

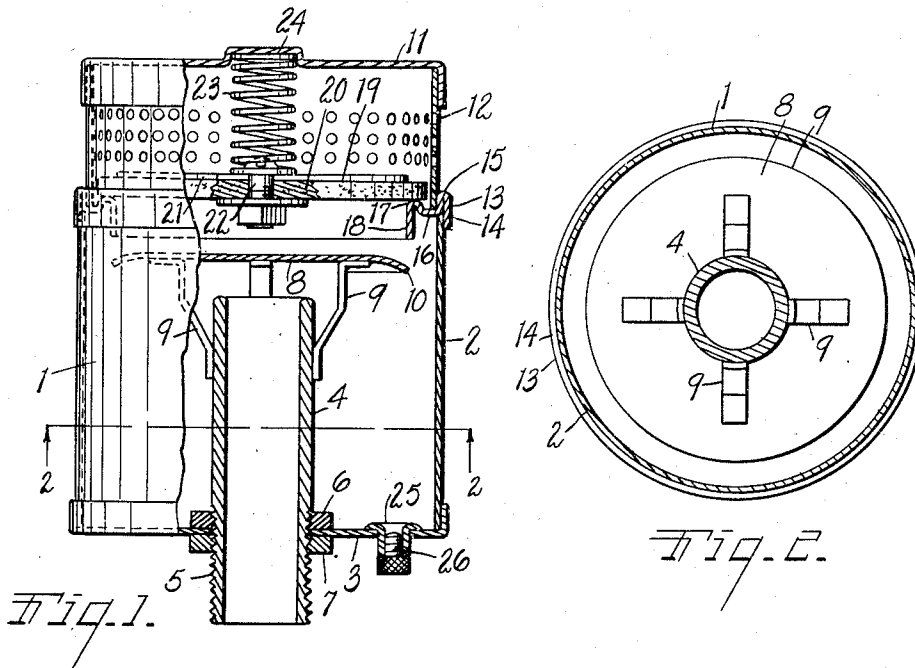
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COMBINED AIR FILTER AND MUFFLER

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COMBINED AIR FILTER AND MUFFLER

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3 Claims. (Cl. 183—41)

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This invention relates to improvements in combined air filters and mufflers.

The main objects of this invention are:

First, to provide a combined air filter and muffler which is well adapted for use on the discharge of vacuum pumps and one which is effective as a filter or separator in removing oil and water from the air and muffling the discharge thereof.

Second, to provide a structure having these advantages which is very simple and economical and at the same time is efficient and has a wide range of uses or adaptations.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

Preferred embodiments of the invention are illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary side elevation of a combined filter and muffler embodying the features of the invention.

Fig. 2 is a horizontal section on line 2—2 of Fig. 1.

The embodiment of the invention illustrated in Figs. 1 and 2 comprises a cup-like separating chamber designated generally by the numeral 1 and comprising a cylindrical side wall 2 and bottom 3. The pipe 4 projects centrally through the bottom, the pipe being threaded at 5 and secured by means of the inner and outer clamping nuts 6 and 7. The pipe preferably constitutes the support member of the structure.

The deflector disk 8 is supported by the arms 9 carried by the pipe in spaced relation to but adjacent the open upper end of the pipe. The outer edge 10 of the deflector disk is preferably curved downwardly and is arranged adjacent to but spaced from the wall 2 of the chamber. The top 11 has a foraminated side wall 12 discharging to the atmosphere when the combined filter and muffler is used in connection with the discharge of vacuum pumps.

The annular intermediate member 13 has a downwardly projecting flange 14 fitting the upper end of the wall 2 and is folded upon itself to provide an upstanding rim 15 receiving the top. The intermediate member has an inwardly projecting web portion 16 upwardly offset to provide an annular baffle seat 17 and extended into a skirt-like flange 18, the lower edge of which is adjacent to but spaced from the deflector disk 8.

