

Nov. 29, 1938.

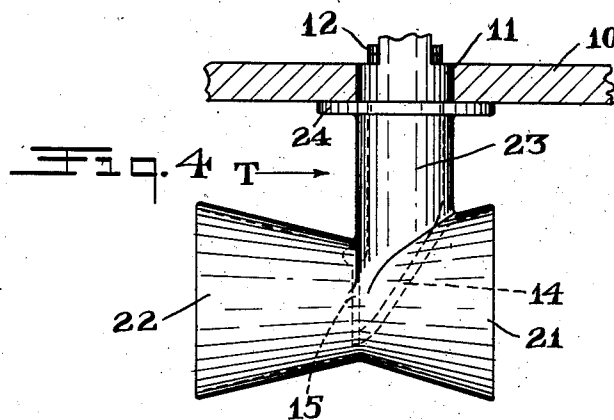
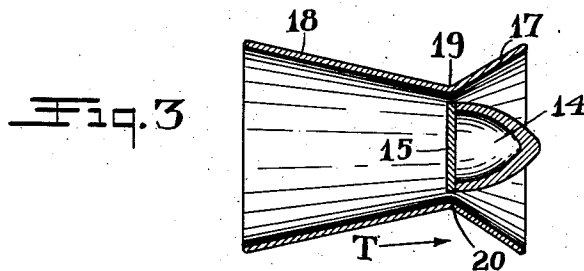
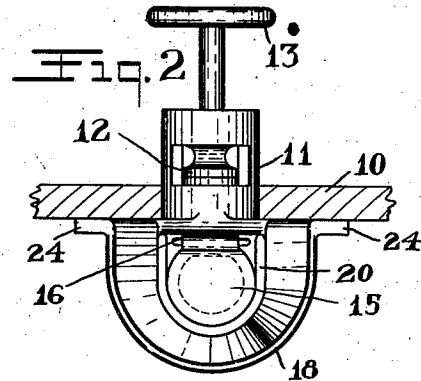
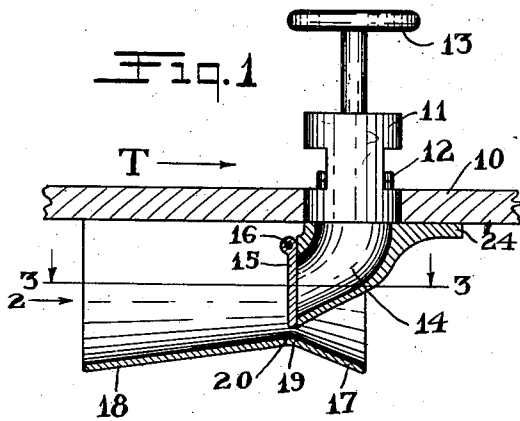
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2,138,368

BILGE DRAINER

Filed May 22, 1934

2 Sheets-Sheet 1



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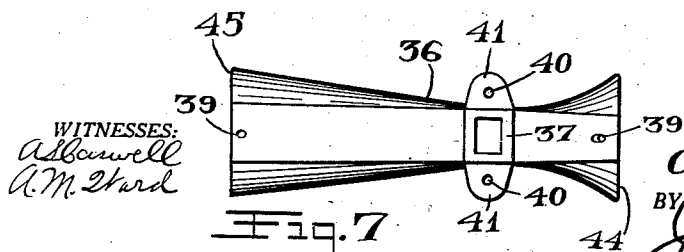
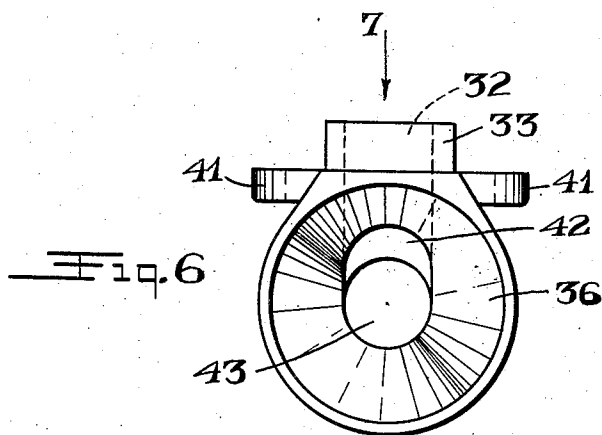
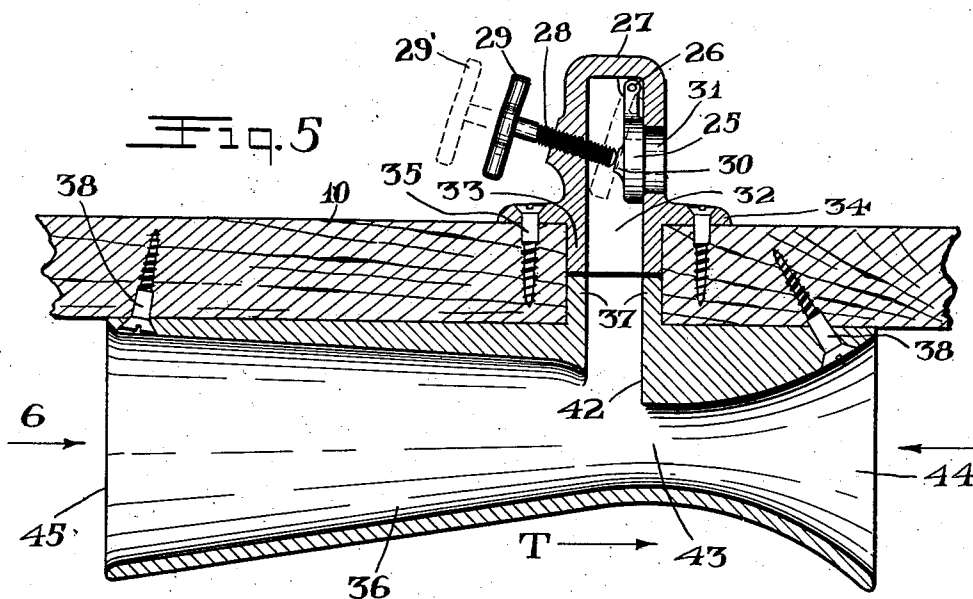
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BILGE DRAINER

