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INTAKE MUFFLER FOR AIR BLOWERS

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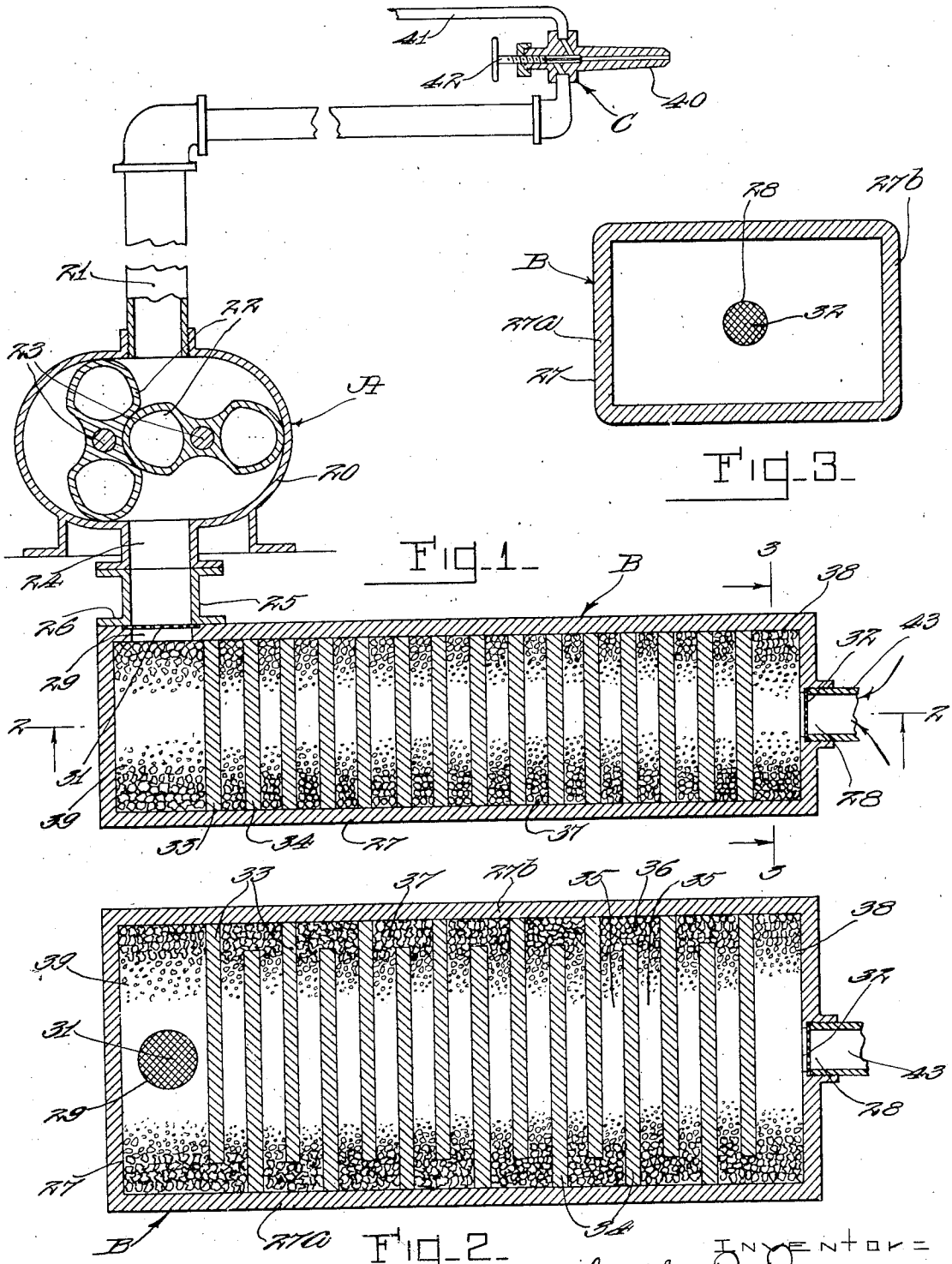


Fig. 3.

Fig. 1.

Fig. 2.

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INTAKE MUFFLER FOR AIR BLOWERS

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This invention relates to positive pressure blowers particularly adapted or designed for use in fuel oil burners, an object of the invention being to provide an improved blower including an air intake device constructed to muffle the noise of the blower during the operation, and at the same time providing a sufficient flow of air into the pump for the requirements of efficient operation.

In fuel oil burners, the operation of the blower pump causes rapid variations in air pressure within the air intake pipe, and the intermittent expansion of the air resulting from the incessant setting up of partial vacuums within the intake during the operation of the pump causes considerable noise. This so-called blower noise, especially prevalent in fuel oil burners, is a source of great annoyance in use and is particularly objectionable in oil burning heating plants or equipment for private homes.

It is the principal object of this invention to eliminate the foregoing disadvantages and to provide a positive pressure blower, adapted for use in oil burning equipment which will be relatively quiet in operation, and at the same time functioning efficiently and effectively. According to the present invention, an improved muffling device is interposed adjacent to the pump in the air intake line thereof, this device being so constructed as to take up or absorb the variations in air pressure set up by the pump thereby eliminating noises and at the same time enabling a sufficient flow of air to the pump to permit the proper operation thereof.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification, wherein like reference characters designate corresponding parts in the several views and wherein:

Fig. 1 is a side elevation partly in section illustrating an embodiment of my invention.

