Dec. 30, 1958 L. CONOVER 2,866,431

AUTOMATIC BAILERS

Filed April 22, 1957

FIG. 1.

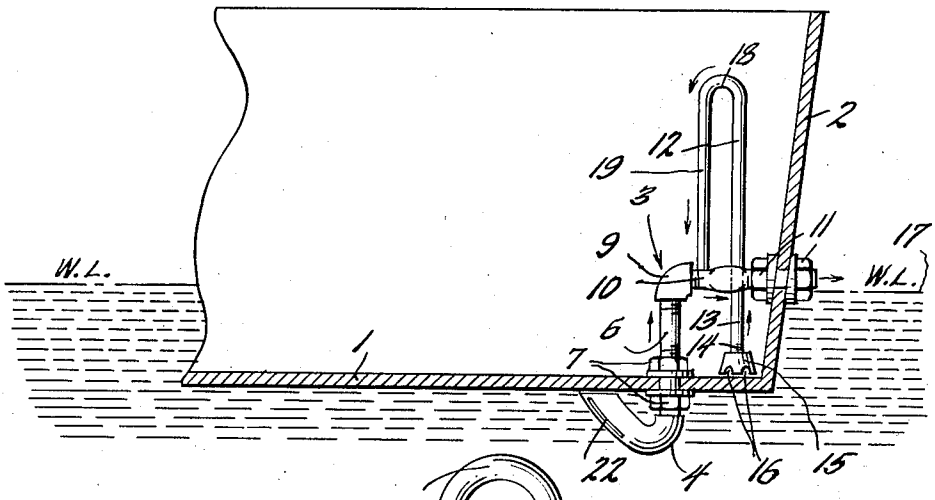


FIG. 2.

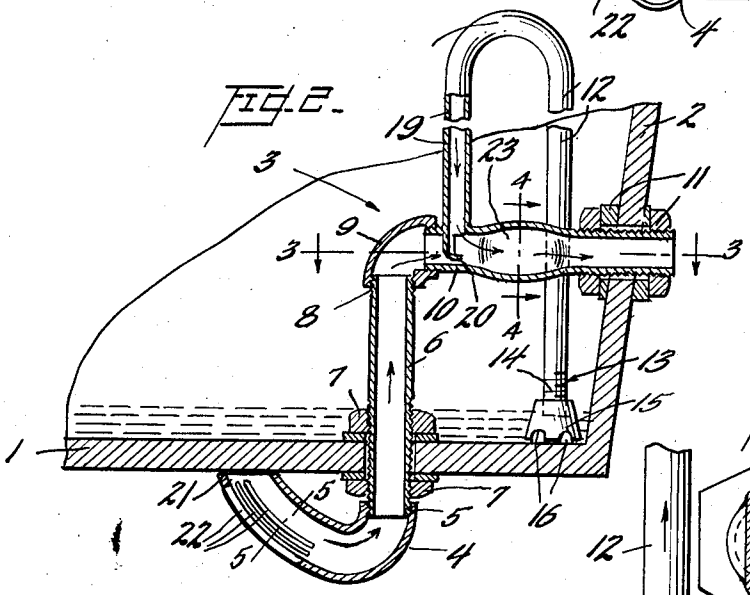


FIG. 4.

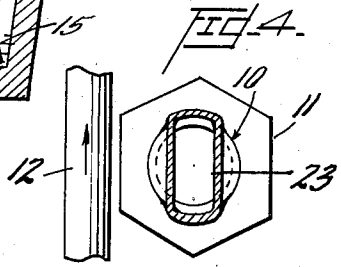


FIG. 3.

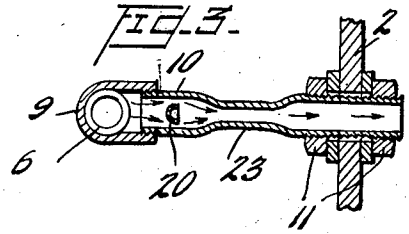
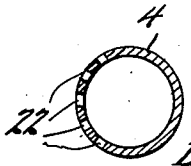


FIG. 5.



