

No. 867,973.

PATENTED OCT. 15, 1907.

J. B. HOOVER.
MUFFLER FOR GAS ENGINES.
APPLICATION FILED FEB. 16, 1906.

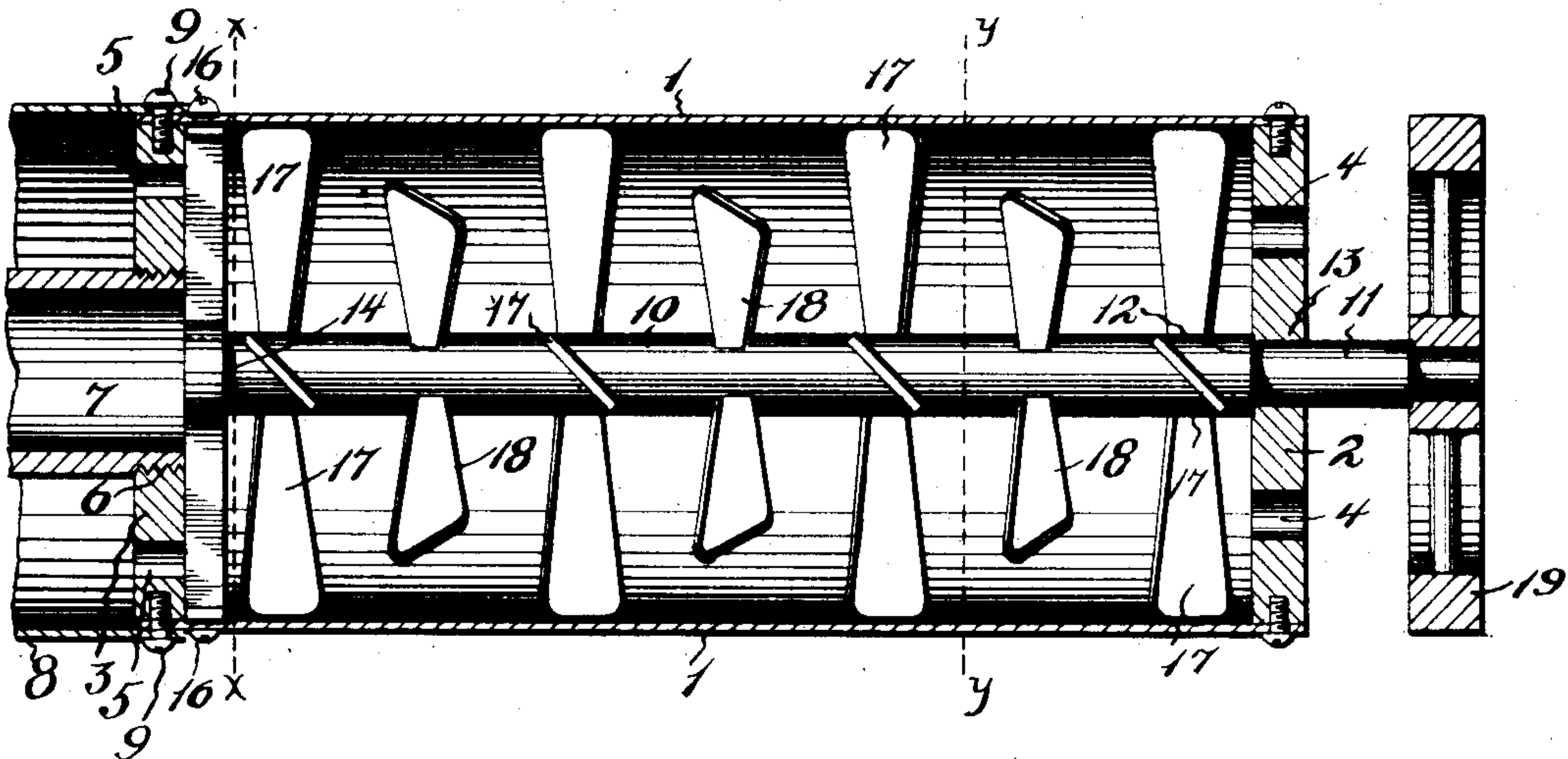


Fig. 1.

