

J. M. WERNER.
MUFFLER FOR INTERNAL COMBUSTION ENGINES.
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971,424.

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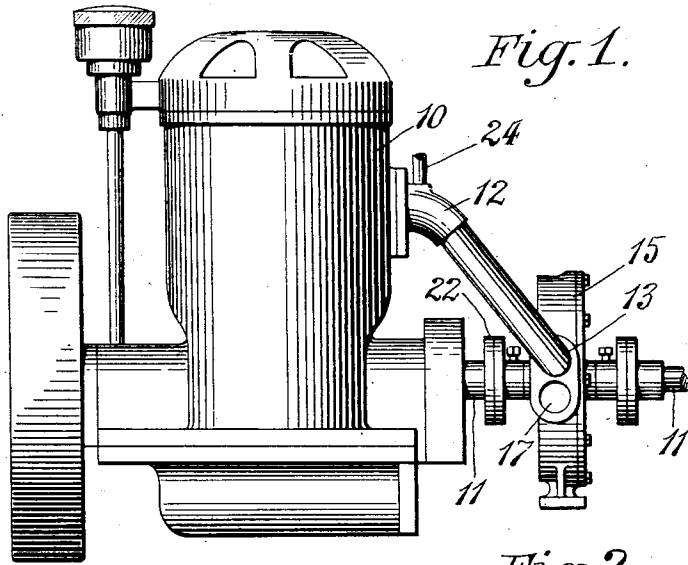
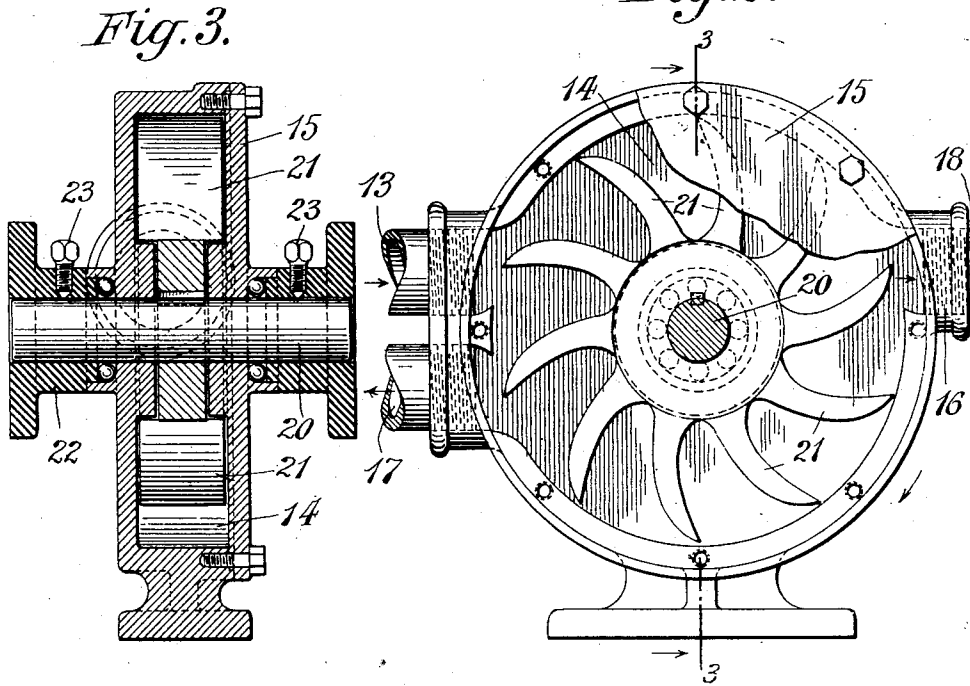


Fig. 2.



Witnesses:

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MUFFLER FOR INTERNAL-COMBUSTION ENGINES.

971,424.

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To all whom it may concern:

Be it known that I, JOHN M. WERNER, a naturalized citizen of the United States, and a resident of Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Mufflers for Internal-Combustion Engines, of which the following is a specification.

My invention relates to mufflers for internal-combustion engines; and it has for its object a muffler, for the exhaust gases from the engine cylinder, which shall substantially muffle the sound; and in which back pressure upon the engine, as produced by the mufflers at present in common use, is eliminated or at least reduced to a negligible quantity, and with which the speed of the engine is not affected to any appreciable extent.

