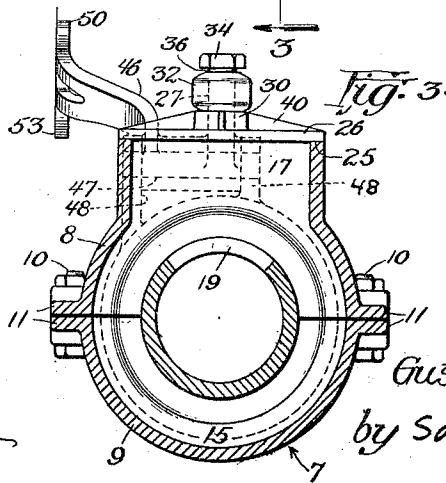
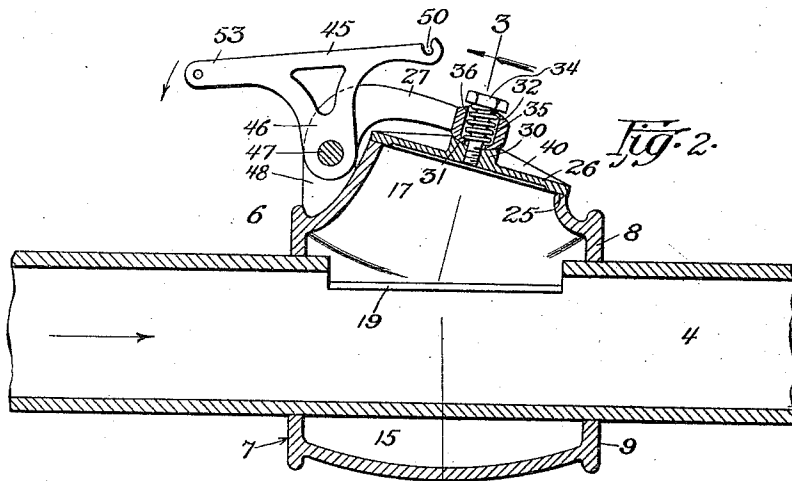
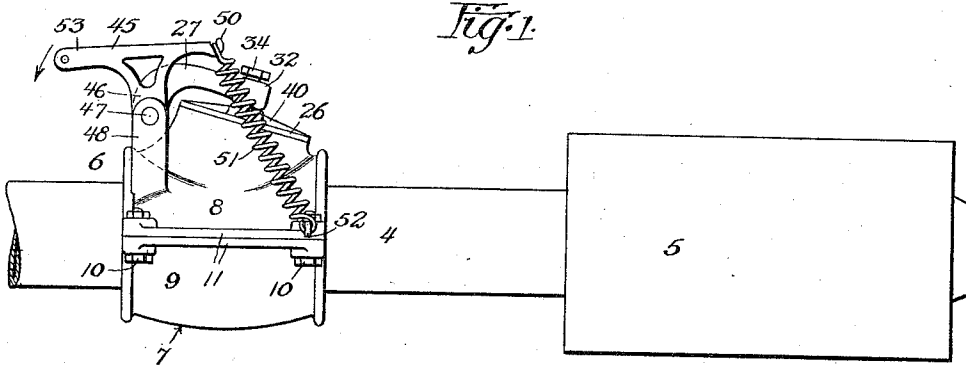


G. LUNDBERG.
MUFFLER CUT-OUT.
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1,006,108.

Patented Oct. 17, 1911.



Witnesses:
J. V. Daggett.
C. Daggett.

Inventor:
Gustave Lundberg
by Samuel D. Hirsch.
Atty.

UNITED STATES PATENT OFFICE.

GUSTAVE LUNDBERG, OF CHICAGO, ILLINOIS.

MUFFLER CUT-OUT.

1,006,108.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GUSTAVE LUNDBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Muffler Cut-Outs, of which the following is a specification.

