Aug. 23, 1949. M. W. SAWYER ET AL 2,479,783

BAILING DEVICE

Filed Oct. 6, 1947

Fig. 1

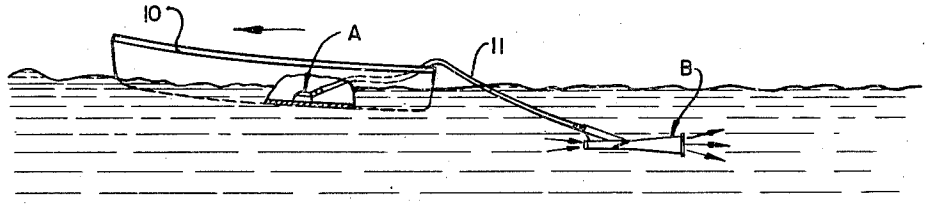


Fig. 2

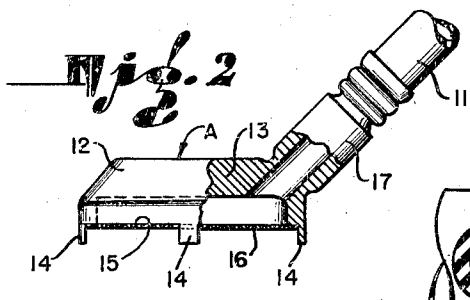
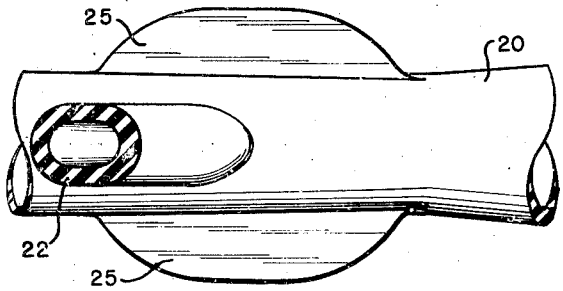


Fig. 4



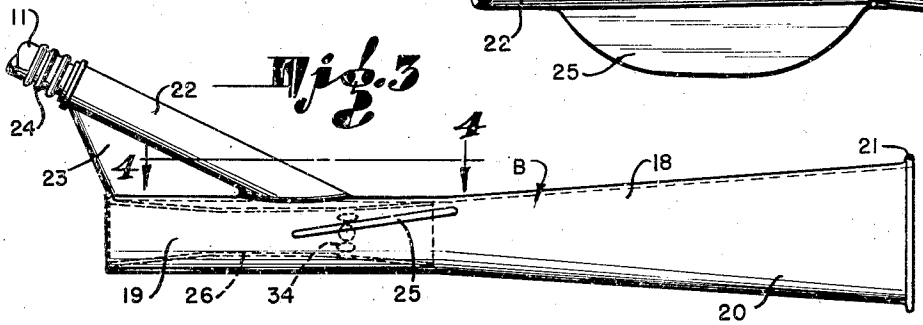


Fig. 3

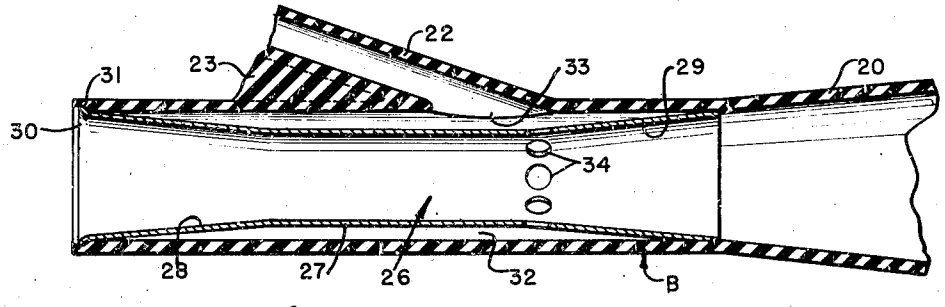


Fig. 5

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BAILING DEVICE

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5 Claims. (Cl. 114—185)

1

The present invention relates generally to a bailing device and is more particularly concerned with devices for such purpose, which will automatically discharge bilge water from a boat in response to movement of the boat through the water.

