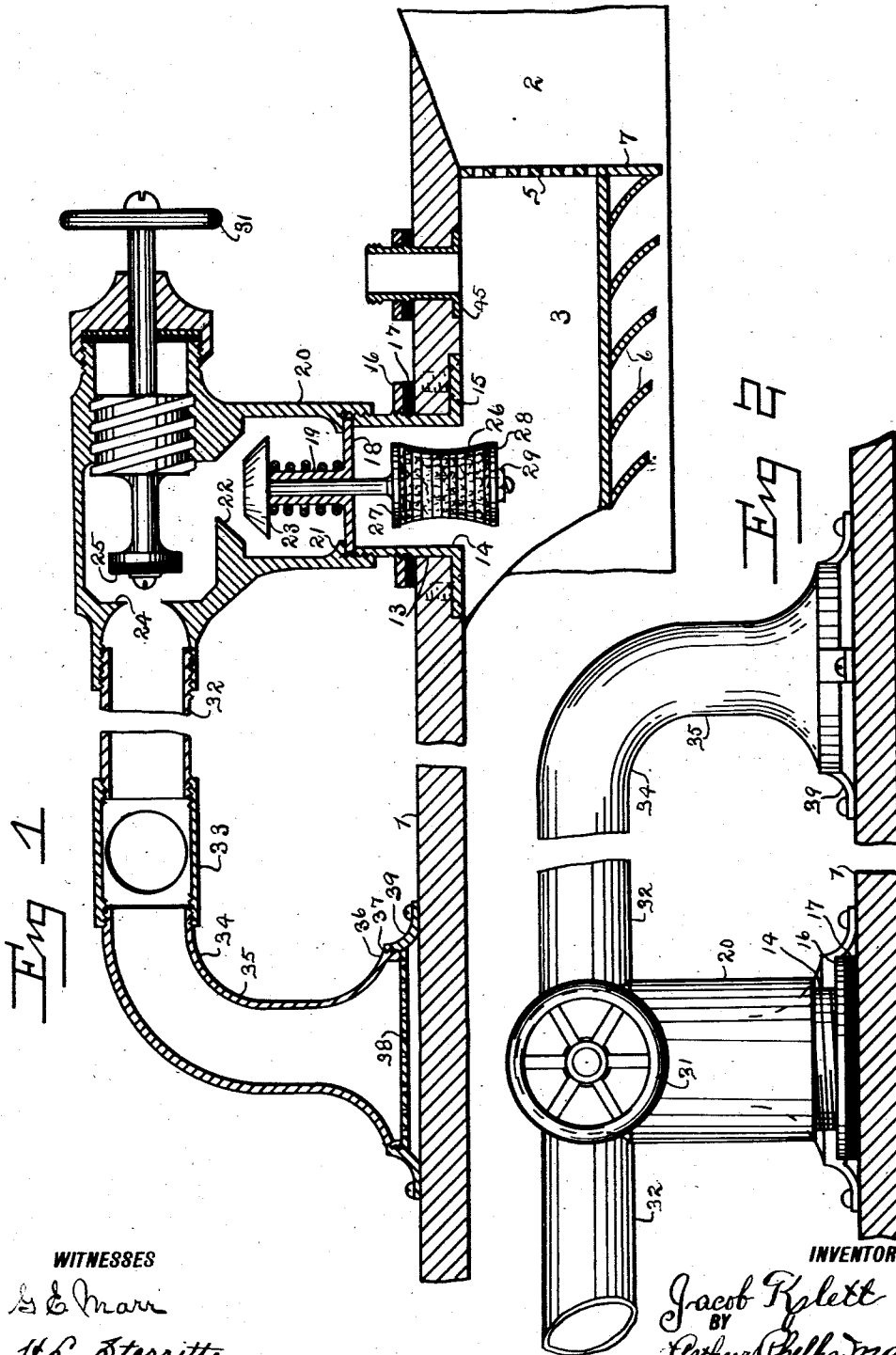


J. KLETT.
BILGE WATER EJECTOR.
APPLICATION FILED JUNE 14, 1911.

1,035,199.

Patented Aug. 13, 1912.

