

S. B. McNEELY.

RUDDER.

APPLICATION FILED SEPT. 1, 1909.

956,404.

Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

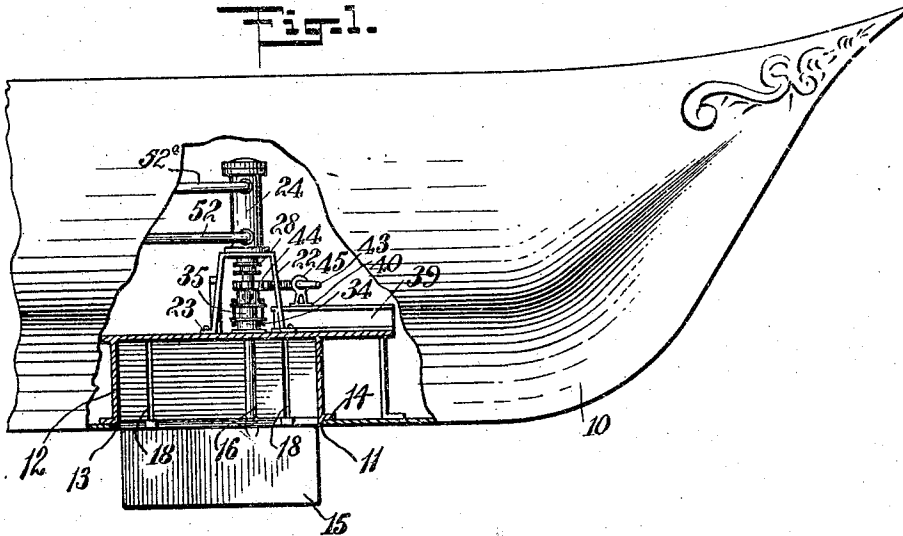


Fig. 2.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

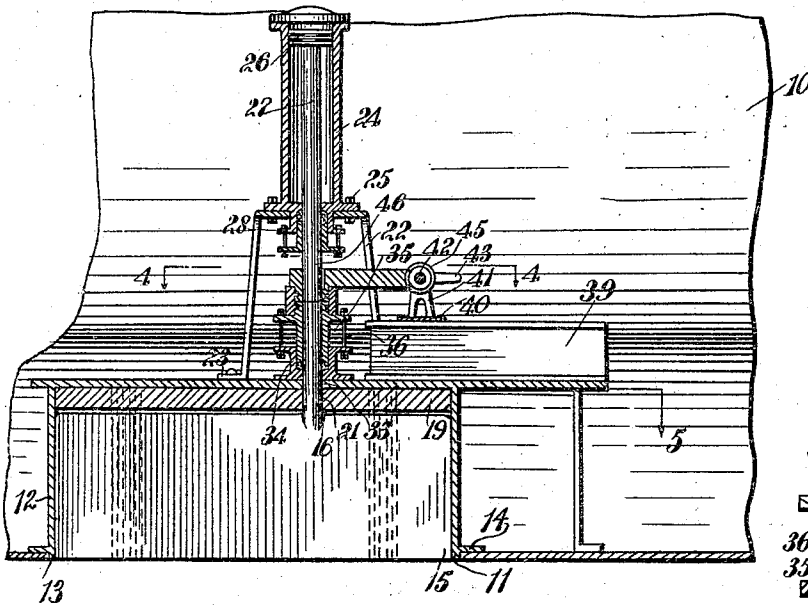


Fig. 3.

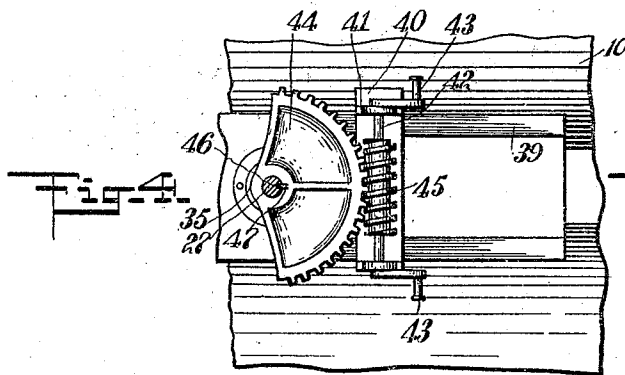
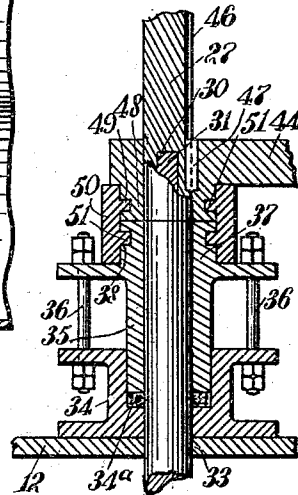


Fig. 7.

