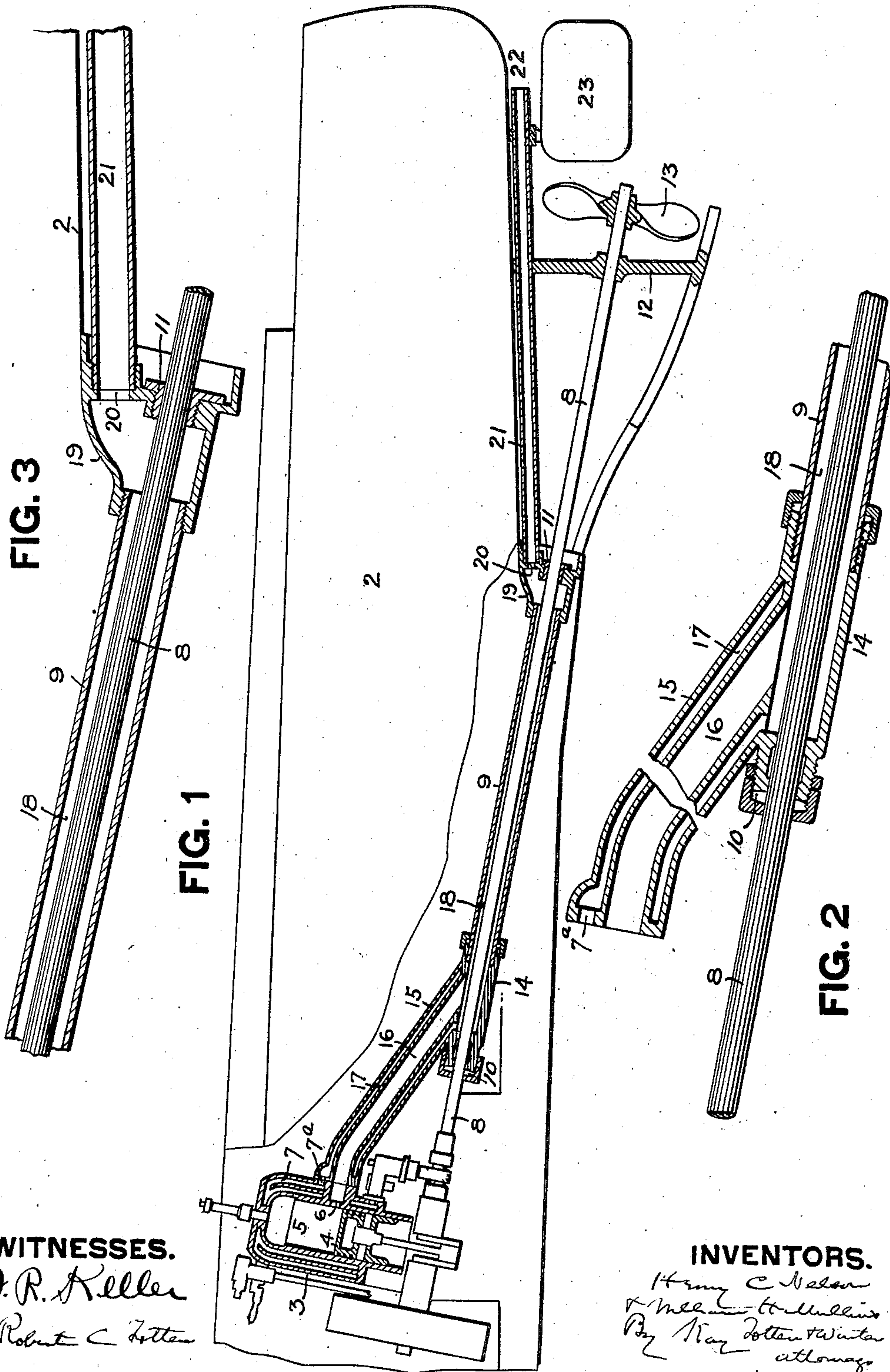


H. C. NELSON & W. H. MULLINS.
 UNDER WATER EXHAUST FOR LAUNCHES.
 APPLICATION FILED JAN. 15, 1906.

900,576.

Patented Oct. 6, 1908.



WITNESSES.
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UNITED STATES PATENT OFFICE.

HENRY C. NELSON AND WILLIAM H. MULLINS, OF SALEM, OHIO.

UNDER-WATER EXHAUST FOR LAUNCHES.

No. 900,576.

Specification of Letters Patent.

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Application filed January 15, 1906. Serial No. 296,179.

To all whom it may concern:

Be it known that we, HENRY C. NELSON and WILLIAM H. MULLINS, residents of Salem, in the county of Columbiana and State of Ohio, have invented a new and useful Improvement in Under-Water Exhausts for Launches; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to under-water exhausts for launches or motor boats.

The object of our invention is to provide means for conveying the waste gases from the exhaust of the engine to a point at the rear of the boat and below the water line so that by the time the gases have arrived at the point of discharge into the water they emerge therefrom with practically no noise or disturbance so that the objectionable feature of motor boats propelled by gas engines, due to the noise of the exhaust is practically overcome.

A further object of our invention is to so construct and arrange this means for discharging the gases at the stern of the boat and beneath the surface of the water that it is not necessary to change the form of the construction of the ordinary boat or launch or cut into the body of the same so as to weaken or mar the appearance of the same.

