J. S. LOSEE.

MUFFLER CUT-OUT.

APPLICATION FILED AUG. 16, 1915.

1,227,461.

Patented May 22, 1917.

2 SHEETS—SHEET 1.

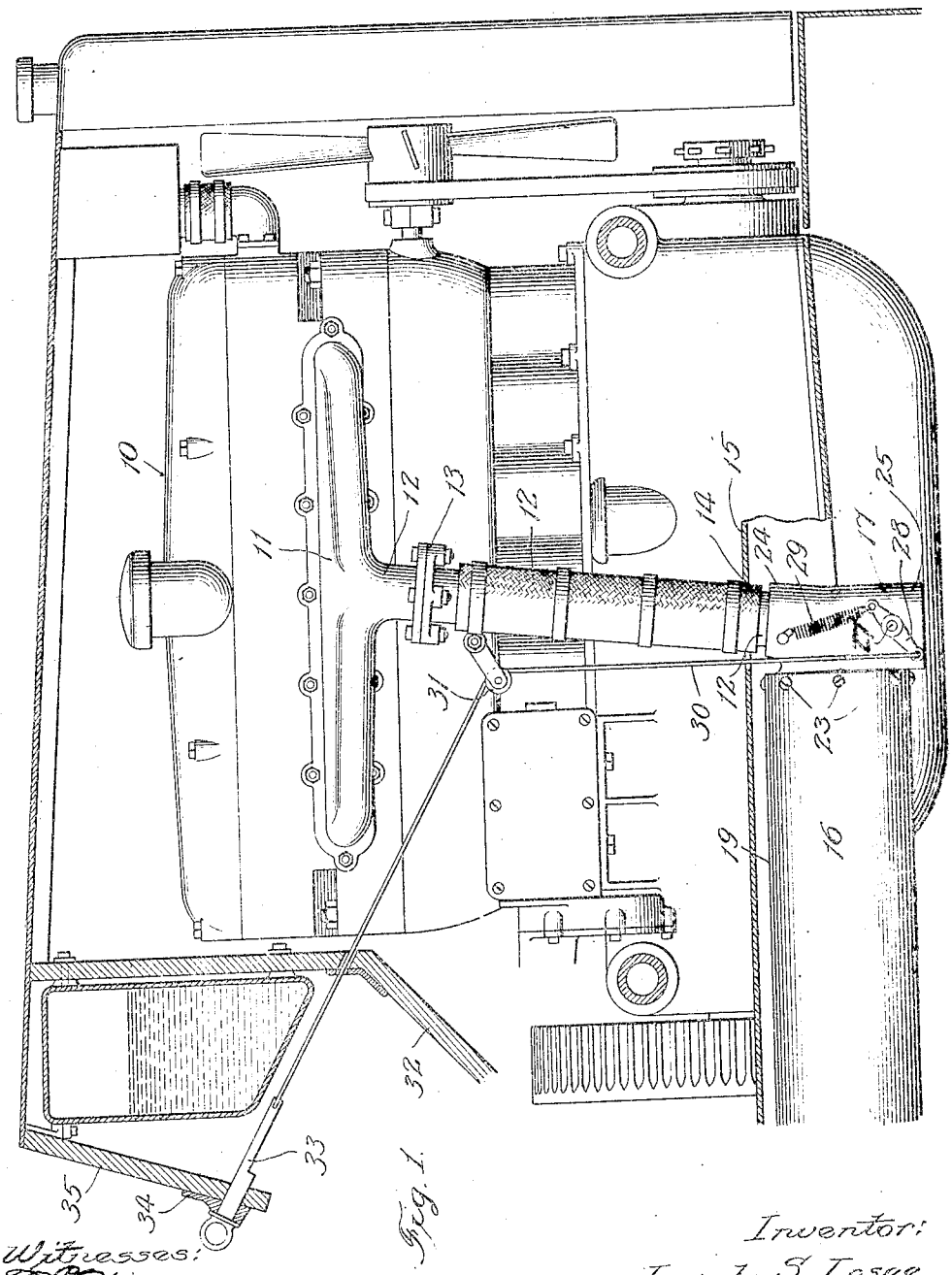


Fig. 1.

Witnesses:
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Geo. H. Buell.

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2 SHEETS—SHEET 2.

Fig. 3.

