

Aug. 26, 1930.

F. D. HOLDSWORTH

1,774,178

SOUND DEADENING DEVICE

Filed Aug. 26, 1927

Fig. 1.

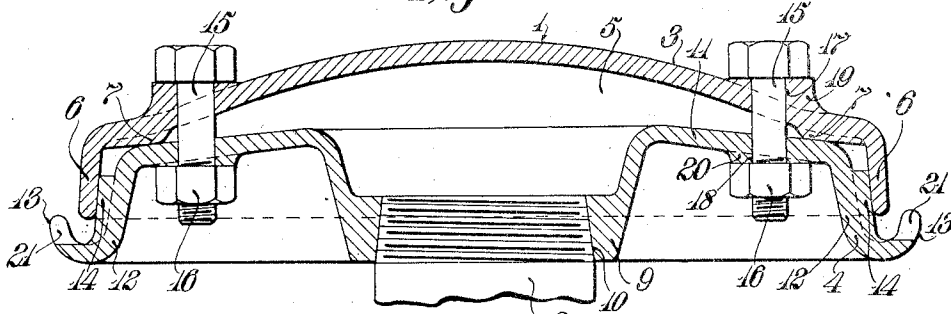


Fig. 2.

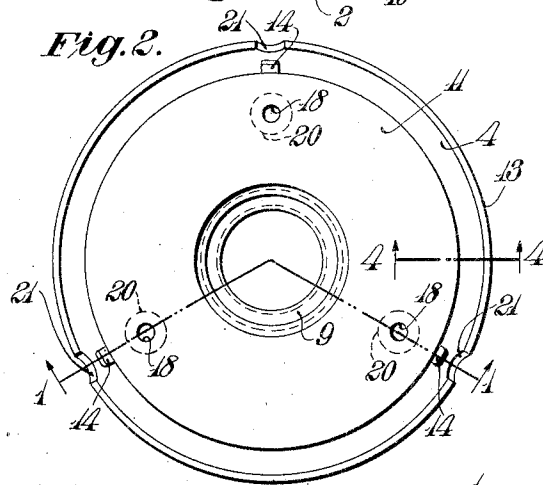


Fig. 3.

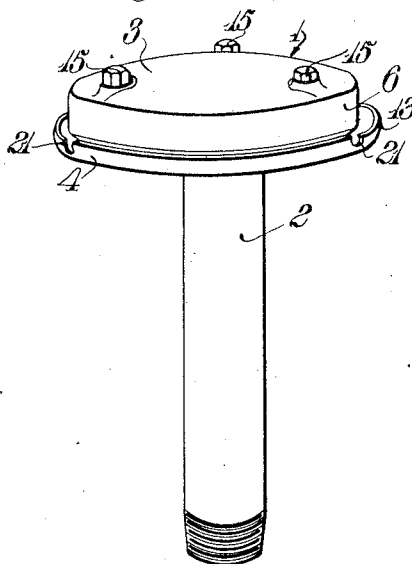
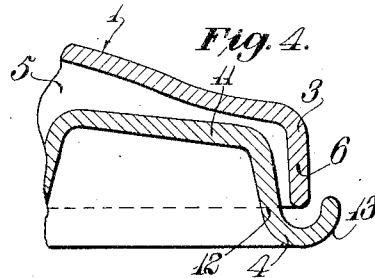


Fig. 4.



Inventor:
Fred D. Holdsworth
by Louis A. Maxson.

Atty.

UNITED STATES PATENT OFFICE

FRED D. HOLDSWORTH, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO SULLIVAN MACHINERY COMPANY, A CORPORATION OF MASSACHUSETTS

SOUND-DEADENING DEVICE

Application filed August 26, 1927. Serial No. 215,728.

This invention relates to sound deadening devices, and more particularly to mufflers for internal combustion engines.

5 An object of my invention is to provide an improved sound deadening device. Another object of my invention is to provide an improved muffler for internal combustion engines. A more specific object is to provide an improved muffler for use on internal combustion engines constituting the prime movers for portable compressors or other engines in which a comparatively low point of discharge for the combustion products is desirable for any reason. Other objects and 10 advantages of the invention will subsequently appear.

In the accompanying drawings I have shown for purposes of illustration one form which my invention may assume in practice.

20 In these drawings,—

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

Fig. 2 is a plan view of the lower member of the muffler.

25 Fig. 3 is a perspective view of a complete muffler in position upon an exhaust pipe.

Fig. 4 is a fragmentary vertical section on a plane corresponding to the line 4—4 of Fig. 2.

