Aug. 12, 1969 E. J. CHALMERS 3,460,503

SELF-PRIMING BOAT BAILER

Filed March 14, 1968

Fig. 6.

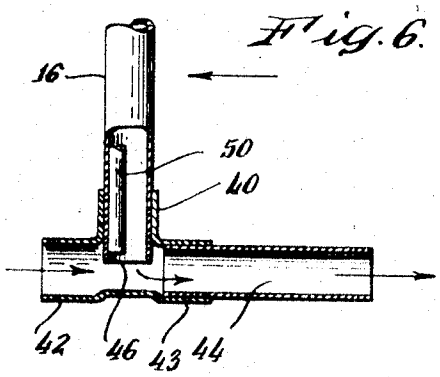


Fig. 1.

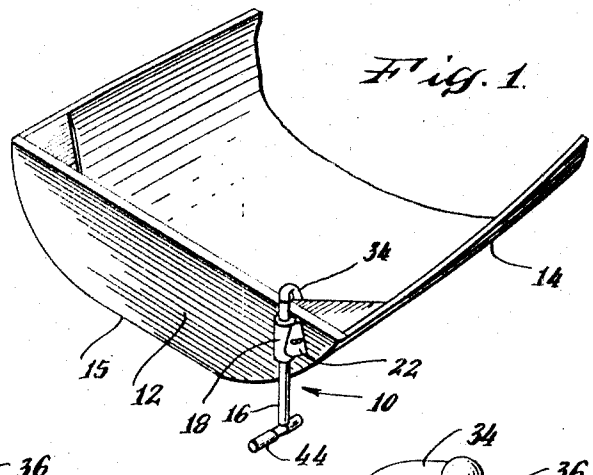


Fig. 2.

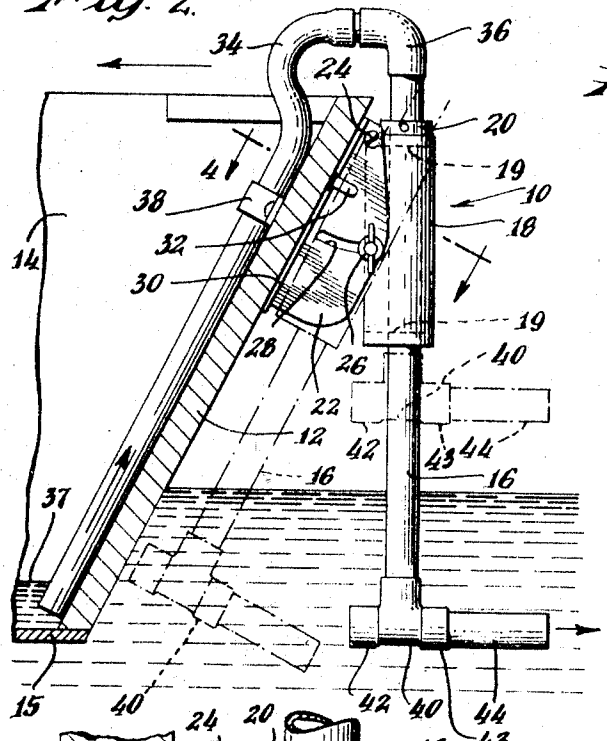


Fig. 3.

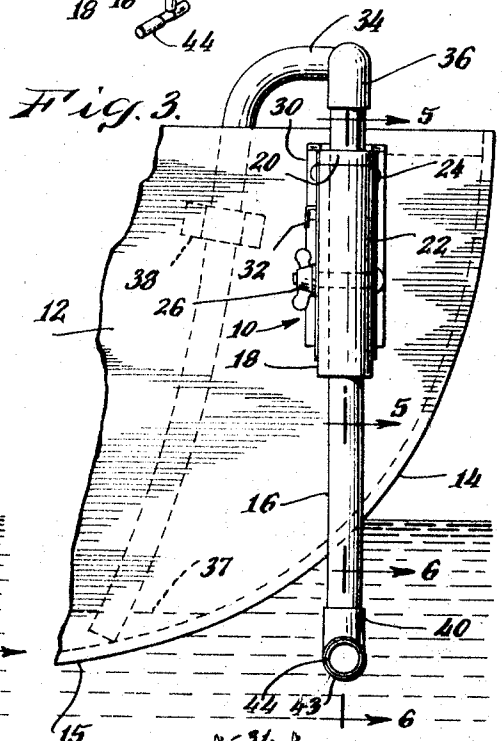


Fig. 5.

