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G. E. FRANQUIST.

VALVE.

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Fig. 1.

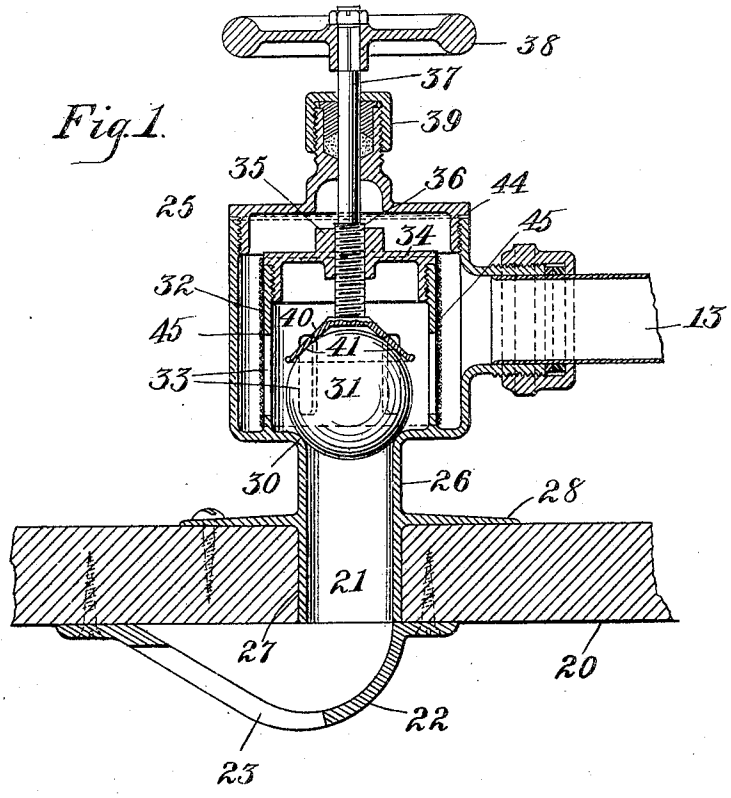
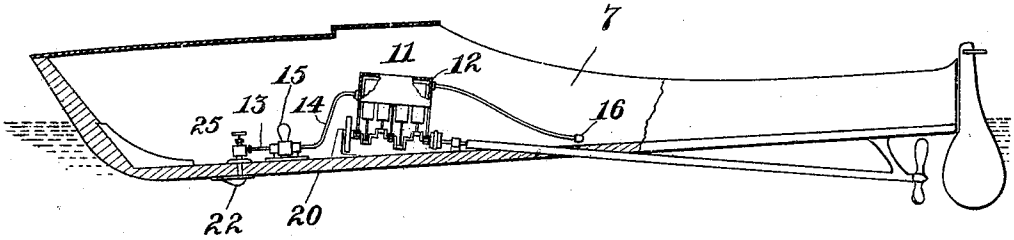


Fig. 2.



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VALVE.

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To all whom it may concern:

Be it known that I, GUSTAVE E. FRANQUIST, a citizen of the United States, residing at the city of New York, in the borough of Manhattan and State of New York, have invented certain new and useful Improvements in Valves, of which the following is a full, clear, and exact description.

This invention relates to an improved sea-cock and foot-valve, and has for an object to provide in one piece of apparatus a sea-cock and a pump foot-valve and means whereby a strainer for the water passing through such sea-cock or valve may be readily removed and cleaned while the sea-cock is securely closed.

This present improvement is peculiarly adapted for use in motor-boats the motors of which are frequently cooled by water-jacketing the cylinders, and the supply may be drawn from the water in which the boat is running. A suitable sea-cock will be employed for opening and closing communication with such body of water, and if a pump is employed for drawing in the water and obtaining circulation through the jacket a suitable foot-valve for such pump must also be furnished. A suitable strainer should be interposed at some convenient point between the sea-cock and the pump for removing foreign substances and impurities passing in with the water. Considerable annoyance has arisen in the cleaning of such strainers and in disassembling the parts for the removal of the strainer.

The present improvement contemplates combining in one piece of apparatus a valve which may be the foot-valve of the pump and also serve when properly seated as the sea-cock and also combining the strainer for the sea-cock with such apparatus, the entire device being so constituted that the strainer may be readily removed and cleaned and the sea-cock may be closed prior to such removal.

Motor-boats are frequently sunk from their sea-cocks having been left open. One instance in which the boats so sink is when the water freezes in some part of the piping leading from the sea-cock and the pipes thereby being burst, which will admit water below the water-line of the boat and cause the same to sink.

