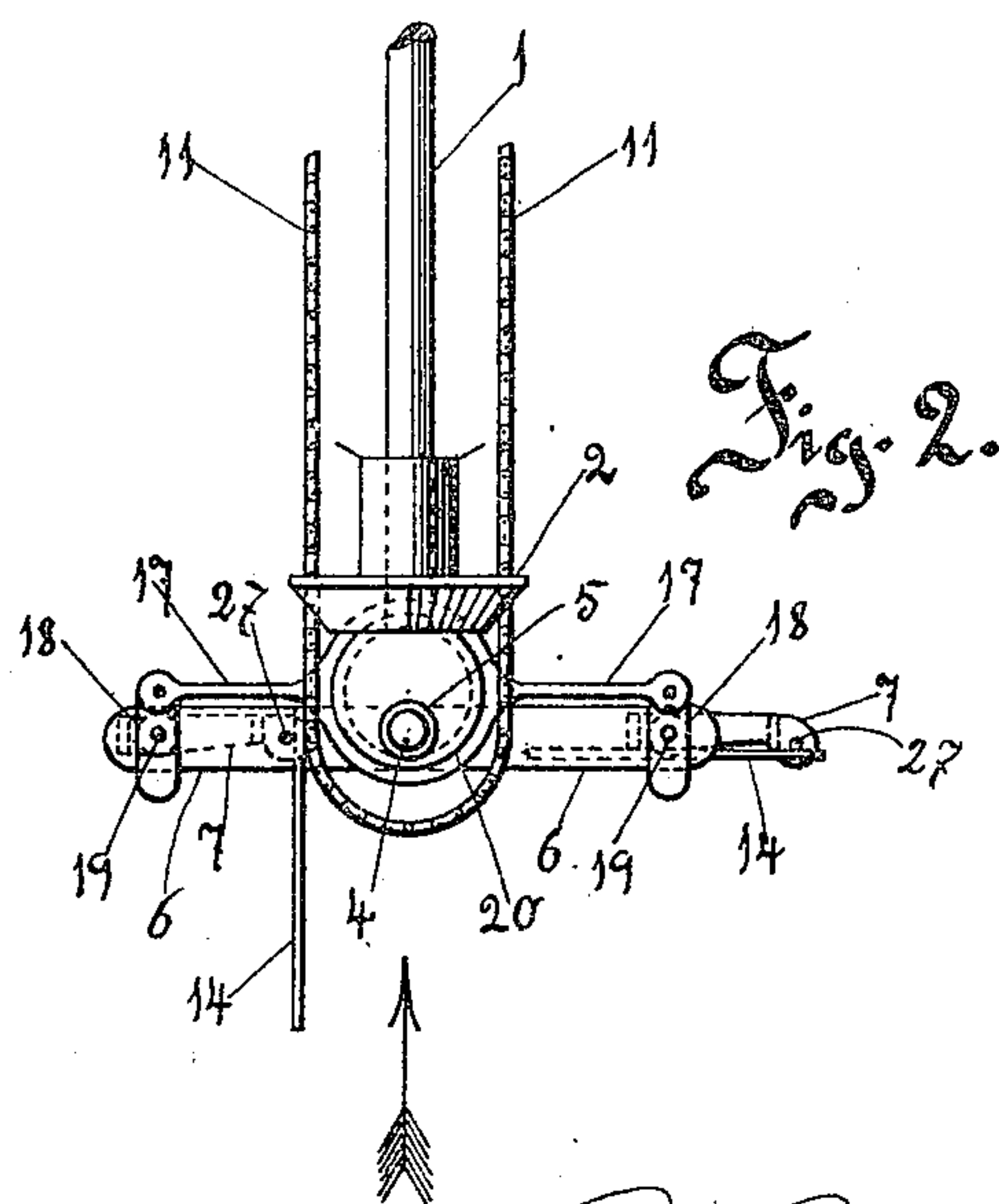