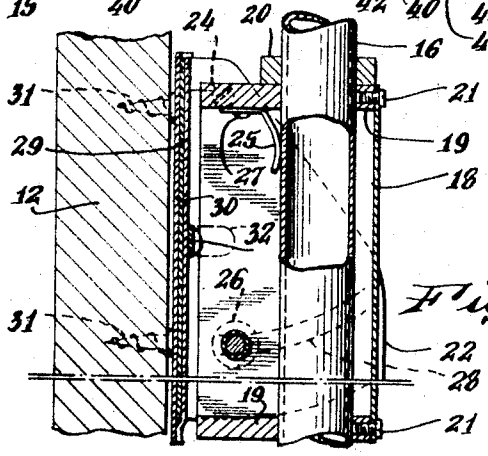
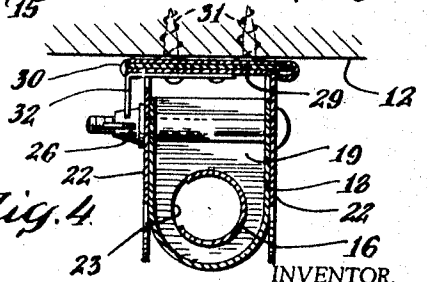


Fig. 4.



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SELF-PRIMING BOAT BAILER

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ABSTRACT OF THE DISCLOSURE

This invention provides a portable, adjustable self-priming boat bailer which is adapted to remove bilge water from a boat in response to movement of the boat through the water. The bailer provided acts by means of a self-priming action to connect and merge the waters together, that is, the water inside the boat is connected and merged to the water flowing outside of the boat. The self-priming action is essentially created by means of a priming tube mounted within a discharge tube of the bailer which is mounted adjustably to the side of a boat. Mounted at one end of the discharge tube is a flexible tubing which is long enough to be extended into the bilge water in the boat. At the opposite end of the discharge tube, a T-tube is mounted with its vertical leg interconnected to the lower end of the discharge tube which is to be submerged into the water. The T-tube is mounted so that the open ends of both the priming and discharge tubes are positioned in the passageway of the horizontal leg of the T-tube. Whereby, during movement of the boat, the water passing through the passageway and past the open ends of the discharge and priming tubes, together with the priming tube creates a suction sufficient in the discharge tube and flexible tubing to remove the bilge water from the boat.

Background of the invention

There have been various types of boat bailers made and used in the past. Some have been made which are dependent upon the motor and propeller of a boat; their operation is dependent on the type and location of the motor for the boat. Others can function only if placed at a certain position on the boat, or placed at a certain angle on or with respect to the angle of the transom of the boat. Obviously, these types of bailers are limited in that they can be used for only a certain type and size of boat and cannot be adjusted to operate on a variety of boats as is necessary for practical use.

Still other boat bailers have been made to be permanently secured to the boat at a position adjacent to the transom. These bailers must be mounted on the transom at essentially two points on the interior and exterior of the boat, in order to remain permanently on the boat. Also, with this type of bailer, it is secured at one position both during use and nonuse. Thus, the bailer is subject to being struck by obstacles in the water, including weeds, rocks and other forms of nature, and also causes water drag, thus reducing speed, as well as the wear and erosion from the weather and water during nonuse. Also, a permanently mounted bailer is subjected to damages by storm while at dock, and also to vandalism or theft. Thus, the life of the bailing unit will be short and will have to be replaced in a short time, or after only one or two seasons.

None of the boat bailing devices heretofore, as the present boat bailer, have been adapted for rapid and efficient snap on-off attachment to, and detachment from a boat, and at the same time to be adapted to be securely mounted when being used, without encountering the aforementioned disadvantages.

Summary of the invention

This invention relates to a portable, adjustable self-primbing boat bailer. More particularly, it relates to a boat bailer which is adapted to remove and discharge bilge water from a boat in response to the movement of a boat at low speeds through the water. The bailer includes a discharge tube with means for adjustably mounting the discharge tube to the side of the boat at a predetermined height and angle relative to the bottom of the boat. At one end of the discharge tube there is mounted a flexible tubing which is long enough to be extended into the bilge water within the boat. At the opposite end within the discharge tube and slightly recessed therefrom is mounted a priming action tube. The axis of the priming tube being parallel to that of the discharge tube. A T-tube is mounted with its vertical leg interconnected to the lower end of the discharge tube. The T-tube is arranged so that the lower ends of both the priming and discharge tubes are positioned in the passageway of the horizontal leg of the T-tube so that during movement of the boat the water passing through the passageway and past the open ends of the discharge and priming tubes together with the priming action tube creates a suction sufficient in the discharge tube and flexible tubing to remove the bilge water from the boat.

