A. NYDEGGER.

MARINE PROPULSION APPARATUS.

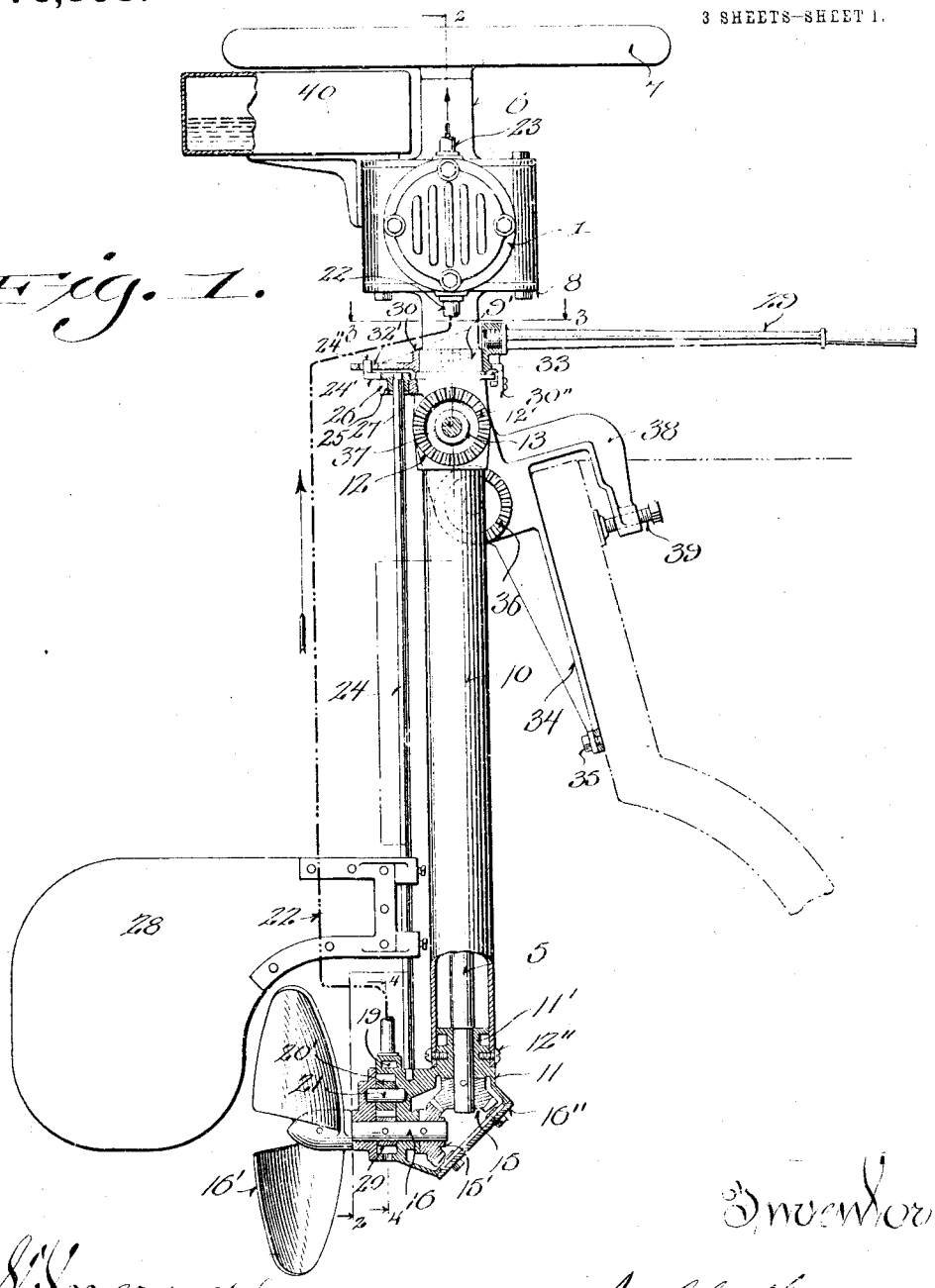
APPLICATION FILED MAY 3, 1913.

1,076,308.

Patented Oct. 21, 1913.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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3 SHEETS—SHEET 2.

Fig. 2.