The type of mufflers in use at present consist essentially of a receiver for the exhaust, said receiver being provided with suitable stationary baffle plates to break the shock or cushion the force of the exhaust gases from the cylinder. This of course involves a considerable loss in efficiency due to the back pressure caused by the choking of the exhaust. The present invention likewise contemplates the use of suitable baffle plates or vanes, but, instead of having these plates fixed or stationary, the same are to be arranged to rotate freely with the exhaust gases, thus relieving the engine of any appreciable back pressure.

The nature of my invention will be best understood when described in the accompanying drawings, in which—

Figure 1 is an elevation of an internal-combustion engine with my improved muffler attached. Fig. 2 is an elevation, on an enlarged scale, of the muffler with a portion of the casing broken away. Fig. 3 is a section taken on the line 3—3, Fig. 2, looking in the direction of the arrows.

Similar characters of reference designate corresponding parts throughout the several views.

Referring now to the drawings, 10 designates the cylinder of an internal-combustion engine, and 11 the shaft of said engine. 12 designates the exhaust pipe leading from the said cylinder 10, and is connected through a suitable inlet 13 to a receiving chamber 14 of the muffler and formed by the casing 15. Suitable outlets 16 and 17 are provided from the casing 15, the outlet 16 being approxi-

mately half-way, and the outlet 17 approximately the entire way around the casing. For the purpose of exhausting directly into the atmosphere the outlet 17 is preferably employed, and the outlet 16 is then closed in any suitable manner as by means of the plug 18. In the case of exhaustion under water, the conditions are reversed, connection being made to the outlet 16 and the outlet 17 being closed.

Within the casing 15 and mounted to turn therein, between the inlet and corresponding outlet, as for example with a shaft 20, is a number of baffle plates or vanes 21 adapted to receive the exhaust gases entering through the inlet 13. Shaft 20 is connected in any convenient manner with the engine shaft 11, as by means of the coupling 22, which is held to the shaft 20 through set screws 23. Circulating water may be mixed in with the exhaust gases at an inlet 24, and passes then through the muffler to cool the same. The exhaust gases are thus delivered from the cylinder 10 to the receiving chamber 14 of the muffler, and are swept through the latter by the vanes 21 rotating with the shaft 11 of said engine. Very little, if any, loss in efficiency is thereby incurred, the muffler acting substantially as an exhaust blower.

I do not wish to restrict myself to the specific construction herein disclosed, as it is evident that various modifications in the same may be made which shall lie within the scope of my invention.

I claim:—

1. The combination with an internal combustion engine, of a muffling device comprising: a casing forming a chamber for the exhaust gases from said engine; a rotatable shaft; a plurality of vanes mounted upon said shaft and adapted to rotate therewith within said chamber, said vanes extending substantially from the shaft to the inner wall of said chamber and forming pockets for the exhaust gases between adjacent vanes; an inlet to said chamber adapted to direct the exhaust gases into the said pockets formed between adjacent vanes and toward the inner portion thereof; and an outlet from said chamber to receive the gases expelled from the outer portion of the said pockets.

2. The combination with an internal combustion engine, of a muffling device comprising: a casing forming a chamber for the exhaust gases from said engine, said casing

having lateral cylindrical extensions providing a ball-race; a shaft passing through said casing and said lateral extensions; suitable coupling flanges at the ends of said
5 shaft adapted to be coupled to the shaft of the said engine; means to secure said coupling flanges to the said muffler shaft to hold the same against relative rotation and to hold suitable balls within the said ball-
10 race; a plurality of vanes mounted upon said muffler shaft and adapted to rotate therewith within said chamber, said vanes extending substantially from the shaft to the inner wall of said chamber; an inlet to

said chamber adapted to direct the exhaust 15 gases into the chamber formed between adjacent vanes and toward the inner portion thereof; and an outlet from said chamber to receive the gases expelled from the outer portion of the said chamber formed between 20 adjacent blades.

Signed at Hoboken in the county of Hudson and State of New Jersey this 28th day of Jan'y. A. D. 1910.

JOHN M. WERNER.

Witnesses:

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