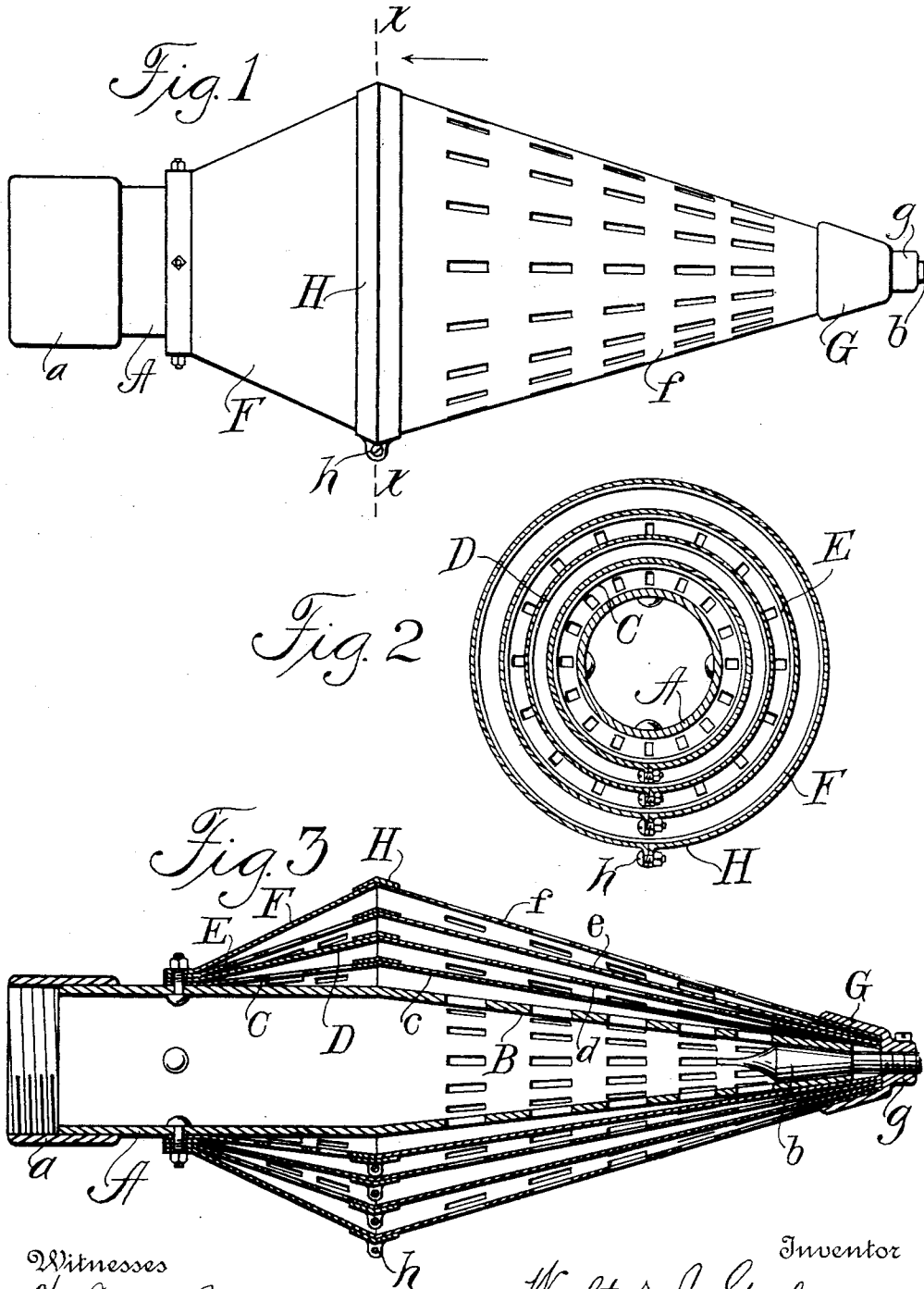


W. J. GOELZER.
MUFFLER.
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1,128,306.

Patented Feb. 16, 1915.



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UNITED STATES PATENT OFFICE.

