve to its closed position, the base being formed with a concaved recess and the lever having a convex head engaging in the recess, said convex head at all times preventing the passage of products of combustion through said slot.

3. A muffler comprising a main pipe leading from the exhaust of an engine, a relatively large casing mounted upon the end of the main pipe, a muffler pipe disposed within the casing larger than the main pipe and into which said main pipe discharges, said muffler pipe for a portion of its length having laterally disposed notched strips, and a plurality of baffle disks mounted on said strips and having staggered perforations, the casing being formed at its outer end with a discharge opening.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

ANDREA PETITO.

Witnesses:
JAMES F. PERETI,
GIUSEPPE FIMIANO.