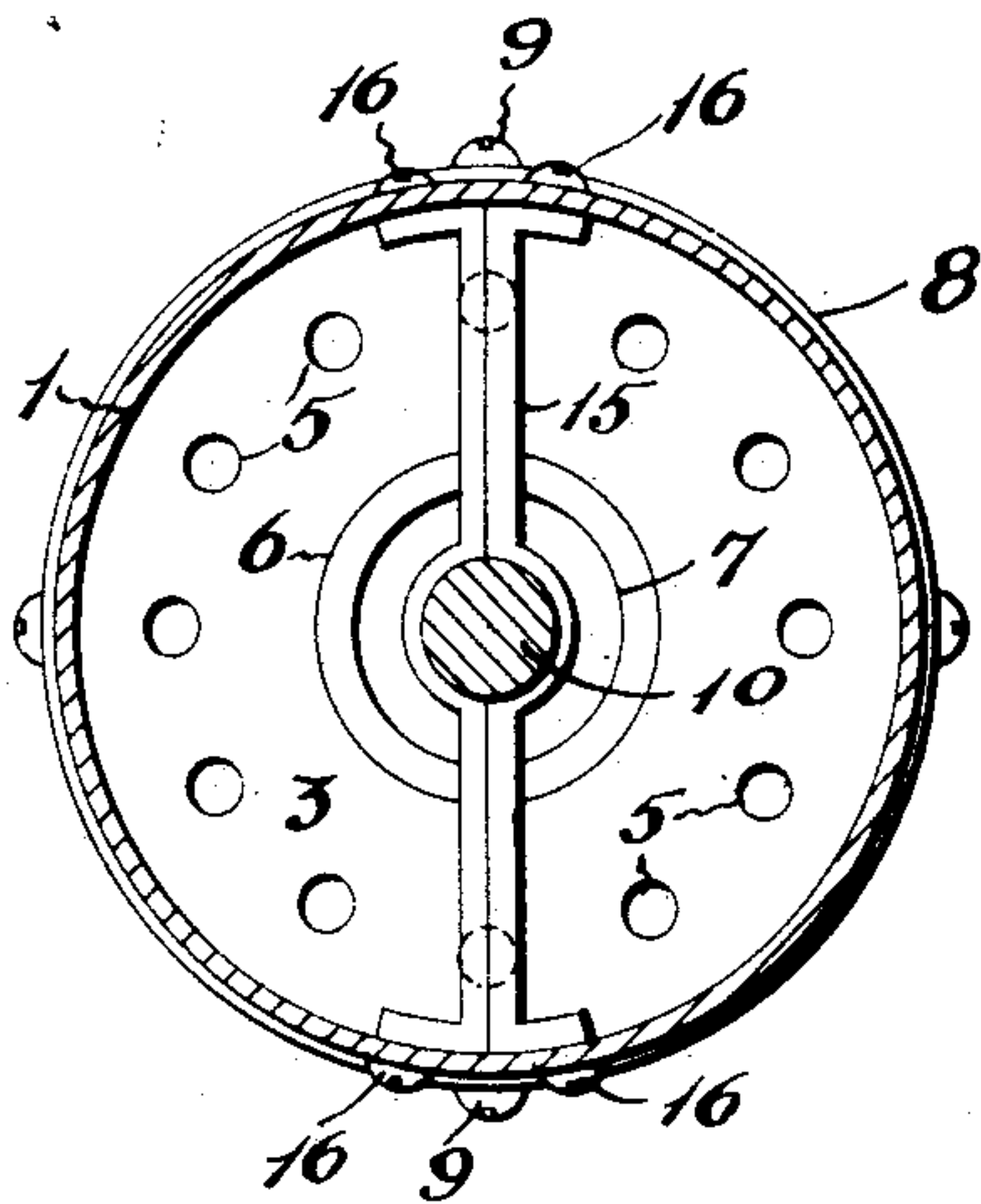


Fig. 2.

