May 1, 1951 W. A. LEE 2,551,497

INJECTING-EJECTING PUMP-SIPHON

Filed March 9, 1945

Fig. 1.

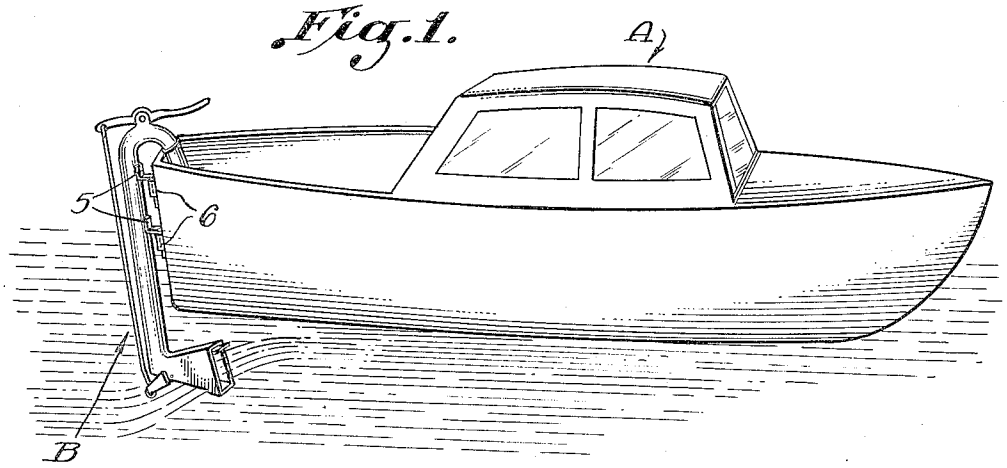


Fig. 2.

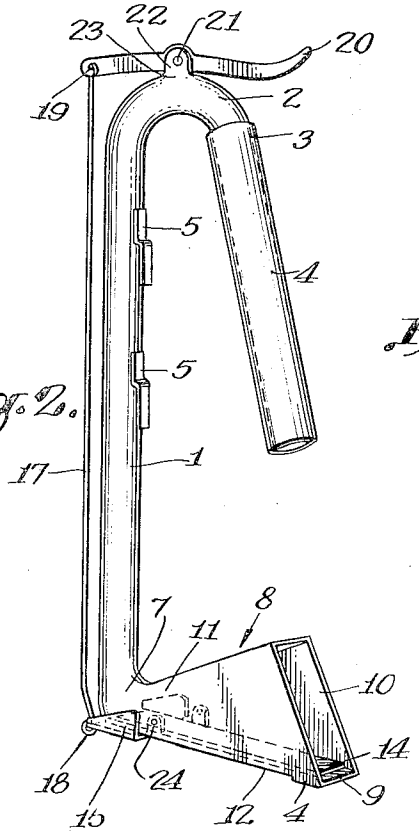
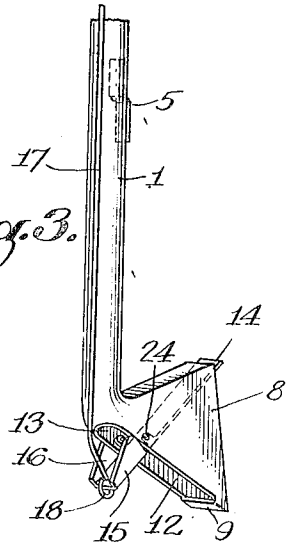


Fig. 3.



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INJECTING-EJECTING PUMP SIPHON

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5 Claims. (Cl. 114—185)

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Generically this invention relates to boat bailers but more especially it is directed to such a means for selectively ejecting water from and injecting water into a boat while the boat is in motion.

A primary object of this invention is the provision of a portable device of this character readily attachable to and removable from, in the present instance, a small boat and readily operable during the movement of the boat to withdraw bilge water or the like therefrom and/or inject water therein as desired.