WALTER J. GOELZER, OF BLOOMINGTON, ILLINOIS.

MUFFLER.

1,128,306.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALTER J. GOELZER, a citizen of the United States, residing at Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Mufflers, of which the following is a specification.

This invention relates to mufflers, particularly, to that class of devices intended to lessen the noise of the exhaust discharges from steam and gasoline engines.

The object of this invention is to produce a muffler having particular arrangement and construction of its parts with the view of cheapness of manufacture, and especial effectiveness in silencing the repeated discharges of burned gases during the operations of internal combustion motors.

Of the accompanying drawings, showing the particular construction and arrangement of the parts, Figure 1 is a side view of the exterior. Fig. 2 is a longitudinal section. Fig. 3 is a cross-section on the broken line *x-x* of Fig. 1.

Throughout the description and drawings, the same letter is employed to refer to the same part.

Considering the drawings, an inner cylinder A is provided with an inlet connection *a* by which it may be coupled with the exhaust pipe of a motor. The other end of the inner cylinder remote from the inlet connection is perforated and has a conical form. The perforated end is referred to by the letter B. The spearhead *b* closes the end of the perforated portion B of the cylinder, and serves to divert and turn the incoming blast of the exhausted gases.

Inclosing the cylinder A is the first hollow member, comprising two conical shells C and *c* secured together base to base. The shell C has its small end attached to or secured at the inlet connection, and is perforated, while the shell *c* has its smaller end attached about the spearhead and is imperforated. The parts mentioned in this description as the hollow members, are each double-conical in form as illustrated.

Inclosing the first hollow member is a second hollow member, comprising the two conical shells D and *d*, secured together base to base. The shell D is secured at its smaller end about the inlet connection, and is imperforated. The shell *d* is secured at its smaller end about the spearhead, and is perforated.

A third hollow member incloses the second member, and comprises the conical shells E and *e*, secured together base to base as shown. The shell E has its smaller end secured about the inlet connection, and is perforated, while the shell *e* has its smaller end secured about the spearhead, and is imperforated.

A fourth and outer hollow member incloses the third hollow member, and comprises the conical shells F and *f*. The shell F has its smaller end attached about the inlet connection, and is imperforated. The shell *f* has its smaller end secured about the spearhead, and is perforated.

The smaller ends of the cylinder and hollow members are secured about the spearhead and to that part by means of the external cup G having the threaded throat *g*.

The conical shells of the hollow members are secured together, base to base, by means of an encircling strap riveted to the cones, such as the strap H shown in Figs. 1 and 2.

It will be noted in the drawings that the perforated portions of the cylinder and either hollow member are arranged next to the imperforated portions of adjacent members, and that the perforated portion of the outermost member is arranged at the end of the muffler remote from the inlet connection *a*.

Having now described this invention, the mode of its operation may be stated as follows: The exhaust gases from the motor first pass outwardly through the perforated portion B of the cylinder A. They are then turned in the opposite direction by the imperforated cone of the adjacent hollow member and pass outwardly, always expanding, through the perforated portion of the member. As they pass through the perforated portions of the hollow members the direction of the gases is reversed, until, they are finally discharged rearwardly and fully expanded through the perforated portion of the outer hollow member.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A muffler, comprising an inner hollow cylinder having a conical perforated end portion, a plurality of perforated and imperforated conical shells concentrically arranged base to base around the said inner cylinder, a number of the said shells having their smaller ends secured to the said inner cylinder, and means acting upon the

conical end of the inner cylinder for clamping the remaining shells removably base to base with the said secured shells.

2. A muffler, comprising an inner hollow
5 cylinder having a conical perforated end
portion, a plurality of perforated and im-
perforated conical shells concentrically ar-
ranged base to base around the said inner
cylinder, a number of the said shells having
10 their smaller ends secured to the said inner
cylinder, means acting upon the conical end

of the inner cylinder for clamping the re-
maining shells removably base to base with
the said secured shells, and removable
clamping straps encircling the concentric
15 junctions of the said shells.

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

WALTER J. GOELZER.

Witnesses:

ANNA V. PAULSEN,
WALTER ARMBRUSTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."