

W. H. McLEOD.  
ENGINE.

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911,670.

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Fig. 1.

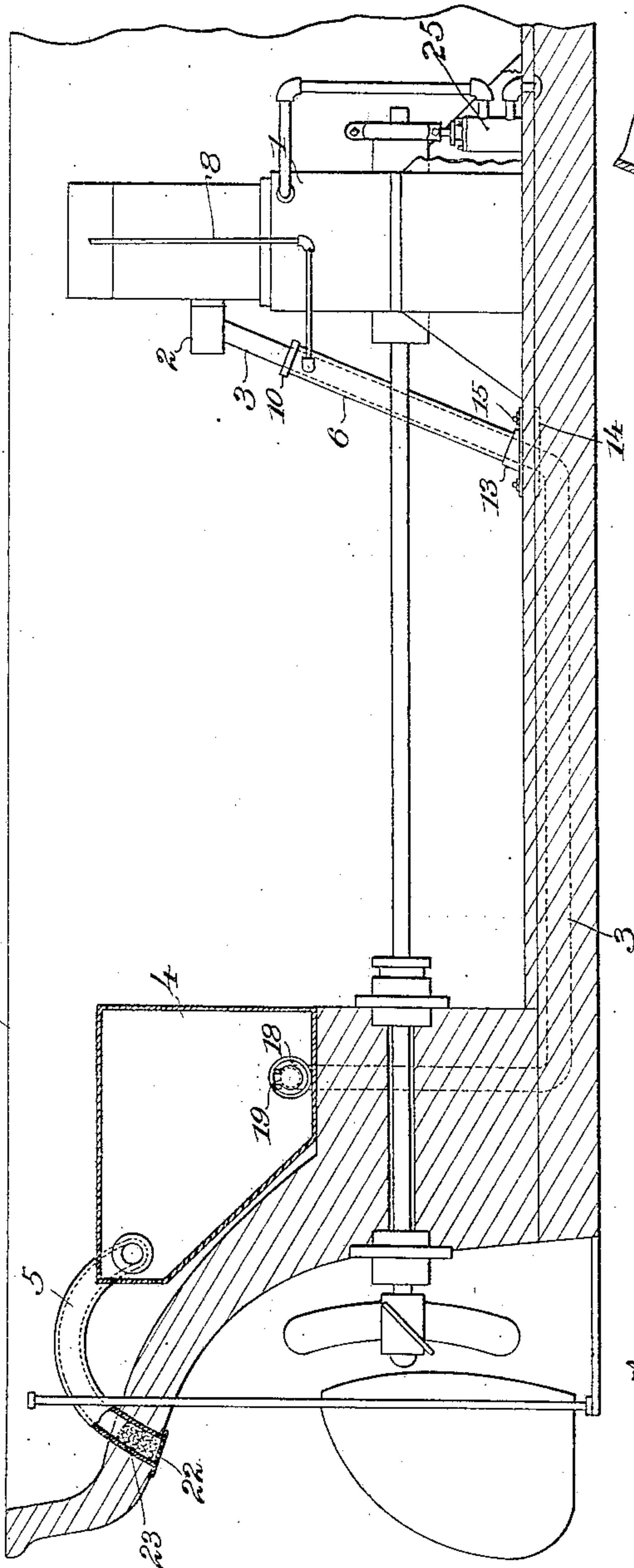


Fig. 3.