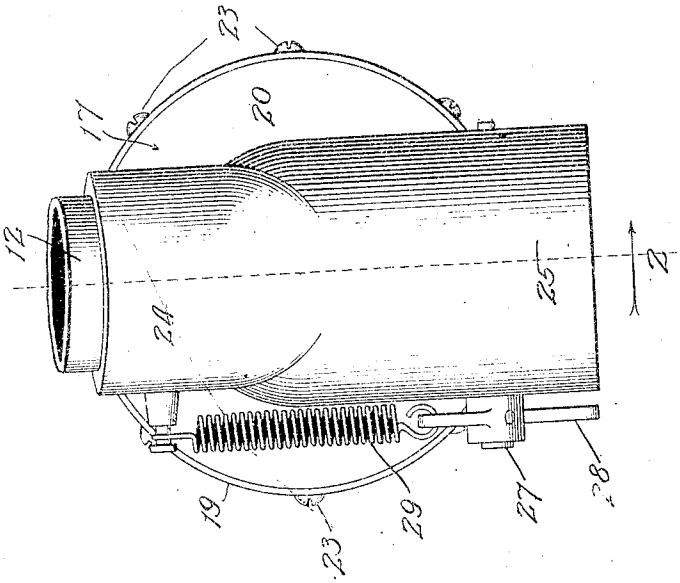
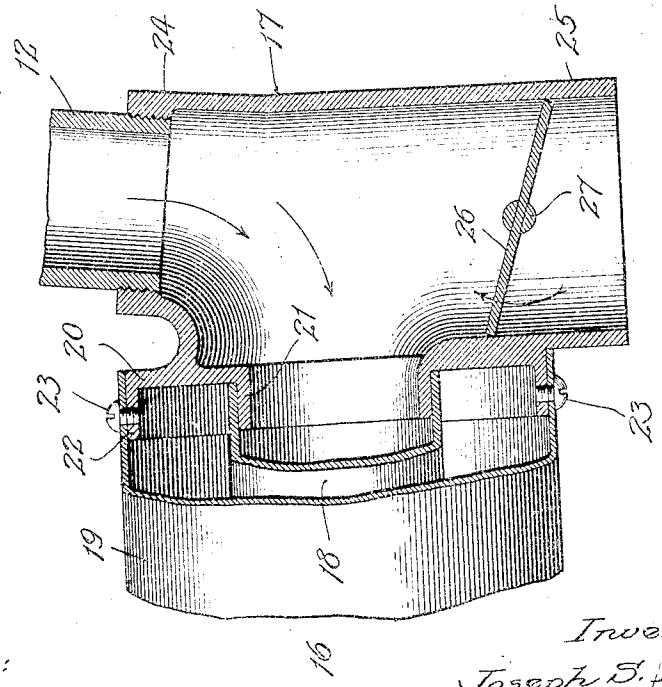


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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MUFFLER CUT-OUT.

1,227,461. Specification of Letters Patent. Patented May 22, 1917.

Application filed August 16, 1915. Serial No. 45,732.

To all whom it may concern:

Be it known that I, JOSEPH S. LOSEE, a citizen of the United States, residing at Hebron, in the city of McHenry and State of Illinois, have invented a new and useful Improvement in Muffler Cut-Outs, of which the following is a specification.

My invention relates to improvements in internal combustion engines and relates more particularly to the exhaust pipe and the muffler or silencer and the connections therebetween. It is the special object of my invention to provide such connections in the most convenient form and to further provide a cut-off valve which shall be so related to the muffler and exhaust pipe as to most perfectly accomplish this purpose.

My invention is more particularly described in the following detailed specification and is illustrated by the accompanying drawings in which—Figure 1 is a side elevation, partly in section, of the front portion of a motor car, showing the internal combustion engine, the exhaust pipe, muffler, and the connections between these parts, together with the operating means for the cut-out valve; Fig. 2 is an enlarged vertical sectional view through the muffler head shown in Fig. 1; and Fig. 3 is an enlarged end elevaion of this muffler head.

In the drawings, the numeral 10 designates an internal combustion engine of a type commonly used for driving motor vehicles, and the numeral 11 designates the exhaust manifold thereof. This manifold will commonly be provided with a single outlet or exhaust pipe 12, and in the arrangement of the parts illustrated by the drawing this pipe is jointed as at 13 and extends downwardly at a slight rearward inclination, passing through an aperture 14 in the sod-pan 15, which commonly shields or closes the space between the engine base and the chassis frame of the vehicle. Beneath this sod-pan 15 there is mounted horizontally a cylindrical expansion chamber, muffler, or silencer, designated 16. It is a particular object of my invention to provide a suitable means for connecting the lower end of the exhaust pipe 12 to the end of the muffler 16, such means being made to embody a cut-out valve or relief valve through which the exhaust gases may be vented directly to the atmosphere without passing through the muffler.