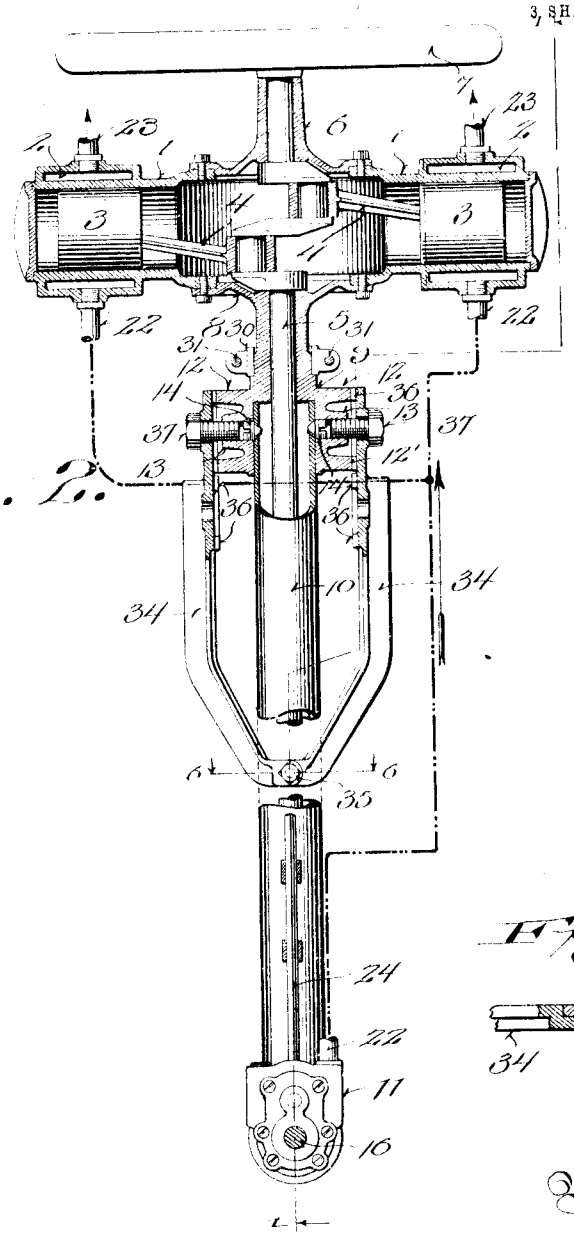
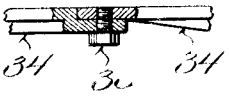


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 4.

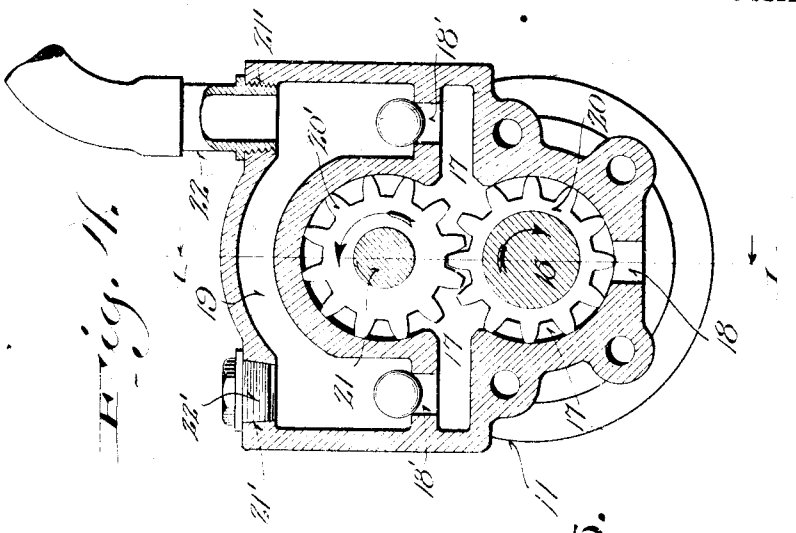


Fig. 5.

