No. 888,586. PATENTED MAY 26, 1908.

J. E. CARROLL.

BOAT PROPELLING APPARATUS.

APPLICATION FILED NOV. 5, 1907.

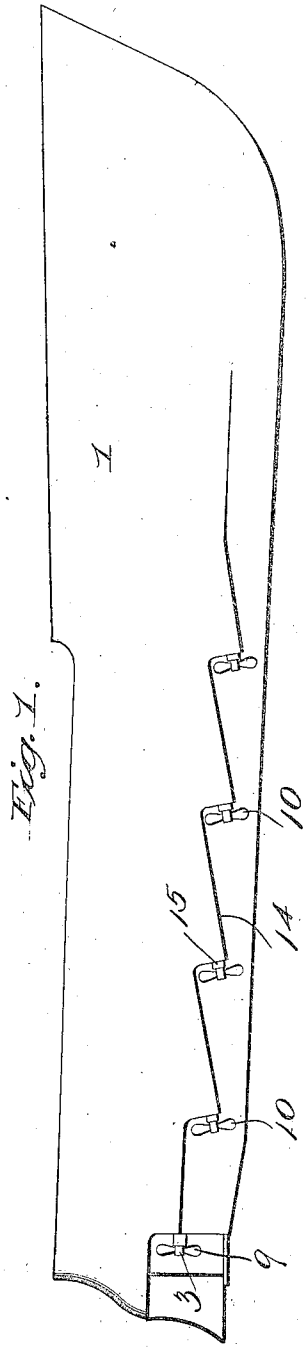


Fig. 1.

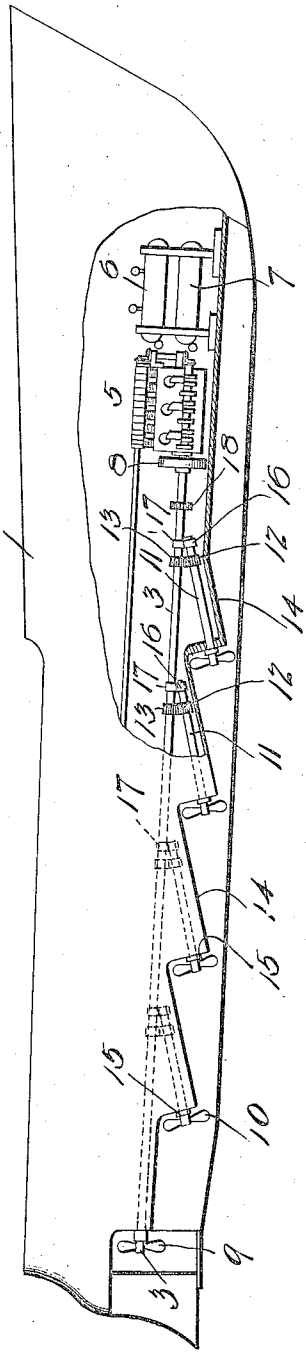


Fig. 2.

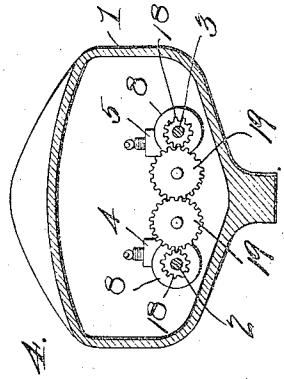


Fig. 4.

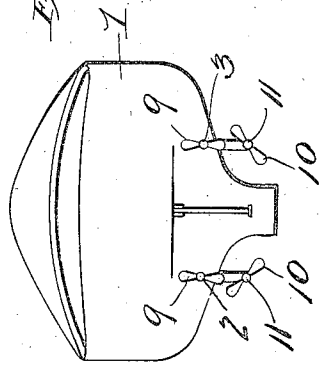


Fig. 3.

Witnesses

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BOAT-PROPELLING APPARATUS.

No. 888,586. Specification of Letters Patent. Patented May 26, 1908.

Application filed November 5, 1907. Serial No. 400,795.

To all whom it may concern:

Be it known that I, JOHN E. CARROLL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Boat-Propelling Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to propelling apparatus for boats the object in view being to provide in connection with an engine driven by carbonic acid gas or gas of a similar nature means actuated by said engine for propelling the boat and at the same time producing a lifting action on the hull of the boat so that the actual displacement and wetted surface of the hull, while in motion, will be materially reduced, and whereby the power developed by the engine will drive the hull along at a comparatively high speed, as compared with a boat in which no provision is made for lifting the hull as it is propelled.