This invention relates to means for relieving the pressure in the exhaust pipes or muffler pipes of internal combustion engines, and more especially to an improved pressure relief valve, adapted for use in connection with the exhaust pipe of such an engine. Such a valve is ordinarily used at a point in the exhaust pipe between the engine and the muffler, and the valve which is here illustrated as embodying the present invention is shown as so arranged. It comprises, briefly, a two part casing or sleeve adapted to be clamped upon the exhaust pipe to cover an opening through the wall of such pipe, such sleeve having an outlet port in registry with the opening in such pipe, and a valve member, or valve disk, adapted to fit over and close such outlet port. These parts, and others, may be better understood by reference to the accompanying drawings, in which:

Figure 1 is a view in side elevation showing a portion of the exhaust pipe of an engine, a muffler, and my improved cut-out valve in place upon the former. Fig. 2 is a longitudinal vertical section through said exhaust pipe and valve. Fig. 3 is a transverse vertical section on the angular line 3—3 of Fig. 2, looking in the direction indicated by the arrows.

As shown in said drawings, 4 indicates a portion of the exhaust pipe leading to the muffler 5, and 6 designates as a whole the complete valve in place upon such exhaust pipe. Said valve comprises a casing or sleeve 7, shown here as formed in two parts, an upper and a lower part, 8 and 9 respectively, which may be placed upon and around the exhaust pipe and then brought together and held in place by means of bolts, and nuts 10, 10, passing through and engaging with horizontal flanges 11, 11, on the meeting edges of such parts 8 and 9. Said casing 7 is shaped at its end portions to fit closely around the wall of the exhaust pipe, the

openings through the end walls of said casing being circular, but the center portion of said casing is enlarged, leaving an annular space between the outer wall of the exhaust pipe and the inner wall of the casing, as shown at 15 in Figs. 2 and 3. The purpose of this construction is to permit of the casing being placed when necessary upon curved portions of an exhaust pipe, the openings through the end walls of said casing in such case being enlarged, by filing, or otherwise, into the form of ellipses in order to fit closely around the wall of said exhaust pipe. The part 8 of the valve casing 7 is extended a short distance diagonally upward and provided with a circular opening through such extended portion, forming an outlet port 17, which registers with an opening 19 cut through the wall of the exhaust pipe. The object in so extending the part 8 diagonally with respect to the axis of the exhaust pipe is to permit of the gases escaping from the pipe 4 through the port 17 by being first turned through less than a right angle, and also to cause them to be directed rearwardly, instead of straight down, when the valve is arranged with the opening 17 downward and placed upon the exhaust pipe of an ordinary automobile engine leading to a muffler at the rear of the car.

The annular edge of the outlet port 17 is ground flat to form an exterior valve seat 25 which is covered by a flat disk, or valve member 26, mounted upon the end of a curved swinging valve arm 27. Said disk 26 is formed with a raised boss, 30, at its center, the upper surface of which boss is spherically recessed to engage with the spherical lower surface 31 of an enlargement, or head 32, upon the end of said valve arm.

34 designates a cap screw which passes through an opening 35 through said enlargement 32, and is screwed into rigid enlargement with a threaded opening into said boss 30. The upper part of said enlargement 32 which engages with the head of said cap screw is likewise spherical. The upper part of said opening 35 is cylindrically enlarged to accommodate a coiled spring 36 which engages with the lower interior wall of said opening and with the head of said cap

screw, and the lower part of said opening 35 is also slightly larger than the diameter of said cap screw. By this means the valve disk 26 is held in engagement with the end of the valve arm, but in a manner permitting of its oscillation upon the end of such arm in order that it may always seat flat upon its seat irrespective of slight inaccuracies in the shape or movement of the valve arm or other parts, due to wear or otherwise. The purpose of the spring 36 is to always keep the upper surface of the boss and the lower surface of the head 32 in engagement with each other, and thus prevent rattle between the parts. By reason of this construction also, the valve disk is rotatable upon the end of its valve arm, and may be easily ground upon its seat by rotating it with the fingers without disassembling any of the parts. For convenience in so doing, as well as to strengthen said valve disk, the latter is provided with radial triangular ribs, 40, 40.