INVENTOR

Leslie Conover

BY Parker & Cook

ATTORNEY

United States Patent Office 2,866,431
Patented Dec. 30, 1958

2,866,431

AUTOMATIC BAILERS

Leslie Conover, Somers Point, N. J.

Application April 22, 1957, Serial No. 654,369

2 Claims. (Cl. 114—185)

My invention relates to a new and useful improvement in automatic bailers, especially for small boats, but I believe that with the principle involved the bailer would also function on boats of larger size.

The bailer employs the old well-known principle of "entraining," but I have found after a number of experiments that I can increase the rate of bailing by forming the bailer as about to be described.

I have perfected a bailer where the same will start bailing when the boat is travelling at about six miles an hour and will bail two gallons per minute after the boat reaches a speed of from six to fifteen miles an hour. After the boat reaches a speed of fifteen to twenty miles per hour, it is possible to bail four gallons a minute; and if the boat is capable of running between twenty and thirty miles per hour, it is possible to bail seven gallons per minute, thus saving the hard work of pumping out the boat with a pump, by hand.

An object of the invention is to provide an automatic bailer that consists primarily of just five parts: an elbow, an inlet tube, a second elbow, an outlet tube, and an entraining tube.

Another object of the invention is to provide an automatic bailer that may be quickly installed in the stern of a boat, wherein the outlet tube passes through the transom above the water line and the inlet elbow will extend beneath the bottom of the boat, so that as the water rushes through the bailer it will cause a vacuum in the entraining tube, which in turn extends down into the bilge to quickly bail out the water that may be in the bilge.

With these and other objects in view, the invention consists in certain new and novel features and combinations of parts, as will be hereinafter more fully described and pointed out in the claims.

Referring now to the drawings, showing a preferred embodiment,

Fig. 1 is a vertical, sectional view of the stern portion of a boat, showing my improved bailer applied thereto,

Fig. 2 is a somewhat similar view on a larger scale and showing the bailer in section,

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2,

Fig. 4 is a vertical section on a further enlarged scale on the line 4—4 of Fig. 3, and

Fig. 5 is a section through the water intake on the line 5—5 of Fig. 3.

Referring now specifically to Fig. 1, there is shown a fragmentary section of a boat with the bottom **1** and the transom **2**. Located in close proximity to the transom **2** is my automatic bailer **3**. Secured in the bottom **1** of the boat is the elbow **4** which is internally threaded as at **5** and in which is threaded what I term the vertically extending inlet pipe **6** which is locked in position with the nuts **7**. The upper end of the inlet tube **6** is externally threaded as at **8** and is internally threaded within a second elbow **9**. Fitted within this elbow **9** is what I

term the outlet tube **10**, which is in turn securely locked as at **11** through the transom **2**.

As also may be seen in Figs. 1 and 2 there is what I term the entraining tube **12**, which has its lower end **13** externally threaded as at **14** and a screw cap **15** on the bottom thereof, which has the openings **16** in its side, as may also be seen in Fig. 2.

The entraining tube **12** must extend vertically above the water line **17** (see Fig. 1) so that if it rains and the boat partly fills with water, the water cannot run into the said outlet tube and up through the entraining tube and back into the bilge.

The entraining tube **12** is bent back on itself as at **18** and extends downwardly as at **19** and is soldered or otherwise fastened within the outlet tube **10**.

As may be seen in Figs. 2 and 3 the end **20** of the entraining tube **12** has its forward portion cut away so that a part of the end **20** of the entraining tube **12** projects well within the outlet tube **10** to cause the water that comes in through the elbow **4** to be forced around this forward portion of the entraining tube **12** and presumably creates a further vacuum in the entraining tube **12**.

