

A. H. GREWE.
MUFFLER FOR EXPLOSIVE ENGINES.
APPLICATION FILED JAN. 12, 1910.

978,287.

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FIG. 1

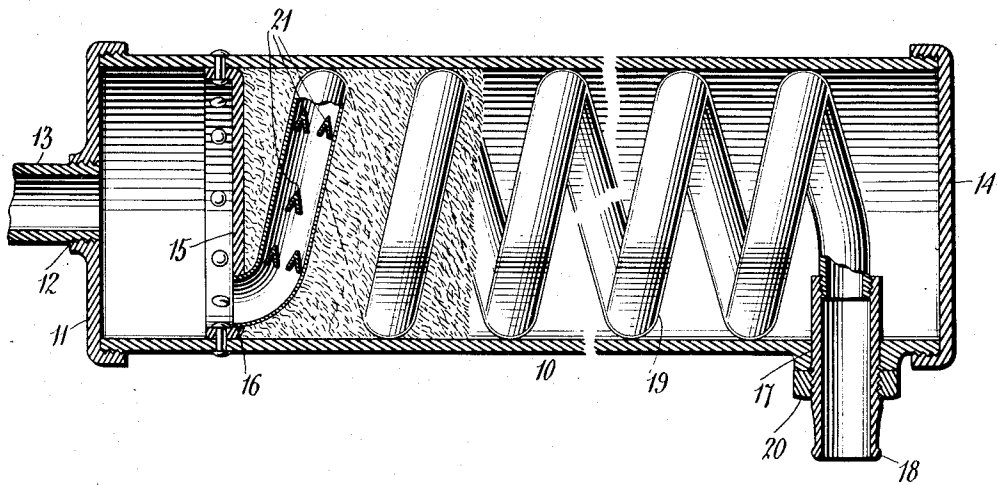


FIG. 2

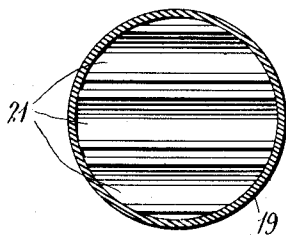
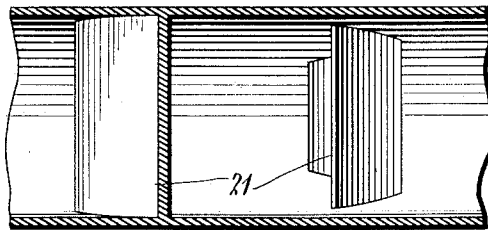


FIG. 3



Witnesses

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MUFFLER FOR EXPLOSIVE-ENGINES.

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To all whom it may concern:

Be it known that I, ALBERT H. GREWE, a citizen of the United States, residing at Des Plaines, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Mufflers for Explosive-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the mufflers which are commonly used with explosive engines to reduce the noise of the explosions taking place in such engines.

One object of the invention is to improve the general construction of mufflers of this character.

Another object of the invention is to provide improved means for reducing the speed of the exhaust through such a muffler and causing the exhaust from the muffler to be substantially uniform so that the flow of the exhaust gases does not set up any pulsations in the atmosphere.

A third object of the invention is to provide a muffler of this character with sound insulating means so that the noise of the gases passing through the muffler is also eliminated.

With the above and other objects in view, the invention consists of a casing wherein is held an exhaust tube of peculiar construction.

The invention further consists in certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claims.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and:—Figure 1 is a longitudinal sectional view through a muffler constructed in accordance with this invention, a portion of the interior of the muffler being shown in elevation while the remainder is shown in section. Fig. 2 is an enlarged detail section taken transversely through the exhaust tube. Fig. 3 is an enlarged detail longitudinal section through a portion of the exhaust tube.