3 SHEETS—SHEET 1.



Eng 1

Eng 2

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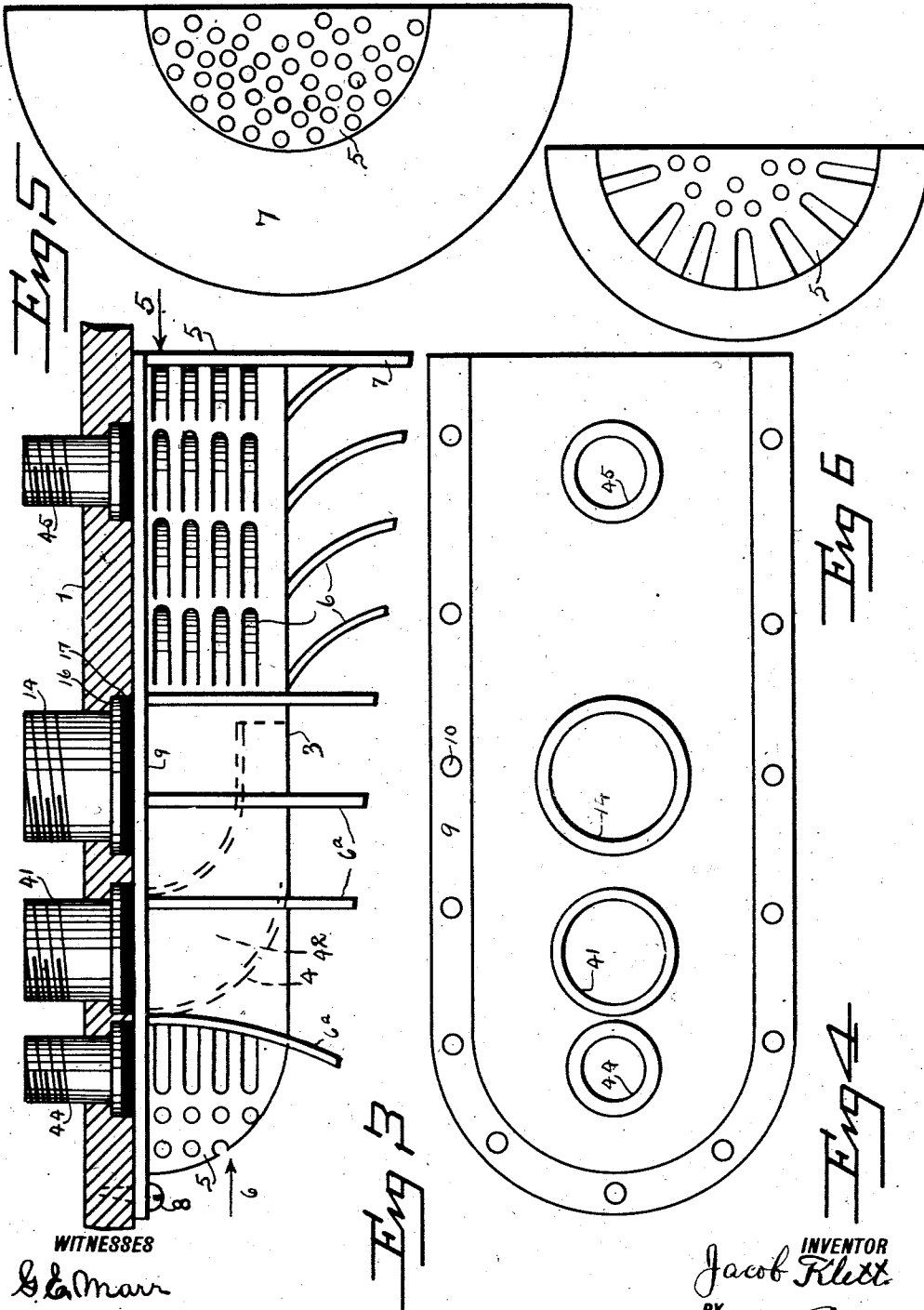
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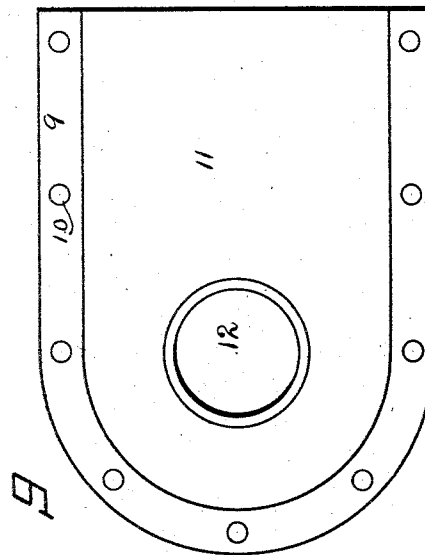
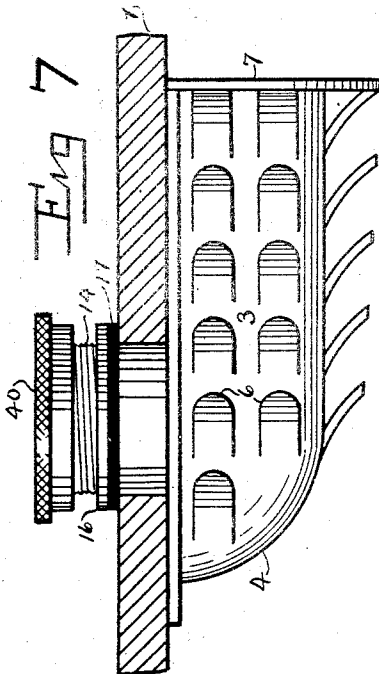
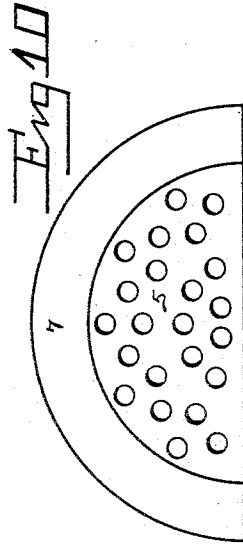
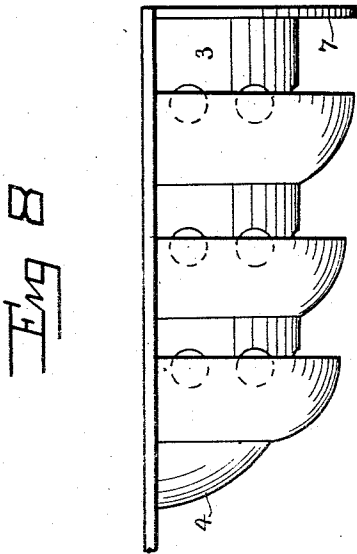
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JACOB KLETT, OF NEW YORK, N. Y.