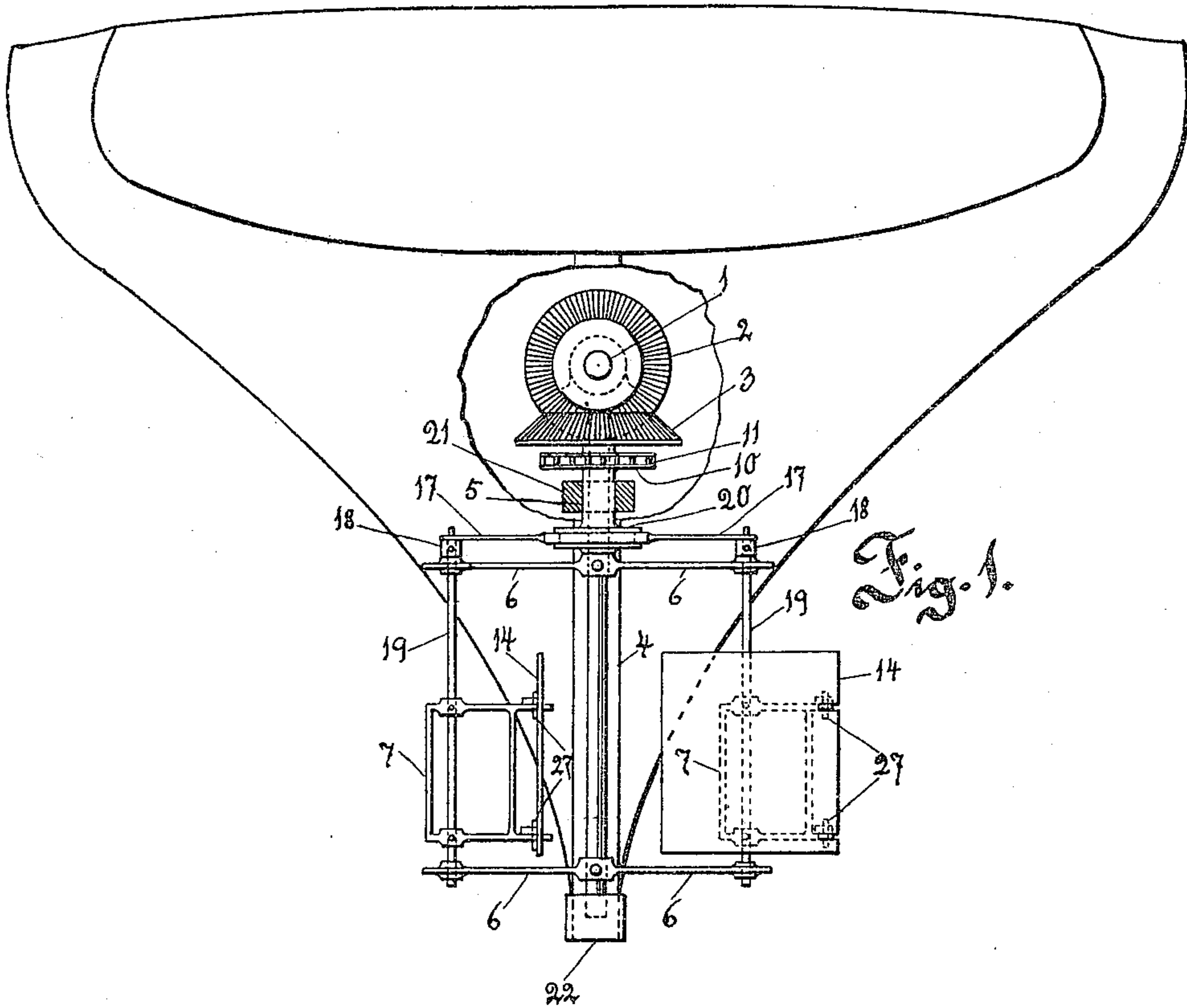


