Jan. 16, 1940. H. S. POWELL 2,187,431

METHOD OF ASSEMBLING MUFFLERS

Filed Feb. 3, 1938

FIG. 1.

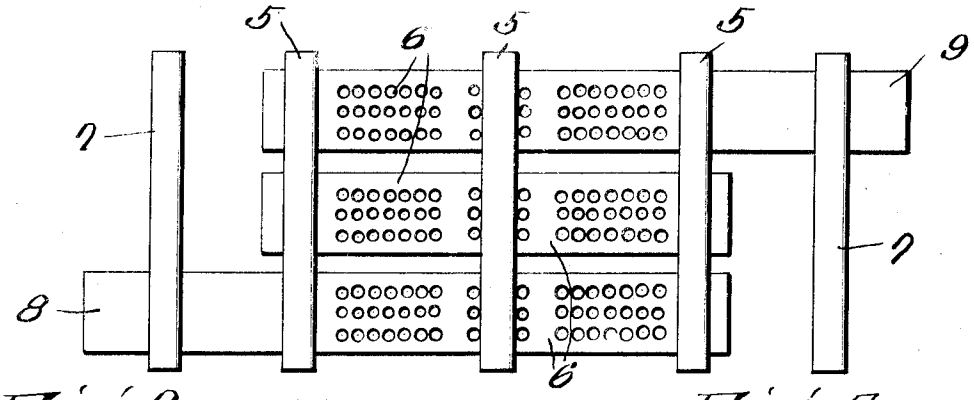


FIG. 2.

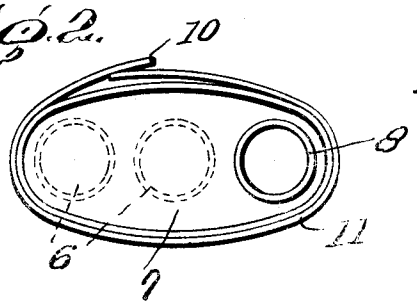


FIG. 4.

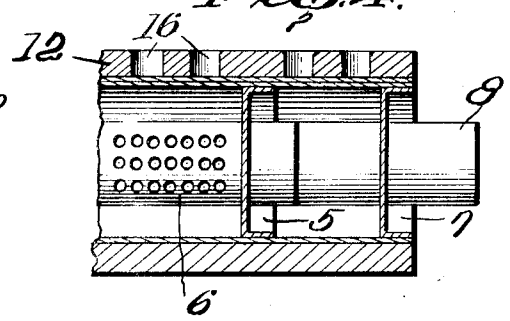


FIG. 3.

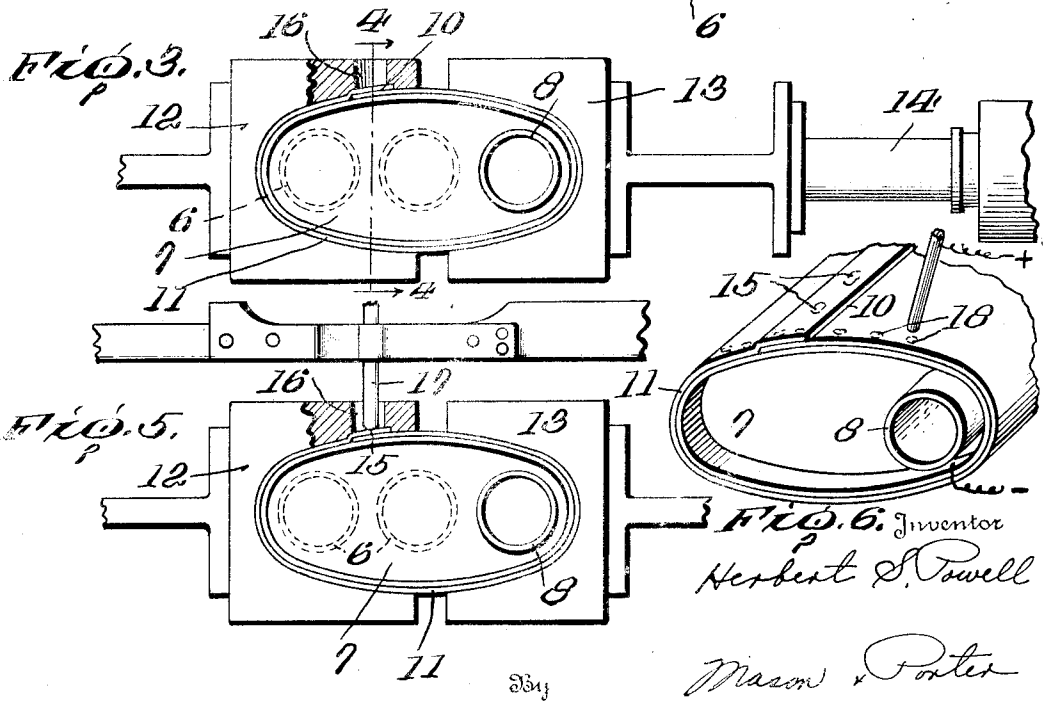


FIG. 5.

FIG. 6.

Inventor

Herbert S. Powell

By Mason & Porter

Attorneys

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METHOD OF ASSEMBLING MUFFLERS

Herbert S. Powell, Utica, N. Y.

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2 Claims. (Cl. 29—157.4)

The invention relates generally to the art of manufacturing internal combustion engine exhaust quieting mufflers and has for an object to provide a novel and advantageous method of assembling the parts embodied in such mufflers.

