No. 768,336. PATENTED AUG. 23, 1904.

C. A. MANKER.

PROPELLING DEVICE.

APPLICATION FILED NOV. 4, 1903.

NO MODEL.

FIG. I.

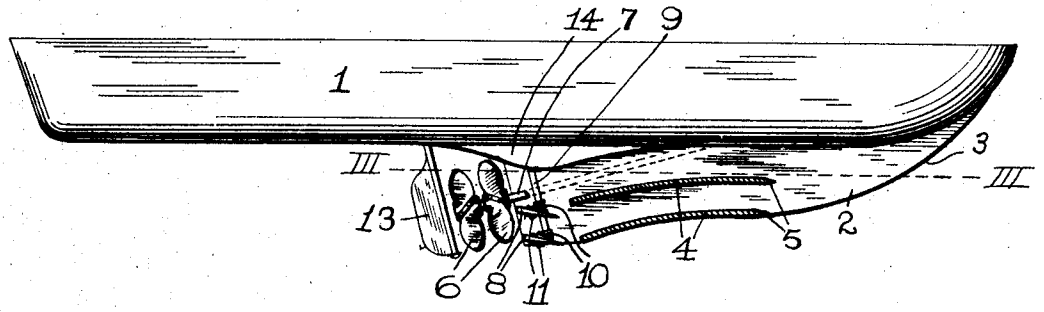


FIG. II.

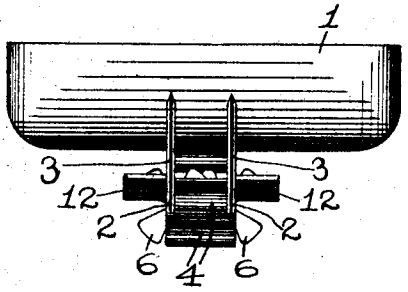


FIG. III.

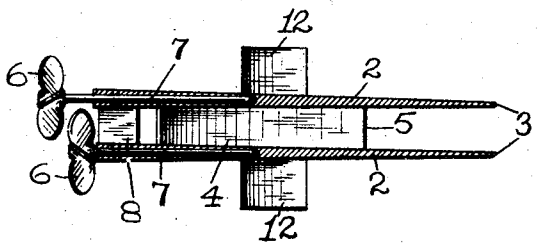


FIG. V.

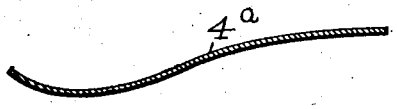


FIG IV.



FIG. VI.

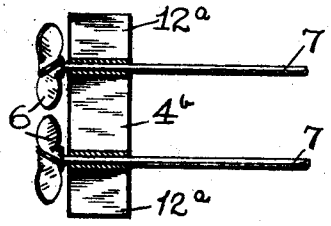
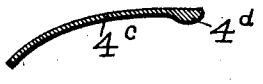


FIG. VII.



ATTEST.

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No. 768,336. Patented August 23, 1904.

UNITED STATES PATENT OFFICE.

CAREY A. MANKER, OF PEARL, ILLINOIS, ASSIGNOR TO MANKER-HEAVNER NAVIGATION COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF ARIZONA TERRITORY.

PROPELLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 768,336, dated August 23, 1904.

Application filed November 4, 1903. Serial No. 179,858. (No model.)

To all whom it may concern:

Be it known that I, CAREY A. MANKER, a citizen of the United States, residing in Pearl, in the county of Pike and State of Illinois, have invented certain new and useful Improvements in Propelling Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a propelling device for navigable vessels; and it has for its object to furnish a construction of propelling device in which deflecting-plates are utilized in connection with propellers and arranged in such manner forward of the propellers that they will not only exert a tendency to elevate the vessel in the water, but will also act to create an upward and backward flow of water to the propeller-blades during their ascending strokes. As a result of this arrangement the propeller-blades are assisted during their upward strokes by the force of water directed thereagainst, and the blades during their downward strokes act with greater force against the water in which they are moving and exert a lifting action with respect to the vessel to diminish the water displacement, and consequently the resistance of the water to the vessel-hull, as a consequence of which increased speed of the vessel is obtained.

The invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side elevation of a vessel equipped with my propelling device, one member of the keel being omitted and the deflecting-plates being shown in longitudinal section. Fig. II is an elevation looking at the forward end of the vessel shown in Fig. I. Fig. III is a horizontal section taken through the propelling device on line III III, Fig. I. Fig. IV is a longitudinal section through a portion of one of the deflecting-plates. Fig. V is a section illustrating a modification of the deflecting-plates. Fig. VI is a top view illustrating a modification of the deflecting-plates located in close proximity to the propellers. Fig. VII is a longitudinal section through the forward end of a modified form of the deflecting-plates.

1 designates the hull of the vessel.

2 represents a pair of keel members located beneath the vessel-hull and having forward knife-edges 3. The keel members are spaced apart, and extending longitudinally between them are upper and lower deflecting-plates 4, that are preferably formed with forward knife-edges 5. (See Figs. I and IV.) These deflecting-plates are preferably curved upwardly and forwardly and act against the water in which the vessel moves with a lifting influence and at the same time serve to direct the water above them in a rearward course between the keel members 2.