With the above and other objects in view the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as hereinafter fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a side elevation of a boat having the improved propelling apparatus applied thereto. Fig. 2 is a side elevation of the same partly broken away in section. Fig. 3 is a stern elevation of the boat, and Fig. 4 is a vertical cross section through the same.

The hull of the boat above the water line may be of any usual or preferred type and is indicated at 1 in the drawings. Under the preferred embodiment of this invention twin shafts 2 and 3 are provided, the same extending lengthwise of the boat, parallel to each other and at a suitable distance apart. At their rear ends each of said shafts is provided with a propeller 9 and the shafts may be geared to run either in the same or in opposite directions, preferably the latter. At their forward ends the shafts are coupled to one or more engines or motors indicated at 4 and 5. Preferably two of such engines or motors are employed, one for each shaft, the said engines being supplied with gas from any suitable number of cylinders or tanks 6 and 7, placed at any convenient point or points in the boat, as shown. Each engine shaft is also shown as provided with a fly wheel 8.

The propellers 9 at the rear ends of the shafts 2 and 3 are placed directly upon said shafts and driven directly thereby in the usual manner, but in addition to the propellers 9 which are used for driving the boat lengthwise, I employ series of auxiliary propellers 10, two of such series being utilized, one series on each side of the vessel, as indicated in Figs. 1, 2 and 3. The propellers 10 operate both to drive the boat lengthwise and also to elevate or raise the hull of the boat and for this purpose the shafts 11 of each and all of the lifting propellers are set at a considerable angle to the horizontal as clearly shown in Figs. 1 and 2. Each shaft 11 is provided with a gear wheel 12 which meshes with a corresponding gear wheel 13 on the adjacent long shaft 2 or 3, as the case may be. All of the side shafts 11 are thus geared to the two main shafts 2 and 3 and in this way motion is simultaneously transmitted to all of the propellers, any number of which may be employed according to the size of the boat and the speed required.

In order to properly house in the shafts of the side or lifting propellers, the hull of the boat is provided with a number of depending wedge shaped offsets 14 which are cored out to receive the shafts 11 and provided with stuffing boxes 15 at the rear, through which the shafts pass. In addition to the bearing afforded by the stuffing box, each of the side shafts may be supported at its forward end in a bearing 16, secured within the hull of the boat in any approved manner and said bearing 16 may be of such shape as to form also a bearing 17 for the main shaft with which the auxiliary shaft is connected and by which it is driven, as shown in Fig. 2.

While each engine is an independent motor, it is preferred to gear the two motor shafts together or provide means by which this may be accomplished, as shown in Fig. 4, in which it will be seen that one or more intermediate transmission gears are interposed between the twin shafts so as to mesh with wheels or pinions 18 on said shafts, 19 designating such interposed gear wheels. Any suitable shifting device may be used for shifting the intermediate gear wheels into and out of mesh with the wheels 18 on the shafts 2 and 3. In this way, should one of

the engines or motors stop or require to be stopped for repairs, both of the main shafts could be coupled together so as to be actuated by the one engine and thus all of the propellers would be driven, notwithstanding the fact that one motor was out of use.

The number of engines or motors may be varied at will and likewise the number of propellers, stern and side or lifting, according to requirements, without departing from the principle or sacrificing any of the advantages of the invention.

I claim:—

1. Propelling mechanism for boats, comprising a fore and aft motor driven shaft, a propeller mounted thereon, inclined auxiliary shafts geared to said motor driven shaft at intervals in the length thereof, and propellers on said auxiliary shafts.

2. Propelling apparatus for boats comprising a main shaft, a motor for actuating said shaft, a propeller driven directly by said shaft, and auxiliary shafts set at an inclination to the direction of movement of the boat and geared to the main shaft and provided with propellers which act to elevate the boat as it is driven lengthwise.

3. A boat hull provided with depending inclined offsets along the bottom thereof, in combination with propelling apparatus comprising a main shaft, a propeller driven thereby, auxiliary shafts mounted at an inclination in the said offsets and geared to the main shaft, and propellers on said inclined auxiliary shafts.

4. Propelling apparatus for boats comprising twin shafts, a motor for each of said shafts, a propeller on each shaft, lifting propellers geared to and actuated by said shafts, and means whereby one of said shafts is adapted to drive the other shaft, substantially as described.

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

JOHN E. CARROLL.

Witnesses:

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JOE C. RODEL.