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BOAT STEERING MECHANISM

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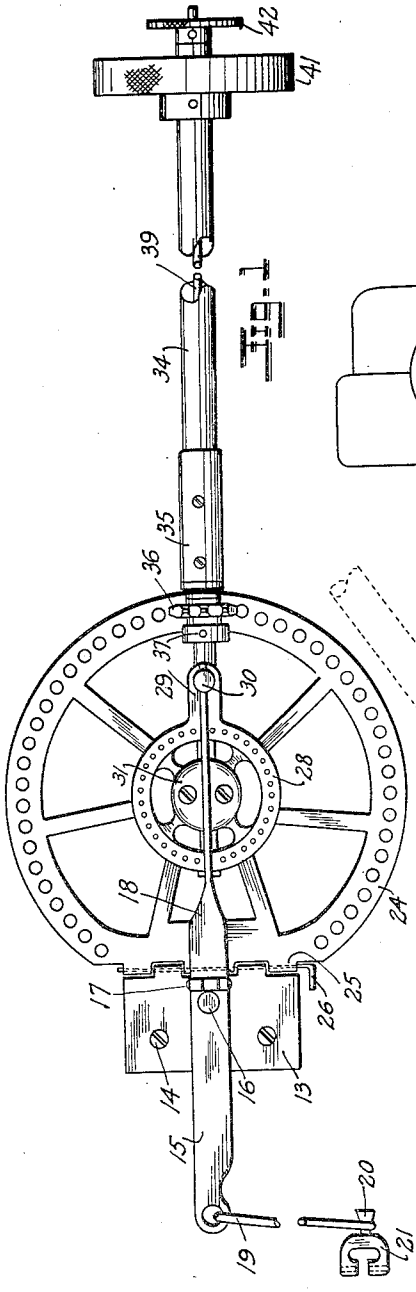


Fig. 1

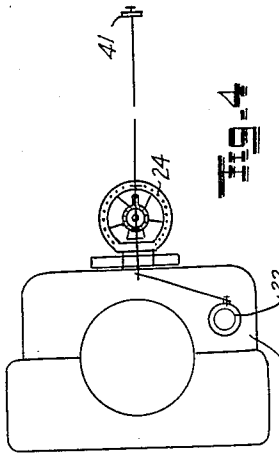


Fig. 4

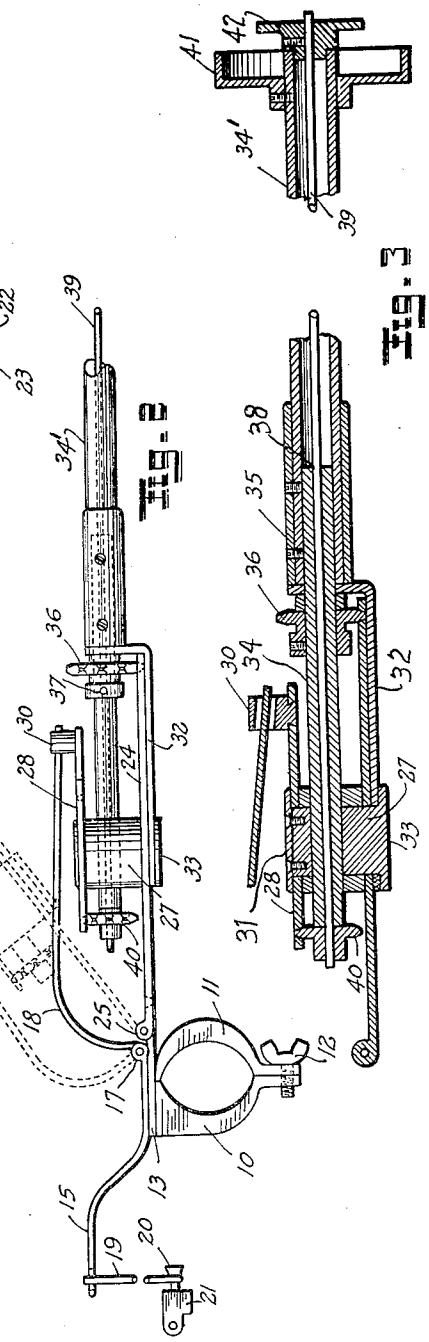


Fig. 2

Fig. 3

INVENTOR.
ANTON HORAK
BY John F. Bregina
ATTORNEY.