Another object of this invention is the provision of a bailer of this character more especially adapted for mounting on the stern of a small boat without interference with an out-board motor or other type of propeller means and readily operable by the operator in the boat, during movement of the boat, to remove water from the interior thereof, or to inject water therein.

A further object of this invention is the provision of a portable bailer of this character having a conduit section and a flexible hose in connection with its upper end adapted to extend within and to the bottom of the boat, and a scooplike formation at said section's outer and lower submerged end, having valve means operable therein, its construction being such that the operation of said valve to one position directs the water from the scoop upwardly through the conduit and said flexible hose, and operation in the opposite direction cuts off the flow from said scoop formation to said vertical conduit and at the same time projects a baffle element below said conduit, whereby the water passing through the scoop is deflected downwardly forming a pocket and vacuum at the lower or bilge water discharge end which withdraws the water from the boat through the flexible connection and vertical conduit, and the flow of which is controllable by the speed of the boat.

A still further object of this invention is the provision of a bailer of this character having a water receiving element or scoop and valve structure at its submerged end operable to inject water into the boat or eject water from the boat during forward motion of said boat, the formation of which structure and the action of the valve being such as to prevent the gathering or depositing of refuse, sea weed and the like in the area of the device occupied in discharging the bilge water from the boat.

With these and other objects in view, which will become apparent as the description proceeds, the invention resides in the construction, combination and arrangement of parts, hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which like characters of reference indicate like parts throughout the several figures, of which:

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Fig. 1 is a side elevation of a boat with my improved device operatively mounted thereon with parts in ejecting position.

Fig. 2 is a perspective view of the device detached from the boat and with parts in injecting position.

Fig. 3 is a fragmentary perspective view of the device showing the valve in water ejecting position.

The bailers or devices of this character for disposing of bilge water from boats, with which I am familiar, have proven deficient in many respects, especially for use in connection with the smaller type of boat, such as bailer structures of a permanent nature requiring a reservation of a part of the interior area of the boat for installation of its component parts, and the type having long sections of hose trailing in rear of the boat free at its extremity and being flexible, following an irregular forward course beyond control of the operator, with tendency to sway from side to side and lift out of the water if the speed of the boat is substantial, and designed at or near the point of discharge with a constricted member or members causing by such design an accumulation of seaweed or other refuse, thereby rendering the device inoperative. Therefore, it was to overcome such disadvantages that I designed the device forming the subject matter of this invention, comprising a substantially L-shaped conduit body portion, having means for attaching said portion exteriorly of a boat, preferably the stern. Said L-portion at the lower normally submerged end of said conduit being substantially in the form of a hollow open mouth scoop element tapering rearwardly and forming a restricted throat portion in communication with the vertical body portion, the bottom of said element being formed with an elongated opening extending to and including the lower end of said vertical portion, an elongated valve member of a length substantially corresponding to that of said bottom is connected to an operating handle means mounted on the upper curved end of said conduit member and to the free end of the conduit member is attached a flexible hose portion extending to the bottom of said boat. Said valve is hingedly mounted in said scoop in a manner such that the operation of said handle in one direction elevates the rear

end of the valve and lowers the front portion into seating engagement with said bottom, closing the opening in the latter and positioning said valve in water injecting position (Fig. 2). Operation of said handle in the opposite direction raises the forward end of the valve into engagement with the upper edge of said mouth, as shown in Fig. 3, closing the throat of said scoop and directing the water through said bottom opening during the movement of said boat, as shown in Fig. 1, and effecting withdrawal of the bilge water and its discharge from the lower end of said conduit body portion, as will be well understood.

In the illustrated embodiment characterizing this invention there is shown a boat A and a portable bailer device B adapted to be detachably mounted thereon operable, when the boat is in forward motion, to eject bilge water or the like from the interior of the boat or inject water therein, as desired.