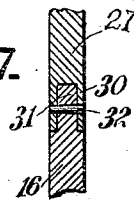


Fig. 5.

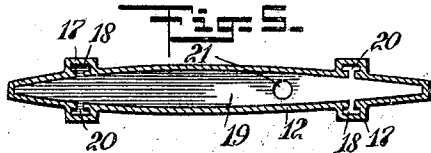


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

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RUDDER.

956,404.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed September 1, 1909. Serial No. 515,572.

To all whom it may concern:

Be it known that I, STANLEY B. McNEELY, a citizen of the United States, and a resident of Natchez, in the county of Adams and State of Mississippi, have invented a new and Improved Rudder, of which the following is a full, clear, and exact description.

This invention relates to rudders for steering vessels of different types, and more particularly to a rudder which is normally inoperatively disposed in a well carried in the hull of the vessel and located near the bow of the same, suitable means being provided for projecting the rudder into an operative position and for turning it to steer the vessel in one direction or the other.

The object of the invention is to provide a simple, strong and durable rudder for steering steamboats and other vessels, which is equally efficient in operation when the vessel is traveling backward as well as forward, by means of which the vessel can be caused to turn more rapidly than with the usual rudder at the stern, which can be used in operation with the usual stern rudder or as a substitute therefor, and which, when in its inoperative position, is protected against accidental injury.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a side elevation of the forward part of the vessel, showing part of the hull broken away and having an embodiment of my invention applied thereto; Fig. 2 is an enlarged transverse section of the hull, showing the rudder and the mechanism for operating the same; Fig. 3 is a longitudinal section of part of the hull of the vessel and of the steering mechanism; Fig. 4 is a transverse view on the line 4—4 of Fig. 3; Fig. 5 is a similar view on the line 5—5 of Fig. 3; Fig. 6 is a plan view of the rudder device showing the stem thereof in section; Fig. 7 is an enlarged longitudinal section of part of the stem of the rudder; and Fig. 8 is an enlarged section showing a detail.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that while it can be use-

fully employed in connection with vessels of various kinds, it is particularly well-adapted for steering vessels such as torpedo boats and the like, which it is necessary often to maneuver with rapidity and in which the exigencies of the service are such that it is essential that they be turned in one direction or the other on as short a radius as possible. The rudder is preferably positioned near the bow of the vessel and is thus operable with equal efficiency when the vessel is traveling backward or forward. It can be used in combination with the usual steering rudder as an auxiliary therefor, or as a substitute for this stern rudder, should the latter be injured or otherwise put out of commission.

Referring more particularly to the drawings, I have shown, for example, a hull of a vessel having an opening 11 in the bottom thereof, on which is located a well 12 of elongated form and provided with an open bottom. The well may be of metal or any other suitable material and has a rim 13 fitted within the opening 11 and a flange 14 seating against the bottom of the vessel. The well conforms to the shape of the rudder 15, which is of substantially rectangular shape and tapers from the middle to the ends, as is shown most clearly in Fig. 6. It has rigid therewith a stem portion 16. The well, at opposite sides, has extensions or ribs 17 within which are formed undercut guide grooves 18 communicating interiorly with the well. A guide member 19 is movably mounted within the well and has extensions 20 which guidingly engage within the grooves 18. The member 19 has an opening 21 through which projects the stem 16.

Mounted upon the well are carriers 22 preferably of inverted V-form and having feet 23 bolted or otherwise fastened, while a cylinder 24 is secured by means of bolts 25 upon the carriers and has therein a piston 26 rigidly connected with a piston rod 27. The latter extends through a stuffing box 28 of any suitable type and located at the lower end of the cylinder. The piston rod is connected to the stem part 16 of the rudder. Preferably the parts have respectively longitudinal recesses 30 and reduced extensions 31 inserted therein. A pin 32, extending through suitable openings of the members, secures the parts together, as is shown most clearly in Fig. 7. The cylinder preferably has a collar 53 to which are attached brace rods 54, secured in turn to the sides of the

vessel. Angularly disposed braces 55 are secured to the carriers 22 and to the body of the vessel, and assist in holding the carriers in position. The well has, of course, an opening 33 in the top thereof, through which the stem passes. A stuffing box 34 is mounted on the opening and has a gland 35 adjustably connected with the stuffing box by means of bolts 36 in the usual manner. The gland rests at its lower end on a suitable packing 34^a, and has an extension 37 provided with an annular groove 38 for a purpose which will appear hereinafter.