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BOAT STEERING MECHANISM

Anton Horak, Chicago, Ill.

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10 Claims. (Cl. 114—144)

This invention relates to a mechanism adapted to be releasably connected to any conventional row boat gasoline motor of the portable and detachable type used for power propulsion of row boats and the like. My invention particularly comprises a remote control boat steering mechanism adapted to also provide control for the fuel carburetor of the motor whereby both steering and speed may be conveniently operated from the center of the boat or seats in the boat located elsewhere than adjacent the stern.

An important object of my invention is the provision of a light, inexpensive and detachable or attachable mechanism adapted to be connected to a portable row boat motor of conventional type, which said mechanism provides highly practical and efficient means for controlling the motor, both in turning the motor to guide the boat as well as to regulate the fuel consumed and consequently attaining any speed desired.

A further object of my invention is the provision of a practical and efficient device attachable to the conventional type of portable boat motor, which device comprises a gear member rotatably mounted shaft, and gear means manually operable from points in the boat remote from the motor.

A further object of my invention is the provision of manually operable and manually controlled device attachable to the portable row boat motor which combines means for swinging the motor on its pivotal connection from the center of the boat or points therein distant from the motor, and at the same time embodying selective and manually operable means for controlling the fuel supply and speed of the motor.

Other and further objects of this invention will be apparent from the disclosures in the specification and the accompanying drawing.

This invention (in a preferred form) is illustrated in the accompanying drawing and hereinafter more fully described.

On the drawing:

Fig. 1 is a top plan view of my boat steering mechanism and motor control.

Fig. 2 is a side elevation thereof and illustrating in dotted lines one of the upwardly inclined positions to which the pivoted portion of my mechanism may be tilted.

Fig. 3 is a cross sectional view of that portion of my mechanism which embodies the means for manually turning a pivot type boat motor.

Fig. 4 is a reduced schematic view illustrating a boat motor with my device attached thereto and illustrating the manner in which the position and speed of the motor may be selectively controlled by the operator from a remote point.

As shown on the drawing:

The reference numeral 10 indicates an arcuate shaped clamp which has an opposed releasable portion 11 releasably connected with respect to the clamp 10 by means of thumb screw 12. 13 indicates a mounting and butt plate which is secured by suitable screws 14 to clamp 10. The clamp 10 is adapted to be tightened about the conventional handle (not shown) or other suitable portion of a row boat motor of the type wherein the same is pivoted for swinging movement with respect to the mounting means therefor and the stern of the boat. 15 indicates a relatively short lever which is pivoted for substantially horizontal movement to the upper surface of the butt plate 13 by means of a pivot 16, the end of said lever adjacent said pivot forming a hinge connection 17 with the end of an upwardly curved lever 18 as shown in Figs. 1 and 2. The free end of the lever 18 is reduced to form a substantially round slender portion for a purpose which will hereinafter appear. The rearwardly extending and free end of the lever 15 carries an aperture in which is loosely connected one end of a metal connecting link 19, the other end of said link pivotally engaging a projecting stud 20 of collar 21 which is adapted to fit snugly upon the conventional valve lever (not shown) of the fuel carburetor 22. It will be apparent that selective pivotal movement of the levers 15 and 18 will transmit movement to the carburetor 22 to regulate the fuel and consequently the speed of the motor 23.

An annular rack 24, which in the preferred form shown in the drawing, is of a type having spokes, a hub and a plurality of spaced apart apertures punched thru its periphery, and having a peripheral portion thereof cut away in a straight line and which may also be in the form of a sector gear wheel, has formed integral therewith a plurality of hinge straps 25 which interfit with similar hinge straps of the butt plate 13 and are held in hinged engagement by a removable pintle 25. A bushing 27 is rotatably mounted in the hub aperture of said annular rack 24 and in a position so that said annular rack and bushing may be free to turn with respect to each other. Said bushing has a plurality of transverse apertures therethrough as clearly indicated in Fig. 3 and as will be more specifically hereinafter described. Rotatably mounted upon the upper surface of said bushing 27 is a relatively small gear wheel 28 of the type having

