Sept. 26, 1933. G. K. NEWELL 1,927,947

MUFFLER

Filed Feb. 3, 1931

Fig. 1

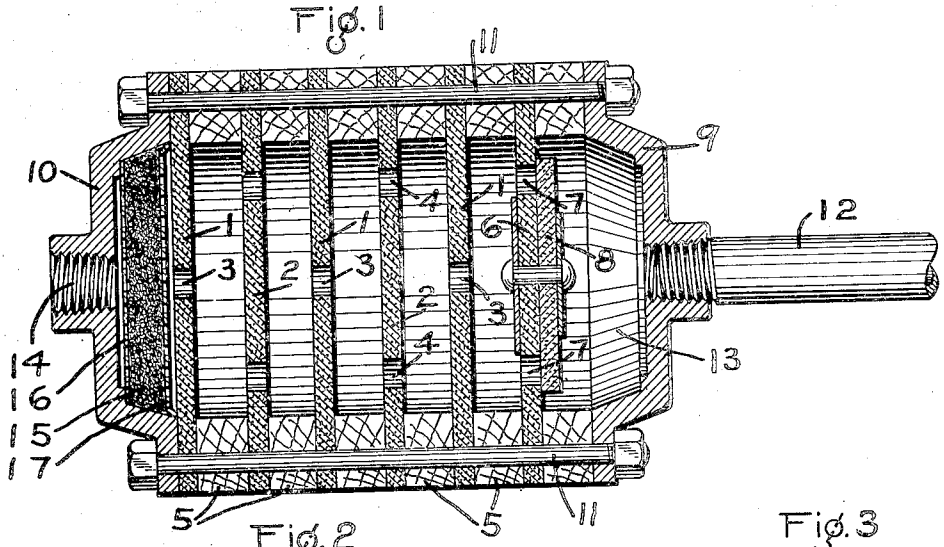


Fig. 2

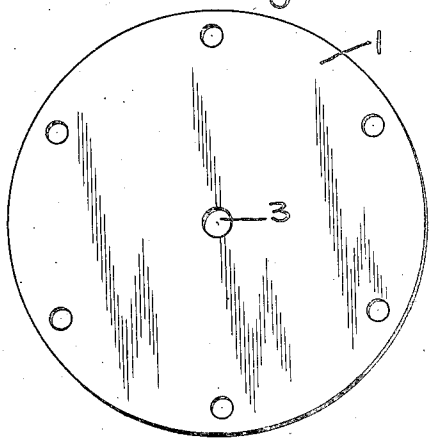


Fig. 3

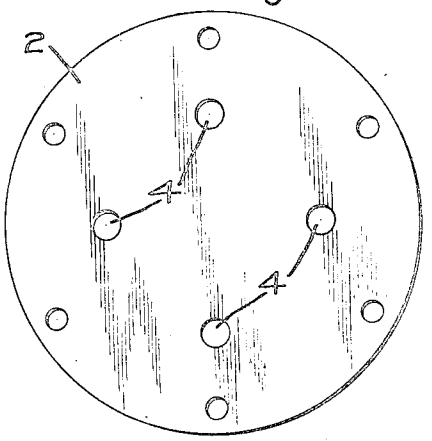
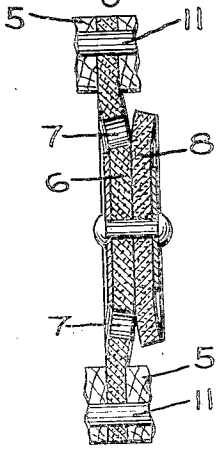


Fig. 4



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1,927,947

MUFFLER

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Application February 3, 1931. Serial No. 513,087

2 Claims. (137—160)

This invention relates to mufflers, and more particularly to a muffler adapted to be employed at the air intake pipe of a fluid compressor.

In some fluid compressors, such as a certain high speed type designed for use on automotive vehicles, considerable noise is developed at the air intake due to sudden changes in the direction of flow of air.

The principal object of my invention is to provide an improved muffler adapted to be employed at the air intake of a fluid compressor for eliminating noise.