E. E. LINDKVIST.  
PROPELLING DEVICE.  
APPLICATION FILED JULY 15, 1907.

962,155.

Patented June 21, 1910.



Witnesses:

Gertud Krause.

Elen Sahlborg.

Inventor:

Erik Emanuel Lindkvist.



# UNITED STATES PATENT OFFICE.

ERIK EMANUEL LINDKVIST, OF STOCKHOLM, SWEDEN.

## PROPELLING DEVICE.

962,155.

Specification of Letters Patent. Patented June 21, 1910.

Application filed July 15, 1907. Serial No. 383,905.

*To all whom it may concern:*

Be it known that I, ERIK EMANUEL LINDKVIST, a subject of the King of Sweden, residing at Stockholm, in the Kingdom of Sweden, have invented a new and useful Propelling Device, of which the following is a specification.

My invention relates to a propelling device for boats, vessels, air-ships, and the like, and has the following advantages, namely, that no special steering device is necessary, that a greater effect is thereby obtained than by the usual propelling devices, and that the boat or vessel can easily be steered in either lateral direction, and also be turned around without going forward or backward.

The invention consists principally of frames adjustable in a certain direction in relation to the longitudinal direction of the boat or vessel and journaled in arms projecting from and secured to the driving shaft, in which frames the paddles are vertically hinged, the motion of said paddles being restricted in one direction by the paddle frames but unrestricted in the other direction and freely turnable outward from the frames, as well as rotatory around the driving shaft by means of an eccentric and connected both with the steering wheel of the boat or vessel and the shafts of the frames in such a way that when the eccentric is turned, the frames are adjusted in another direction, whereby the paddles press against the water in an opposite direction, so that the moving direction of the boat or vessel, is altered.

The invention is shown on the annexed drawing.

Figure 1 is a rear view of the propelling device fitted in a boat, with the paddles in the position they occupy when the boat or vessel is driven forward. Fig. 2 is a top view of the propelling device, but with wheels 3 and 10 and the bearing 21 removed.

The motor of the vessel or boat turns the shaft 1, which by means of a conical gearing 2, 3 turns the vertical driving shaft 4 to the right in Fig. 2. On the drawing the paddles 14 are shown in the position they occupy when the driving shaft 4 is turned in the above mentioned direction. The driving shaft 4 is at the top journaled in a sleeve 5, which sleeve together with the lower part of the shaft, is journaled in bearings 21, 22 projecting from the boat or

vessel. Between these bearings two sets of arms 6 are fitted to the driving shaft 4 at right angles to the same. Between these arms 6 frames 7 are fitted to vertical shafts 19, which shafts are journaled in the arms 6. To the top ends of these shafts are fitted cranks 18. These cranks 18, which are all of the same size, are linked to arms 17, projecting from the strap of the eccentric 20. This eccentric 20 is fitted to the lower end of the sleeve 5, and its eccentric radius is equal to the radius of the cranks 18, so that the shafts 19 are turned one revolution, when the sleeve 5 is turned one revolution. The upper end of the sleeve 5 is connected with the steering wheel by means of a chain wheel 10 and a chain 11. The paddles 14 are hinged in frames 7 by means of pivots or spindles 27 in such a way that the movement of the paddles is restricted in one direction by the paddle frames 7, but can freely be turned out from the frame in the other direction. These pivots or spindles 27 are parallel to the shafts 19.

Since the radius of the eccentric 20 is equal to the radius of the cranks 18, it consequently happens that, when the steering wheel has been put in a certain position, both frames 7 are given the same direction, in relation to the boat or vessel, and the frames 7 remain in this position while the boat or vessel is being propelled forward by means of the rotation of the driving shaft 4, until the steering wheel is turned into another position, and then the frames are given another position in relation to the boat or vessel, which is then also propelled in another direction. If now, as above mentioned, the driving shaft 4 is turned to the right, one of the paddles 14 will, as shown on the drawing, press against the water, while the other paddle is turned away from the frame by the water, thus offering no resistance but presenting its edge to the rush of water. Thus the boat or vessel is propelled, and the paddle which does the propelling, that is to say the paddle which rests against the frame 7, is always kept at right angles to the longitudinal direction of the boat or vessel, so that it presses with its whole surface against the water. This is accomplished by keeping the steering wheel stationary, so that the sleeve 5 is not turned. The eccentric 20 then turns the cranks 18 so, that the above mentioned movements are given to the frames 7 and paddles 14. In



reversing, or backing the boat or vessel, the steering wheel is turned so that the sleeve 5 and paddle-frames 7 are turned 180 degrees, whereby the paddles 14 propel the vessel backward. In steering the vessel to one side, it is only necessary to turn the steering wheel more or less, so that the paddle-frames 7 will be given an oblique position. If it is desired to turn the boat or vessel around 10 without moving the same forward or backward, the steering wheel is turned just enough to bring the paddle-frames 7 in the longitudinal direction of the vessel.

I claim.

15 In a propelling device, the combination of a driving shaft journaled in the boat, ves-

sel, airship, or the like, and furnished with arms, frames journaled in said arms, shafts supported by said frames and parallel with the driving shaft, said shafts bearing pad- 20 dles arranged so as to turn freely in certain positions, and a shell turnable about the driving shaft and in rotary connection with the shafts of the frames, for the purpose shown. 25

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

ERIK EMANUEL LINDKVIST.

Witnesses:

CARL O. SAHLBERG,  
KLAËS O. CALLIN.