Spaced longitudinal supports 39 are mounted upon the well casing and have a transverse plate 40, upon which are located bearings 41. The latter have journaled therein a shaft 42, having at each end a crank 43 adapted for connection with steam steering gears or the like (not shown). A toothed segment 44 is mounted upon the stem and is in engagement with a worm 45 rigid with the shaft 42. The rod 27 has a longitudinal groove 46 slidably engaging a key 47 of the segment, so that the stem can slide through the segment, but is constrained to turn with the same. The segment has a hub extension 48 provided with an annular groove 49 and seating upon the extension 37 of the gland. A collar 50 encompasses the extensions 37 and 48 and has internal annular ribs 51 engaging the respective grooves 38 and 49.

The cylinder 24 has suitable pipe connections 52 and 52^a for the introduction of steam, compressed air and the like, to permit the piston to be moved back and forth within the cylinder so that the rudder may be correspondingly raised or lowered, as the case may be. It will be understood that the rudder, when in a normal position within the well, is protected against injury. When it is desired to use the rudder, steam is permitted to enter the cylinder to force the piston toward the lower end of the cylinder and correspondingly to protect the rudder. The rudder can be turned to one side or the other by operating the segment through the agency of the worm 45, the shaft 42 being operated by steam steering gear, or in any other suitable manner. The stuffing box 34 and the parts associated therewith prevent water from entering the hull of the vessel through the opening of the rudder stem. The latter is preferably off center with respect to the rudder, as is shown most clearly in Figs. 1, 3 and 6. The guide member 19 moves with the rudder up and down within the well, owing to the frictional engagement of the rudder stem within the opening 21, and serves the purpose of preventing the stem or the rudder from binding when moved in or out of the well.

Having thus described my invention I

claim as new and desire to secure by Letters Patent:

1. In a vessel, a rudder normally positioned within the hull of the vessel and movable to the outside of the same, means for moving said rudder, means for operating said rudder to steer the vessel, and a guide member loosely associated with said rudder and positioned in said well.

2. In a vessel, a well lying within the hull of the vessel and having an opening through the hull, a rudder adapted to be positioned within said well and movable through said opening to the outside of the hull, and a guide member movable within said well, and movable with respect to said rudder.

3. In a vessel, a well having guides, a rudder slidable within said well and adapted to be projected from the same, a stem rigid with said rudder, a member for guiding said rudder into and out of said well and in movable engagement with said guides, means for moving said stem in the direction of its length, and means for turning said stem about its longitudinal axis, said member being loosely associated with said stem.

4. In a vessel, a well located within the same and having an open bottom, a rudder movable within said well and adapted to be projected through said open bottom, a stem rigid with said rudder, a member within said well and movably engaging the same, said member being in slidable engagement with said stem, means for moving said stem longitudinally to project said rudder, and means for turning said stem to turn said rudder.

5. In a vessel, a well located within the same and having an open bottom, said well having internal guides, a rudder movable within said well and adapted to be projected through said open bottom, a stem rigid with said rudder, a guide member movable within said well and having parts slidably engaging said guides, said member having an opening, said stem passing loosely through said opening, means for moving said stem longitudinally to project and retract said rudder, and means for turning said stem to turn said rudder.

6. In a vessel, an open well, a rudder movable within said well and adapted to be projected therefrom, a cylinder having a piston therein, an elongated member connecting said piston and said rudder, said well having a stuffing box through which said member passes, a toothed segment associated with said member, said member being slidable with respect to said segment, in the direction of its length and being constrained to turn with said segment, and means for operatively connecting said segment with a steering gear.

7. In a vessel, a well, a rudder movable within said well and adapted to be projected

therefrom, a cylinder having a piston therein, a piston rod rigid with said piston, said rudder having a stem, a connecting member between said piston rod and said stem, 5 said well having a stuffing box adapted to have said stem, said connecting member and said piston rod slide therethrough, said stuffing box including a gland having a grooved extension, a segment having a hub 10 receiving said piston rod, said hub having a grooved extension, and a ribbed collar encompassing said extensions, said piston rod having a longitudinal recess, said segment having a key slidably engaging said recess, and 15 said segment being adapted to be operated by a steering gear.

8. In a vessel, a well having an open bottom, a rudder within said well and adapted

to be projected from the same, a stem rigid with said rudder, a movable guide member 20 within said well and movably engaging said stem, a cylinder adapted to receive a motive fluid and having a piston therein, means connecting said stem and said piston, and a 25 member adapted to be connected to a steering gear and controlling said connection between said piston and said stem to turn said rudder.

In testimony whereof I have signed my name to this specification in the presence of 30 two subscribing witnesses.

STANLEY BASIL McNEELY.

Witnesses:

O. ZIE CHANEY,
THOMAS C. WEST.