BILGE-WATER EJECTOR.

1,035,199.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed June 14, 1911. Serial No. 633,022.

To all whom it may concern:

Be it known that I, JACOB KLETT, a citizen of the United States, and resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Bilge-Water Ejectors, of which the following is a specification.

This device is intended to perform a multiplicity of duties, as a means for supplying cooling water to an engine, as a means for furnishing a muffled exhaust from the engine, as a vacuum creating means for use wherever and for whatever a vacuum may be useful, but it is principally intended as a means for ejecting the bilge water from the hold of a vessel, by a suction formed by the passage of the vessel through the water, and is so arranged that it is entirely automatic in its action. It provides a free and unobstructed liberal passage outward for the bilge water, during such time as the boat is in motion, and having a positive means for automatically closing the passage when the boat is at rest or when traveling at a speed too slow to maintain a useful suction. The automatic means for closing the passage, although carefully designed may through some unforeseen reason, become useless, I have therefore provided a manually operated means for more or less permanently closing the discharge passage if it is desirable to do so. The connections for the engine cooling means are independent in operation, though the inlet is connected to the forward end of the shoe, and the outlet passes into the exhausted part of the shoe at a point aft of the bilge siphon valve. It is desirable to connect the engine exhaust to the main shoe as in this way the exhaust from the explosion is discharged under water and the suction on the shoe relieves the engine from back pressure.

The following is what I consider the best means of carrying out this invention.

