June 13, 1950 B. R. WRIGHT 2,511,190

BAFFLE TYPE MUFFLER

Filed Oct. 4, 1945 2 Sheets-Sheet 1

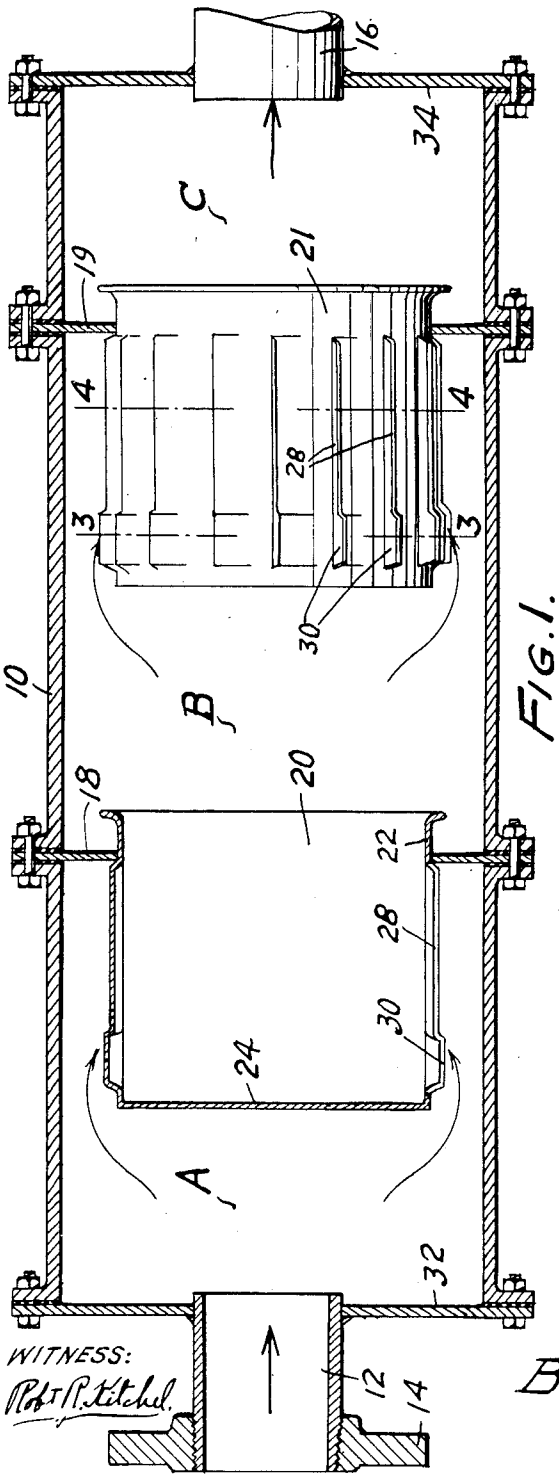


FIG. 1.

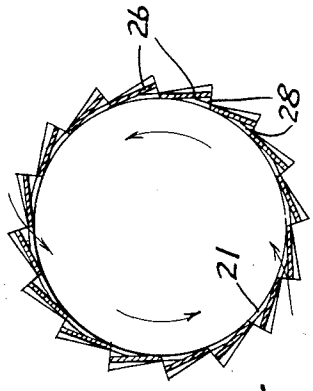


FIG. 4.

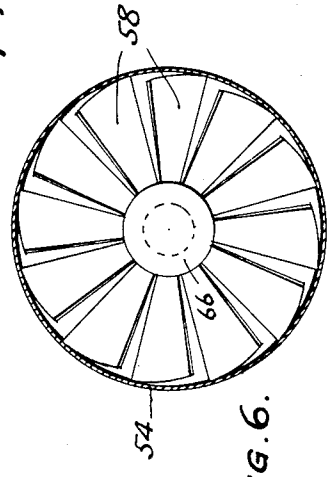


FIG. 6.