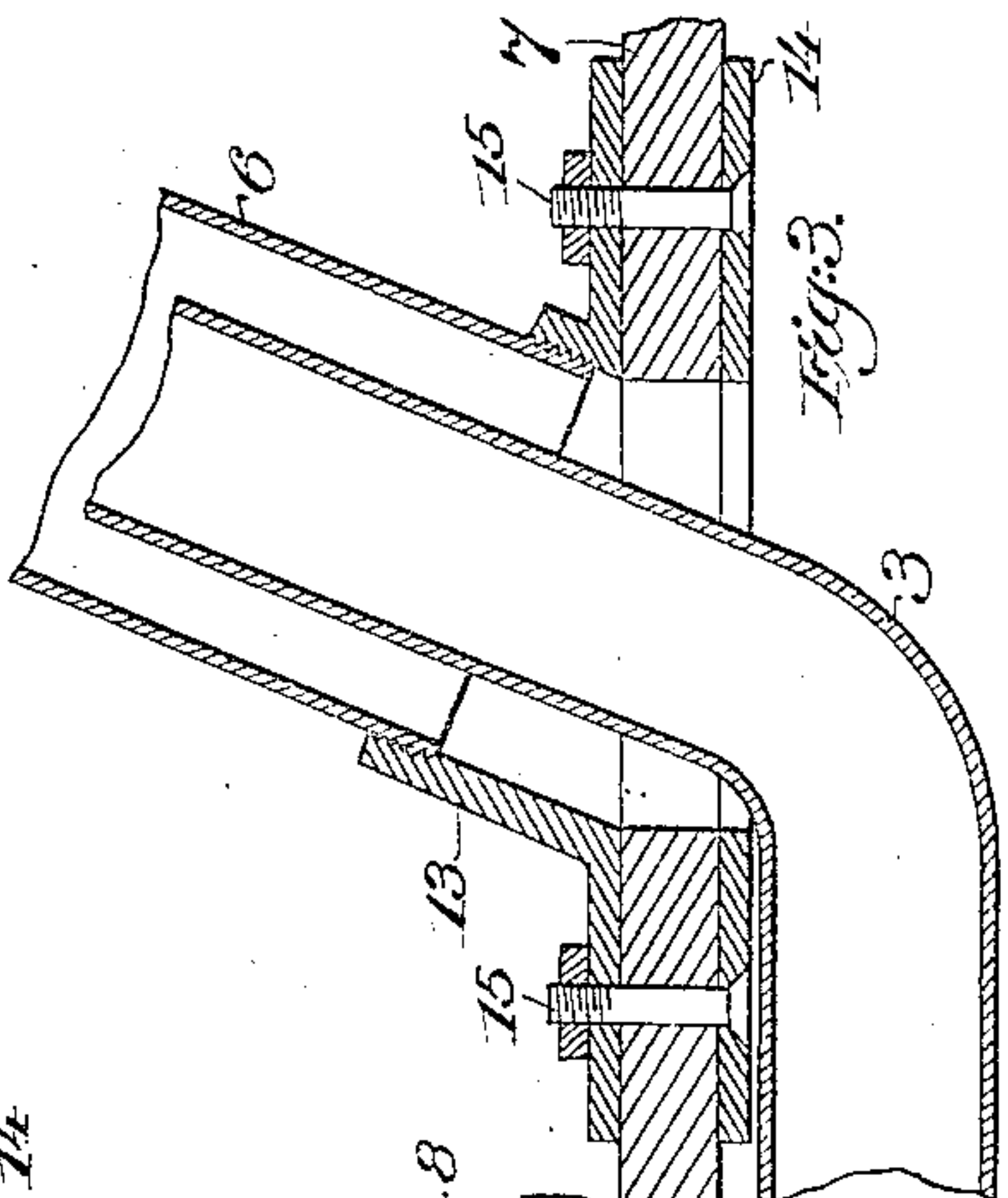


Fig. 2.

