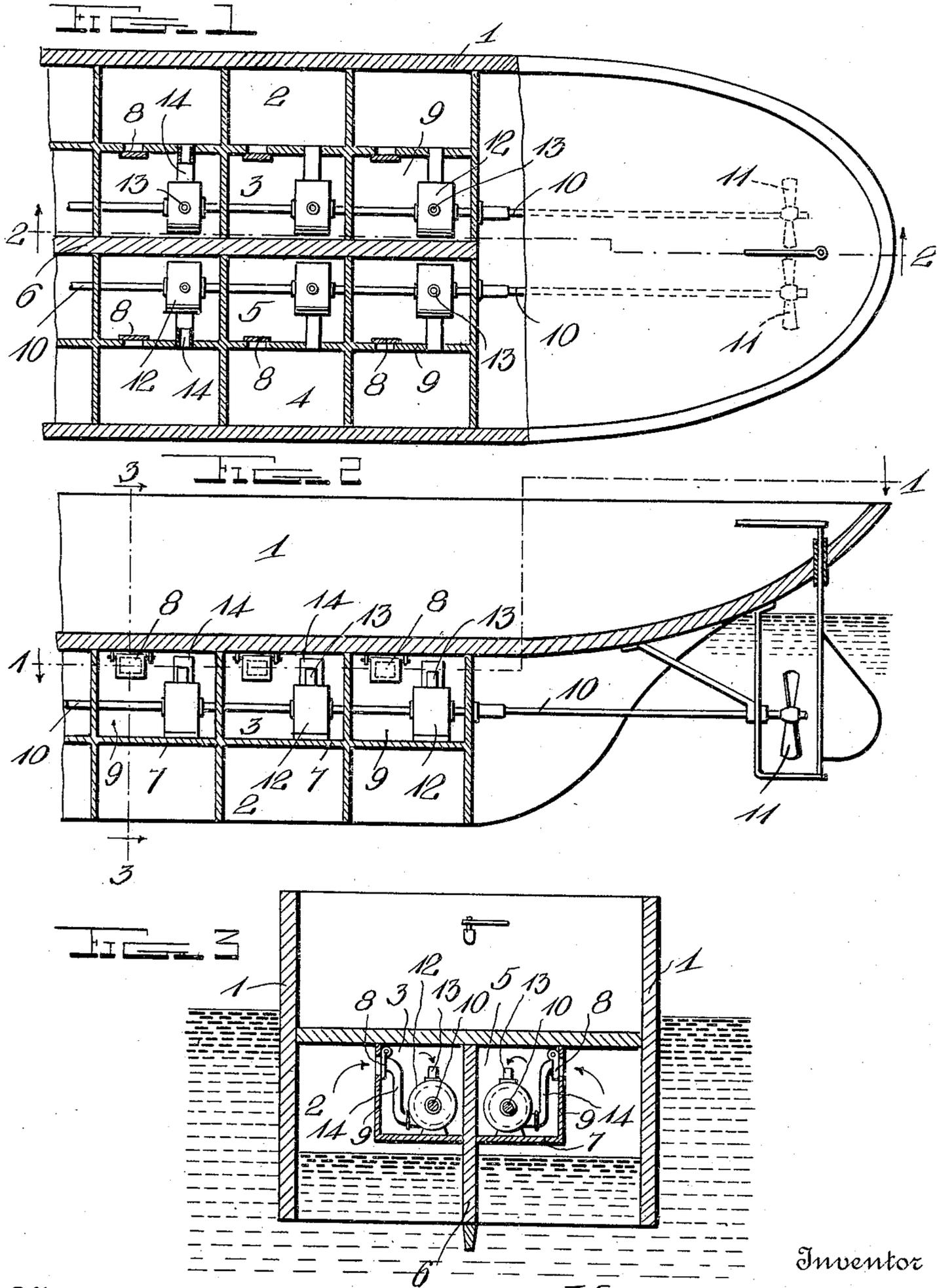


M. FRANKLIN.
 SHIP PROPELLING DEVICE.
 APPLICATION FILED JULY 22, 1909.

938,750.

Patented Nov. 2, 1909



Witnesses
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UNITED STATES PATENT OFFICE.

MOSES FRANKLIN, GRAND JUNCTION, COLORADO.

SHIP-PROPELLING DEVICE.