The accompanying drawings form a part of this specification, in which:

Figure 1 is a central longitudinal section through a part of the device, the valve closures and parts adjacent thereto being shown in elevation. Fig. 2 is a view in elevation. Fig. 3 is in side elevation showing the shoe with all of its connections. Fig. 4 is a plan view of the shoe. Fig. 5 shows the shoe in end elevation. This view is taken in the direction of the arrow 5 in Fig. 3.

Fig. 6 is an end elevation of the shoe viewed in the direction of the arrow 6 in Fig. 3. Fig. 7 shows a modification in the construction of the shoe adapted to accomplish certain useful results, the auxiliary cap is shown in position in this figure. Fig. 8 shows another modification. Fig. 9 is a plan view of the modified shoe. Fig. 10 is an end elevation of the shoe shown in the modification.

Similar reference numerals indicate like parts in all the figures where they appear.

At 1, I have shown the bottom of a vessel and although my device will work equally well with vessels of any type, I have shown a vessel having a wooden hull and an ordinary keel 2.

The exterior member of the structure, which I have added to the vessel, is the shoe 3, constructed of sheet steel or of any other suitable material, it is semi-cylindrical in cross-section and is provided with an internal baffle 4 arranged near the forward end, which divides the interior of the shoe into two separate compartments. Both ends of the shoe are open except for the screens 5, which prevents the inward passage of foreign matter, such as weeds or pieces of drift wood, or even fishes, that would tend to clog or make inoperative the several parts of the device. The screens 5 are secured into the ends of the shoe in such a manner that they may be easily removed when occasion may require.

I have found that the suction produced by a smooth shoe passing through the water, although capable of good work is not sufficient to withdraw the water with the proper degree of rapidity nor create the proper suction within the shoe unless the boat be traveling at a very great rate of speed, I have therefore designed certain improvements that make the shoe much more efficient and capable of satisfactory operation even at slow speeds. These improvements consist in adding to the exterior of the shoe a plurality of fins 6, which I have shown as arranged in series, arranged along each side and on the bottom. In addition to this I have added an outwardly extending flange 7, arranged about the opening in the rear-most end of the shoe. The purpose of these additions is to displace a greater amount of water and thereby cause a more powerful suction through the shoe 3, and the parts attached thereto. The projections 6^a ar-

ranged about the forward end of the shoe perform the same general functions, whipping the water into numerous small eddies and whirlpools and causing a heavy drag or suction upon every outlet of the structure.

A plurality of bolts 8, are the means by which the shoe 3 is secured to the hull, and a flange 9 is provided with a series of holes 10 for the reception of the bolts 8. It is my intention that the upper face of this flange shall fit fairly against the outside of the hull, though if the hull be too rough, it may be advisable to calk the seam between the flange and the hull. An upper plate 11, shown in Fig. 9 may be employed to close the whole top of the shoe. Said shoe 3 is provided with a perforation 12, and when the shoe is in position the perforation 12 exactly registers with a hole 13, which has been produced in the bottom of the boat.

A screw threaded thimble 14 provided with a flange 15, as a securing means, is inserted into the hole 13, and projects upward into the hold of the boat for some distance. A locking ring or nut 16 secures the thimble reliably in position, and any suitable packing 17 is placed between the ring 16, and the bottom sheathing of the boat. A guide member 18, which may be a circular spider having an upwardly extending part 19, is placed upon the upper face of the thimble 14, and a member 20, which is a duplex valve member, and which may be a casting if such structure is preferred, is screw-threaded upon the thimble 14 and forced downward until the shoulder 21 rests upon the member 18 holding it securely in position. The duplex member 20 is provided with two valve seats, one an angle seat 22 arranged to operate with the vertical float valve 23, and the other a flat seat 24 arranged to operate with the horizontal disk valve 25. Both of these valves will be described in detail. The passage through the duplex member 20 is a right angle-passage as is shown in Fig. 1, and the height of the vertical portion may be sufficient to carry the upper part close to the under side of the deck above.