In the accompanying drawing; Fig. 1 is a central sectional view of a combined muffler and air strainer embodying my invention; Fig. 2 a face view of one of the rubber disks employed in the Fig. 1 construction; Fig. 3 a face view of another of the rubber disks; and Fig. 4 a sectional view of the rubber disk valve means employed in the Fig. 1 construction, showing same in its suction position.

The muffler and strainer may comprise a plurality of spaced disks which may be of rubber micarta, or other non-metallic flexible material, some as indicated in Fig. 2 by the reference numeral 1 and others as indicated in Fig. 3 by the reference numeral 2. The disks 1 have a single central hole 3 and the disks 2 a plurality of holes 4 which may be arranged as shown.

The disks 1 and 2 are alternated and are spaced apart by preferably wood or micarta spacer rings 5. At one end, a rubber disk 6 is mounted in spaced relation with the other disks and is provided with holes 7. A rubber disk valve 8 is centrally secured to the disk 6 and is adapted to act as a flap valve to control the flow of air through the openings 7.

A cover plate 9 is mounted at one end of the device, and a cover plate 10 at the other end, and the whole structure is secured together by means of a plurality of bolts 11. A pipe 12, leading to the air intake of a fluid compressor (not shown) is secured to the cover plate 9 and opens into chamber 13 at one side of the disk valve 8.

The cover plate 10 is provided with an air inlet opening 14 and in the chamber formed in said cover plate is disposed a curled hair strainer, the curled hair 15 being packed between metal screen disks 16 and 17.

When the compressor is running particularly at high speed, severe disturbances and changes of direction of travel of air in the space between the muffler and the compressor tend to take place. On the suction stroke, the rubber disks 1 and 2 are flexed toward the right by the inflow of air from the atmosphere, this action being aided by the staggering of the holes 3 and 4 in the alternating rubber disks, and this tends to slow down the inrush of air through the compressor intake pipe 12. The inflow of air also acts on the disk 6 to flex same toward the right and to cause the valve 8 to be flexed away from the disk 6, as shown in Fig. 4, so that air passes through the openings 7 to chamber 13 and the intake pipe 12.

There is a tendency, due to the high intake velocity of the air on the suction stroke, for more air to be drawn in than is required by the compressor, and this excess air, instead of blowing back on the non-suction stroke of the compressor is trapped by the closure of the flap valve 8, and thus prevents noise due to the back flow of air. The disk 6 tends to be flexed toward the left by this trapped air, and the tendency of the disk to return to its normal position gives the trapped air a push toward the intake of the compressor, which thus provides a somewhat high pressure of trapped air for the next intake stroke of the compressor, all of which tends to reduce or minimize the movements of the air column between the atmospheric intake and the compressor.

The substantially wood and rubber construction of the muffler, due to the non-resonant character of these materials, also tends to prevent noise.

While one illustrative embodiment of the invention has been described in detail, it is not my intention to limit its scope to that embodiment or otherwise than by the terms of the appended claims.

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

1. A muffler for the intake of a fluid compressor and comprising a flexible disk interposed between the intake and the inlet valve of the compressor and having openings and a flexible disk valve carried by said disk and controlling said openings to permit flow of air from the atmosphere through said openings from the intake of the compressor to the inlet valve of the compressor, but preventing back flow from the compressor inlet valve to the intake and the atmosphere, both said disk and said valve being flexed by the pressure of air flowing from the intake to the inlet valve of the compressor.

2. A muffler for the intake of a fluid compressor comprising a casing, a flexible disk interposed between the intake of the compressor and the in-

let valve of the compressor and having its periphery secured to the casing and having openings therethrough, and a flexible disk valve secured to said disk and controlling the flow of air from the atmosphere through said openings to the inlet valve of the compressor, said disk and said valve being flexed in one direction by the pressure of air flowing from the atmosphere to the compressor inlet valve to permit flow of air through said openings, and both the disk and the valve being flexed in the opposite direction by the pressure of air between the inlet valve of the compressor and the disk to close said openings.

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