938,750.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MOSES FRANKLIN, a citizen of the United States, residing at Grand Junction, in the county of Mesa and State of Colorado, have invented certain new and useful Improvements in Ship-Propelling Devices; and I do 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.

My invention relates to mechanism for the propulsion of vessels, and the primary object of the invention is to provide a propelling device in which the initial cost of installation is the only cost of obtaining the power derived, the maintenance or operating expense being negligible.

A further object of the invention is the provision of means for propelling a vessel which utilizes air compressed by the waves to operate an air driven engine or engines in which the exhaust of said engine is returned to its initial compression point for further compression thereby completing a cycle.

A still further object of the invention is the provision of means of this character for operating a vessel which may be operated either by waves traveling longitudinally or transversely thereof.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

In the drawing, Figure 1 is a horizontal sectional view of a portion of a vessel showing my invention applied thereto; Fig. 2 is a longitudinal sectional view taken on line 2—2 of Fig. 1; and Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1.

In the specific embodiment of the invention as hereinafter described, I have shown a hull 1, having its bottom substantially completely covered with a series of compartments 2—3 and 4—5. As shown in Fig. 3, these compartments are arranged with the compartments 2 and 4 on the outside of the hull and the compartments 3 and 5, arranged adjacent and on opposite sides of the keel 6. The compartments 2 and 4 are open to the water and the compartments 3 and 5, are closed by bottom pieces 7, so that they are substantially air-tight as

will hereinafter be described. These sets of compartments extend substantially from the bow to the stern of the vessel and each of the compartments 2 and 4 in the sets is provided with valves 8, of the flap variety or their equivalent, positioned in the dividing walls 9, between the compartments 2—3 and 4—5. These flap valves open inwardly from the compartments 2 and 4 into the compartments 3 and 5 of each set and are adapted to admit the air which is compressed in the compartments 2 and 4 to the compartments 3 and 5.

As shown in Fig. 1, longitudinal shafts 10 are extended through the compartments 3 and 5 from a point adjacent the bow to a point exterior of the stern, where they are provided with suitable propellers 11. These shafts have arranged upon them, air driven engines 12, which may be connected directly to the shafts or loosely connected thereto so as to rotate with the shafts only when they are operated.

Each engine is provided with an inlet port 13, which is freely opened to the air within the compartments 3 and 5, and each engine is provided with an exhaust port which communicates with the compartments 2 and 4 by a pipe 14. These exhaust pipes are connected so as to be arranged above the normal high-water point within the compartments 2 and 4, so that immediately upon the recession of the wave, the air which is compressed in the compartments 3 and 5, may pass through the engine and exhaust into the compartments 2 and 4.

In operation, the waves as they rise alongside of the vessel also rise within the compartments 2 and 4, and compressing the air therein, cause it to pass through the valves 8 into the compartments 3 and 5. Pressure in the compartments 2—4 and 3—5 is equalized on account of the inwardly opened valves until the wave starts to recede. At this time, the valves close and as the wave recedes, the air under compression in the compartments 3 and 5, passes through the engines therein, driving the shafts 10 and exhausting through the pipes 14 into the compartments 2 and 4. In receding from the compartments 2 and 4, the wave causes a partial vacuum therein which coöperates with the pressure compartments 3 and 5 to drive the engines.

From the foregoing description, taken in connection with the accompanying draw-

ings; the construction and operation of the invention will be readily understood without requiring a more extended explanation.

5 Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principles or sacrificing any of the advantages of this invention as defined in the appended claims.

10 Having thus described my invention, what I claim is:—

1. A vessel comprising a hull, a plurality of open compartments therein, a shaft arranged longitudinally of said hull, engines 15 connected to said shaft, means for connecting the engines directly with the compartments whereby the air compressed therein, may be utilized in the engines, and means for exhausting the air by said engines into 20 said compartments.

2. A vessel comprising a hull, a plurality

of compartments therein open to the water, a plurality of closed compartments arranged adjacent the open compartments, one-way 25 valves connecting said open and closed compartments, longitudinal shafts arranged to pass through said closed compartments, propellers upon said shafts, engines on said shafts having free communication with the air in said compartments, and exhaust pipes 30 connected to said engines and to said open compartments, whereby the air utilized in said engines will be returned to the initial point of compression within the open compartments when the water recedes therein. 35

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MOSES FRANKLIN.

Witnesses:

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