spaced apart peripheral apertures and having an integral projecting tongue 29, in the end of which tongue is mounted a relatively short upwardly extending pivot 30 as indicated in Figs. 1 and 2. Said pivot 30 has a transverse aperture therethrough and the reduced portion of the lever 18 slides in the aperture of said pivot 30 when the gear wheel 28 is rotated. It will be apparent that rotation of gear wheel 28 will cause pivotal movement of lever 15 and consequent movement of the fuel control valve of the carburetor 22 of the motor. A cap 31 is secured upon the end of the bushing 27 by means of suitable screws, as clearly indicated in Figs. 1 and 3, this cap holding said gear wheel 28 in proper rotative position.

A right angled lever 32 has one apertured end thereof pivoted coaxial with and beneath the center of the annular rack 24, a lock nut 33 being adapted to retain the same in proper position with respect to the bushing 27, as clearly shown in Fig. 2. The opposite end of said lever, which is bent perpendicularly and upwardly with respect to the longer portion thereof, is also apertured and provides journalling means for a shaft as hereinafter described.

A hollow axle shaft 34, which may be of any length desired according to the size or length of the boat in connection with which my device is to be used, extends through the aperture in the upwardly extending portion of lever 32 and through the central transverse aperture in the bushing 27, as clearly indicated in Figs. 2 and 3. One end of said axle 34 projects a short distance from the bushing 27 toward the aforesaid motor connections, as indicated in Figs. 1 and 2. A pipe 34' of the length desired according to the distance from which control is desired is snugly secured by means of suitable screws about the end of shaft 34, as shown in Fig. 3. A relatively long sleeve 35 is snugly secured by means of the aforesaid screws, about said pipe 34', as indicated in Fig. 3, said sleeve being positioned so that one end thereof lies adjacent the upwardly extending portion of the lever 32 and is adapted to prevent longitudinal movement of said axle shaft 34 in one direction. A pinion 36 having an enlarged annular shank is secured on said shaft 34 at a point immediately adjacent the upwardly extending portion of the lever 32 and so that the teeth of said pinion will engage the apertures of gear wheel 24. A suitable set screw 37 threadingly engages the shank of said pinion 36 and secures the same on said shaft. A hand wheel 41, as clearly shown in Figs. 1 and 3, is securely mounted about the end of pipe 34' by means of a suitable set screw 42 threadingly engaging an integral shank thereof and adapted to engage the surface of said pipe 34'.

The shaft 34 has a central and longitudinal aperture 38 extending therethrough, in which aperture as well as in the central pipe passageway, is rotatably mounted a relatively small axle shaft 39 which is of a length greater than both the shaft 34 and pipe 34', and one end thereof projects beyond the end of said shaft 34 and its other end projects beyond the end of said pipe 34'. The end of said shaft 39 which projects beyond the end of shaft 34 nearest to the motor connections as aforesaid has securely mounted thereon a relatively small pinion 40, the teeth of which engage the apertures of the gear wheel 28. The opposite end of the said small shaft 39 projects a short distance beyond the outer surface of the hand wheel 41 and has mounted thereon a smaller hand wheel 42 which is preferably narrow as indicated in Fig. 1, and has a reduced annular shank portion which rotatably engages a central aperture formed in the shank of the hand wheel 41, as indicated in cross section in Fig. 3.

It will be apparent that due to the construction hereinbefore described and particularly to the hinge constructions, both of the annular rack and the upwardly curved lever, the entire device may be operated from any desired angle of inclination within the boat; and even more important is the advantage of being able to swing the complete steering mechanism into an upwardly pointing direction above the motor itself where said mechanism is completely out of the way when ingress and egress from the boat is desired. It will be further apparent that due to the length of the rotatable shafts a person may not only control the angular position of the swingably mounted boat motor which in turn controls the direction of the boat, but may also, from the center seat of the boat where riding is far more comfortable, and from either a forward or rearward facing position, guide the boat and regulate its speed efficiently, satisfactorily and with far greater comfort than is possible in riding next to the boat stern and motor.