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BAFFLE TYPE MUFFLER

Filed Oct. 4, 1945 2 Sheets-Sheet 2

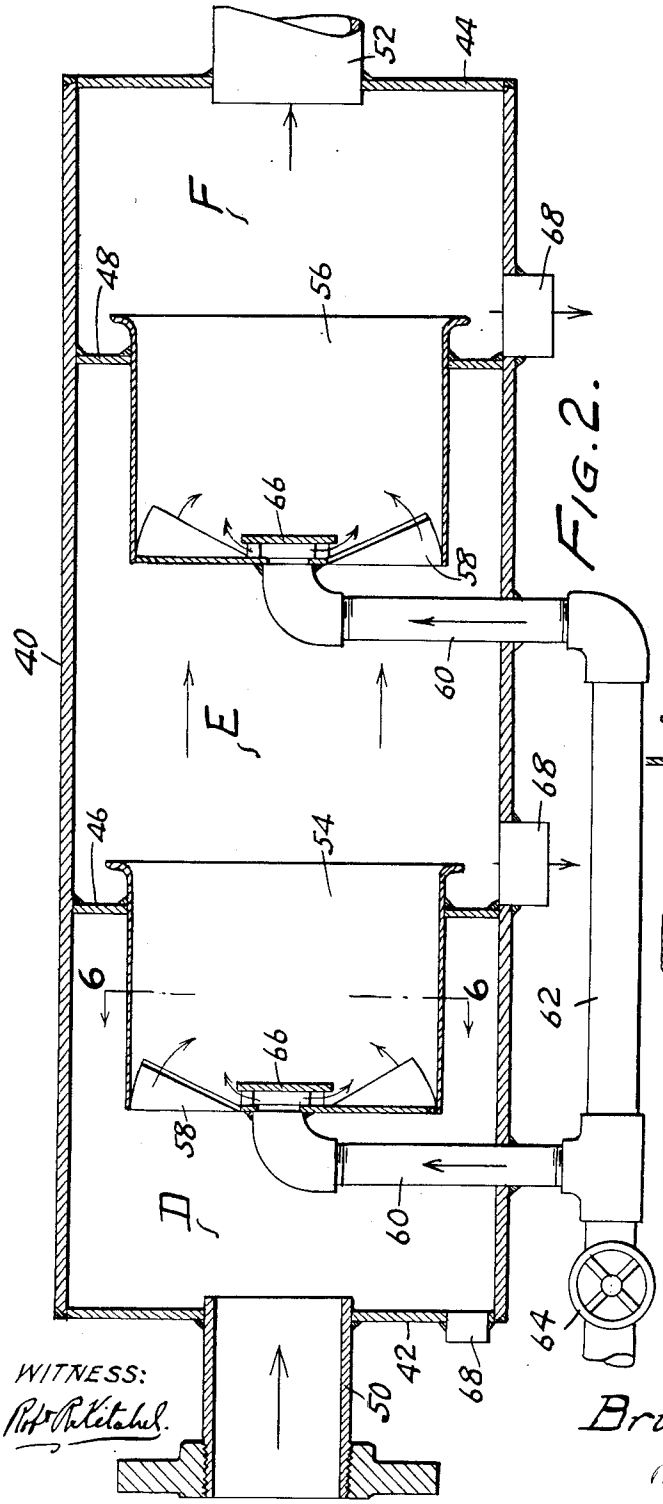


FIG. 2.

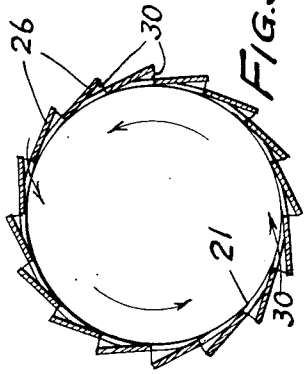


FIG. 3.

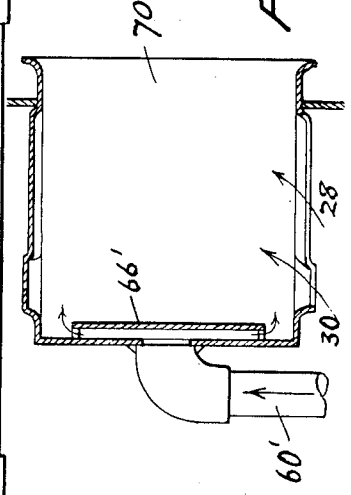


FIG. 5.

