Nov. 18, 1924. 1,516,270

L. E. EDMUNDS ET AL

SHIP PROPULSION MEANS

Filed July 21 1923 3 Sheets-Sheet 1

Fig. 1.

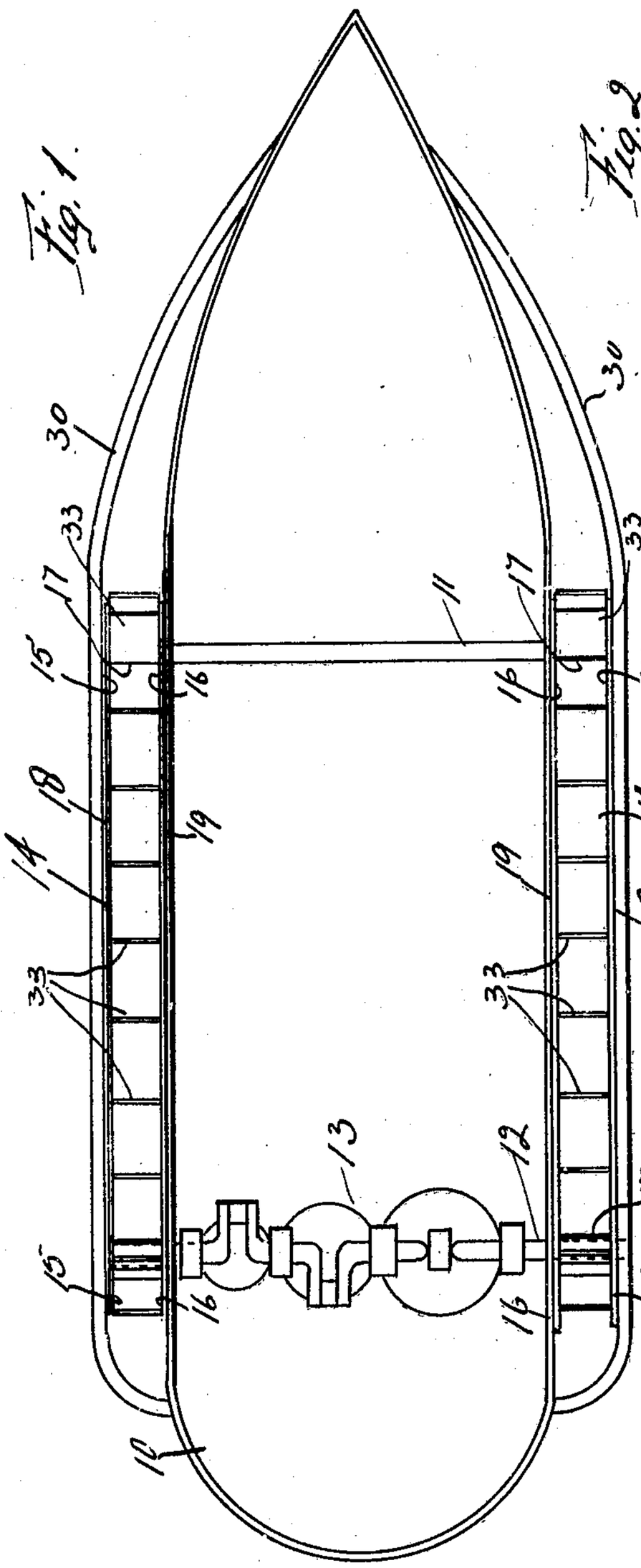
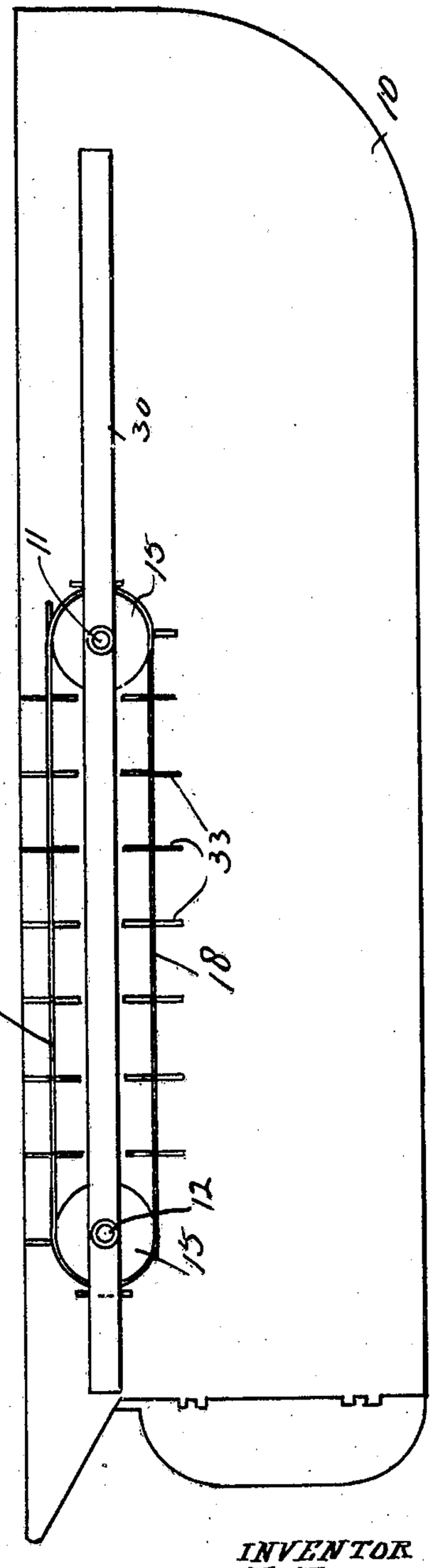