In the drawings accompanying and forming a part of this specification, Figure 1 is a longitudinal section of a portion of a motor-boat, showing a mode of employing my invention, (some parts are, however, shown in elevation;) and Fig. 2 is a vertical section of a practical form of embodiment of the present invention.

The foot-valve for the pump may be located at some convenient point—as, for instance, adjacent to the port for the entry of the water—and will of course close against its seat against the direction of the flow of the water, so that the stroke of the pump, tending to expel the water through the port, will cause the valve to seat. The valve may normally seat itself by gravity and when the pressure below is equal to that above the valve it may seat itself. A convenient form of valve is the ball-valve, which is illustrated herein, and such valve to constitute the sea-cock will have suitable means in connection with it for forcing it to its seat and holding it thereon. Suitable centering devices may be employed for centering the ball on its seat should there be anything tending to prevent its properly seating—as, for instance, the presence of some solid body or the rocking of the boat. The centering and seating devices may be carried by a suitable screw, the nut for which may be carried by a cage surrounding the ball and tending to prevent it from escaping too far from its seat. Such cage may be surrounded by a suitable screen for straining the water that passes through the openings in the cage. By having the valve-controlling screw pass through a nut carried by this cage it will be possible to open the outer casing of the device and remove the strainer or screen, while the valve is securely held to its seat. This operation of removing the strainer, cleaning the same, and replacing it will occupy but a short time and may be accomplished without disarranging the different parts of the system, it merely being necessary to unfasten two or three screw connections without injuring the piping or connected parts.

The boat (designated in a general way by 7) is shown provided with a motor, designated in a general way by 11 and which may be of the explosive order and be provided with a water-jacketing device 12, having a supply conduit or pipe 13 14, and some suitable pump 15 may be employed for producing a continuous circulation through the same. The skin 20 of the boat is provided at some suitable point below the normal water-line with a port 21, shielded by a cap 22, having inlet-openings 23. A casing (designated

in a general way by 25) is shown coupled to the pipe 13 and carried by a pipe 26, fitted to an opening 27 in the skin of the boat and forming the port 21. The pipe 26 may be provided, if desired, with a flange 28 for making a better and more secure joint. The port and conduit 13 are connected through the interior of the casing 25, and the pump or other device will draw water from said port for the water-jacket, and such water may be discharged at some convenient point, as at 16.

For preventing back pressure from the pump and to hold the water in the jacket and conduit when the pump is inactive a suitable foot-valve will be employed. The pipe 26 is shown provided at its juncture with the casing with a valve-seat 30, facing toward the pump and away from the inlet-port. A ball or ball-valve 31 seats on said valve-seat by the back pressure, and if made in the form illustrated will normally seat by gravity. This valve is practically self-centering under normal conditions and will permit the admission of water whenever the pressure below it is greater than the presssure above it; but when the conditions are reversed or the pressures are equal the valve will find its seat and prevent a back or outward flow.

When the boat is not running, or if for any other reason it is desired to prevent the admission of water, the port may be shut. When the boat is left idle in cold weather, the valve may be closed and all the water pumped from the jacket. This prevents freezing and springing a leak in the boat. To shut off such flow, the ball may be positively seated, for which purpose the framework 32, in the form of a cage, may carry on its top 34 a nut 35, the nut to receive a screw-threaded portion 36 of a stem 37, having a hand-wheel 38, the stem passing through a suitable gland stuffing-box 39, carried by the cover 44 of the casing and carrying means for positively forcing said ball to its seat against the admission from said port. The cage serves to keep the ball from getting too far from its seat and if cast may have cored openings 33.

Under normal conditions the ball will be self-centering and will automatically find its seat; but when it is desired to convert the ball from a foot-valve to a sea-cock the ball and the chance for missing rendered practi- must be brought to its seat with precision cally *nil*. For this purpose the ball must be positively centered and seated and then positively pressed against its seat, for the accomplishment of which the upper side of the ball may be engaged at several points about its vertical axis. In the present instance a cup 40 is carried by the stem 37 and will engage the ball, as at 41, and when the cup is advanced by the screw the ball will be centered on its seat, pressed to the seat and given a rotation on its vertical axis, thereby grinding it against its seat. By adjustment of the cup the inflow may be controlled, and when but partially raised the cup will prevent the ball leaving its seat to the full limits of the confines of the cage. When it is desired that the valve be very sensitive to back pressure and seat quickly, it may be so confined. When there is opportunity for a large margin of play and it is desired not to restrict the entrance of water, the ball may be released entirely from the control of the cup.