Fig. 2 is a sectional view taken substantially on lines 2—2 of Fig. 1 in the direction of the arrows.

Fig. 3 is a horizontal section taken substantially on lines 3—3 of Fig. 1 in the direction of the arrows.

Before explaining in detail the present improvement and mode of operation thereof, I desire to have it understood that the invention is not limited to the details of construction and arrangement of parts which are illustrated in the accompanying drawings, since the invention is capable of other embodiments, and that the phraseology which I employ is for the purpose of description and not of limitation.

In the accompanying drawings wherein I have illustrated a present preferred form of my invention, a low pressure blower A is provided which comprises a suitable pump casing 20 having at the discharge side thereof an outlet pipe 21. Within the casing 20 rotate in opposite directions a pair of impellers 22 mounted on parallel shafts 23. These shafts are driven by suitable mechanism including timing gears, (not shown), on shafts 23 by means of which the relation between the impellers is maintained throughout their revolution. The pump casing 20 at its suction side 24 terminates in close proximity to the pump, and has an inlet nipple 25 provided with an outwardly projecting flange 26 bolted to the upper end of a muffler B comprising a casing or box 27. This casing is mounted horizontally and comprises enclosing top, bottom and side walls, and, in the present instance, is preferably rectangular in cross-section, as shown in Fig. 3. The end wall of the casing 27 is provided with an intake opening 28, and the top at the inner end of the casing is provided with an outlet opening 29, which communicates with the inlet opening 24 of the pump A. A screen 31 is interposed in the outlet opening 29 of the muffler casing between the same and the pump casing, and a suitable screen 32 is located in the intake opening 28 of the muffler device.

The muffler casing or box 27 may be constructed of any suitable material such as wood or metal, and this casing interiorly thereof is provided with a series of transversely or vertically extending baffle plates or partitions of wood, metal or other relatively hard material. As illustrated in Fig.

2, the vertical partitions are horizontally spaced and extend alternately from opposite side walls of the casing. Thus, the partitions 33 project from the side wall 27[b] and terminate short of the opposite side wall 27[a], and the partitions 34 project from the latter wall and terminate short of the side wall 27[b]. As a result of this construction, the partitions or baffles 33 and 34 form therebetween parallel vertical air passages 35, connected alternately at opposite ends by short, horizontal air passages 36. This construction provides a continuous tortuous passage through the muffler casing, it being noted that the vertical passages 35 are relatively narrow, whereas at one end of the casing a vertical passage 38 of greater depth is provided, and at the other end of the casing a passage or chamber 39 of increased depth or size is provided.

The several passages or chambers 35, 38 and 39 are filled with a lumpish or granular material such as lumps of coke or charcoal. I preferably use a coarsely divided material in the form of relatively larger lumps or fragments having irregular or rough surfaces, and, in the present application of my invention, find that lumps of coke prove satisfactory in carrying out the purposes of the invention. It will be seen from the foregoing that the interior of the muffler casing is formed with a plurality of parallel layers or non-porous partitions 33 and 34 of relatively hard material with smooth surfaces, and also a plurality of alternate porous layers in the form of granular or lumpish beds of coarsely divided material, such as coke or other fragmentary substance forming preferably rough surfaced lumps.

The air pressure line 21 from the blower A is connected to the fuel burner C, which comprises a nozzle or jet 40 to which is connected the fuel feed pipe 41. The fuel mixture forced through the nozzle is regulated by means of an adjustable needle valve 42.

In the use of the pressure blower it will be seen that the air entering the muffler casing 27 through the intake pipe 43 in the direction of the arrows will pass through the chamber 38 and will travel alternately back and forth through the several air passages 35, thence the air will pass through the chamber 39 into the inlet opening 24 of the pump casing. I have found in practice that a blower pump provided with an intake muffler device of the construction herein described eliminates the noise resulting in the intake from the operation of the blower pump, the alternating or staggered partitions or layers 33 and 34 acting to bend alternately the air stream, causing the air to flow through the porous layers 35 in a tortuous manner. The air stream is broken up by the lumpish or granular material 37 into multiple tortuous streams which flow in contact with the rough or irregular surfaces of the lumps or fragments. As in the case of lumps of coke, charcoal, etc., the surfaces thereof are irregular and are formed with innumerable air pockets which assist in absorbing differences in air pressure, thereby equalizing the pressure in the intake and preventing the setting up of noises therein.

It is to be understood that by describing in detail herein any particular form, structure, or arrangement, it is not intended to limit the invention beyond the terms of the several claims or the requirements of the prior art.

What I claim is:—

1. A device for muffling the intake of pressure blowers, comprising an enclosed casing having an inlet at one end and an outlet at the side near the other end, partitions within the casing arranged to cause the air in its passage from the inlet to the outlet to flow across the casing alternately in opposite directions, and a porous material located between said partitions.

2. A noise muffling device for pressure blowers, comprising a casing having an inlet and an outlet, and transverse partitions in said casing forming a tortuous air passage between the inlet and outlet, the passages between the ends of the casing and the first and last partition being wider than the passages between adjacent partitions, and a porous material located in said passages.

In testimony whereof I affix my signature.

JOSEPH B. BRENNAN.