I desire that it be understood that the use of my aforesaid mechanism is not to be understood as limited to use in connection with the regulation of fuel or speed of a boat engine, but it may be applied to various uses wherever the objects accomplished by my invention and remote control is desirable.

I am aware that many changes may be made and numerous details of the invention and construction thereof may be varied through a wide range without departing from the principles of this invention, and I therefore do not desire to limit the patent granted thereon.

I claim as my invention:

1. In combination with means for guiding a boat and pivotally mounted at the stern thereof, a sector annular rack hingedly secured with respect to said means for free movement; a journalling member coaxially and rotatably mounted on said annular rack; a rotatable shaft journalled in said member; a pinion secured on said shaft and adapted to move said annular rack when said shaft is turned, and means for connecting said member and said shaft and adapted to maintain said shaft and annular rack in substantially parallel planes.

2. In combination with means for guiding a boat pivotally mounted at the stern thereof, an annular rack hingedly secured with respect to said means; a journalling member coaxially and rotatably mounted on said annular rack; a rotatable shaft journalled in said member; a pinion secured on said shaft and adapted to move said annular rack when said shaft is turned, and means for connecting said member and said shaft and adapted to maintain said shaft and annular rack in substantially parallel planes, said annular rack, shaft, member and pinion being pivotally mounted for vertical pivotal movement with respect to said boat guiding means.

3. In combination with a portable boat motor having a fuel control valve, an annular rack member hingedly mounted with regard to said guiding means; a gear wheel rotatably mounted in a plane substantially parallel to and spaced from said annular rack member; a manually rotatable hollow shaft; means wherein said shaft is journalled

and adapted to maintain same between said rack member and gear wheel; a pinion secured on said shaft and in mesh with said annular rack member; a shaft rotatably mounted within said first mentioned shaft; a pinion on said inner shaft in mesh with said gear wheel, and lever means connecting said gear wheel and fuel control valve, the rotation of said first mentioned shaft being adapted to swing said rack and attached parts and the rotation of said inner shaft being adapted to move said fuel control lever means to regulate the fuel control valve.

4. In a device adapted to be attached to a portable and swingable boat motor, an annular wheel-like rack member having a central hub portion; mounting means hingedly connected to the edge of said rack member whereby the same may be connected to a boat motor; an apertured bushing having its lower portion rotatably engaging the hub of said annular rack member; a gear wheel secured on said bushing and coaxial therewith; a hollow shaft projecting through said bushing member and between said rack member and said gear wheel and in a plane substantially parallel thereto; a pinion on said shaft and in mesh with said rack member; an inner shaft extending through and rotatable in said first mentioned hollow shaft and projecting from the opposite ends thereof; a pinion on the end of said inner shaft and in mesh with said gear wheel; and lever means connecting said gear wheel and fuel control means, the rotation of said inner shaft being adapted to rotate said gear wheel to regulate said fuel control means and the rotation of said hollow shaft being adapted to selectively swing said rack member, motor and attached parts to any desired position.

5. In a device adapted to be attached to a portable and swingable boat motor, an annular wheel-like rack member having a central hub portion; mounting means hingedly connected to the edge of said rack member whereby the same may be attached to a boat motor; an apertured bushing having its lower portion rotatably engaging the hub of said annular rack member; a hollow shaft rotatably mounted in an aperture of said bushing and in a plane substantially parallel to said rack member, and a pinion secured on said shaft and in mesh with said rack member, the rotation of said shaft and pinion being adapted to rotate said rack member and swing said motor to the desired angular position.

6. In a device adapted to be attached to a portable and swingable boat motor, an annular wheel-like rack member having a central hub portion; mounting means hingedly connected to the edge of said rack member whereby the same may be connected to a boat motor; an apertured bushing having its lower portion rotatably engaging the hub of said annular rack member; a gear wheel secured on said bushing and coaxial therewith; a hollow shaft projecting through said bushing member and between said rack member and said gear wheel and in a plane substantially parallel thereto; a pinion on said shaft and in mesh with said rack member; an inner shaft extending through and rotatable in said first mentioned hollow shaft and projecting from the opposite ends thereof; a pinion on the end of said inner shaft and in mesh with said gear wheel; a lever pivoted on said first mentioned mounting means; a link connecting one end of said lever to the fuel control valve, and a lever having one end slidably connected on said gear wheel and its other end hingedly connected to one end of said first mentioned lever, the rotation of said inner shaft being adapted to transmit regulative movement to said fuel control valve, said rotation of said hollow shaft being adapted to swing said rack member, shafts, gear wheel and hinged lever angularly.