The cage 32 may be made substantially cylindrical upon its outer surface, and a cylindrical screen 45, which may be fabric of suitable gage wire and size of mesh, may closely fit the cage and the water passing through the openings 33 therein be strained, preventing the passage of undesirable matter into the pump or water-jacket, the said cage or framework acting to support the screen. When it is desired to clean the strainer or screen, the hand-wheel 38 will be rotated, bringing the ball 31 to its seat and preventing further inlet of water to the boat. The water may be shut off in the pipe 13 by a suitable cock or may be pumped from the pipe. The casing may then be opened by removing the hand-wheel 38 from the end of its stem and loosening the packing in the gland 39. The cover 44 may then be unscrewed and removed from the casing and the gland from the stem 37, after which the screen 45 may readily be removed, cleaned, and replaced, when the parts may be reassembled and then the sea-cock be again opened and the ball 31 permitted to assume its other function, that of a foot-valve.

Having described my invention, I claim—

1. In a sea-cock, a chamber having an opening extending through the hull of the boat, a ball contained in said chamber and arranged to close said opening by gravity, and a centering-cup disposed to impinge against said ball and force it against said opening and means whereby the ball may be inspected without removing the centering-cup.

2. In a sea-cock, a chamber extending through the hull of the boat, a ball pressed by gravity in a direction to close said opening, means for forcibly retaining the ball against its seat, a frame surrounding said ball and having recesses therein, and a strainer removably surrounding said frame and disposed to cover the recesses therein.

3. In a sea-cock, a chamber extending through the hull of the boat, a ball within said chamber and arranged to constitute a check-valve for said opening, means for positively retaining the ball in closing relation, and a strainer removable from operative relation without disturbing said ball.

4. In a sea-cock, a chamber having an opening extending through the hull of the boat, a ball arranged to be pressed in a direc-

tion to close said opening, and a strainer removable from its operative relation without disturbing said ball.

5. The combination with a casing having an inlet and an outlet, a valve-seat at said inlet, a removable cover, and a stuffing-box on such cover, of a ball for seating on said valve-seat, a cage within said casing, surrounding said valve-seat and ball, having its outer walls of cylindrical conformation, a top for said cage having an opening with screw-threaded walls, means for engaging said ball, a valve-stem carrying said means, having a screw-threaded portion traversing said screw-threaded opening and passing through said stuffing-box, and a hollow cylindrical screen surrounding said cage.

6. The combination with a casing having an inlet and an outlet, a valve-seat at said inlet, a removable cover, and a stuffing-box on said cover, of a valve for seating on said valve-seat, a valve-stem carrying said valve, projecting through said stuffing-box and having a screw-threaded portion within the casing, a framework within the casing, surrounding the valve and valve-seat and having screw-threaded means for engaging the screw-threaded portion of the said stem, and a removable screen supported by said framework.

7. A sea-cock embodying a valve-seat, a casing surrounding the same and embodying a removable cover, a valve seating on said seat and having an actuating-stem projecting through said cover and having a screw-threaded portion within said casing, screw-threaded means within the casing for receiving said screw-threaded portion of said stem, and a removable screen within said casing surrounding said valve and seat and removable from said casing after the removal of the said cover whereby the valve may be inspected without moving said stem.

8. In a sea-cock, a casing having a portion adapted to pass through the hull of a boat and having a flange 28 by which it is secured thereto, said casing having an enlargement at its upper part, a cover removably attached upon said enlargement, a valve-stem passing through said cover, and additional means for holding the valve-stem in place, whereby the cover may be removed without disturbing the valve-stem, and a valve.

9. In a sea-cock, a casing having means whereby it is attached to the hull of a boat, said casing having an enlargement at its upper part, a cover removably attached upon said enlargement, a valve-stem passing through said cover, said valve-stem having a threaded portion, means engaging said threaded portion for permanently holding the valve-stem in place, whereby the cover may be removed, and a valve.

10. In a sea-cock, a casing having an upper enlarged portion, with a removable cover, a valve-stem passing through said cover, said valve-stem being threaded, means for engaging said threaded portion, whereby the valve-stem is permanently held in position while the cover may be removed, a valve, and a strainer surrounding said valve.

11. In a sea-cock, a casing having an upper enlarged portion, with a removable cover, a valve-stem passing through said cover, said valve-stem being threaded, means for engaging said threaded portion, whereby the valve-stem is permanently held in position while the cover may be removed, a valve, and a removable strainer surrounding said valve.

12. In a sea-cock, the combination of a casing, inlet and outlet pipes connected thereto, a foot or check valve in said casing controlling the flow of liquid form one passage to the other, a screen or perforated diaphragm interposed between the two passages and located in the casing and through which the liquid must flow, means for positively holding said valve closed and means whereby said diaphragm may be removed and replaced while the valve is in its closed condition.

In witness whereof I subscribe my signature in the presence of two witnesses.

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