The bailer device B comprises a tubular normally vertical conduit section 1 curved inwardly at its upper end as at 2 and to which is suitably connected as at 3 a flexible hose section 4 of a suitable length to extend downwardly to the bottom of the boat. Said device B is removably attachable, in the present instance, to the stern of the boat by the finger clips 5 welded or otherwise secured to the surface of conduit section 1 and insertible in anchor members suitably secured to the stern of the boat as at 6.

The lower normally submerged end 7 of conduit 1 is integrally formed with a forwardly extending hollow right-angle triangular scoop element 8 with its longer side constituting the bottom 9 and open at its front side to form a rectangular mouth opening 10 and its throat or restricted portion 11 extending rearwardly and converging with lower end 7 of conduit section 1. Said bottom 9 extends upwardly and rearwardly and is formed with an opening 12 extending to and forming the open end of the conduit 1 as at 13.

The elongated rectangular valve member 14 is formed at its rear end on opposite sides with upstanding ears 15 providing on the upper side a trough-like space 16 for a purpose directly more fully appearing. An operating rod 17 is connected to the rear end of said valve intermediate said ears 15 as at 18 and the upper end of said rod is connected as at 19 to one end of a manually operable handle 20 mounted on a cotter-pin 21 or the like, extending through the fork or yoke-shaped member 22 integrally formed on or otherwise suitably attached to the curved portion 2 as at 23.

Said valve 14 is pivotly mounted in said scoop 8 on cotter-pin 24 or the like at a point approximately one-third of the length of the valve 14 from its rear end in a manner such that the downward movement of the handle 20 raises the rear end of the valve, closing the bottom opening 13 and simultaneously lowering the front end to seat on bottom 9, closing the opening 12 and placing said valve in water injecting position. The upward movement of handle 20 causes the forward portion of valve 14 to move upward and seat against the upper edge of the mouth opening 10 and at the same time closing the throat 11 and lowering the rear trough portion 16 to open the lower end 13 of conduit 1 and positioning the valve in bilge water ejecting position. The water entering mouth 10 and passing through bottom opening 12 is deflected downwardly by the undersurface of the trough portion 16 which acts as a baffle, thereby increasing the pocket and vacuum formation at the rear of discharge opening 13 and which accelerates the withdrawal of the bilge water from the boat. The force of the water passing through openings 10 and 12 maintains the valve 14 in water ejecting position until the manual movement of operating handle 20 moves said valve to water injecting position, as in the first instance.

It will be noted that the particular construction and operative arrangement of the scoop 8 and valve 14 is such, that when valve is in water injecting position the entire opening 12 is closed and operation of the valve to water ejecting position divides said opening 12 into two separate openings for the independent passage therethrough of water from two distinct sources.

From the above it will be apparent that I have provided a portable bailer of the character removably attachable exteriorly of a boat, having a valve controlled scoop-like means at its lower end, and a flexible hose means connected to its upper end, means operable by the operator of the boat from his seat therein for controlling said valve during the movement of the boat to initially prime the device by directing sufficient water therethrough to fill the device, and then said valve may be instantly operated to cut off the flow of water through said scoop to said device and direct it through the bottom of said scoop to remove the bilge or other water from the boat. Also, if desired, the device may be operated as previously described to direct water through said hose in a manner to flush out the boat to effect cleaning thereof, said device being likewise adaptable to act as a fire hose in case of fire, the force of the stream of water for such purpose, or any purpose, being controlled by the speed of the boat. The body of the device adapted to be constructed of copper, galvanized iron pipe, aluminum, plastic or other suitable material, and the device being of a size and weight rendering it easily attached to and removed from the boat, yet adapted to occupy a small space, comprising few parts, simple in construction, manufacturable at a minimum cost, and efficient for the purposes intended.

Although in practice I have found that the form of my invention illustrated in the accompanying drawings and referred to in the above description as the preferred embodiment, is most efficient and practical, yet realizing that conditions concurrent with the adoption of my invention will necessarily vary, I desire to emphasize that various changes in details of construction, proportion and arrangement of parts, may be resorted to within the scope of the appended claims without departing from or sacrificing any of the principles of this invention.