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Patented June 13, 1950 2,511,190

UNITED STATES PATENT OFFICE

2,511,190

BAFFLE TYPE MUFFLER

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Application October 4, 1945, Serial No. 620,273

4 Claims. (Cl. 181—52)

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This invention relates to an improvement in devices for eliminating aspiration, in, for example, a conduit through which gas is passed in successive increments or intermittently, such, for example, as an exhaust pipe from a reciprocating engine.

One of the objects of my invention is the provision of a muffler, and in connection with which provision may be made for scrubbing the exhaust gases whereby they may be made invisible.

Another object of my invention is the provision of a device comprising a shell or casing through which gases are forced, which is divided into a plurality of chambers by means of transverse partitions forming baffles, having tubular members extending therethrough, which are adapted to give the gases a whirling motion and prevent pulsation in either direction.

Another object of my invention is the provision of means for directing a stream of water into the whirling stream of gases in at least one of the tubular members while passing through the casing, to scrub the gases.

Another object of my invention is the provision of means for controlling the flow of water into the tubular members as well as the flow of water from the chambers, whereby when all of the controlling means are closed the gases will pass through the shell or casing without being scrubbed, but with substantially all pulsation or aspiration eliminated.

Referring to the accompanying drawings, in which:

Fig. 1 is a longitudinal sectional view through the shell or casing of one form of apparatus in accordance with my invention, with one of the tubular members shown in side elevation and another in section;

Fig. 2 is a longitudinal sectional view of another form of structure, in accordance with my invention;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view on the line 4—4 of Fig. 1;

Fig. 5 is a vertical section of a tubular member such as shown in Fig. 1, when used in connection with a structure such as shown in Fig. 2; and

Fig. 6 is a sectional view on the line 6—6 of Fig. 2.

Referring to Figs. 1, 3 and 4, the device for eliminating aspiration comprises a shell or casing 10 which is formed of three flanged sections and having closed ends 32 and 34 secured to the flanges of the end sections, an inlet tube 12 connected to end 32 and provided with a suitable flange 14, whereby it may be connected to any source from which gas is to be passed through the shell, in successive increments or intermittently, and 16 is an outlet tube in the end 34 of the casing 10.

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Interposed between the flanges of the intermediate section and the end sections of the casing are partitions or baffles 18 and 19, only two being shown, although the number may be increased or decreased in accordance with the requirements of the particular system in which the apparatus is to be used.

Extending through the partition 18 is a tubular member 20, and 21 is a similar tubular member extending through partition 19, each tubular member being constructed of sheet metal, wherein the blades of the tubular member are made by shearing and forming operations.

Each tubular member of the preferred form comprises a body 22 and a closed end 24; and 26 are blades in the body portion between the closed end and the partition through which the tubular member extends, and by which it is supported.

The blades 26 extend outwardly and tangentially from the body and provide tangential inlet openings 28, which are relatively narrow throughout the major portion of their length, but are enlarged at the inlet end as indicated at 30, adjacent to the closed end 24, as shown in Figs. 4 and 3, respectively.

The ends 32 and 34 of the shell 20, and the partitions 18 and 19, form separate chambers A, B and C within the shell, through which the gases pass during their passage from the inlet 12 to the outlet 16.

The gas which is delivered through inlet 12 first enters chamber A, passes through the openings 28 and 30 in tubular member 20, whereby the gas is given a whirling motion in the same direction within the tubular member 20 throughout the entire length of the openings and is delivered into the chamber B. From chamber B the gas is delivered to the chamber C and through the openings in the tubular member 21, where the whirling of the gas is increased so that the aspirations will be substantially eliminated and the gas will flow from the outlet 14 in a substantially steady stream.

In Figs. 2 and 6 I have shown another form of apparatus in accordance with my invention and in which I have included means for scrubbing the gases.

The structure illustrated in Figs. 2 and 6 is particularly adapted as a muffler wherein the pulsation or throb of the exhaust gases are eliminated, and the gases are scrubbed, whereby the gases are made invisible.

The form of the invention comprises a shell or casing 40, provided with end plates 42 and 44 and partitions 46 and 48.

Formed in the casing 40, between end plate 42 and partition 46, is a chamber D, a second cham-

ber E is formed between partitions 46 and 48, and F is a third chamber formed between partition 48 and end plate 44.