Fig. 2.



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SHIP PROPULSION MEANS

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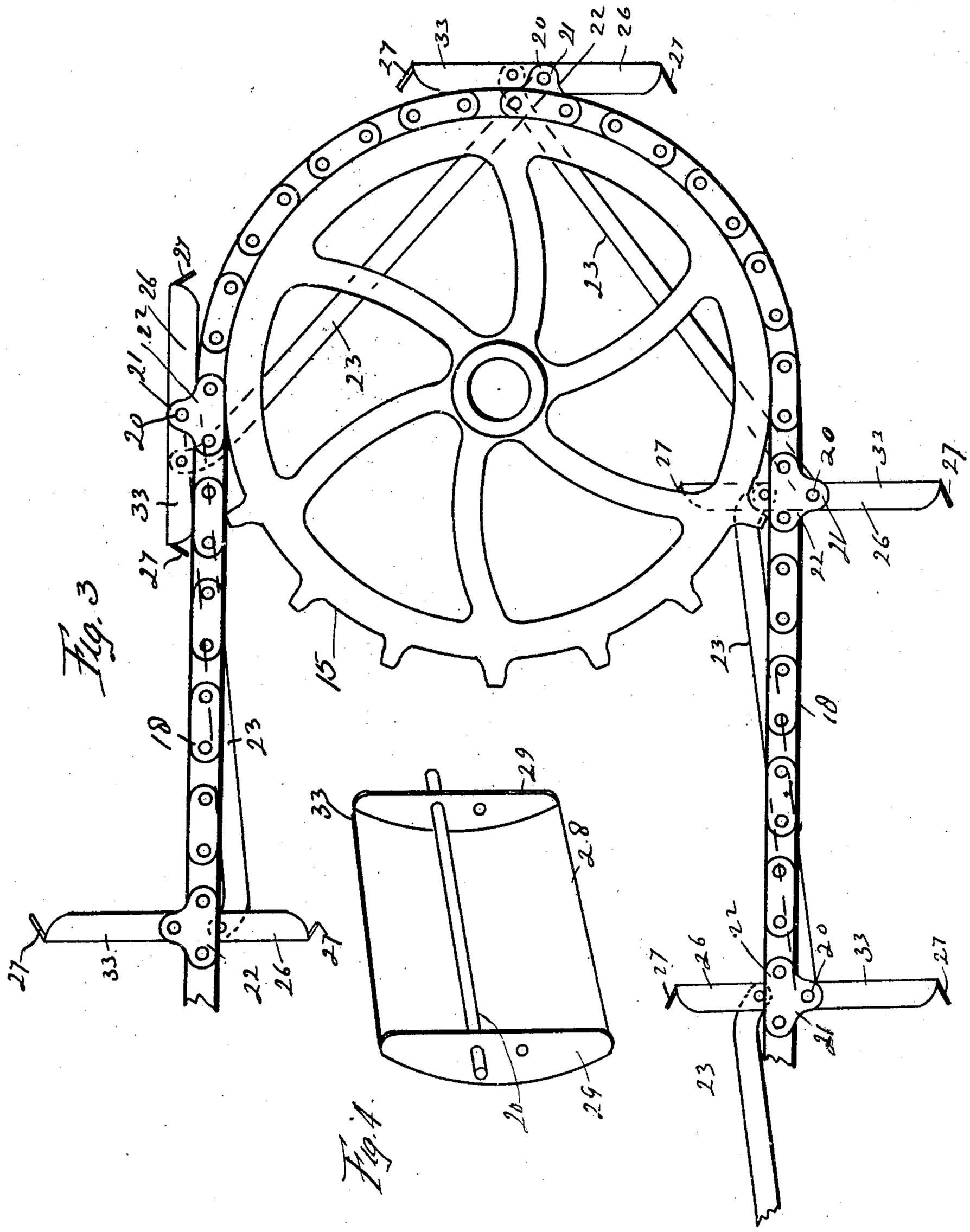

