

No. 714,077.

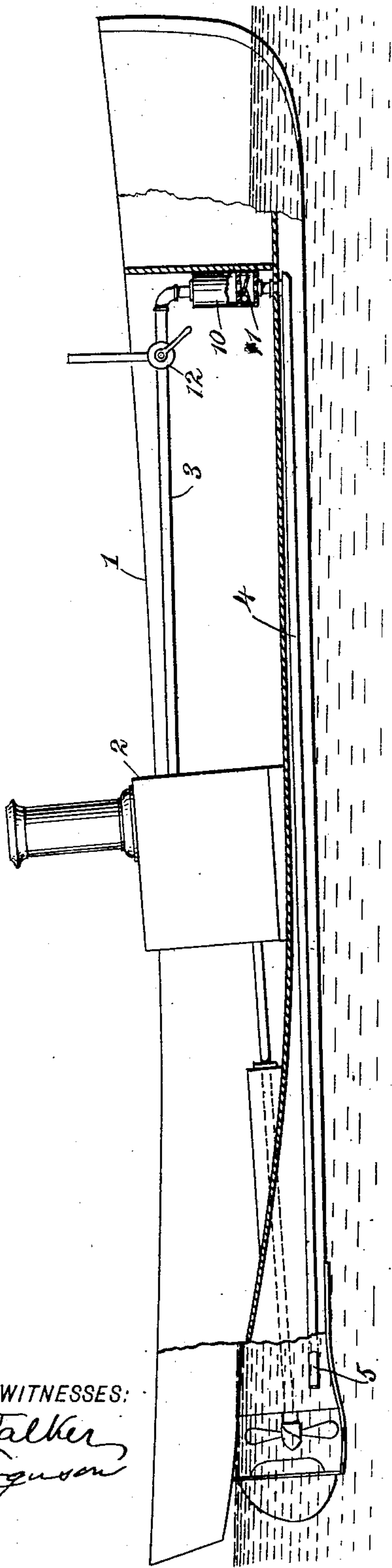
Patented Nov. 18, 1902.

H. N. WHITTELSEY.
EXHAUST MUFFLER.

(Application filed Mar. 26, 1902.)

(No Model.)