Opening into chamber D is a gas inlet pipe 50, and 52 is a gas outlet pipe communicating with chamber F.

Supported in partition 46 is a tubular member 54, and 56 is a similar tubular member supported in partition 48, which tubular members forms connecting means between chambers D and E and E and F, respectively.

The entrance end of each of these tubular members comprises a plate 58, which has been cut radially from the periphery thereof for a short distance to form blades, which have been bent to give the gases passing between the blades a whirling motion in the same direction on entering a tubular member throughout the entire length of the openings.

Connected to the central portion of each of plates 58 of the tubular members is a pipe 60, connected to a pipe 62, which is connected to a suitable water supply for delivering water to the tubular members, and is provided with a control valve 64.

Mounted on each of the plates 58 within the tubular members, but spaced therefrom and in front of the inlets from the pipes 60, is a baffle plate 66, which is adapted to spread the water radially within the tubular members, and 68 are outlet couplings from the chambers D, E and F, which may be connected to a common outlet pipe having a suitable control valve.

When a device such as above described is used for a combined muffler and gas scrubber, water is admitted to the tubular members which is sprayed radially in the tubular members 54 and 56 into the whirling stream of gases passing between the blades 58 during the passage of the gases from inlet 50 to outlet 52, whereby the pulsations or throbs of the exhaust gases are eliminated and at the same time the exhaust gases are scrubbed, whereby they are made substantially invisible.

If it is desired to use the form shown in Fig. 2 as a muffler, or merely to eliminate aspirations, both the water inlets and outlets may be closed, and the gases are passed successively through chambers D, E and F and the connecting tubular members 54 and 56, whereby pulsation will be eliminated.

In Fig. 5, I have illustrated a tubular member 70, such as illustrated in Fig. 1, which has been modified for use in a structure as shown in Fig. 2, and is provided with a baffle plate 66′ and a water inlet pipe 60′.

It will be evident that numerous variations of the invention may be made without departing from the principles thereof as defined in the following claims.

What I claim and desire to protect by Letters Patent is:

1. A device of the character described through which gases are passed to eliminate the aspiration of the gases passed therethrough in successive increments comprising a casing, there being an inlet thereto and an outlet therefrom, a plurality of partitions in said casing forming a plurality of chambers, a tubular member mounted in each partition, blades spaced about the periphery of each tubular member and running longitudinally thereof, said blades being identically angularly disposed with respect to the circumference of their respective tubular members and constructed and arranged so as to give the gas passing therethrough a whirling motion in the same direction of rotation.

2. A device of the character described through which gases are passed to eliminate the aspiration of the gases passed therethrough in successive increments comprising a casing, there being an inlet thereto and an outlet therefrom, a plurality of partitions in said casing forming a plurality of chambers, a tubular member mounted in each partition, blades spaced radially about the axis of each tubular member in the inlet end thereof, said blades all having the same angular relationship with the axes of the tubular members and constructed and arranged so as to give the gases passing therethrough a whirling motion in the same direction.

3. A device of the character described through which gases are passed to eliminate the aspiration of the gases passed therethrough in successive increments comprising a casing, there being an inlet thereto and an outlet therefrom, a plurality of partitions in said casing forming a plurality of chambers, a tubular member mounted in each partition, blades spaced about the periphery of each tubular member and running longitudinally thereof, said blades being identically angularly disposed with respect to the circumference of their respective tubular members and constructed and arranged so as to give the gas passing therethrough a whirling motion in the same direction of rotation, and means for spraying water axially within each tubular member and a plate within each tubular member substantially normal to the axis of the tubular member and opposite said means for spraying water.

4. A device of the character described through which gases are passed to eliminate the aspiration of the gases passed therethrough in successive increments comprising a casing, there being an inlet thereto and an outlet therefrom, a plurality of partitions in said casing forming a plurality of chambers, a tubular member mounted in each partition, blades spaced radially about the axis of each tubular member in the inlet end thereof, said blades all having the same angular relationship with the axes of the tubular members and constructed and arranged so as to give the gases passing therethrough a whirling motion in the same direction, and means for spraying water axially within each tubular member and a plate within each tubular member substantially normal to the axis of the tubular member and opposite said means for spraying water.

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