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SHIP PROPULSION MEANS

Filed July 21, 1923 3 Sheets-Sheet 3

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UNITED STATES PATENT OFFICE.

LEVI E. EDMUNDS AND ALBERT E. EDMUNDS, OF PHILADELPHIA, PENNSYLVANIA.

SHIP-PROPULSION MEANS.

Application filed July 21, 1923. Serial No. 652,946.

To all whom it may concern:

Be it known that we, LEVI E. EDMUNDS and ALBERT E. EDMUNDS, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in a Ship-Propulsion Means, of which the following is a specification.

Our invention relates to new and useful improvements in ship propulsion means, and has for its primary object to provide traveling paddles running lengthwise of the ship and adapted to engage the water for propelling the ship either forwardly or rearwardly.

Another object of our invention is to provide a pair of chains with paddles journalled therebetween and having levers connected to the chains or journals of the paddles and to the paddles beyond their journals or between the journals and one of the transverse edges of the paddles whereby the changing of the course of the chains will rotate the paddles and cause them to "feather." These paddles and their component parts may be suitably located on the ship but we prefer to place them on each side of the ship with guard means to protect them and prevent damage when tying to a wharf or should a collision occur.

A further object of this invention is to provide a paddle of unique design and a novel method of mounting the same.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains, may understand how to make and use the same, we will describe its construction in detail, referring by numerals to the accompanying drawings forming a part of this application, in which:—

Fig. 1, is a conventional plan view of a ship illustrating the arrangement and preferred location of the propelling devices.

Fig. 2, is a side elevation of the same.

Fig. 3, is an enlarged fragmentary side elevation of one of the propelling devices.

Fig. 4, is a perspective view of one form of paddle.

Fig. 5, is a view similar to Fig. 3, of a slight modification.

Fig. 6, is a perspective view of another form of paddle.

In carrying out our invention as here embodied, 10 represents a ship which may be of any desirable type or size and in this ship are journalled the transverse shafts 11 and 12 in any suitable and well known manner one of which has power applied thereto from a suitable engine or motor conventionally represented at 13. Both of these shafts are here shown as solid or running from one side of the ship to the other, but it is to be understood that they may be sectional shafts with the sections in endwise alignment and the power suitably applied.