Filed May 22, 1934

2 Sheets-Sheet 2



WITNESSES:
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2,138,368

BILGE DRAINER

Charles S. Briant, Cape May, N. J.

Application May 22, 1934, Serial No. 726,919

2 Claims. (Cl. 114—185)

This invention relates to bilge drainers, and has for an object to provide improved means for draining the water from the bilge of a water craft while the craft is in motion, taking advantage of the slip of water.

A further object of the invention is to provide improved means for association with a water craft, whereby, owing to the movement of the craft relative to the water or the water relative to the craft, the water contained in the bilge is entrained and drained from the bilge.

A further object of the invention is to provide in combination with a valve for opening and closing communication through the bottom of a water craft, of a shell of substantially venturi shape wherein the water, by reason of the relative movement, is introduced about the valved passage and discharged through the opposite end of the venturi, while the slip of the water about the exterior of the shell produces an attenuation of air within the shell, adding to the entrainment of the water by the water passing through the shell.

The invention, therefore, comprises a Venturi tube having located at its waist an outflow conduit communicating with the interior of the bilge of the boat, providing a reduced space communicating with the outflow conduit between said conduit and the waist of the venturi, whereby a limited amount of water may pass through said attenuated space as the boat and water move relative to each other, the water passing said outlet conduit and also without the venturi, entraining the water from the outflow within the venturi, which is assisted by the attenuation of the air within the venturi by the water slip upon the exterior.

The drawings illustrate several embodiments of the invention and the views therein are as follows:

Figure 1 is a vertical sectional view substantially diametrical of the outflow and on a median line of the venturi,

Figure 2 is an end view, as indicated by arrow 2 at Figure 1,

Figure 3 is a horizontal sectional view taken on line 4—4 of Figure 1,

Figure 4 is a view in side elevation of a slight modification,

Figure 5 is a longitudinal substantially diametrical section through a still further modification of the bilge,

Figure 6 is a view of the type shown at Figure 5 seen in end elevation, as indicated at arrow 6 in Figure 5, and

Figure 7 is a top plan view of the Venturi mem-

ber on a reduced scale, as indicated by arrow 7 at Figure 6.

Like characters of reference indicate corresponding parts throughout the several views.

As indicated in the drawings, the part 10 indicates the bottom wall or floor or shell of a boat or other water craft. The showing as thus indicated is, however, purely conventional, and for illustration only, and is not in any way indicated as limiting the invention to a hull of the type.

Extending upwardly through the shell of the hull, as shown at Figures 1 to 4 inclusive, is a valve housing 11 with a valve 12 therein actuated manually by means of a hand wheel 13. The valve is intended to illustrate a now well-known type of valve for the purpose, and is disclosed for illustration only, without limitation upon the invention.

Communicating with the valve housing 11 is an outflow conduit 14. This conduit is curved, as shown more particularly at Figure 1, so that the opening of the conduit is toward the stern of the boat, the boat being supposed to travel in the direction indicated by the arrow T at Figures 1, 3, and 4.

The mention of the travel of the boat simply indicates the movement of the boat relative to the water, and it is quite obvious that the boat might be stationary and the water traveling in the opposite direction, which would provide for such relative movement.

The opening of the outflow conduit 14 is closed by a flap valve 15 which would temporarily prevent the inflow of water in case the craft is stopped. This valve 15 is hinged at 16 to open and close with but little resistance.

Preferably, though not necessarily, formed integral with this outflow conduit 14 is a venturi having one funnel-shaped end 17, another funnel-shaped end 18, providing a waist 19. This waist 19 is positioned about the open end of the outflow conduit 14, providing thereby an attenuated space 20 between the outflow conduit 14 and the inner surface of the waist 19.