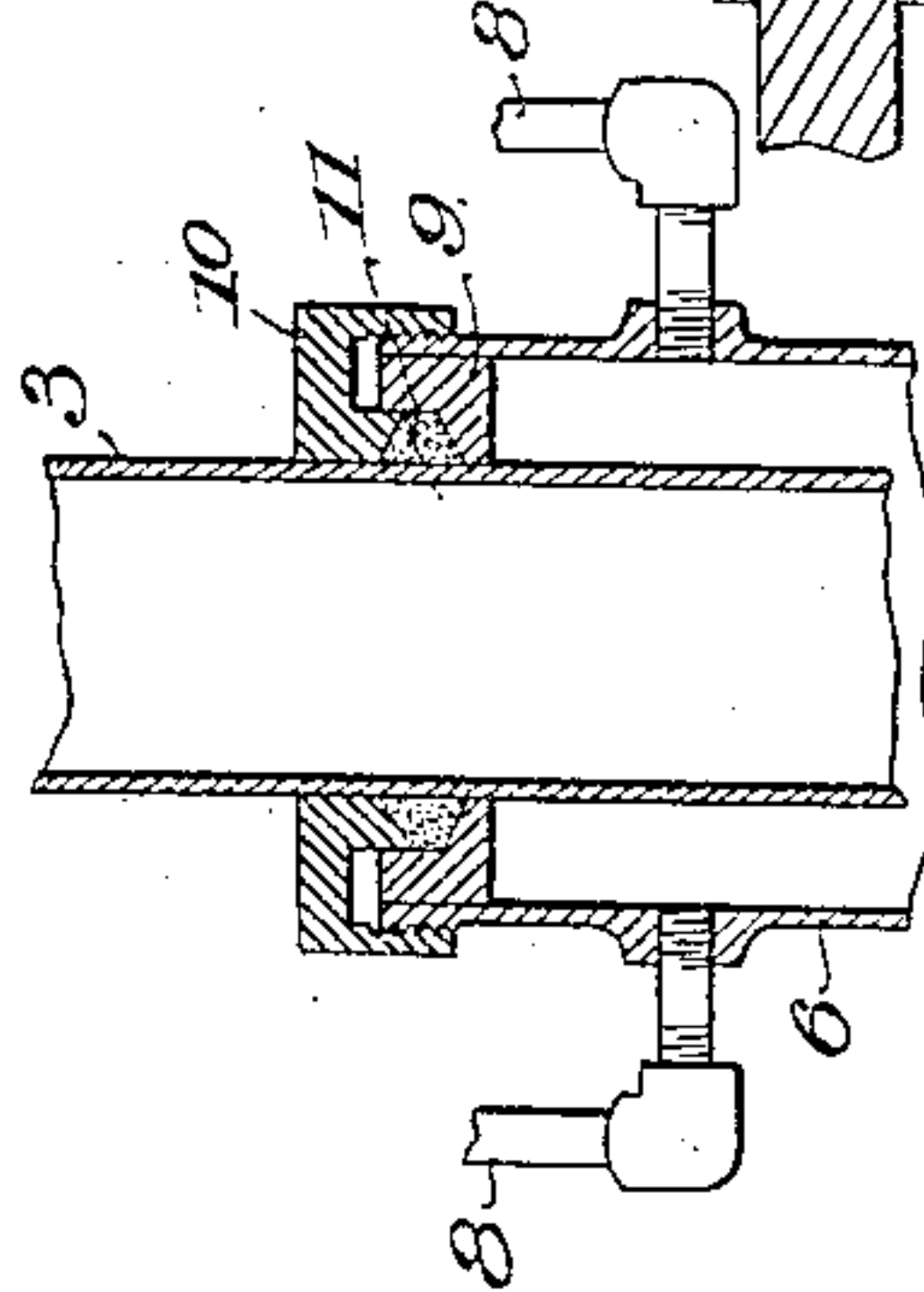