Mufflers of the character stated comprise an outer casing or shell, end closures or headers, and intermediate baffle elements usually assembled with one or both headers and designed to control the direction of movement and the rapidity of expansion of the exhaust gases so as to reduce to a minimum noise incident to the exhausting of the gases. It is customary to assemble the outer shell and the intermediate elements and header separately, and then to push the header and baffle assembly into the outer shell. This method of assembly is objectionable because of the amount of time necessary to be consumed in effecting the assembly, and the difficulties encountered in attempting to obtain an assembly proof against vibration and rattling.

The invention therefore seeks to provide a novel method of assembling mufflers which includes the steps of first assembling the baffle or baffle and header unit, then placing the shell forming sheeting about the unit with the edges thereof overlapped to form a longitudinal seam, then subjecting the shell and the included unit to pressure so as to tightly grip the unit within the shell and hold the edges in overlapped relation, and while maintaining said pressure, securing said seam to permanently retain the assembly of shell and the encased baffle and header unit.

Another object of the invention is to include in the method, the steps of securing the shell seam by welding, and thereafter weld-securing the headers at the respective ends of the muffler.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by following the description, the appended claims, and the several views illustrated in the accompanying drawing.

In the drawing:

Fig. 1 is a face view illustrating the step of separate assembly of the baffle or baffle and header unit;

Fig. 2 is an end view illustrating the step of placing the shell sheeting about the baffle or baffle and header unit;

Fig. 3 is a vertical cross section illustrating the step of subjecting the shell and the included baffle or baffle and header unit to pressure;

Fig. 4 is a fragmentary vertical longitudinal section taken on the line 4—4 on Fig. 3;

Fig. 5 is a view similar to Fig. 3, and illustrates the step of securing the shell seam by welding;

Fig. 6 is a detail perspective view diagrammatically illustrating the step of weld-securing the headers in the shell.

My improved method may be practiced in the assembly of mufflers of various types and shapes, and with the aid of various forms of apparatus.

In Fig. 1 of the drawing I have generally indicated the step of assembling the baffle or baffle and header unit. This unit may be formed and fabricated or assembled in any suitable manner, and since the particular manner of assembling this unit, in itself, forms no part of my present invention I have deemed it sufficient to illustrate the unit in the assembled state. The particular unit shown includes intermediate wall members 5 in which are supported the gas course directing or baffle tubes 6, and the unit may include one or both headers or end closure members 7 through which project the inlet and discharge pipes 8 and 9.

After the unit exemplified in Fig. 1 has been assembled, a sheet of metal is placed about it, as shown in Fig. 2, with the longitudinal edges of the sheet overlapping as at 10, thus forming a unit encasing shell 11. While I have herein disclosed a muffler oval in transverse section, it is to be understood that mufflers which are round or otherwise shaped may be assembled by my improved method.

When the muffler has been temporarily assembled as shown in Fig. 2, it is placed in a press of suitable form and herein disclosed as comprising a stationary jaw 12 and a movable jaw 13, and subjected to external pressure so as to tightly grip the baffle or baffle and header unit within the shell 11 and hold the edges 10 in overlapped relation. An air cylinder 14 or other suitable mechanical means may be employed to force the jaws 12 and 13 together for applying and holding the desired pressure. See Fig. 3.

While the baffle or baffle and header unit is being held tightly gripped within the shell 11, by application of external pressure as above described, the seam formed by the overlapped edges 10 is permanently secured, preferably by welding, as indicated at 15. For this purpose the jaw 12 may be equipped with equidistantly spaced openings 16 through which the weld stick or electrode diagrammatically indicated at 17 can be applied to the seam. See Figs. 3 and 4. It is preferred that the securing of the seam shall be ac-

complished by the well known arc welding process, weld spots being formed, as at **15**, at equidistantly spaced intervals along the seam. By this manner of assembling the shell and the encased unit, and the securing of the assembly while the whole is retained under external pressure, a tight and permanent assembly is assured in which relative vibration of parts such as would cause rattling or the like is impossible.

After relaxing of the external pressure exerted by the jaws **12** and **13**, the assembling of the muffler can be completed by weld-securing the headers or end closures **7** as indicated at **18** in Fig. 6.

By practicing the improved method herein described, mufflers can be assembled more rapidly, more economically, and more efficiently than by the previously known methods in which the shell and baffle and header units were individually assembled and the inner units forced into the encasing shells.

What I claim is:

1. The herein described method of assembling mufflers which comprises, forming a baffle and header unit including two headers and at least one wall therebetween, placing sheeting about the two headers and wall to form an encasing shell with edges of the sheeting overlapped to form a full length longitudinal seam, subjecting the shell and the encased unit to pressure of such degree as to tightly grip the unit within the shell and hold the edges in overlapped relation and to retain the aforesaid wall in place without the necessity of welding same to the shell to prevent rattling of the wall in use, while maintaining said pressure application, weld-securing said seam to permanently retain the assembly of the shell and encased unit, and welding said headers and shell together.

2. The herein described method of assembling mufflers which comprises, forming a baffle and header unit including two headers and at least one wall therebetween, placing sheeting about the two headers and wall to form a full length longitudinal seam, subjecting the shell and the encased unit to pressure of such degree as to tightly grip the unit within the shell and hold the edges in overlapped relation and to retain the aforesaid wall in place without the necessity of welding same to the shell to prevent rattling of the wall in use, while maintaining said pressure application, weld-securing said seam to permanently retain the assembly of the shell and encased unit, relaxing said pressure application, and thereafter weld-securing the shell to the unit header portions.

HERBERT S. POWELL.