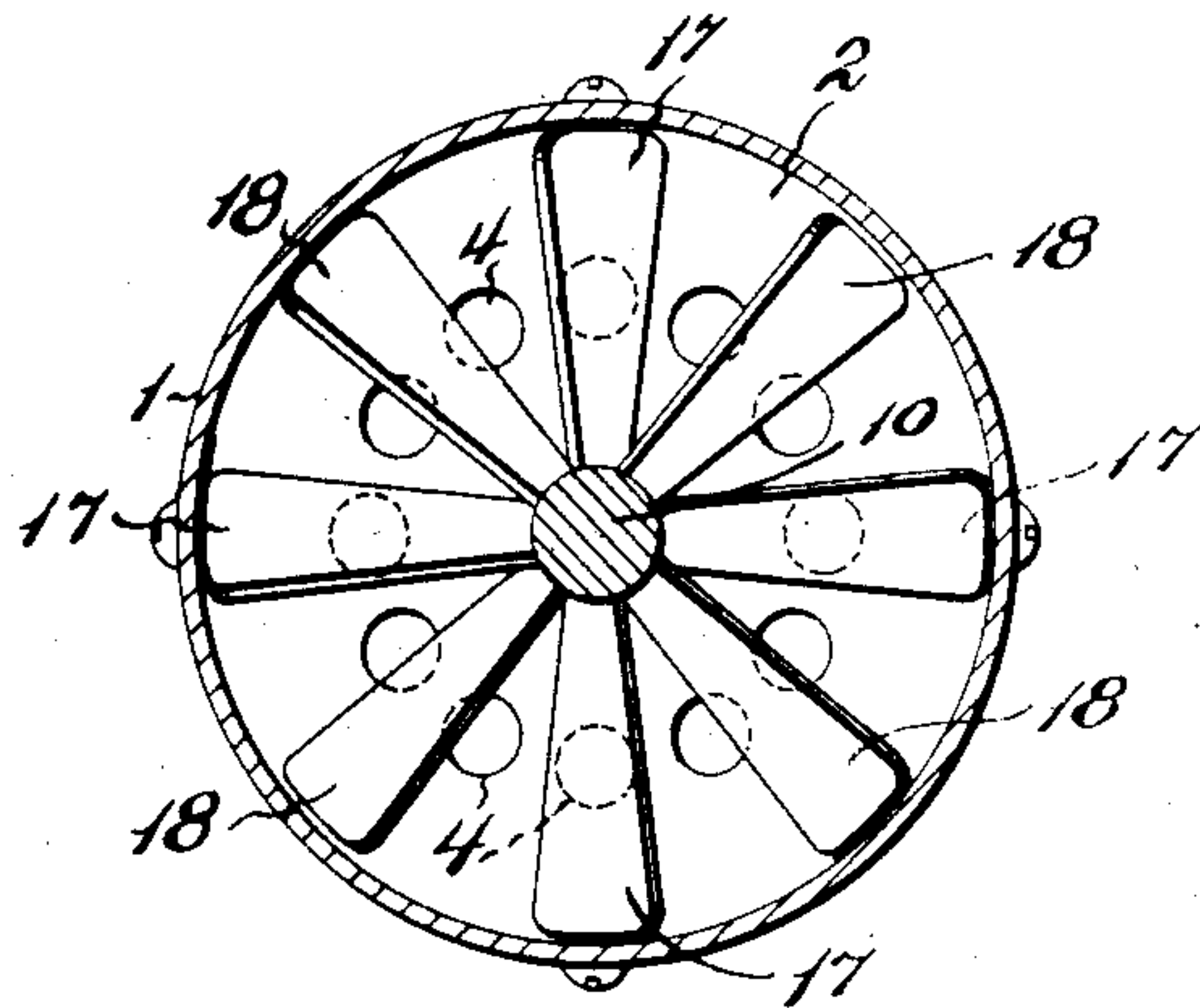


Fig. 3.

WITNESSES

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MUFFLER FOR GAS-ENGINES.

No. 867,973.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed February 16, 1906. Serial No. 301,362.

To all whom it may concern:

Be it known that I, JACOB B. HOOVER, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Mufflers for Gas-Engines, of which the following is a specification.

My invention relates to new and useful improvements in mufflers for gas engines.

The object of the invention is to provide a muffler more especially designed for air cooled engines, in which air is conveyed along the exhaust pipe.

Another feature resides in rotatable means disposed within the muffler and arranged to be driven by the exhaust from the engine, with the result that a suction is created which tends to draw the air so that a circulation about the cylinder and the exhaust pipe is had.

Finally the object of the invention is to provide a device of the character described that will be strong, durable and efficient and one in which the several parts will not be liable to get out of working order.