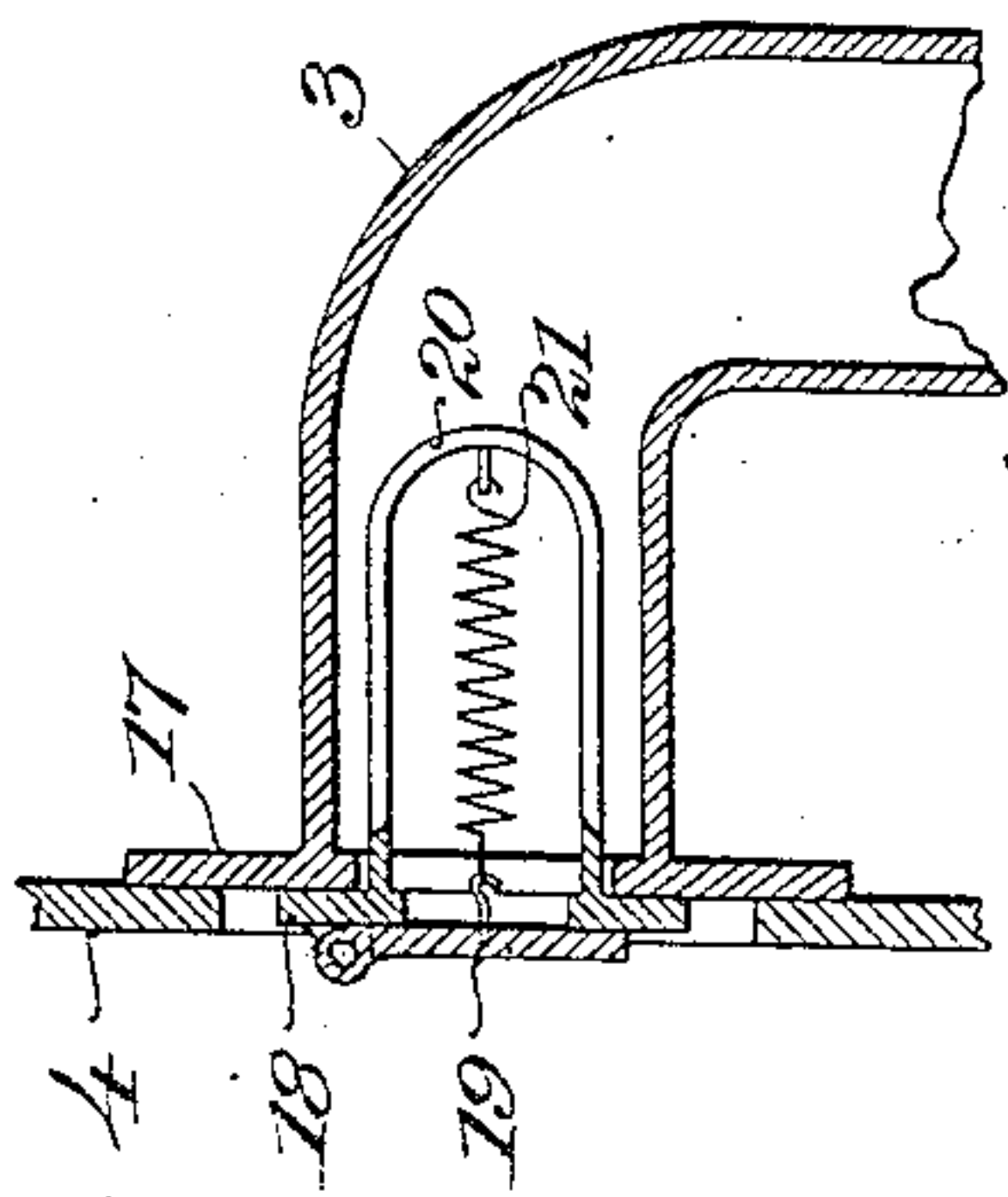