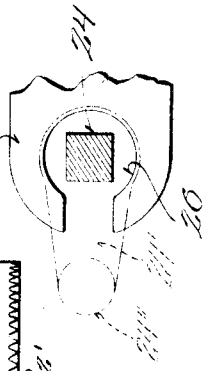
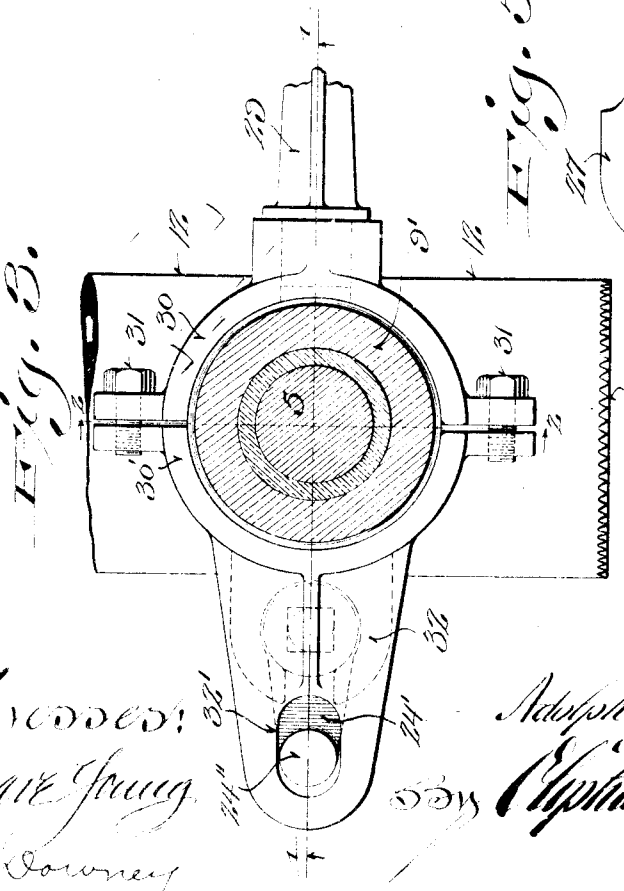


Fig. 3.



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UNITED STATES PATENT OFFICE.

ADOLPH NYDEGGER, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO OTTO J. KOCH, OF MILWAUKEE, WISCONSIN.

MARINE PROPULSION APPARATUS.

1,076,308. Specification of Letters Patent. Patented Oct. 21, 1913.

Application filed May 3, 1913. Serial No. 765,187.

To all whom it may concern:

Be it known that I, ADOLPH NYDEGGER, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Marine Propulsion Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention refers to self-contained propulsion and steering apparatus, the same being especially designed for attachment to small crafts of the row-boat type.

The primary object of my invention is to provide a simple, economical and light portable device of the above character capable of being readily assembled or dismantled and also readily attached to a small boat irrespective of its shape or dimensions and adjusted with relation to the draft of the boat.

Specific objects of my invention are to provide a two-part clamping bracket having a swivel clutch connection for suspending the propelling and steering apparatus, whereby the elevation and angle thereof relative to the boat can be varied, the bracket members being in hinge connection; to provide a head constituting part of an engine shell having clutch-hubs which co-act with the clutch members of the bracket, whereby the apparatus is swiveled and rigidly locked in a selected position; to provide means in connection with the engine shell head for detachably securing an engine-shaft incasing sleeve, the free end of which sleeve carries the ordinary type of propeller in gear connection with the shaft; to provide a practically water-tight gear casing that is detachably secured to the free end of the sleeve for the reception of a propeller arbor, the said casing being also formed with a pump chamber; to provide a reversible rotatory pump mechanism in driving connection with the propeller arbor, the said pump mechanism being mounted within the casing pump chamber; to provide a crank-carrying rudder-stem in parallel relation with the sleeve and detachably connected with the head and gear casing; to provide a revoluble tiller-carrying clip that is mounted upon the head and in slidable engagement with the rudder crank stem, whereby said stem is oscillated and lastly to provide all of the above mentioned parts together with the engine shell with means for effecting rapid assemblage or dismantling, whereby the manufacturing cost is reduced to a minimum, while at the same time each part so arranged can readily be replaced without the help of skilled mechanics.

With the above objects in view the invention consists in certain peculiarities of construction and combination of parts as hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings Figure 1 represents a side elevation of a propelling and steering apparatus embodying the features of my invention with parts broken away and parts in section to more clearly illustrate the structural features, the section being indicated by lines 1—1 of Figs. 2, 3 and 4; Fig. 2, a rear sectional view of the same, the section being indicated by line 2—2 of Fig. 1; Fig. 3, a detailed cross-section of the head and its connected steering mechanism, the view being upon an enlarged scale and the section indicated by line 3—3 of Fig. 1; Fig. 4, an enlarged sectional face view of the pump mechanism, the section being indicated by line 4—4 of Fig. 1; Fig. 5, a detailed sectional view of a rudder-stem showing a key-hole slotted ear that extends from the head, into which ear the upper end of said stem is journaled, and Fig. 6, a detailed cross-section of a two-part clamping-bracket showing a hinge connection between its members.