The numeral 10 indicates the casing of this invention and this casing is provided with an inlet head 11 wherein is formed an inlet opening 12 adapted to receive the end

of a pipe 13 leading from the exhaust port of the engine to which the muffler is attached. The opposite or exhaust end of the muffler is also provided with a head 14, the latter being imperforate. Adjacent the inlet head is a diaphragm 15 suitably secured within the casing 10 and provided with an opening 16. This opening 16 is preferably near the bottom of the muffler, the cylindrical casing of which is preferably disposed in a horizontal position. At the opposite or exhaust end of the muffler the casing is provided with an opening 17 and in this opening is held an exhaust nozzle 18. Extending from the opening 16 to the exhaust nozzle 18 is a spirally wound tube 19 preferably termed the exhaust tube. This tube is screwed into the opening 16 before the diaphragm 15 is placed in the muffler and when the tube and diaphragm are in position the exhaust nozzle 18 is screwed on to the exhaust end of the tube, being properly held by means of a jam nut 20. Extending across the exhaust tube 19 are a series of retarding or baffle plates 21. These plates are arranged in staggered relation and preferably one centrally disposed plate and two lateral plates alternate with each other so that the arrangement is quincuncial. Each of the retarding plates comprises a vane having two portions arranged at an angle to each other with the apex of the angle directed toward the exhaust end of the pipe, thus having the hollow sides of said plates disposed toward the inlet end of the tube. The space surrounding the spiral exhaust tube is packed with some form of sound insulating material such as mineral wool or the like.

In the operation of the device the exhaust enters the inlet end of the muffler first flowing through the chamber formed between the diaphragm 15 and inlet head 11 and thence passing through the opening 16 into the exhaust tube 19. There the exhaust is retarded by the peculiar arrangement of the retarding plates so that it is forced to flow between the lateral plates and around the central plates. The exhaust is thus not only given a spiral passage through the tube as a whole but also has a broken and zigzagged passage through the tube itself. When the exhaust has been so checked that it flows through the nozzle 18 in a substantially uniform manner, the rapidly succeeding ex-

sions have but little effect owing to the checking and retarding influence of the plates 21.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of this invention without departing from the material principles thereof. It is not therefore desired to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come within the scope of the appended claims.

Having thus described the invention, what is claimed as new, is:—

1. In a muffler, a casing having an inlet opening at one end and an exhaust opening at the opposite end, an imperforate spiral tube held in said casing between the inlet and exhaust openings, and sound insulating material packed around said spiral tube and in said casing.

2. In a muffler, a cylindrical casing having an inlet opening at one end and an exhaust opening at the opposite end, a partition across said casing at the inlet end and having an opening therethrough, a spiral tube held in said casing between the partition and exhaust end, one end of the tube being connected to the opening in the partition and the other end to the opening in the exhaust end, and sound insulating material packed around said spiral tube.

3. In a muffler, a spiral exhaust tube having retarding plates extending thereacross, each plate comprising a vane having a hollow side disposed toward the inlet end of the tube.

4. In a muffler, a spiral exhaust tube having retarding plates arranged in staggered

relation and extending transversely of said tube, each plate comprising a vane having a hollow side disposed toward the inlet end of the tube.

5. In a muffler, an exhaust tube having retarding plates extending thereacross, each plate comprising a vane bent to form two portions arranged at an angle to each other, the apex of the angle being directed toward the exhaust end of the tube.

6. In a muffler, a spiral exhaust tube having retarding plates arranged in staggered relation and extending transversely of said tube, each plate comprising a vane bent to form two portions arranged at an angle to each other, the apex of the angle being directed toward the exhaust end of said tube.

7. In a muffler, a cylindrical casing having an inlet opening at one end and an exhaust opening at the opposite end, a partition across said casing at the inlet end having an opening therein, a spiral tube held in said casing between the partition and exhaust end, one end of the tube being connected to the opening in the partition and the other end to the exhaust opening, retarding plates arranged in staggered relation and extending transversely of said tube, each plate comprising a vane having two portions arranged at an angle to each other, the apex of the angle being directed toward the exhaust end of the tube, and sound insulating material packed around said spiral tube within the casing.

In testimony whereof, I affix my signature, in presence of two witnesses.

ALBERT H. GREWE.

Witnesses:

WILLIAM G. WILLS,
FRED GREWE.