Fig. 4.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. McLEOD, OF BOSTON, MASSACHUSETTS.

## ENGINE.

No. 911,670.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed December 9, 1899. Serial No. 739,746.

*To all whom it may concern:*

Be it known that I, WILLIAM H. McLEOD, citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in 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 particularly to means for reducing the noise produced by the exhaust in internal-combustion motors and for increasing the power of such engines by reducing the back pressure of the exhaust gases on the engine piston.

The exhaust gases of the ordinary internal-combustion engine are delivered at a high temperature and pressure, and various devices are used for dissipating them without objectionable noise. Such devices consist usually of closed chambers provided with more or less restricted outlets and with baffles of various forms to impede the flow of the gases, and these devices result in a substantial back-pressure on the engine piston, causing loss of power.

The object of the present invention is to reduce the noise of the exhaust of an internal-combustion engine without producing back pressure, and the invention consists in the application to the exhaust pipe of an internal-combustion engine of certain devices for cooling the gases in their passage there-through whereby the pressure and volume of the gases are reduced without obstruction to their flow. These devices are particularly applicable to engines used in marine work, and may be used with or without a muffler of ordinary form.

In the drawings Figure 1 is a vertical section of an apparatus embodying the present invention, Fig. 2 is a vertical section showing in detail the packing joint connecting the exhaust pipe and the well, Fig. 3 is a detail vertical sectional view taken at the bottom of the well and Fig. 4 is a detail vertical sectional view of the jacket valve.

In the illustrated embodiment of the invention the engine proper 1 which is shown as mounted in a power launch is provided with an exhaust chamber 2 connected by means of an exhaust pipe 3 with a muffler 4. The muffler is connected by a pipe 5 with the exterior of the launch. A portion of the ex-

haust pipe as shown in Figs. 1 and 3 passes outside of the hull of the launch so as to be immersed in the water and thereby kept cool. The portion extending from the exhaust chamber to the bottom of the launch cannot, however, be kept cool in this manner and therefore this part of the exhaust pipe is surrounded by a well 6 extending upward from the bottom 7 of the launch to a point near the exhaust chamber 2 so that this portion of the exhaust pipe is kept cool by the water which rises in the well and the exhaust gases in passing through the exhaust pipe are almost immediately cooled and reduced in volume so that by the time they enter the muffler the volume is substantially less than at the time of the issuance from the engine cylinder and the noise produced by the final discharge of the exhaust gases through the pipe 5 is reduced to a minimum.

The upper end of the well is connected by means of a pipe 8 with the water jacket of the engine, which is of the internal-combustion type, and this water jacket is kept supplied during the operation of the engine by means of a pump 25, the pipe 8 serving as an overflow, and thus the well 6 serves to receive the water flowing from the jacket as well as to cool the exhaust pipe. The upper end of the well 6 is provided with a stuffing box 9 and a gland 10 between which a flexible packing ring 11 is compressed against the exhaust pipe. This connection allows for relative movement of the exhaust pipe and the well due to vibrations of the engine or other causes and reduces the transmission of vibrations to the hull of the launch from the engine. The lower end of the pipe which forms the well is screwed into a flange collar 13 corresponding with a collar 14 on the outside of the hull, the two collars being secured together by bolts 15 and making a water tight joint between the well and the hull. The exhaust pipe 3 is provided with a flange 17 by which it is secured to the muffler and a valve seat 18 to which a check valve 19 is pivoted. This valve is provided with a spring 21 connected to a fixed yoke 20 on the valve seat and the valve serves to prevent the return of exhaust gases into the exhaust pipe after the emission of the exhaust from the engine ceases and a partial vacuum is produced in the exhaust pipe through the cooling of the gases therein. This valve is not an essential feature of the present invention although it conduces to its utility. The



mouth 22 of the outlet pipe 5 is stuffed with a loose packing 23 to reduce the noise of the exhaust.

The invention is not limited to the details of construction and operation of the illustrated embodiment, but may be embodied in other forms broadly defined in the claims.

I claim—

1. A launch, having, in combination, a hydro-carbon motor, a well communicating with the water outside of the launch, and an exhaust pipe for the motor passing through the well, substantially as described.

2. A launch, having, in combination, a hydro-carbon motor, a well communicating with the water outside of the launch, an exhaust pipe for the motor passing through the well, and means for forcing water through the well, substantially as described.

3. A launch, having, in combination, a

hydro-carbon motor, a well communicating with the water outside of the launch, an exhaust pipe for the motor passing through the well, and a packing joint in said well through which said pipe passes, substantially as described.

4. A launch, having, in combination, a hydro-carbon motor provided with a water jacket, a well communicating with the water outside of the launch, an exhaust pipe for the motor passing through the well, and connections between the water jacket and the well, substantially as described.

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

WILLIAM H. McLEOD.

Witnesses:

HORACE VAN EVEREN,  
A. HART ANDERSON.