Fig 1



WITNESSES:
H. Walker
C. R. Ferguson

Fig 2

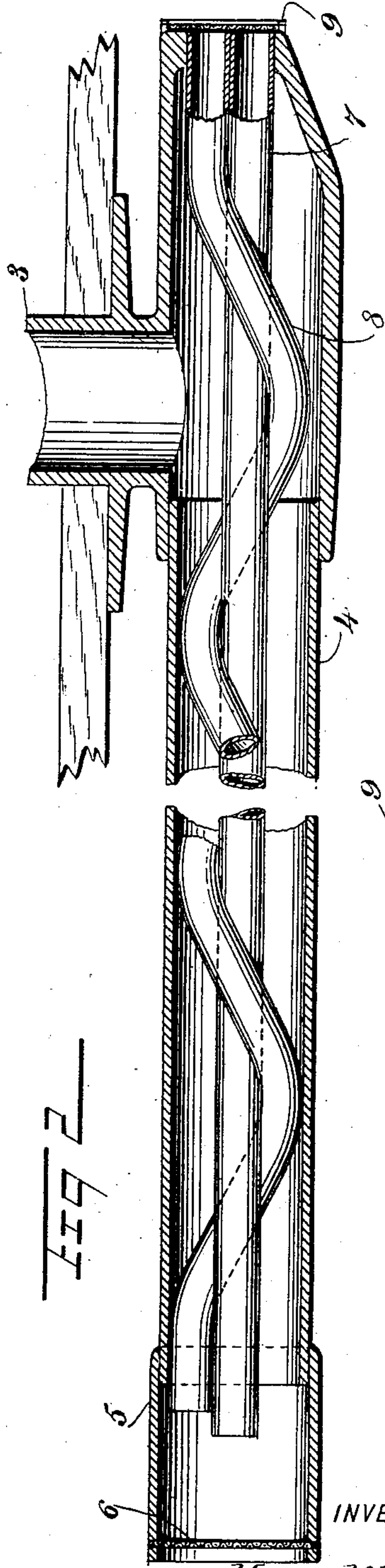
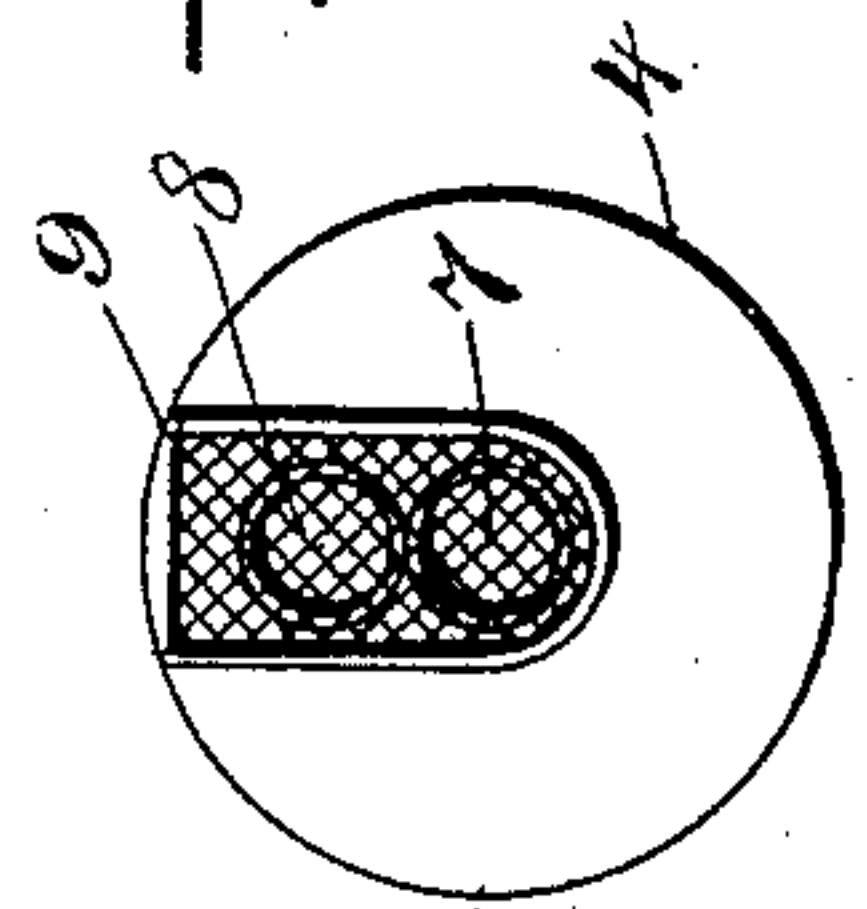


Fig 3



INVENTOR
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UNITED STATES PATENT OFFICE.

HENRY NEWTON WHITTELSEY, OF CAMDEN, NEW JERSEY.

EXHAUST-MUFFLER.

SPECIFICATION forming part of Letters Patent No. 714,077, dated November 18, 1902.

Application filed March 26, 1902. Serial No. 100,092. (No model.)

To all whom it may concern:

Be it known that I, HENRY NEWTON WHITTELSEY, a citizen of the United States, and a resident of Camden, in the county of Camden and State of New Jersey, have invented a new and Improved Exhaust-Muffler, of which the following is a full, clear, and exact description.

This invention relates particularly to improvements in mufflers for the exhaust of combustion of steam-engines used in propelling launches and other vessels; and the object is to provide a muffler in the form of a submerged condenser so constructed as to cool and effectually condense the exhaust gases and vapors and emit the small volume uncondensed in a continuous stream through the open after end, thus preventing any noise from the final discharge of the exhaust, and, further, to relieve the engine-cylinder from back pressure, thus increasing the working efficiency of the engine.

I will describe an exhaust-muffler embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional view of a boat, showing an exhaust-muffler embodying my invention applied thereto. Fig. 2 is a longitudinal section of the muffler, and Fig. 3 is a front end view thereof.