It will be noted that, as shown at Figures 1 to 3 inclusive, the funnel-shaped end 17, which is the forward end when the boat is moving, is smaller and shorter than the rear or aft funnel 18. While this seems to be a desirable feature, it is not necessary to a satisfactory functioning. At Figure 4 the forward funnel 21 is shown of substantially the same dimension as the rear funnel 22.

In this particular embodiment, complete circular parts are indicated as distinguished from

semi-circular parts, shown at Figure 2. In such an installation, the venturi is connected with the valve housing 11 by means of a pipe or conduit 23. It is to be understood that this pipe 23 is of any length desired, and that the comparative length indicated at Figure 4 is merely illustrative, and that the venturi may be relatively nearer to or farther from the hull 10.

In either of these embodiments, flanges 24 are provided by the use of which the device may be secured to the outer or underside of the hull, as indicated at 10.

In the type shown at Figures 5 to 7 inclusive, the valve, here shown as 25, accomplishes the purpose attained by the valves 12 and 15 in the previously described embodiments. This valve 25 is fulcrumed at 26 in a housing 27 which stands upwardly above the hull 10 of the boat. A manual screw 28 with a handwheel 29, or other means for manipulation, is provided, engaging against a boss 30 by which the valve may be closed in water-tight relation when so desired.

At other times, the loosening of the wind screw so that it occupies a position 29' will allow the valve 25 to swing up its pivot to permit the passage of water from the bilge through the opening 31 and thereby into and through the passage 32.

This passage 32 is preferably formed by a neck 33 with a flange 34 thereabout by means of which and fastening members 35, the device is secured within the interior of the boat structure.

In this case the venturi 36 is provided also with a neck 37 corresponding in area to the neck 33 and held substantially in abutment with said neck by means of fastening members 38, which are inserted through perforations 39 and other fastening members, which are inserted through the openings 40 in the ears 41.

It will be noted that within the venturi a shoulder 42 is provided, which produces a reduced passage 43 communicating with the neck 37. This provides for the same effect as described in regard to the passage of the water through the attenuated space 20 in the previously described embodiment.

In other words, the space in the venturi at the rear of the passage 43 is greater than the passage itself, so that the water entering the bell-shaped member 44 will pass through this passage 43 and entrain water from the passage in the neck 37 and will be discharged at the larger or rear bell 45.

Also, in this embodiment, the water slip upon the exterior of the venturi will produce the attenuation of air within the larger bell 45, as previously described.

In operation, with the boat traveling in the direction indicated by the arrows T, the water will rush into the funnels 17 or 44, and through the attenuated space 20 or 43. The space 20 surrounding or substantially surrounding the outflow 14 and the space 40 being constricted by the shoulder 42, will serve to entrain any water which may be in either of the conduits.

When there is water, therefore, in the bilge, the valve 12 being manually opened and the valve 25 released by the manipulation of the screw 28, the entraining of water begins immediately upon

the automatic opening of the valves 15 or 25. With the funnels 18 or 45 at the rear of larger dimension than the funnels 17 or 44 at the front, an attenuation of the air within the rear funnels 18 and 45 is accomplished by the slip of the water, whereby air for the entraining of water from the outflow conduits 14 and 32 is augmented.

In case of a stoppage of the boat, the valves 15 and 25 will close and temporarily prevent the inflow of water until the valves are manually securely closed.

The type shown at Figures 5 to 7 inclusive have the advantage that in case it engages an obstruction, the venturi may be ripped from the bottom of the boat, without in any way disturbing the valve structure, and in case of such accident, the water will not flow into the boat by reason of the automatic closing of the valve 25, which will be later augmented manually.

Of course, it is obvious that with the venturi displaced by accident, another may be used for replacement purposes.

Of course, the bilge drainer herein illustrated may be modified and changed in various ways without departing from the invention herein set forth and hereinafter claimed.

I claim:—

1. A bilge drainer comprising a valve housing adapted to extend through the floor of a water craft, an outflow conduit connected to the valve housing and having an outflow opening in a plane substantially parallel to the axis of the valve housing, a flap valve for said opening, a Venturi tube enclosing said outflow conduit and having a waist substantially at said outflow opening and spaced radially therefrom, the end of said tube forwardly of the outlet opening being flared outwardly and the portion of the Venturi tube rearwardly of the outlet opening being flared outwardly and having a longitudinal dimension greater than the said portion of the Venturi tube forwardly of the outlet opening, said outflow conduit constituting a restriction in the forward part of the Venturi tube whereby an attenuated space is provided about the outlet opening.

2. A bilge drainer of the character described comprising a valve housing adapted to extend through the floor of a water craft and formed at one end with an outflow conduit, a valve in the valve housing, said outflow conduit being formed with a flange adapted to engage the bottom side of the floor of the craft, said outflow conduit also being formed with an outflow opening in a plane substantially normal to the plane of the said flange, a flap valve for said opening, and a Venturi tube having flanges engaging the under side of the floor of the water craft and having a flared portion disposed forwardly of the outlet opening and about the outflow conduit, said Venturi tube having a waist spaced from the outflow conduit about the outlet opening thereof and a portion of a gradually increasing diameter extending from the outlet opening to the rear end of the tube.

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