Having thus described my invention, what I desire protected by Letters Patent is as set forth in the following claims:

1. A combined water injector and ejector apparatus adapted to be removably attached exteriorly to a boat and comprising a conduit section with openings at its upper and lower extremities, means in connection with the upper extremity of said conduit section for establishing communication therebetween and the bottom of said boat, and valve controlled means at the lower end of said conduit for causing a flow of water into and out of said conduit, said means including a water scoop means offset with respect to said conduit and valve means operable therein for controlling the direction of flow of water

through said conduit, said valve means including a simultaneously operable valve member and water baffle.

2. A combined water injector and ejector apparatus adapted to be removably attached exteriorly to a boat and comprising a conduit section with openings at its upper and lower extremities, means in connection with the upper extremity for establishing communication therebetween and the bottom of the boat, and means at the lower end of said conduit for causing a flow of water into and out of said conduit, said means including a water receiving means at its lower end extending at an angle with respect to said conduit, valve means in connection with said receiving means operable to one position to direct the injecting flow from said receiving means into said conduit and operable to another position to cut off the flow from said water receiving means to said conduit and cause the ejecting flow from said conduit to discharge exterior of said receiving means, said valve means including a combined simultaneously operable valve member and water baffle, said baffle, when said valve member is in water ejecting position, accelerating the flow of water from the boat.

3. A portable combined water injector and ejector apparatus adapted to be removably attached exteriorly to a boat and comprising a conduit section with openings at its upper and lower extremities, said lower extremity adapted to be submerged, a flexible means in connection with the upper extremity for establishing communication therebetween and the bottom of said boat, and valve controlled means at the lower end of said conduit for causing a flow of water into and out of said conduit, said means including a scoop means extending at an angle with respect to said conduit, and valve means in connection with said scoop operable to one position to cause flow of water from said scoop into said conduit in injecting direction and operable to another position to cut off the flow from said scoop to said conduit and at the same time cause the flow of water in ejecting direction from said conduit to discharge exterior of the scoop, said valve means including a combined simultaneously operable valve member and water baffle, said baffle accelerating the flow of water in ejecting direction, the formation of the scoop being such that when said valve is in water ejecting position the water entering the scoop will be directed therethrough and against said baffle, and means for operating said valve from the boat.

4. A water injecting and ejecting apparatus adapted for removable attachment exterior of a boat and operable by the motion of the boat, comprising a conduit section adapted to have its lower end submerged, means in connection with the upper end of said conduit having communication with the bottom of the boat, and valve controlled means in connection with the submerged end of said conduit for causing a flow of water into and out of said conduit in injecting and ejecting directions, said means including a scoop member, a valve mounted therein, and means in connection with said valve operable from said boat to operate said valve to injecting and ejecting positions, said valve additionally comprising a water baffle, said baffle accelerating the flow of water in ejecting direction.

5. A portable water injecting and ejecting apparatus adapted for removable attachment exterior of a boat and operable by the motion of the boat, comprising a conduit section adapted to have its lower end submerged, means in connection with the upper end of said conduit section having communication with the bottom of said boat, and valve controlled means at the submerged end of said conduit for causing a flow of water into and out of said conduit in injecting and ejecting directions, said means including a scoop element having an enlarged open mouth and angularly positioned with respect to said submerged end, a valve member mounted in said scoop element, said valve member including a water baffle simultaneously operable therewith, and manually operable means carried by said conduit section and in connection with said valve for operating the valve to one position to direct the flow in injecting direction from said scoop into said conduit, and operable in another direction to cut off the flow to said conduit from said scoop and direct said flow in a manner such as to cause a flow of water through said conduit in ejecting direction and to discharge exterior of said scoop.

WILLIAM A. LEE.

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