It is an object of the invention to provide a bilge bailing mechanism which utilizes a suction device of improved and novel construction which may be trailed behind a moving boat, and which is so constructed that the relative movement through the water will produce a Venturi action, this action being utilized to suck and discharge water from the boat bilge. The suction device is further provided with laterally inclined fins for regulating the distance below the surface of the water to which the trailing device will be maintained for a given speed of the boat.

A further object of the invention is to provide improved means in a device of this character, which will permit independent twisting movement of the suction device with respect to a trailing suction conduit connection. By providing a swivel in the trailing conduit, the trailing device is free to adjust itself under the action of the regulating fins thereon and operate efficiently at all times without causing fouling of the trailing conduit.

Still another object of the invention is to provide a novel body construction in the suction device, which will permit utilizing a moldable material such as rubber and enable the use of a separate rigid insert of metal or other suitable rigid material to attain a Venturi passageway through the body of the device, without having to resort to a complicated mold or other expensive operation to construct the suction device.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing preferred embodiments of the invention without placing limitations on the scope of the invention defined in the appended claims.

Referring to the drawings, which are for illustrative purposes only,

Fig. 1 is a view in elevation of a boat, showing the manner in which a bailing device embodying the features of the present invention may be applied thereto;

Fig. 2 is a view in elevation of a strainer inlet fitting as utilized in the invention; parts being cut away to show details of internal construction;

Fig. 3 is an elevational view of the suction device constructed according to this invention;

2

Fig. 4 is a fragmentary view as seen from section line 4—4 of Fig. 3; and

Fig. 5 is a vertical longitudinal section taken through the forward end of the suction device, and showing details of construction of the tubular insert therein.

In brief, as shown in Fig. 1 of the drawings, a boat 10 is illustrated as having the bailing device of the present invention applied thereto. The device is composed of two main parts, an inlet fitting A adapted to be disposed in the boat bilge and form an inlet for a suction conduit 11 which is utilized as a trailing medium for trailing a suction mechanism. The suction mechanism, as will be hereinafter described in detail, in its broad aspects is provided with a Venturi passageway through which water will flow as the mechanism is trailed behind the boat, the action of the venturi setting up a suction which is transmitted through the conduit 11, whereby water may be drawn through the fitting A and discharged overboard automatically without any work or effort on the part of persons aboard the boat.

More specifically, as shown in Fig. 2, the inlet fitting A comprises an inverted cup-shaped body 12 constructed of suitable material, a metal such as brass being satisfactory, due to its desirable characteristics under moisture conditions and freedom of corrosion. The closed end of the body, as indicated at 13, is preferably of substantial thickness in order to provide sufficient weight for retaining the fitting in operative position. The open end is provided with spaced projections 14 which support the lower edge 15 in raised position so that water may flow into the fitting. Across the open end, the fitting is provided with a screen 16 to prevent the entrance of foreign material which might tend to clog up the suction conduit 11. The body has an angularly projecting connection stem 17 communicating with the interior of the body 12 at one end, the other end of the stem being connectable with the suction conduit.

The suction mechanism B, as clearly shown in Fig. 3, comprises an elongate body 18 which is constructed of a moldable material, in this instance, a rubber composition. The body is formed with a cylindrical forward end section 19 and a rear end section 20 gradually flared and terminating in a reenforcing peripheral bead or flange 21.

On its top side, the cylindrical forward end section is provided with an angular forwardly

extending tubular branch 22 which is formed integral with the body 18 and connects with the interior thereof at a point adjacent the juncture of sections 19 and 20 of the body.

The tubular branch 22 projects past the forward end of the cylindrical section 19 and is connected to the adjacent wall of this section by means of a web 23 in the angle between the tubular branch and the cylindrical end section. This web has a stabilizing effect upon the suction mechanism and guides it in the direction of travel of the boat.