7. In a device adapted to be attached to a portable and swingable boat motor, an annular wheel-like rack member having a central hub portion; a mounting member hingedly connected to the edge of said rack member whereby the same may be attached to a boat motor; clamping means on said member for releasably attaching the same on a motor; an apertured bushing having its lower portion rotatably engaging the hub of said annular rack member; a gear wheel secured on said bushing and coaxial therewith; a hollow shaft in said bushing member and between said rack member and between said gear wheel and in a plane substantially parallel thereto; a pinion on said shaft and in mesh with said rack member; a hand wheel on said hollow shaft; an inner shaft extending through and rotatable in said first mentioned hollow shaft and projecting from the opposite ends thereof; a pinion on the projecting end of said inner shaft and in mesh with said gear wheel; a bushing on said inner shaft and forming a hand grip; and lever means connecting said gear wheel and fuel control means comprising a lever pivoted on said mounting member, link connections connecting said lever and a fuel control valve; and a lever having one end hingedly connected to said first mentioned lever and its other end slidably engaging said gear wheel, the rotation of said inner shaft being adapted to rotate said gear wheel to regulate said fuel control means and the rotation of said hollow shaft being adapted to selectively swing said rack member, motor and attached parts to any desired angular position.

8. In a device adapted to be attached to a portable and swingable boat motor having a fuel carburetor and valve, an annular wheel-like rack member having a central hub portion; mounting means hingedly connected to the edge of said rack member whereby the same may be attached to a boat motor; an apertured bushing having its lower portion rotatably engaging the hub of said annular rack member; a hollow shaft rotatably mounted in an aperture of said bushing and in a plane substantially parallel to said rack member; a pinion secured on said shaft and in mesh with said rack member, the rotation of said shaft and pinion being adapted to rotate said rack member and swing said motor to the desired angular position, and manually operable means for selectively regulating the fuel valve of said motor from a remote point.

9. In a device adapted to be attached to a portable and swingable boat motor, an annular wheel-like rack member having a central hub portion; mounting means hingedly connected to the edge of said rack member whereby the same may be connected to a boat motor; an apertured bushing having its lower portion rotatably engaging the hub of said annular rack member; a gear wheel secured on said bushing and coaxial therewith; a hollow shaft projecting through said bushing member and between said rack member and said gear wheel and in a plane substantially parallel thereto; a pinion on said shaft and in mesh with said rack member; an inner shaft extending through and rotatable in said first mentioned hollow shaft and projecting from the opposite ends thereof; a pinion on the end of said inner shaft and in mesh with said gear wheel; a lever pivoted on said first mentioned

mounting means; a link connecting one end of said lever to the fuel control valve; a lever having one end slidably connected on said gear wheel and its other end hingedly connected to one end of said first mentioned pivoted lever, the rotation of said inner shaft and said gear wheel being adapted to transmit regulative movement to said fuel control valve, said rack member, shafts, gear wheel, hinged lever and attached parts being swingable vertically with respect to said mounting means.

10. In a remote control boat steering mechanism adapted to be attached to a swingably mounted motor, an annular rack hingedly secured with respect to said motor for vertical movement; a journalling member coaxially and rotatably mounted on said annular rack; a rotatable shaft journalled in said member; a hand grip on one end of said shaft; a pinion secured on said shaft and adapted to engage said annular rack when said shaft is rotated; means for connecting said member and said shaft and adapted to maintain said shaft and annular rack in substantially parallel planes, said annular rack, shaft, member and pinion being pivoted for vertical pivotal movement with respect to said boat motor; an inner shaft rotatable within said first mentioned shaft, and means actuable by said inner shaft for selectively regulating the speed of said motor.

ANTON HORAK.