Referring by characters to the drawings, 1, 1, represent the cylinders comprising part of an engine-shell provided with the usual water-jackets 2. Mounted in the cylinders are pistons 3 having pitmen 4, which are connected to cranks of an engine-shaft 5. The upper end of the engine-shaft is journaled in a cap 6 that is detachably fitted to an aperture in the crank-casing which forms part of the engine-shell, the said shaft being provided with the usual fly-wheel 7. Fitted to a lower opening in the crank-casing is the flanged portion 8 of a head 9, which head serves as a support for the engine-shell and is bored to also form a bearing for the engine-shaft. The lower end of the head is counterbored for the reception of one end of a sleeve 10. The lower end of the sleeve has detachably secured thereto a gear-casing 11, the same being held in position by screws 12″, which pass through apertures in the shell and are in threaded union with corresponding apertures in a shank 11′ forming

part of the casing, the same projecting into the mouth of the sleeve.

The lower portion of the head 9 has extending therefrom in opposite directions, a pair of hollow hubs 12, the faces of which are provided with radially disposed clutch-teeth 12′, the said hubs constituting clutch members. Each of the hubs is provided with a centrally disposed apertured nipple 13, the apertures of which are threaded throughout their length and are adapted to receive corresponding threaded plugs 14, which plugs have tapered ends that enter apertures in the sleeve 10, whereby the latter is rigidly secured with relation to said head. Referring again to the gear housing attached at the free end of the sleeve, the shank 11′ of said housing is bored to form a bearing for the lower end of the engine shaft which projects through said shank and carries a miter gear 15 that meshes with a corresponding miter-gear 15′. The latter gear is secured to a horizontally disposed arbor 16 that is journaled in bearings with which the gear-casing is provided, the said arbor being extended beyond the casing and carrying the usual propeller-wheel 16′.

As best shown in Figs. 1 and 4 of the drawings the arbor 16 passes through a pump chamber 17 that is formed in the gear casing. This chamber is provided with an intake port 18 and a pair of valve controlled discharge ports 18′, which ports communicate with a common receiving chamber 19. Secured to the arbor 16 and within the pump chamber 17 is a toothed rotor 20, which meshes with a corresponding toothed rotor 20′ that is revolubly mounted upon a stud 21, the ends of the same being journaled in recesses with which the walls of the pump chamber are provided. The receiving chamber is provided with a pair of threaded discharge apertures 21′, one of which is fitted with the usual water-supply pipe 22, the other being blind and closed by a plug 22′. It is apparent that either one of the discharge apertures may be utilized for the pipe connection at the convenience of the manufacturer.

The discharge pipe 22, as indicated by dotted lines in Figs. 1 and 2, is provided with branch connections that communicate with the cylinder water-jackets 2, 2′, the water being exhausted through discharge pipes 23 that communicate with the jacket, whereby the cooling is effected, it being understood that this circulating system forms no part of my invention, except as regards the peculiar arrangement of the pump. By this arrangement it is apparent that a continuous flow of water is discharged into the receiving chamber irrespective of the direction of rotation of the propeller arbor, due to the check-valve controlled discharge apertures 18′, 18′, which are disposed upon opposite sides of the rotors, whereby the water is delivered from the pump chamber. For example, should the arbor be rotated in the direction as indicated by the arrow in Fig. 4, it is apparent that the discharge of water will be through the left-hand valve-controlled discharge port, while the pressure in the chamber 19 against the right-hand check-valve mechapism will prevent back-flow.

The lower end of a rudder-stem 24 is stepped into the gear-casing 16, and the upper end of said stem carries a crank 24′ having an upwardly extending crank-pin 24″, and a depending circular hub 25.

As best shown in Figs. 3 and 5, the upper end of the rudder-stem is journaled by engagement of the crank-hub 25 with the circular portion 26 of a key-hole slot, which slot is formed in an ear 27 that extends from the engine-shaft supporting head 9. This key-hole slot connection is formed for the purpose of convenience in assemblage, which assemblage is effected by first fitting the rudder-stem, which protrudes from the crank-hub, through the throat of the key-hole slot and thereafter said stem is dropped into position, whereby the hub is seated within the circular portion of said slot and, simultaneously, the lower end of the aforesaid stem enters the recess in the gear-housing that forms the stepped bearing for said stem. A rudder-blade 28 is suitably secured to the stem 24, being flared downwardly about the propeller-wheel to permit clearance, whereby the rudder is capable of the desired swing, said rudder in its form also constituting a guard for the propeller. The rudder-stem is actuated by a tiller 29 which is secured to one member 30 of a two-part clip that is loosely mounted upon a neck portion 9′ of the head, the opposite member 30′ of the two-part clip being secured by suitable bolts 31 which engage ears that extend from said members. The clip-member 30′ has extending rearwardly therefrom a finger 32, the end of which is provided with a slot 32′ for engagement with the crank-pin 24″. In order to prevent longitudinal displacement of the tiller-clip, the member 30 thereof has depending therefrom an ear 30″, which ear carries a screw that extends under a web 33 that constitutes a part of the head, the web being of such width as to permit ordinary oscillatory play of the tiller without disengagement of the locking screw.