The means for swinging the valve arm 27 comprises a walking beam lever 45 made integral at its center or hub portion 46 with the end of said valve arm opposite to the enlarged end 32. Through said hub portion passes a pivot rod 47, mounted at its ends in vertical posts or standards 48, 48 rising from the part 8 of the valve casing 7. At the end of said lever 45 which is toward the valve disk is provided a hook or opening 50 engaging with a coiled spring 51, secured at its opposite end to a lug 52 upon the valve casing. By the tension of this spring the valve arm 27 is drawn down and the valve disk 26 normally kept upon its seat, while it is evident that a movement of the opposite end 53, of the lever 45 in the direction indicated by the arrows will raise the valve disk from its seat and allow the escape of gases through the outlet port. Such a movement of the lever 45 is conveniently effected by an upward pull upon the end 53 when the device is arranged with the outlet port downward, which would be the ordinary arrangement upon the exhaust pipe of an automobile engine. It is evident also that an excess of pressure in the pipe 4, due to a "muffler explosion," or otherwise, will tend to raise the valve disk from its seat and allow the gases to escape, whereby the muffler and other parts may be saved from injury.

The parts here shown including the lever 45, the pivot rod 47 and the standards 48, operating the valve arm 27 may be otherwise arranged without departing from the spirit of the present invention, but the arrangement here shown is deemed a preferable one in that it allows the freest escape of gases through the outlet port, directing them away from the operating parts of the device, and allowing them to escape toward

the rear of the car when the device is used upon the exhaust pipe of an automobile engine as suggested above.

I claim as my invention:

1. A muffler cut-out comprising a divided sleeve adapted to be placed upon an exhaust pipe and provided with a diagonally arranged outlet opening having an exterior valve seat, a movable valve disk adapted to seat upon said valve seat, means for yieldingly maintaining said valve disk in one of its positions, and means for moving it into another position.

2. A muffler cut-out comprising a divided sleeve adapted to be placed upon an exhaust pipe and provided with an outlet opening having an exterior valve seat, a swinging valve arm and a valve disk mounted thereupon and adapted to seat upon said valve seat, said valve disk being mounted upon said valve arm in a manner to permit of its oscillation and rotation, and means for yieldingly maintaining said valve arm in a position with said valve disk upon its seat.

3. A muffler cut-out comprising a divided sleeve adapted to be placed upon an exhaust pipe and provided with an outlet opening having an exterior valve seat, a swinging valve arm carrying a valve disk adapted to seat upon said valve seat and having a spherical surface, said valve disk having a part of its surface spherically recessed and adapted to engage with the spherical surface upon said valve arm, means for maintaining said spherical surfaces in engagement, and means for yieldingly maintaining said valve arm in a position with said valve disk upon its seat.

4. A muffler cut-out comprising a divided sleeve adapted to be placed upon an exhaust pipe and provided with an outlet opening having an exterior valve seat, a swinging valve arm carrying a valve disk adapted to seat upon said valve seat, said valve disk engaging with said valve arm in a manner to permit of the oscillation and rotation of said valve disk, a pivoted walking beam rigidly connected to said arm and a spring connected to said beam for yieldingly maintaining said valve arm in a position with the valve disk upon its seat.

5. A muffler cut-out comprising a divided sleeve adapted to be placed upon an exhaust pipe and provided with an outlet opening having an exterior valve seat, a swinging valve arm and a valve disk mounted thereupon and adapted to seat upon said valve seat, said valve disk being mounted upon said valve arm in a manner to permit of its oscillation and rotation, and means for yieldingly maintaining said valve arm in one of its positions.

6. The combination with an exhaust pipe, of a muffler cut-out adapted to be placed thereupon and comprising a divided sleeve

provided with an outlet opening and a movable valve adapted to close the same, the interior wall of said sleeve being adapted to fit closely around the wall of said exhaust
5 pipe at the ends of said sleeve, but being enlarged and adapted to fit loosely around said exhaust pipe in its portion between said ends.

In witness whereof, I have hereunto set my hand in the presence of two witnesses 10 this 6th day of July 1910.

GUSTAVE LUNDBERG.

Witnesses:

BESSIE D. KENNEY,
WILLIAM J. ANDREWS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