Supported by the guide member 18 is the float-valve 23, consisting of the top, or angular closing member, and a downwardly depending stem secured therein. The stem passes through the central perforation of the extension 19, and at its lower end receives and retains the float 26, this float may be a copper cylinder, or a cylinder of any other material, but I have constructed it of a plurality of cork disks held securely between the flanges 27 and 28, and retained upon its stem by the nut 29.

When water, for any reason enters the shoe 3, and attempts to flow upward through the thimble 14, it lifts the float 26, and closes the valve 23 against the valve-seat 22,

thereby obstructing the passage. I have arranged a spring 30 under the angle member of the valve 23, to assist the float in urging the closure of this valve, though it may be found that this spring is not necessary. If for any reason, the valve 23 does not close and it is found that water is flowing inward through the shoe 3, the passage may be closed by means of the valve 25, an ordinary screw operated disk valve, which may, by turning the hand wheel 31, be caused to positively and efficiently obstruct the passage through the duplex member 20. The valve 25, although an ordinary disk valve, must be selected with a view to its peculiar duties, and because it is intended that it shall remain inoperative for the greater part of the time and yet be in condition for perfect work at a moment's notice, it must be constructed of non-corrosive metals and have a valve-seat and disk that will not easily cut by the almost constant outflow of water.

A nipple 32, which may be of any desired length is screw-threaded into the horizontally arranged passage or outlet of the duplex member 20, and connects therewith a cross fitting 33. This cross fitting is inserted to allow a number of strainer members to be connected to the system. A second nipple 34, connects the strainer member shown in Fig. 1 to the system, as is shown in Fig. 1.

The strainer member may more properly be called the suction nozzle, as it is through this that the bilge water first passes. It is a trumpet shaped member having a right-angled bend 35 at its upper end, and having a flange 36 formed about the flared lower end. The flange 36 is screw-threaded at 37 and receives the strainer proper 38 upon the screw-threads. The strainer is provided with a plurality of lugs 39, by which it may be secured to the bottom, and which firmly support the strainer and the trumpet member a certain predetermined distance above the deck so as to allow the water to flow freely through the strainer 38.

A member of my device not before described is the auxiliary cap 40, shown in detail in Fig. 7. When it is desirable to remove this device for repairs or renewals, the boat being under headway will cause a suction through the shoe 3 and the thimble 14, the device may then be disjointed and the duplex member 20 unscrewed from the thimble 14. The cap 40 is then screw-threaded firmly down upon the thimble 14 and now, when the boat is stopped no water can flow into the boat from the shoe 3.

So far I have described but the bilge water ejector but I will now detail the structure and operation of the other parts. The exhaust from the engine is connected to a nipple 41 which passes through the bottom of the boat and terminates in an angled pas-

sage 42. The open end of this passage is rearwardly disposed and terminates at a point a short distance aft of the float valve passage. When the boat is in operation and the shoe 3 has been exhausted, the pressure from the engine exhaust passage assists in creating a suction for other useful purposes.

I have before referred to a forward chamber arranged in the shoe 3, which is divided from the main or larger passage, by the baffle 4. A thimble 44 passing upward through the bottom of the boat connects with this forward chamber and its upper end may be connected to the water circulating chambers of an engine not shown. The outlet from the circulating chambers may be connected with a thimble 45 which passes through the bottom of the boat and is let into the main shoe 3 at a point considerably aft of all of the other connections. The motion of the boat through the water forces water upward through the thimble 44, through any parts connected therewith causing it to circulate about the cylinder of the engine if one be connected therewith to be discharged into the main shoe through the thimble 45.

Modifications may be made within the

scope of the appended claim without departing from the principle or sacrificing the advantages of this invention. Parts may be used without the whole.

At Fig. 7 I have shown a shoe of a somewhat different construction that I have found to work well.

Although I have shown valves of a certain specified construction, it is obvious that any well operating valves may be used.

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

A bilge water ejector having in combination with a suction nozzle and a valve member, a discharge shoe, said discharge shoe being provided with a plurality of fins, and an outwardly extending flange arranged upon its exterior for increasing the efficiency of said discharge shoe as herein specified.

Signed at New York city, county and State of New York this 27th day of May, 1911, in the presence of two witnesses.

JACOB KLETT.

Witnesses:

G. E. STERRITTE,

ARTHUR PHELPS MARR.