

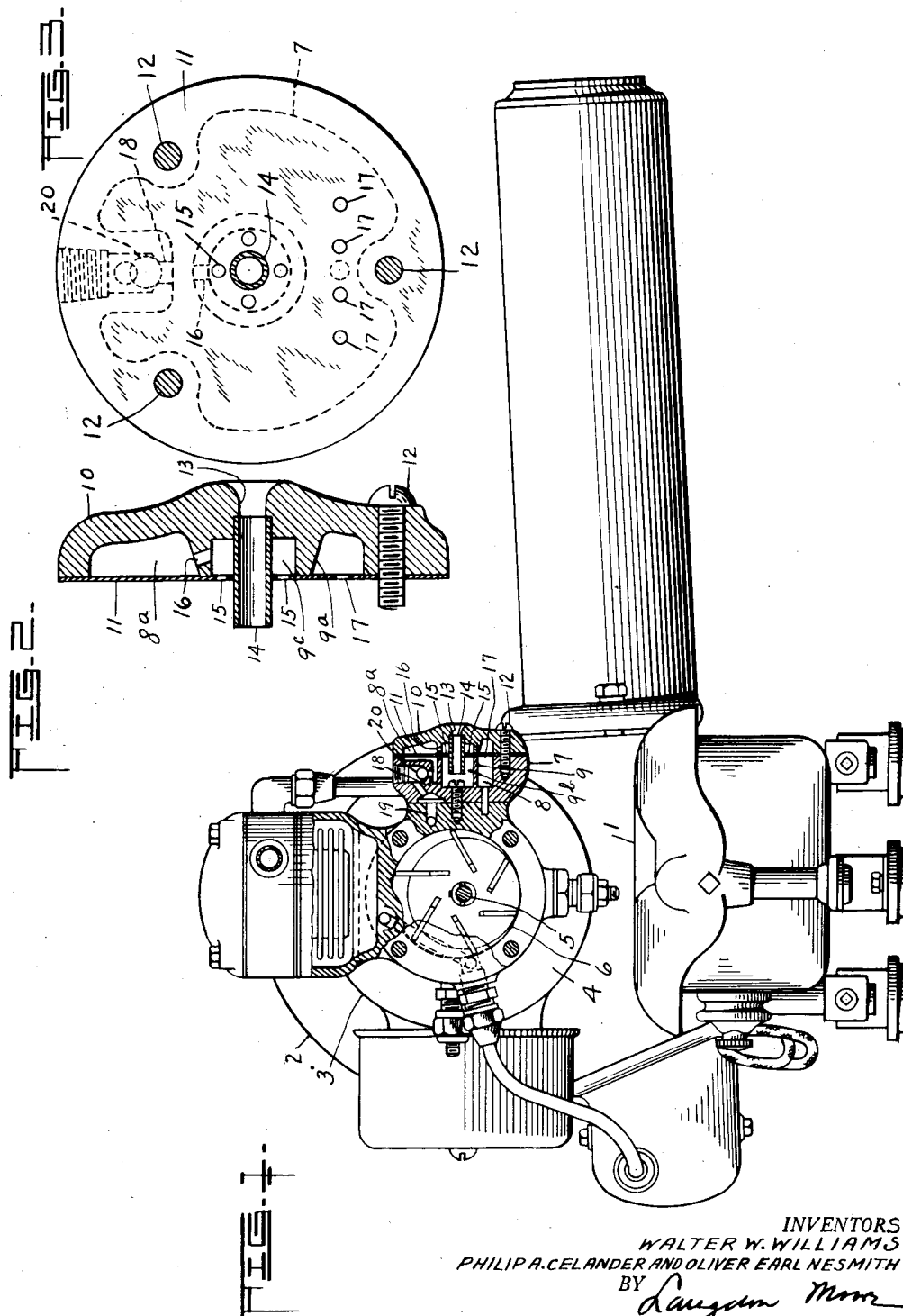
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W. W. WILLIAMS ET AL

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FLUID FUEL BURNER MUFFLER

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INVENTORS.
WALTER W. WILLIAMS,
PHILIP A. CELANDER AND OLIVER EARL NESMITH
BY *Langdon Mum*
ATTORNEYS.

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FLUID FUEL BURNER MUFFLER

Walter W. Williams, Phillip A. Celander, and Oliver Earl NeSmith, Bloomington, Ill.; said Celander and said NeSmith assignors of their entire right to Williams Oil-O-Matic Heating Corporation, Bloomington, Ill., a corporation of Illinois

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2 Claims. (Cl. 137—160)

This invention relates to improvements in electrically operated fluid fuel burners of the domestic type for installation with heating plants of homes and buildings, and more particularly to the construction of an air muffler for use there-with.

It is an object of this invention to reduce the noise of operation in fluid fuel burners of this type occasioned by the passage of air from the surrounding atmosphere into the compression pump. With this object in view, reference is made to the accompanying sheet of drawings which illustrate a preferred form of this invention with the understanding that minor detail changes may be made without departing from the scope thereof.

In the drawing:

Figure 1 is a view in side elevation of a commercial type of domestic fluid fuel burner with parts broken away, illustrating the air muffler in central vertical section.

Figure 2 is an enlarged detail view in similar section of the air muffler cap.