Referring to the drawings, 1 designates a vessel, and 2 an engine therein. Leading forward from the exhaust-port of the engine is the exhaust-pipe 3, which extends through the bottom of the vessel and communicates with the muffler, consisting of a cylinder 4, which extends along the under side of the vessel and is consequently surrounded by water. The rear end of the muffler is open and is provided with a removable extension 5, in the end of which is a screen 6 to prevent the entrance of seaweed or other floating material. Extended longitudinally in the cylinder 4 is a water-pipe 7, which opens through the front end of the cylinder and increases the condensing-surface, and arranged around this pipe 7 is a metal spiral, here shown as a pipe 8, having an opening through the forward

end of the cylinder. This metal spiral serves to make the exhaust travel in a spiral direction within the condenser, thus increasing the distance traveled and more efficiently accomplishing the condensing. The pipe 8 (here shown as the metal spiral) serves to conduct water also through the cylinder, thus increasing the condensing-surface. The inlet ends of the pipes 7 and 8 are covered by a screen 9, which will prevent the entrance of floating material, and their rear ends, as will be noted in Fig. 2, terminate somewhat inward of the screen 6, so that the force of water passing through said pipes will act to thoroughly clean the screen.

Arranged within a casing 10, to which the pipe 3 is connected, is a downwardly-opening valve 11, which will be opened when the vessel moves forward, but will be automatically closed by water-pressure on a backward movement of the vessel. I may also arrange in the exhaust-pipe 3 a three-way cock 12, which may be moved in one direction to permit exhaust into the open atmosphere when the vessel is not in motion or is moving backward.

The action of the device is as follows: By the forward motion of the boat a partial vacuum is formed in the condenser, which draws the exhaust gas or vapors direct from the engine-cylinder. The gas in passing through the condenser is reduced to one-third its original volume and the vapor condensed, thus causing an additional partial vacuum. Together the partial vacuums clear the engine-cylinder of the spent gases or vapors and by reducing the pressure against exhaust increase the power of the engine. The capacity of the condenser is such that it acts as a receiver for the spent gases and vapors, and by causing them to travel such a distance in spiral direction, which is caused, as before stated, by the spiral here represented by the pipe 8, the separate exhaust must come together, and therefore any uncondensed exhaust will issue from the rear in a continuous stream, thus effectually overcoming the impulsive exhaust from the engine and accomplishing the muffling by taking entirely away the cause of the noise—that is, the exhaust of gases or vapor at high velocity into the atmosphere.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A submerged muffler, comprising a cylinder for receiving exhaust, open at its rear end, a water-pipe extending lengthwise in the cylinder and open at its forward and rear ends, and a metal spiral, here made of a pipe open at its forward and rear ends, substantially as specified.

2. A muffler comprising a cylinder for receiving exhaust, a water-pipe extending lengthwise in the cylinder and open at its forward and rear ends, a metal spiral arranged around the first-named pipe and here made of a pipe open at its forward and rear ends, the said pipes terminating a short distance inward of the rear end of the cylinder and opening through the forward end of the cylinder, and a strainer in the rear end of the cylinder, substantially as specified.

3. A muffler comprising a cylinder for receiving exhaust, a water-pipe extending lengthwise in the cylinder, a metal spiral arranged around the water-pipe and here made

of a pipe, the said two pipes opening through the forward end of the cylinder, a sieve material over the forward ends of the pipes, a sieve material in the rear end of the cylinder, a pipe connection between an engine and the cylinder, and a downwardly-opening valve in said pipe, substantially as specified.

4. In combination with a vessel and an engine therein, a muffler comprising a cylinder arranged underneath the vessel and submerged, an exhaust-pipe leading from the engine to said cylinder, a valve arranged in said pipe, a pipe extending longitudinally in the cylinder and opening through the forward end thereof, and a pipe arranged spirally on the first-named water-pipe and opening through the forward end of the cylinder, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY NEWTON WHITTELEY.

Witnesses:

H. L. GRANT,
HAROLD LEE.