Among the many advantages of the present boat bailer is that while attached to the boat the discharge tube may be raised out of the water when not being used for bailing the bilge water from a boat. Thus, obviating destruction from obstacles in the water, eliminating water drag, and providing less wear and erosion on the bailer and maintaining a longer life for the unit.

Another important advantage of the present boat bailer is that it is portable and can be rapidly attached and detached from a boat, making it a portable slide in and snap-on unit, thereby eliminating any damage occurring from docking or leaving the dock in low waters, storm damages, weather and water erosion, vandalism or theft. Also, the present boat bailer can be produced simply, economically, and is highly effective at boat speeds as low as four to five miles per hour.

Brief description of the drawings

With reference to the accompanying drawings, I shall describe the preferred embodiments of my invention. In the drawings:

FIG. 1 is a perspective view of a boat bailer embodying this invention mounted on the transom of a boat;

FIG. 2 is an enlarged detailed side elevational view of the boat bailer shown in FIG. 1;

FIG. 3 is an end elevational view of the boat bailer shown in FIG. 2;

FIG. 4 is a plan view of the boat bailer shown in FIG. 2 taken on line 4—4;

FIG. 5 is a partial sectional view of the boat bailer shown in FIG. 3 taken on line 5—5; and

FIG. 6 is an enlarged partial sectional view of the T-tube mounted at the lower end of the discharge tube of the boat bailer shown in FIG. 3 taken on line 6—6, and the priming tube is shown mounted within the discharge tube.

Detailed description of invention

Referring to FIG. 1, a boat bailer generally indicated by **10**, is mounted on the transom **12** of a boat **14**. As shown in FIG. 2 (dotted lines), the bailer **10** is adjustably mounted and can be positioned at different angles with respect to the transom **12** and at different heights with respect to the bottom **15** of the boat **14**, as well as the water level.

The bailer **10** comprises a discharge tube **16** slidably mounted in a hollow member **18** with an adjustable stop

collar **20** to secure the discharge tube **16** at a desired level (FIG. 2). As shown in FIGS. 2 and 5, the hollow member **18** is pivotally mounted in a bracket **22** by a bolt **24** at the top and is secured at a desired angular position by a wing lock nut arrangement **26** in a slot **28** of the bracket **22**, which has two sides (FIG. 4).

On the bottom of the two-sided bracket **22**, there is provided a mounting flange **29** (FIG. 4) which is of the size and shape to slide into and be mounted in a flat clip **30** (FIG. 3) secured by threaded screws **31** to the transom **12** (FIGS. 4, 5). The bracket **22** together with the discharge tube **16** and the hollow member **18** arranged therein, is securely positioned in the slotted mounting clip **30** by a spring snaplock **32** (FIGS. 2, 5).

As best shown in FIGS. 4 and 5, the hollow member **18**, in which the discharge tube **16** is mounted, has end plates **19** mounted on each end by screws **21** (FIG. 5). The end plates **19** have openings **23** (FIG. 4) through which the discharge tube **16** is slid when mounted in member **18** (FIG. 4). The tube **16** is secured in position at a certain level by the adjustment of the stop collar **20** (FIG. 2). Also, in the preferred construction, the discharge tube **16** is pressed and further secured when raised up in position in member **18** by a spring **25** mounted on plate **19** by a pin **27** (FIG. 5).

Referring to FIGS. 2 and 3, there is shown a flexible intake tubing **34**, which is extended from the top of the discharge tube **16** by means of an elbow **36** into the bilge water **37** in the boat **14**. The flexible tubing **34** serves as the intake for the bailer **10**. The flexible tubing **34** is preferably made of clear plastic for visibility to easily determine when the bilge water is being removed from the boat. The intake tubing **34** is secured in position along the inside of the boat **14** by a loose clamp **38**. The level of position may be adjusted as needed.

Mounted on the opposite end of the discharge tube **16** is a T-tube **40** (FIGS. 2 and 6) which is to be placed in the water during movement of the boat **14**. The T-tube with its vertical leg is interconnected to the lower end **46** of the discharge tube **16**. As best shown in FIG. 6, the T-tube **40** has an intake end **42** and a discharge end **43** having a tube **44** extended therefrom. The discharge end **43** with the tube **44**, is positioned in the water in a direction opposite to that of the movement of the boat. With the diameters of both ends **42**, **43** being the same, the passageway through the horizontal leg of the T-tube **40** and the extended tube **44** has essentially one continuous diameter.