Figure 3 is a view in side elevation of Figure 2, looking at the left side thereof.

The embodiment of this invention is illustrated in connection with a commercial type of fluid fuel-burning mechanism for domestic heating purposes of the same general type as illustrated in the W. W. Williams Patent No. 1,817,051, August 4, 1931. The embodiment illustrated includes a base 1, which supports an integral fan blower casing or housing 2 having an extension for receiving and mounting the electric motor 3. The other side of the motor is provided with a cover or an end bell 4 secured to the casing. The motor is provided with a driving shaft 5 for operating an oil pump and also operating a fan blower. The driving shaft 5 is extended through the end bell 4 on the side of the motor for operating a compression pump 6 and metering pump mounted, not shown, upon the end bell. The general construction and operation of the pressure pump and metering pump is of the type disclosed in the W. W. Williams Patent No. 1,451,798, granted April 17, 1923.

The pressure pump 6 draws atmospheric air into the pump chamber through an air muffler, including a casing 7 mounted on the casing upon the pressure pump 6, as shown in Figure 1. The casing 7 is preferably cylindrical in shape with an annular passageway 8 about a concentric baffle 9. The casing 7 is provided with a similar shaped cover 10 and a corresponding annular passageway 8^a and corresponding cylindrical baffle 9^a. A

flexible diaphragm 11 is positioned between the contacting surfaces of the casing 7 and cover 10, which cover is drawn tightly upon the casing by a plurality of screws 12. This flexible diaphragm is shown in the enlarged detailed view, Figure 3, in which the outline of the casing 7 is indicated in dotted lines and likewise the outline of the cylindrical baffle 9 is shown in dotted lines. This diaphragm is referably made of a treated heavy flexible paper, such as that commercially known as "Karrapak". The cover 10 is provided with a central opening 13, which supports an air intake tube 14, which passes through the diaphragm 11 and opens into the casing 7, within the cylindrical baffle 9. The diaphragm is provided with a plurality of apertures 15, which allow the air drawn through the tube 14 to pass from the chamber within the baffle 9 through the diaphragm into the corresponding chamber 9^c in the cap. The wall of the cylindrical baffle of the cap is provided with one or more apertures 16, opening into the annular passageway 8^a in the cap and the diaphragm is provided with a plurality of apertures 17, forming a means of communication between the annular passageways 8^a and 8 in the cap and casing. The annular passageway 8 in the casing is provided with a passageway 18 leading to the intake 19 of the pressure pump, which passageway is preferably provided with a ball check valve 20.

By this construction, when the motor starts the operation of the pressure pump, atmospheric air is drawn through the opening 13 in the muffler cap, passes through the tube 14 into the chamber 9^b formed by the cylindrical baffle 9 and diaphragm 11, passes through the apertures 15 in the diaphragm into the similar chamber 9^c on the other side thereof, then through the aperture 16 into the annular passageway 8^a about the exterior of the cylindrical baffle 9^a in the cap and then through the apertures 17 in the diaphragm into the annular passageway 8 in the casing 7 upon the exterior of the cylindrical baffle 9, through the passageway 18 leading therefrom, lifting the ball check valve 20, and enters the intake 19 of the pump. It has been found that by this construction the atmospheric air is drawn into the pressure pump at a constant rate, with little or no noise. The diaphragm 11 is easily and readily replaced. The pressure pump rotates at a very high rate of speed and as the diaphragm is of soft, flexible material, the air passing through and about it at a high rate of speed is muffled. The check valve is provided to prevent the pump from forcing oil out through the muffler in the

event that the discharge side of the pump, or any of the parts leading therefrom, become clogged or stopped up. The air passes through the diaphragm twice on its way to the pump, sets up a vibration in the diaphragm, which, on account of its composition, is noiseless.

This application is a division of the joint application filed by Walter W. Williams, Philip A. Celander, and Oliver Earl Nesmith, Serial Number 648,966, filed December 27, 1933, for improvements in Electrically operated fluid fuel burners.

What we claim is:

1. A device for muffling the intake of an air pump including means for admitting air to said pump and a muffler casing about the exterior of said intake having a perforated flexible diaphragm and a plurality of baffles arranged to cooperate with the perforations of the diaphragm to pass the air drawn into the pump back and forth through the flexible diaphragm.

2. A device for muffling the intake of an air pump including a casing about said pump provided with an air intake passage, a muffler mounted upon said pump casing communicating with said intake passage comprising a cylindrical muffler casing hav-

ing a concentric baffle therein forming an annular passage, a connecting passage provided in the muffler casing from the said annular passage to the said pump intake passage, a check valve in said muffler casing passage permitting air to pass therethrough to said pump, a cap secured over said muffler casing having a registering concentric baffle and an axially disposed passage therethrough with a flexible diaphragm secured between the contacting parts of the said cap and muffler casing and engaged by the said oppositely disposed similar concentric baffles, said cap having an axially disposed passage therethrough and supporting on the interior a concentric intake tube passing through said diaphragm, said diaphragm provided with perforations upon the interior and exterior of said concentric baffles and a passage provided in the concentric baffle of the said cap opening into the annular passage thereabout, whereby the operation of the pump draws air through the muffler in a circuitous path.

WALTER W. WILLIAMS.

PHILIP A. CELANDER.

OLIVER EARL NESMITH.

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