In order to prevent fouling of the suction conduit, by means of which the suction mechanism is trailed behind the boat, a swivel joint 24 is placed in the connection of the conduit at the forward end of the tubular branch 22. This swivel joint enables the suction mechanism to independently twist and adjust its position without kinking or fouling the conduit 11.

The normal tendency of an object trailed in the water to come to the surface is overcome in the suction mechanism by providing integrally formed lateral fins 25—25 which are respectively disposed on opposite sides of the tubular branch 22, and as shown in Fig. 3, are forwardly inclined in a downward direction in relation to the longitudinal axis of the suction mechanism. By trailing the suction mechanism through the water, the action of the fins will keep the device submerged below the surface so that it will function and operate properly at all times.

As shown in Fig. 5, it will be noted that the passage through the cylindrical section 19 is of uniform diameter. This construction permits molding and facilitates removal of the core after the molding operation without damaging the molded body. A tubular insert 26 of rigid material, such as a plastic or suitable metal, such as brass, is removably positioned within the cylindrical end section 19. This insert is contracted to provide a section 27 intermediate its ends and terminates in a forward flared end section 28 and a rear flared end section 29.

The end edge of section 28 is outwardly turned to form a peripheral lip 30 adapted to seat in a receiving end groove 31 formed in the end terminus of the cylindrical section 19. This acts to limit the inward insertion of insert 26 and also eliminates any projecting portions at the forward end of the cylinder which might tend to catch on grass, weeds, or the like, in the water.

The opposite or rear flared end of the insert 26 terminates at the beginning of the flared portion 20 so that the flared portion 20 forms in effect a continuation of the rear flared end 29 of the insert 26.

The contracted section 27 cooperates with the adjacent inner wall of the cylindrical section 19 to form an annular space 32 around the insert, this space having an outer connection with the passage in the tubular branch 22, through an opening 33. The inside of this annular space communicates with the interior of the tubular insert 26 by means of a plurality of circumferentially spaced wall openings 34 substantially at the junction of the section 27 and the rear flared end section 29 of the insert.

The body 18 of the suction mechanism and the insert 26, as described above, cooperate to form a Venturi passageway in the suction mechanism so that when it is trailed behind the boat through

the water, the flow of water through the insert 26 and the flared rear end section 20 will create a suction within the annular space 32 which will act through suction conduit 11 to suck water through the inlet fitting A and pull out any bilge water, thus acting as an automatic bailing device.

We claim as our invention:

1. An automatic bilge bailing device for a boat comprising the combination of: strainer inlet means adapted to be positioned within said bilge; a structure adapted to be trailed from the boat having a Venturi water passage therethrough; fins carried by said structure for determining the amount of submergence of said structure; a tubular trailing connection between said strainer means and the structure communicating with the throat of the venturi; and a swivel joint in said trailing connection permitting independent twisting movement of said structure.

2. An automatic bilge bailing device for a boat comprising the combination of: strainer inlet means adapted to be positioned within said bilge; a structure adapted to be trailed from the boat having a Venturi water passage therethrough; a tubular trailing connection between said strainer means and the structure communicating with the throat of the venturi; and a swivel joint in said trailing connection permitting independent twisting movement of said structure.

3. A suction bailing device comprising: an elongate tubular body having a Venturi fluid flow passage therethrough; a branch tubular connection with the throat of said venturi angularly inclined toward the entrance end of the body flow passage; and a swivel joint in said branch connection adjacent said entrance end.

4. A suction bailing device comprising: an elongate tubular body having a Venturi fluid flow passage therethrough; a branch tubular connection with the throat of said venturi angularly inclined toward the entrance end of the body flow passage; a connecting web in the angle between the branch tubular connection and said body; and external fins respectively disposed on opposite sides of said body in the vicinity of the throat portion thereof.

5. A suction bailing device comprising: an elongate tubular body having a Venturi fluid flow passage therethrough; a branch tubular connection with the throat of said venturi angularly inclined toward the entrance end of the body flow passage; and a connecting web in the angle between the branch tubular connection and said body.

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