As shown in FIG. 6, a priming action tube **50** is mounted within the discharge tube **16**. The priming tube **50** is mounted so that its axis is parallel to that of the discharge tube **16**. The T-tube **40** is mounted on the discharge tube **16** so that its lower end **46** and the lower end of the priming tube **50** are positioned in the passageway of the horizontal leg of the T-tube **40**. That is, in the passageway through which water will pass during movement of the boat. Preferably, the lower end **46** of tube **16** is positioned down in the passageway a distance within the range of one-third to one-half the diameter of the horizontal leg of the T-tube **40**.

As can be seen the priming action tube **50** is mounted on one side of the discharge tube **16** and is slightly recessed from the lower end **46**. The priming tube **50** may be recessed between about 0.075 to 0.125 inch from the lower end **46** of the discharge tube **16**. In mounting the priming tube **50**, it is advantageous to mount it on the side of the discharge tube **16** toward the direction of the movement of the boat. Also, it is preferred that the priming tube **50** have a diameter of at least about two-thirds that of the discharge tube **16**. For example, with the diameter of the discharge tube being ¾ of an inch, the priming tube should have a diameter of ½ inch. The length of the priming tube **50** should be approximately from 8 to 12 inches long.

The function of the priming tube **50** mounted in the discharge tube **16** (FIG. 6) is to create a self-priming action in the bailer in response to the water flowing through the horizontal leg of the T-tube **40** during movement of the boat through the water. The priming tube mounted in its recessed position in the discharge tube **16** together with the water flowing past the lower open ends of the discharge and priming tubes causes a circulating turbulence inside of the discharge tube which causes a mixture of both air and water to rise up the discharge tube and down the priming tube. The circulating air and water mixture exits through the priming tube and is removing by the water flowing past the lower end **46** of the discharge tube **16** out the extended tube **44** and into the water outside the boat. When the air is completely evacuated from the discharge tube and bailer, the circulating action and turbulence cease. During this turbulence, the combination of the circulating action induced by the priming tube, and the water continuously flowing past the lower open ends of the discharge and priming tubes, creates a suction sufficient in the discharge tubing **16** and flexible intake tubing **34** to remove the bilge water from the boat. Once the air is completely removed, the bilge water is discharged from the boat up the flexible tubing **34** and down through the discharge and priming tubes simultaneously and out the discharge end **43** of the T-tube **40** and the exhaust tube **44** into the surrounding water. Thus, the priming action created by the priming tube **50** and the water flowing past the lower end **46** of the discharge tube causes the waters to connect and merge together. That is, the bilge water in the boat is connected and merged with the water flowing outside of the boat.

In a modification of my boat bailer, instead of a T-tube being mounted on the lower end **46** of the discharge tube **16**, a long tube of one continuous diameter, having an opening on one side thereof is horizontally mounted at the lower end **46** of the discharge tube **16**. The opening in the tube is positioned closer to one end and thereby it is similar to the T-tube arrangement (FIG. 6). That is, the discharge tube **16** is positioned closer to the intake end with the exhaust end extended outward. Also, the arrangement of the lower ends of the priming tube **50** and the discharge tube **16** is similar in that the lower ends are positioned in the passageway of the water, which is the horizontally mounted tube. Thus, the function performed can be performed by a tube transversely mounted at the lower end **46** of the discharge tube **16**.

Operation of boat bailer

The boat bailer **10** is mounted on the transom **12** of the boat **14** and the discharge tube **16** is adjusted at the proper level with respect to the bottom **15** of the boat **14** and the water level by the stop collar **20** and at the desired angle in bracket **22** by the wing lock nut arrangement **26**. The T-tube **40** of the bailer **10** is preferably submerged in the water with its horizontal leg at a depth of at least about six inches below the surface, as shown in FIGS. 2 and 3. The flexible intake tubing **34** is submerged in the bilge water **37** within the bottom of the boat **14**. The end of the tubing **34** is at a level above that at which the horizontal leg of the T-tube **40** is submerged in the water outside the boat. The flexible tubing **34** is secured to the interior of the boat at the desired level by clamping **38**.

As the boat moves through the water, the water flows through the horizontal leg of the T-tube **40**. More specifically, the water flows in through the input end **42**, past the lower open ends of both the priming **50** and discharge tubes **16** positioned in the passageway of the horizontal leg, and passes out the end of tube **44** extended from the discharge end **43** of the T-tube **40**. The water flowing past the open ends of the priming and discharge tubes, together with the priming tube creates a circulating turbulance within the discharge tube which

causes a mixture of air and water to rise up the discharge tube and down the priming tube and out the end of tube **44**. During this turbulence, the combination of the circulating air and water, together with the water constantly flowing past the lower open ends of the priming and discharge tubes creates a suction sufficient in the discharge tube and flexible tubing to remove the bilge water from the boat.