With the above and other objects in view, the invention consists of the novel details of construction and operation, a preferable embodiment of which is described in the specification and illustrated in the accompanying drawings, wherein:

Figure 1 is a longitudinal vertical sectional view of my improved muffler, also showing a portion of the exhaust pipe and air conducting tube, Fig. 2 is a transverse vertical sectional view taken on the line *x x* and looking toward the exhaust pipe, and, Fig. 3 is a transverse vertical sectional view taken on the line *y y* of Fig. 1, and looking toward the discharge end of the muffler.

In the drawings the numeral 1 designates the muffler which is preferably cylindrical in shape, being closed at each end by disk plates or heads 2 and 3. These heads are each formed with circular rows of openings 4 and 5 respectively. The inner head 3 is provided with a screw threaded opening 6 in which is threaded the end of the exhaust pipe 7 of an explosive engine (not shown). This exhaust pipe is surrounded by a somewhat larger air conducting tube 8, which is secured to the ends of the muffler by any suitable means as screws 9. The openings 5 in the head 3 are so disposed as to permit the air in the tube 8 to freely pass therethrough to the muffler casing 1.

Centrally within the casing 1 a longitudinal shaft 10 is disposed. The shaft is provided with a reduced portion 11 and a shoulder 12, which reduced portion passes through an opening 13 in the head 2, while the shoulder 12 abuts the inner side of the same, a suitable bearing

being thus provided. At its opposite end the shaft is also provided with a shoulder 14 and has suitable bearing in a spider 15 which the shoulder abuts. The spider is secured at its opposite ends to the inner surface of the casing 1 by any suitable means as screws 16 passed through the casing from the outside thereof. By provision of the shoulders end thrust and longitudinal displacement of the shaft is obviated, while at the same time it is permitted to freely revolve. Secured on the shaft and projecting therefrom within a short distance of the inner surface of the casing are blades or paddles 17 and 18, the said blades being arranged in sets of four each, or any other suitable combination. However, in the present instance, the blades 18 project from the shaft at points substantially forty-five degrees from the blades 17, the purpose of which will be hereinafter brought out. The reduced end 11 of the shaft is extended a short distance beyond the head 2 and a fly or balance wheel 19 mounted thereon, which assists in the revolution of the paddles by the shaft. It is to be noted that the blades 17 and 18 are disposed at an angle and inclined away from the head 3 through which the exhaust and air are admitted.

The operation of the device is as follows: The exhaust gases from the engine enter the muffler casing 9 and causes the shaft 10 to revolve when said gases strike against the blades 17. The rotation of these blades create a suction in the muffler casing which tends to draw the air from the tube 8. This tube is connected to the air jacket of the engine in the usual and well known manner. A circulation of air is accordingly set up in said tube and about the cylinder of the engine. The air and gases after passing through the casing escape through the openings 4 in the head 2. It is obvious that after the shaft is set in motion, the momentum gained by the balance wheel 19, will materially assist in keeping up the revolution of the shaft. I wish it clearly understood that I use no manual or mechanical power in revolving the shaft 10, but depend solely upon the force of the exhaust gases as they strike up against the blades to revolve the same. By the provision of such a device as I have herein described, a constant circulation which is desirable in air cooled engines may be had, and without the consumption of power necessary where a fan or the like, is used.

What I claim, is:

1. In a muffler for explosive engines, the combination with an exhaust pipe of an explosive engine, of a muffler casing into which said exhaust pipe discharges, a fan mounted in said casing and adapted to have movement imparted thereto by the force of said exhaust, an air conduit which is also in communication with said casing, said cas-

ing having openings formed therein for the discharge of the spent gases to the atmosphere, said fan creating a circulation of air in the air conduit.

2. In a muffler for explosive engines, the combination
5 with the exhaust pipe of said engine, of a muffler casing, said exhaust pipe discharging into the end of said muffler casing, a shaft rotatably mounted in said casing and extending longitudinally thereof, fan blades carried by said shaft, a balance wheel mounted upon the shaft upon
10 the exterior of the casing, an air conduit which surrounds

the exhaust pipe and which is also in communication with the interior of the casing, and said casing having openings formed in the end thereof opposite the end at which the exhaust pipe is connected.

In testimony whereof I affix my signature in presence of 15 two witnesses.

JACOB B. HOOVER.

Witnesses:

A. L. PHELPS,
M. B. SCHLEY.