The entire propelling and steering apparatus is suspended from the craft to which it is attached, by means of a two-part clamping bracket, which bracket is formed by a pair of arms 34, the same being hinged together at their lower ends and secured by a bolt 35. The upper ends of the bracket arms, as shown, are provided with corre-

sponding sets of toothed clutch-disks 36, 36, which disks project inwardly and are formed with radial teeth corresponding to the radial clutch-teeth of the clutch-hubs 12. Each pair of the clutch-disks 36 is centrally apertured and is positioned upon a different horizontal plane, whereby they may selectively be fitted to the hub-members 12 in order to regulate the position of the propeller-wheel with relation to the draft of the craft to which the apparatus is attached. After the selected elevation of the apparatus has been determined the companion pair of toothed disks is alined with the hubs and the bracket-arms are then contracted by swinging upon their pivot, whereby a clutching engagement is effected between the disks and toothed hubs. The interlocked clutch-members are then secured by clamping-bolts 37, which bolts pass through the disk apertures and effect threaded engagement with the threaded apertures of the nipples 13, whereby the arms are drawn tightly together and thus the head and its connected mechanism is securely locked in pivotal union with the bracket. It is apparent that by loosening the clamping bolts 37 the apparatus may be swung upon its pivot so as to adjust the sleeve and its connected propeller at any desired angle. The bracket arms are also provided with forwardly extending rectangular legs 38 which are fitted over the gunwale of the boat, the said bracket being secured by clamping screws 39 that engage the inner wall of the boat, which clamping screws are carried by the leg.

From the foregoing description it is apparent that a simple and convenient mechanism is produced for obtaining the desired results, particular attention being called to the fact that each element can readily be assembled and secured and thereafter liability of disarrangement of the parts is reduced to a minimum; furthermore all adjustment required for this type of propelling and steering apparatus are effected in an extremely simple and positive manner, whereby the adjustments when made, are capable of holding the self-contained mechanism rigidly. The engine is provided with the usual oil tank 16 that is secured in any suitable manner to the shaft and the gear-casing 16 is arranged with a cap-closed mouth 16″, whereby access may be had to the gearing contained therein. It will also be observed that in effecting the various adjustments the mechanism is so designed that there is no tendency of the same to twist under side thrust of the propeller, due to the rigid pivotal connections, all adjustments being effected in a common vertical plane.

I claim:

1. In a propelling apparatus for small crafts having an engine, an engine-shaft extending therefrom, an incasing sleeve for the engine-shaft, and a propeller carried by the sleeve in gear connection with said shaft; the combination of a supporting bracket having arms projecting upon opposite sides of the sleeve, a clutch-disk carried by each arm, transversely disposed clutch-hubs associated with the engine-shaft incasing sleeve adapted to register with the clutch-disks, and pivot-bolts for securing the clutch-hubs and said clutch-disks together.

2. In a propelling apparatus for small crafts having an engine, an engine-shaft extending therefrom, an incasing sleeve for the engine-shaft, and a propeller carried by the sleeve in gear connection with said shaft; the combination of a supporting bracket having arms in hinge connection the said arms projecting upon opposite sides of the sleeve, a toothed clutch-disk carried by each arm, transversely disposed toothed clutch-hubs associated with the engine-shaft incasing sleeve adapted to register with the toothed clutch-disks, and pivot-bolts for securing the toothed clutch-hubs and said toothed clutch-disks together.

3. In a propelling apparatus for small crafts having an engine, an engine-shaft extending therefrom, an incasing sleeve for the engine-shaft, and a propeller carried by the sleeve in gear connection with said shaft; the combination of a supporting bracket having arms projecting upon opposite sides of the sleeve, a plurality of toothed clutch-disks carried by each arm, transversely disposed clutch-hubs associated with the engine-shaft incasing sleeve adapted to register with a selected set of the clutch-disks, and pivot-bolts for securing the clutch-hubs and said clutch-disks together.