As we prefer to mount one of the propelling devices represented as a whole by the numeral 14 on each side of the ship said shafts are shown as having their ends projecting through the hull with a pair of associated or coacting sprocket wheels 15 and 16 mounted on the outer or projecting ends of said shafts and in spaced relation. Each pair of sprocket wheels are preferably connected by a hub or barrel 17 the ends of which are fixed to the sprocket wheel webs.

Over each pair of sprocket wheels runs a pair of chains 18 and 19 between which are mounted at suitable intervals the paddle axles 20, the projecting ends of said axles being preferably journalled in the lugs 21 of special links 22 the remaining chain links being of any desirable or well known construction.

On each of the axles 20 between the chains is mounted a paddle 33 while to said paddle inside of its connection with the axle are pivoted the ends of a pair of levers 23 and 24 one at each side and the other ends of these levers are pivoted to the paddle axles 20, as shown in Fig. 3, or to the chains intermediate adjacent paddles, as shown in Fig. 5. As the ends of these levers are pivoted some distance from the paddles as the course of travel of the chains change to pass around the sprocket wheels the successive paddles will be gradually changed from a position at substantially right angles to the chains to a position substantially parallel therewith so as to enter and leave the water entirely edgewise and as soon as the chains again straighten out the paddles will be gradually returned to a position at right angles to the chains so that those paddles

within the water will act thereon to propel the ship either forward or rearwardly according to the direction of travel of the propelling devices. It is to be understood that those paddles on the lower strands of the chains are below the water line or submerged while those on the upper strands are above the water line and therefore are ineffective.

The paddles may be constructed, as shown in Fig. 6, wherein they are represented as comprising a flat panel 25 with side walls 26 projecting at right angles thereto and two angular flanges 27 projecting obliquely from the free ends or edges or as shown in Fig. 4 each paddle may consist of a concavo-convex panel 28 with side walls 29 projecting therefrom. In either case the paddles journalled upon their axles by means of said side walls and the levers 23 and 24 are pivoted to said side walls. The side walls and the oblique flanges project forwardly from the paddle panels when considered with relation to the normal direction of travel of the paddles.

In order to pervent damage to the propelling devices should a collision occur or when tying the ship to a wharf a suitable guard 30 is fixed to the ship on each side thereof and extends outside of the propelling devices. These guards are attached to the outside of the ship in any suitable or approved manner and may partly or completely house those portions of the propelling devices normally above the water line and may also be so located as to act as supports for the outer ends of the shafts 11 and 12.

In practice these propelling devices will be forced through the water by the ship's engine or motor and because of their large combined area said ship will be readily propelled and considerable speed may be obtained.

One of the disadvantages of devices of this character heretofore has been that the paddles as they entered and left the water were so positioned that their working faces were opposed to the water and therefore the ones at the bow had a tendency to lift the bow of the ship out of the water, while those paddles leaving the water at the stern had a tendency to pull the stern of the ship downward and at certain positions in their downward and upward movements they were at such angles as to retard the free movement of the ship through the water. By feathering the paddles so that they lie substantially parallel to the chains during their passage around the sprocket wheels these disadvantages are practically eliminated.

As plainly shown in the drawings the paddles extend approximately an equal distance both above and below the chains so that there is always an even draft thereon which will absolutely prevent kinking or buckling of said chains.

Of course we do not wish to be limited to the exact details of construction as herein shown as these may be varied within the limits of the appended claims without departing from the spirit of our invention.

Having thus fully described our invention, what we claim as new and useful is:—

1. In a device of the character stated, a paddle comprising a flat panel, side walls projecting forwardly therefrom at substantially right angles thereto and flanges projecting obliquely from the free ends or edges of said panel.

2. The combination with two pairs of sprocket wheels, and a pair of endless chains associated with said sprocket wheels, of paddles pivotally mounted midway their height between said chains outside of the outer surfaces of said chains, and levers, each having an end pivoted to the side of a paddle inside of the chains and having the other end pivoted to a chain forward of its respective paddle when considered with relation to the normal direction of travel of the paddles.

In testimony whereof we have hereunto affixed our signatures.

LEVI E. EDMUNDS.
ALBERT E. EDMUNDS.