With the present boat bailer, the bilge water can be removed from the boat at a rate of at least four gallons per minute at a boat speed as low as four to five miles per hour. After the bilge water has been removed from the boat, the bailer **10** can be easily and quickly removed from the boat by removing the bracket **22** from the mounting clip **30** secured to the boat, and by sliding the tubing **34** from clamp **38** after it has been loosened. Also, if desired, the T-tube **40** and discharge tube **16** can be raised out of the water by simply lifting and sliding the discharge tube **16** upward through the hollow member **18**, and maintained there by the tension spring **25**. Thereby, remaining out of the water until there is a need for reuse and removal of the bilge water from the boat. This feature of the bailer removes it from the hazard of striking foreign objects in the water such as weeds, pieces of wood, other debris and rocks, as well as eliminating the water drag on the boat and bailer. Thus, there is less wear on the device and a longer life provided for the unit.

From the foregoing, it can be understood that the boat bailer, as described above and illustrated in the drawings is sufficient to carry out the invention as set forth. However, it is to be noted that the various elements and features may be varied or may be used separately in any other device or apparatus without departing from the scope or spirit of the invention described hereinabove and defined in the following claims.

What is claimed is:

1. A portable self-priming boat bailer adapted to discharge bilge water from a boat in response to movement of the boat through the water, said boat bailer comprising:

(a) a discharge tube, means for adjustably mounting said tube to the side of said boat at a predetermined height and angle relative to the bottom and side of said boat;

(b) a priming action tube mounted within said discharge tube and slightly recessed from the lower end thereof, the axis of said priming tube being parallel to that of said discharge tube;

(c) a flexible intake tubing mounted at the opposite end of said discharge tube and long enough to be extended into the bilge water within said boat; and

(d) a T-tube mounted with its vertical leg interconnected to the lower end of said discharge tube to have the lower open ends of said priming and discharge tubes positioned in the passageway of the horizontal leg of said T-tube so that during movement of the boat the water passing through said passageway and past the open ends of said discharge and priming tubes, together with the priming action tube creates a suction sufficient in said discharge tube and said flexible tubing to remove the bilge water from said boat.

2. A self-priming boat bailer as set forth in claim **1**, wherein said priming tube has a diameter of at least two-thirds that of said discharge tube and a length of about 8 to 12 inches.

3. A self-priming boat bailer as set forth in claim **1**. wherein said priming tube is recessed between about 0.075 to 0.125 inch from the lower end of said discharge tube.

4. A self-priming boat bailer as set forth in claim **1**, wherein said priming tube is mounted on the side of said discharge tube toward the direction of the movement of said boat.

5. A self-priming boat bailer as set forth in claim **1**, wherein said lower end of said discharge tube is positioned down in the passageway a distance within the range of one-third to one-half the diameter of the horizontal leg of said T-tube.

6. A portable self-priming boat bailer adapted to discharge bilge water from a boat in response to movement of the boat through the water, said boat bailer comprising:

(a) a discharge tube, means for adjustably mounting said tube to the side of said boat at a predetermined height and angle relative to the bottom and side of said boat;

(b) a priming action tube mounted within said discharge tube and slightly recessed from the lower end thereof, the axis of said priming tube being parallel to that of said discharge tube;

(c) a flexible intake tubing mounted at the opposite end of said discharge tube and long enough to be extended into the bilge water within said boat; and

(d) a tube horizontally mounted at the lower end of said discharge tube, the axis of said tube being transverse to that of said discharge tube, the tube is mounted to have the lower open ends of said priming and discharge tubes positioned in the passageway of said tube so that during movement of the boat, the water passing through said passageway and past the open ends of said discharge and priming tubes, together with the priming action tube creates a suction sufficient in said discharge tube and said flexible tubing to remove the bilge water from said boat.

7. A self-priming boat bailer as set forth in claim **6**, wherein said lower end of said discharge tube is positioned down in the passageway of said horizontal tube a distance within the range of one-third to one-half the diameter of said horizontal tube.

8. A self-priming boat bailer as set forth in claim **6**, wherein said priming tube is mounted on the side of said discharge tube toward the direction of the movement of said boat.

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ANDREW H. FARRELL, Primary Examiner