6 represents propellers carried by shafts 7, that operate in the keel members 2, the propellers being located at the rear of said keel members and so disposed that they are partially in the rear of the water passage-way between the keel members and project partially beyond a line extending along the outer sides of the keel members. By thus positioning the propellers the blades thereof are permitted to partake of their upward strokes in the path of the water passing between the keel members and over the deflecting-plates 4, while the blades on their descending strokes are out of the path of flow of the water directed in the course referred to.

8 designates a pair of oscillating deflectors mounted on shafts extending horizontally and transversely through the keel members 2. These deflectors are located at the rear of the deflecting-plates 4 and in front of the propellers 6. Oscillation is imparted to the deflectors through any suitable means, such as a rotatable operating-shaft 9, (see Fig. I,) that is provided with worms 10, that mesh with worm-gears 11, fixed to the deflector-shafts.

12 represents auxiliary deflecting-plates carried by the keel members 2 and extending horizontally and outwardly from said members. These auxiliary deflecting-plates are

preferably concave at their lower sides, as seen in Figs. II and III, so that they receive water beneath them and act to prevent settling of the vessel.

13 is a rudder located at the rear of the propellers 6.

14 is a curved deflector carried by the vessel-hull and located between the keel members 2 at their rear ends, this deflector serving to direct the water in a downwardly course above the upper deflecting-plate 4 instead of permitting it to flow directly in a rearward course above the propellers.

In Fig. V, I have shown a modification of the deflecting-plates 4, in which the plate 4^a is illustrated in the shape of an ogee curve instead of being curved in a single direction, as illustrated in Figs. I to IV. By using a deflecting-plate of this form it may take the place of the deflecting-plate 4 and the deflector at the rear of said plate.

In Fig. VI, I have shown a modification in which a deflecting-plate 4^b is utilized in close proximity to the propellers instead of being located remote therefrom and having a deflector positioned between the deflecting-plate and the propellers. In this modification the auxiliary deflecting-plates 12^a are positioned in the same perpendicular line as the deflecting-plate 4^b.

In Fig. VII, I have shown a modification in which the forward end of a deflecting-plate designated 4^c is of enlarged and curved form, as seen at 4^d, instead of being in the shape of a knife-edge, the enlargement of the plate serving to diminish the space at the entrance ends of the pair of deflecting-plates, so that the flow of water between the plates will be lessened, if desirable.

In the operation of my propelling device the vessel in its forward movement meets with the water in which it floats, and the deflecting-plates receiving the water beneath them tend to ride on the water, and as a consequence the vessel is lifted in the water. This lifting action of the vessel is due to the deflecting-plates being inclined or curved forwardly and upwardly to impinge upon the water. The water flowing over the deflecting-plates between the keel members passes in a rearward course and flows onto and over the deflectors 8 to be directed therefrom to the under sides of the blades of the propellers 6 at the rear of the deflectors, so as to exert force against said blades in an upward direction and assist them in their rotation. An increased force is thereby imparted to the propellers, as a result of which the propeller-blades move downwardly with greater power against the water, and in addition to their screw-propulsion action to propel the vessel act to lift it in the water to diminish the water displacement, so that greater speed of the vessel may be acquired and maintained.

The oscillating deflectors 8 may be rocked vertically to any desired degree to obtain the proper angle of upwardly-directed flow of water therefrom to the ascending propeller-blades in order that the water will strike said blades with the most beneficial force to accelerate their upward travel. The water deflected also acts on the under faces of the descending propeller-blades to furnish better efficiency of operation thereof than it would act if it were not deflected thereto by the described deflecting construction.

I claim as my invention—

1. In a propelling device, the combination with a vessel-hull, of a plate located beneath the hull, and a propeller arranged at the rear of said plate to receive an ascending flow of water that passes contiguous to said plate, substantially as set forth.

2. In a propelling device, the combination with a vessel-hull, of a pair of keel members, plates located between said keel members, propellers arranged at the rear of said plates to receive the water passing between said keel members and over said plates, and deflectors located between said keel members and intermediate of said plates and propellers, substantially as set forth.

3. In a propelling device, the combination with a vessel-hull, of a pair of keel members, plates located between said keel members, propellers arranged at the rear of said plates to receive the water passing between said keel members and over said plates, and oscillating deflectors located between said keel members and intermediate of said plates and propellers, substantially as set forth.

4. In a propelling device, the combination with a vessel-hull, of a pair of keel members, plates located between said keel members, propellers arranged at the rear of said plates to receive the water passing between said keel members and over said plates, oscillating deflectors located between said keel members and intermediate of said plates and propellers, and a deflector carried by the vessel-hull above said plates, substantially as set forth.

5. In a propelling device, the combination with a vessel-hull, of a pair of keel members, plates located between said keel members, propellers arranged at the rear of said plates to receive the water passing between said keel members and over said plates, and auxiliary plates extending laterally from said keel members, substantially as set forth.

6. In a propelling device, the combination with a vessel-hull, of a pair of keel members located at the under side of said hull, a pair of plates extending longitudinally and transversely between said keel members; said plates

being inclined downwardly and rearwardly from their forward ends, and propellers located at the rear of said keel members to receive the flow of water directed between said keel members and over said plates, substantially as set forth.

In testimony whereof I have signed my name to this specification, as well as to the drawings herewith, in the presence of two subscribing witnesses.

CAREY A. MANKER.

Witnesses:
ARTHUR MANKER,
MARIE MANKER.