4. A self-contained propelling and steering apparatus comprising an engine-shell, a head extending therefrom, horizontally disposed toothed clutch-hubs extending from the head, a supporting bracket having arms overlapping the head, a toothed clutch-disk extending from each arm engageable with the clutch-hubs, clamping-bolts for securing the clutch-hubs and disks together, a detachable sleeve depending from the head, an engine-shaft mounted within the sleeve, a propeller suspended from the free end of the sleeve, the propeller being in gear-connection with the engine-shaft, and a tiller-controlled rudder-stem in parallel relation to the sleeve.

5. A self-contained propelling and steering apparatus comprising an engine-shell, a head extending therefrom, horizontally disposed toothed clutch-hubs extending from the head, a supporting bracket comprising a pair of arms in hinge connection with each other, a hub-clamping leg extending from each arm, a plurality of toothed clutch-disks extending from each arm for selective engagement with the clutch-hubs, clamping-

bolts in engagement with the arms and in threaded union with the clutch-hubs, a sleeve depending from the head having one end secured to the latter, an engine-shaft revolubly mounted within the sleeve, and a propeller suspended from the free end of the sleeve, the propeller being in gear connection with said engine-shaft.

6. In a self-contained propelling and steering apparatus having an engine-shell, a supporting-head depending therefrom, a bracket for supporting the head, a sleeve extending from said head having its lower end provided with a housing, an engine-shaft revolubly mounted within the sleeve, a propeller-arbor journaled within the housing and in gear connection with said engine-shaft; the combination of a rudder-stem journaled upon the housing and the head, a crank extending from the upper end of the stem, a tiller-carrying clip revolubly mounted upon said head, the clip being provided with a slotted finger engageable with the stem crank.

7. In a self-contained propeller and steering apparatus having a bracket, a head carried thereby provided with a sleeve extension, an engine fixed to the head, an engine-shaft mounted within the sleeve, and a propeller-arbor carried by said sleeve in gear connection with the engine-shaft; the combination of a rudder-stem supported in approximate parallel relation to the sleeve, a crank secured to the upper end of the rudder-stem having a crank-pin extending therefrom, and a tiller carrying clip loosely mounted about the head, the clip being provided with a finger having a slot engageable with the crank-pin.

8. In a self-contained propelling and steering apparatus having an engine provided with a sleeve extension, an engine-shaft revolubly therein, a bracket for the support of the engine, and a propeller carried by the sleeve in gear connection with the engine-shaft; the combination of an ear associated with the sleeve provided with a key-hole slot, a rudder-stem, a crank secured to one end of the rudder-stem provided with a hub, the hub being adapted to fit within the enlarged portion of said key-hole slot, a journal for the lower end of the rudder-stem extending from the sleeve, a tiller-carrying clip loosely mounted about the sleeve, a slotted finger extending from the clip, and a pin extending from the rudder-stem crank engageable with the finger slot.

9. A propelling apparatus for small craft comprising an engine, a support therefor, a sleeve depending from the engine, an engine-shaft mounted in the sleeve, a housing secured to the lower end of the sleeve provided with a pump chamber having a pair of valve-controlled discharge ports and an intake port, a propeller arbor journaled in the housing in gear connection with the engine-shaft, a toothed rotor fitted within the pump chamber carried by the arbor, a corresponding toothed rotor mounted within the pump chamber between the discharge ports, the said rotors being in meshed engagement with each other, and a discharge pipe in communication with both valve-controlled discharge ports.

10. A propelling and steering apparatus for small crafts comprising a bored head having an enlarged counterbored end, an engine supported thereby, an engine-shaft journaled in the head bore, a sleeve provided with transverse apertures fitted into the enlarged bored portion of the head, internally threaded nipples extending from said head in alinement with the sleeve apertures, threaded plugs fitted into the nipple apertures engageable with the sleeve apertures, hubs extending from the aforesaid head concentric with the nipples, the hubs being provided with toothed edges constituting clutch-members, a supporting-bracket having arms provided with clutch-disks for engagement with the clutch-members of the hub, bolts in threaded union with the nipple apertures for securing the clutch-disks to said hub, and a propeller-arbor carried by the lower end of the sleeve in gear connection with the engine-shaft.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee in the county of Milwaukee and State of Wisconsin in the presence of two witnesses.

ADOLPH NYDEGGER.

Witnesses:
E. T. Samson,
Geo. W. Young.