My preferred connection between the end of the exhaust pipe 12 and the end of the muffler 16 comprises a casting generally designated 17 and embodying the following elements: first, a head member for the muffler 16; second, an inlet member adapted for connection with the exhaust pipe of the engine; and third, an atmospheric vent or outlet in which is arranged a cut-out valve. In the drawing the muffler 16 is shown as of cylindrical form and comprising inner and outer concentric sleeves 18 and 19 respectively. The casting 17 is therefore made to embody an annular head 20 having outwardly disposed flanges 21, 22, over which the sleeves 18 and 19 may be slipped, the outer sleeve 19 being then secured in place as by a plurality of machine screws 23. The casting 17 further comprises a nipple member 24 which may be internally threaded, as shown, to receive exhaust pipe 12. In the particular embodiment of the invention shown, the nipple 24 has its bore slightly inclined from the vertical to aline with the exhaust pipe, as shown in Fig. 1. Directly beneath and in substantial alinement with the nipple 24 there is provided a second nipple 25, larger in cross-section than the nipple 24 open to the atmosphere at its outer end and carrying within its bore a butterfly-valve 26, mounted upon a shaft 27. One end of the shaft 27 is extended as shown in Figs. 1 and 3, and to the projecting end is secured a double-armed lever 28, one end of which is caught by a tension spring 29, which constantly urges the valve 26 toward its closed position, as shown in Fig. 2, and the other end of which is connected to the operating cable 30, which may be extended upwardly through an opening in the sod-pan 15 and after passing over a pulley 31 may be brought rearwardly and upwardly through the dashboard 32 and connected to a notched operating handle 33, mounted in a fitting 34 upon the front face of the instrument-board or cowl-board 35. The notched handle 33 may be manually retracted, as will be readily understood, to pull the cable 30 rearwardly and thereby rock the shaft 27 in the direction indicated by the arrow in Fig. 2, in order to open the butterfly-valve 26. The valve may be maintained in this open position by the engagement of the notched portion of the handle 33 with the base fitting 34 thereof. Among the particular advantages of my construction the following may be mentioned:

First—the casting 17 forms a simple and convenient connection between the end of the opposite pipe and the muffler. Second—it further forms a head for the muffler casing. Third—the cut-off or atmospheric relief is located as near to the exhaust manifold 11 as is possible without discharging into the space within the hood or cutting through the latter. Fourth—the arrangement of the nipple 25 directly opposite the nipple 24, the muffler connection being at right-angles to the juncture, and the enlargement of the nipple 25, taken together, make of the cut-out device a highly efficient ejector by which entrance of explosive gases to the muffler (as when the motor running without ignition is used as a brake on the car) is prevented when the cut-out is open, and, furthermore, the muffler itself serves as an inlet for atmospheric air during normal operation of the motor with the cut-out open, whereby the outgoing gases are cooled. This is of particular importance in that it is the avowed object of every muffler cut-out device or relief to provide the quickest and freest possible outlet for the exhaust gases. Fifth—the atmospheric vent is located in substantial alinement with the exhaust pipe 12, whereby the exhaust gases may pass to the atmosphere with the least resistance and without change of direction. Sixth—the construction readily lends itself to the most simple and desirable form of operating connections, as is illustrated in Fig. 1.

While I have particularly described and have illustrated by the accompanying drawing a preferred construction of my invention, it is to be understood that such description and illustration is only for the purpose of making my invention more clear and that I do not regard the invention as limited to the detailed conformation or arrangement of the parts shown, except in so far as I have included such limitations within the terms of the following claims, in which it is my intention to claim all novelty inherent in my invention as broadly as is possible in view of the prior art.

What I claim as new and desire to secure by Letters Patent is:

1. The combination with a muffler-casing, of a hollow member forming a head therefor and in open communication intermediate its ends with said muffler-casing, the ends of said hollow member being open and in line with each other, one of said ends being adapted for connection with the exhaust-pipe of an engine, and the opposite end being open to the atmosphere, said opposite end being larger in cross-sectional area than said exhaust-pipe-connected end, whereby said member acts as an ejector for said muffler-casing, and a valve for closing said enlarged end.

2. The combination with a muffler-casing, of a hollow open-ended member forming a head therefor and communicating through one of its walls with said muffler-casing, said communicating wall being slightly offset relative to the ends of said head and the opposite imperforate wall of said head being unobstructed and arranged at an angle to the axis of the opening in the muffler-casing, one of the ends of said head being adapted for communication with the exhaust-pipe of an engine, and the opposite end being open to the atmosphere, whereby the gases from the exhaust pipe discharged through said head are caused to exert a suction through the muffler-casing and to cause said head-forming member to act as an ejector for said muffler-casing.

3. In combination, a horizontally arranged exhaust manifold, an exhaust pipe leading downwardly from the said manifold, a T-member having one arm connected to the lower end of said exhaust pipe and the opposite arm opening to the atmosphere, a valve for closing said atmospheric opening, a horizontally arranged muffler connected to the third arm of said T-member, an operating member for said valve passing upwardly from the valve along the exhaust pipe and from a point intermediate the length of the latter outwardly at an angle thereto, and means carried by the pipe for supporting the bend of said operating member.

JOSEPH S. LOSEE.

In presence of—
L. HEISLAR,
K. O'NEILL.