Referring again for the moment to the elbow **4** it will be seen that its end **21** is approximately flush with the under-surface of the bottom **1** of the boat, but the elbow **4** is provided with slots **22** through which the water may pass, but will prevent foreign substances, such as "sea lettuce" (or, as it is technically known *"Ulva latissima"*) from passing into the elbow **4** and up through the inlet tube **6** and outlet tube **10**.

Referring now for the moment to Figs. 3 and 4, and especially to Fig. 3, it will be seen that the outlet tube **10** is restricted as at **23** for the reason that it is thought that by having this restricted portion adjacent the inner end of the entraining tube it may tend to increase the velocity of the water through the outlet tube **10**, although this thought is not in agreement with the basic principles of the Venturi tube.

As may be seen in Fig. 3, the water coming in through the elbow **4** has to pass around the one end of the entraining tube **12** and then has to be forced throught the restricted portion **23** of the outlet pipe **10**, which restriction may cause the bailer to be more efficient than if the restriction were not present.

In the drawing I have shown the self-bailer or automatic bailer as applied to a small boat, but I believe it could be used with much larger boats, the bailer being made in proportion to the size of the boat.

To instal the bailer it is only necessary to drill a hole in the bottom **1** of the boat and the transom **2**, making sure that the cap **15** is in place, then locking the bailer in place with the several nuts and washers and adjusting the cap **15** so that it contacts with the bottom **1** of the boat to here again prevent any "sea lettuce" or foreign matter from stopping up the entraining tube **12**.

The cap **15** may easily be adjusted so that it can contact with the bottom **1** of the boat, and the various parts being externally threaded can easily be fitted to a small boat.

I am aware that the principle of entraining is an old one, but I believe that by placing the entraining tube well within the outlet tube and having the outlet tube above the water line of the boat in which it is situated, there will be no possibility of water entering in through the end of the outlet tube and being entrained or syphoned back into the boat.

Finally, it is to be remembered that the entraining tube must extend at quite a height from the bottom of the boat, so that there is no possiblity of water filling the entraining tube and flowing into the bottom of the boat.

The self-bailer needs no attention, is entirely automatic, and will save pumping out water from the bilge, especially

if there has been a hard rain and the boat has been out in the open.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent is:

1. In combination with a boat having a transom together with a self-bailing means, said self-bailing means comprising an elbow having slots in its forward face and adapted to extend beneath the bottom of the boat; an inlet tube registering with the elbow; a second elbow at the top of the inlet tube and a Venturi outlet tube registering therewith and adapted to pass through the transom of the boat and above the water line; an entraining tube extending in a higher plane than that of the outlet tube, its forward end extending within the outlet tube, and the lower end of the entraining tube extending to the bottom of the boat to thereby entrain any water from the bilge when the boat is in motion.

2. In combination with a boat having a transom together with a self-bailing means, said self-bailing means comprising an elbow having slots in its forward face and adapted to extend beneath the bottom of the boat; an inlet tube registering with the elbow; a second elbow at the top of the inlet tube and a Venturi outlet tube registering therewith and adapted to pass through the transom of the boat and above the water line; an entraining tube extending in a higher plane than that of the outlet tube, the forward end of the entraining tube having its rear face cut away and extending well down within the outlet tube, and the lower end of the entraining tube extending to the bottom of the boat to thereby entrain any water from the bilge when the boat is in motion.

References Cited in the file of this patent

UNITED STATES PATENTS

2,138,368	Briant	Nov. 29, 1938
2,281,459	Scott-Paine	Apr. 28, 1942
2,565,885	Reitz	Aug. 28, 1951
2,608,160	Moody	Aug. 26, 1952

FOREIGN PATENTS

87,318	Sweden	Sept. 8, 1936

OTHER REFERENCES

Fluid Meters, Their Theory and Application, part I, Report of A. S. M. E. Special Research Committee on Fuid Meters, page 21.