In carrying out our invention therefore we take advantage of the construction now commonly employed of having the propeller shaft running up through the body of the boat so as to be directly geared to the engine, said shaft passing through suitable stuffing boxes and through a shaft-casing, which shaft-casing we employ as a conduit for the gases discharged from the gas chamber of the engine and we connect said casing with the gas chamber at one end with a suitable discharge pipe at its opposite end, so that in this way we dispense with such extra connections as might otherwise be necessary for conveying the discharged gases from the cylinder of the engine to a point at the stern of the boat.

To enable others skilled in the art to make and use our invention we will describe the same more fully, referring to the accompanying drawing in which

Figure 1 is a vertical section of the rear end of a suitable boat or launch showing our invention applied thereto; and Figs. 2 and 3 are enlarged views.

Like numerals indicate like parts in each of the figures.

In the drawing the numeral 2 designates the rear end of a suitable boat or launch to be propelled by the gas engine 3 of any suitable construction. It is not deemed necessary to illustrate and describe the gas engine in detail, as any suitable form of gas engine may of course be employed. Within the gas engine 3 is a suitable piston 4 and the gas chamber 5 with the exhaust port 6 for carrying off the exploded gases. The cylinder or body of the engine is provided with the ordinary water jacket 7 with the discharge port 7^a. The propeller shaft 8 is connected up directly with the engine shaft and said propeller shaft extends in an inclined direction through the propeller shaft casing 9 which is provided at each end with suitable stuffing boxes 10 and 11. The propeller shaft extends a suitable distance beyond the lower stuffing box 11, being supported by the frame 12 and said propeller shaft carries at its extreme outer end the ordinary propeller 13. The stuffing box 10 forms part of a casting 14 which has the inclined extension 15 which is connected to the engine cylinder. This extension 15 has the central passage 16 which connects with the exhaust port 6 of the engine and in addition has the outer annular passage or well 17 which connects with the port 7^a of the water jacket 7 of the engine. The lower end of the passage 16 of the extension 15 and the well 17 communicate with the passage 18 in the propeller shaft casing 9. At the lower end of the casing 9 is the keel-casting 19 in which the stuffing box 11 is formed and said keel-casting in addition has the by-passage 20 which connects the passage 18 with the exhaust pipe 21. This exhaust pipe is supported close to the bottom of the boat and extends out to a point adjacent to the stern, said pipe being below the water line. The outer end of the exhaust pipe 21 is open and forms the exhaust discharge 22. A suitable rudder 23 is supported at the stern in the usual manner.

When the engine is running to drive the propeller shaft and impart motion to the boat the burned gases will pass from the chamber 5 through the port 6 into the passage 16, while at the same time the water from the water jacket 7 will pass through the well 17 and will join the waste gases at the point where the passage 16 and well 17

unite with the passage 18 in the propeller shaft casing. The water and gas will be driven through the passage 18 and through the keel casting 19 into the exhaust pipe 21 to be discharged from the exhaust discharge 22. By the time the gases have reached the exhaust discharge they will have had an opportunity to expand so that they will not be ejected with a loud explosion, while at the same time the exhaust being below the water line the water will have a tendency to muffle the exhaust and further reduce the noise which has heretofore been so objectionable in motor boats of this character. The discharge of the waste gases is made with practically no sound and the boat moves along in the water evenly and smoothly.

From the fact that we take advantage of the propeller shaft casing to convey the waste gases to the exhaust pipe in the rear makes it possible for us to apply our improved apparatus to the boat without the necessity of using extra pipe or of making additional openings in the body of the boat to receive the pipe for conveying the gases to the exhaust pipe. This construction of ours is therefore applicable to any boat which is already provided with the propeller shaft casing, as it requires very little change to add the other parts necessary to make the structure complete.

It will be found in operation that as the boat moves through the water the propeller of the boat will act to cause a suction at the outer end of the exhaust pipe which will have a further tendency to quicken and aid the discharge of the gas and water contained within the exhaust pipe. This will further prevent the backing of the water into the exhaust pipe and thus prevent the proper discharge of the gases.

What we claim is:

1. In a motor-boat, the combination of a

gas-engine, a propeller shaft casing, and means for connecting up said casing with the exhaust port of said engine and with an under-water exhaust. 45

2. In a motor-boat, the combination of a gas-engine, a propeller shaft casing, a conduit connected to the exhaust of said engine, and to said casing, and an exhaust-pipe connected to said casing and extending below the water-line. 50

3. In a motor-boat, the combination of a gas-engine, a propeller shaft casing, a conduit connected to said gas-engine and to said casing, said conduit having two passages therein, one connecting with the exhaust of said engine and the other with the water-jacket, both leading into said casing, and an exhaust-pipe leading from said casing to a point below the water-line. 55 60

4. In a motor-boat, the combination of a gas-engine, a propeller shaft casing, a conduit connected to said casing and to the exhaust of said engine, and an exhaust-pipe connected to said casing and extending out to the rear end of said boat below the water-line. 65

5. In a motor-boat, the combination of a gas-engine, a propeller shaft casing, a conduit connected to said casing and to the exhaust of said engine, a connection at the other end of said casing forming a stuffing-box and having an outlet, and an exhaust-pipe connected to said outlet extending below the water-line. 70 75

In testimony whereof we, the said HENRY C. NELSON and WILLIAM H. MULLINS, have hereunto set our hands.

HENRY C. NELSON.
WILLIAM H. MULLINS.

Witnesses:

F. J. MULLINS,
J. H. BLACKBURN.