30 Referring to Fig. 3 of the accompanying drawings, the muffler constituting the illustrative embodiment of my invention is generally designated 1 and is mounted upon the upper end of a discharge pipe 2. The muffler 35 1 comprises upper and lower members 3 and 4 respectively which together enclose a chamber 5 into which the upper end of the pipe 2 opens. The upper member 3 is convex upon its outer surface and concave upon its inner surface and is provided with a depending annular flange 6 extending completely around its periphery and with a series of, herein three, lugs 7 which are adapted to cooperate with a portion of the lower member 4 to space the members so as to provide 40 a narrow, substantially annular, restricted vent through which the products of combustion may discharge from the chamber 5. The lower member 4 has a depending central portion 9 in which a threaded opening 10 is ar-

ranged to permit a threaded connection with the exhaust pipe 2. The walls of the central depending portion flare upwardly and at their top merge into generally radially extending walls 11 which form a surface slightly conical instead of plane. The lugs 7 are adapted to engage the upper surface of the flange 11 adjacent the periphery of the latter. At its outer edge the flange 11 carries, in turn, a depending flange 12 which terminates at its lower edge in a sharply upturned rim 13. The flange 12 at several points, herein three, about its periphery is provided with integral lugs 14 to cooperate with the depending flange on the member 3 and center the parts properly. Bolts 15 provided with nuts 16 extend through openings 17, 18 in bosses 19 and 20 respectively formed on the upper and lower members 3 and 4. The upturned rim 13 is provided with narrow drain notches 21 at points in its periphery, three of these notches being shown herein, and these being arranged in the same radial lines with the lugs and bolts.

It will be evident that when the upper member 3 is superimposed upon the lower member 4, the lugs 7 will insure a narrow vent between the outwardly converging walls of these members; and it will further be noted that the lugs 14 serve to center the parts, and that between the flanges 6 and 12 a further narrow vent passage is provided, the same being formed at a sharp angle to the vent passage first described. It will finally be evident that gases discharged through the two circumferential vent passages heretofore described will engage the bottom of the groove formed by the upturned rim 13 and that these gases will be sharply reversed and directed upwardly. Any water which may collect in the annular recess formed by the upturned rim 13 is free to escape through the notches 21.

From the foregoing description, it will be evident that I have provided an improved muffler having, by virtue of the initial chamber of substantial volume into which the gases discharge and by virtue of the narrow angularly disposed vent passages from this chamber, excellent sound deadening qualities

and by virtue of the upward direction of the flange 13 the beneficial feature of directing the sheet of escaping gases upward instead of laterally are so well away from any one working or standing near the engine. It will further be noted that the position of the drainage grooves opposite the lugs 7 and 14 and the bolts 15 permits them to effect their draining function without causing any substantial radial discharge of exhaust gases.

While I have in this application specifically described one form which my invention may assume in practice, it will be understood that this form of the same is shown for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

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

1. In a muffler, a head member adapted for connection to an exhaust pipe and having a rebent flange terminating in a rim extending substantially opposite to the direction of said flange, a cooperating head member having a flange adapted to surround said first mentioned flange and of smaller diameter than the diameter of said rim, means for spacing said head members and flanges, means for holding them in assembled relation, and means for draining the space between said rim and first mentioned flange in common radial lines with said spacing means and holding means.

2. In a muffler, a head member adapted for connection to an exhaust pipe and having an annular portion disposed transversely of the axis of said pipe, an outer annular portion extending back along the axis of said pipe, and a reversely directed peripheral flange, and a cooperating head member disposed transversely of the end of said pipe and shaped to define with said first mentioned head member a chamber gradually decreasing in height to its outer limits and continuing into a peripheral vent, said vent comprising portions extending generally radially and portions extending substantially parallel to the axis of said pipe, said reversely directed peripheral flange serving to reverse the direction of flow of said gases as they emerge from said vent forming means.

3. In a muffler, a head member having a portion adapted for connection to an exhaust pipe, an annular portion of substantial radial dimension compared with the radius of the exhaust pipe disposed transversely of the axis of said pipe, and an outer annular portion extending back along the axis of said pipe, said transversely disposed annular portion connecting said outer annular portion and said portion adapted for connection to an exhaust pipe, a concave head member having an annular flange extending substantially parallel to said outer annular portion and

spaced therefrom, and means for holding said head members in assembled relation.

4. In a muffler, a perforated member adapted for connection to an exhaust pipe, a cooperating concave closure member having an annular flange, and means for holding said perforated member and said closure member in assembled relation, said perforated member having adjacent the perforation therein an outwardly extending annular portion and, connected to said annular portion, a second annular portion extending back along the axis of the pipe, said annular flange on said concave closure member extending substantially parallel to said backwardly extending annular portion of said perforated member and being spaced therefrom, and said outwardly extending annular portion of said perforated member being disposed transversely of the axis of said pipe and being of substantial extent in a direction radially of and compared with the radius of said pipe.

In testimony whereof I affix my signature.
FRED D. HOLDSWORTH.