The baffle designated generally by the numeral 19 seats upon this intermediate member. The

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baffle comprises the disk 20 of fibrous material such as felt and a backing plate or disk 21 of sheet metal, the disk and the baffle being secured together by means of the bolt 22 and suitable washer and nut. This baffle member is yieldingly urged toward its seat by means of the coiled spring 23, the upper end of which is seated in a recess 24 provided therefor in the top, the lower end engaging the disk 21.

With this arrangement of parts, the exhaust air from a compressor or the like is discharged through the pipe 4 and against the under side of the deflector disk and is spread out and drops of oil and water that may be borne by the air are collected and dropped into the bottom of the chamber member.

The bottom 3 is provided with a drain tube 25 which is normally closed by the drain plug 26. The air passing around the edges of the deflector skirt or flange 18 and the flange serves as a further separator member. These members also serve as muffler members.

The baffle or muffler member is urged yieldingly to its seat by the spring 23 which is of such strength as to permit quite free opening of the baffle. The baffle 19, rather than being in the nature of a check valve to prevent back flow is primarily intended as a deflector means and as means for creating a slight back-pressure whereby the baffle not only constitutes a deflector and muffler element but also adapts the combined muffler and filter to operate efficiently over a relatively wide range of volume of exhaust gases thereby adapting the combined air filter and muffler for a relatively wide range of adaptations or uses. The baffle also serves as a moisture or oil collecting element.

Structures embodying my invention are efficient both as mufflers and filters of the type described and have a wide range of adaptability and use.

I have illustrated and described a practical embodiment of the invention. I have not attempted to illustrate or describe other embodiments or adaptations which I contemplate as it is believed that this disclosure will enable those skilled in the art to embody or adapt the invention as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a combined muffler and filter the combination of a cylindrical chamber member provided with a drain plug at the bottom, a pipe project-

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ing centrally into said chamber member, and constituting a support, a deflector disk mounted on said pipe adjacent to but in spaced relation to the open upper end thereof and with its edges adjacent to but spaced from the wall of the chamber member, a top having a foraminated side wall, an annular intermediate member provided with a vertical flange telescopingly engaging said chamber member and provided with a portion supportingly receiving said top, said intermediate member having an inwardly projecting web portion terminating in an annular bead-like baffle member seat and extended into a depending flange the lower edge of which is adjacent to but spaced from the said deflector disk and inwardly spaced from the cylindrical chamber member, a baffle adapted to seat on said intermediate member seat and comprising a disk of fibrous material and a backing plate therefor, said depending flange so disposed relative to said deflector disk and cylindrical chamber member constituting a muffle and deflector element, and a spring arranged within said top member to yieldingly urge said baffle member upon its seat.

2. In a combined muffler and filter, the combination of a cylindrical chamber member provided with a drain plug at the bottom, a pipe projecting centrally into said chamber member, a deflector disk mounted on said pipe adjacent to but in spaced relation to the open upper end thereof and with its edges adjacent to but spaced from the wall of the chamber member, a top having a foraminated side wall, an annular intermediate member having an inwardly projecting portion constituting an annular baffle seat and extended into a depending flange the lower edge of which is adjacent to but spaced from the said deflector disk and inwardly spaced from the cylindrical chamber member, a baffle adapted to seat on said intermediate member and comprising a disk of fibrous material and a backing plate therefor, said depending flange so disposed relative to said deflector disk and cylindrical chamber member constituting a muffle and deflector

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element, and a spring arranged within said top member to yieldingly urge said baffle member upon its seat.

3. In a combined muffler and filter, the combination of a cylindrical chamber member provided with a drain plug at the bottom, a pipe projecting centrally into said chamber member, a deflector disk mounted on said pipe adjacent to but in spaced relation to the open upper end thereof and with its edges adjacent to but spaced from the wall of the chamber member, a top having a foraminated side wall, an annular intermediate member having an inwardly projecting portion constituting an annular baffle seat, a baffle adapted to seat on said intermediate member and comprising a disk of fibrous material, and a spring arranged within said top member to yieldingly urge said baffle member upon its seat, said baffle being spaced from the deflector disk and in axial alignment therewith and opening and closing in a direction parallel to the foraminated side wall and towards and from the plane of the deflector disk, said baffle so disposed constituting a deflector and muffle element.

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