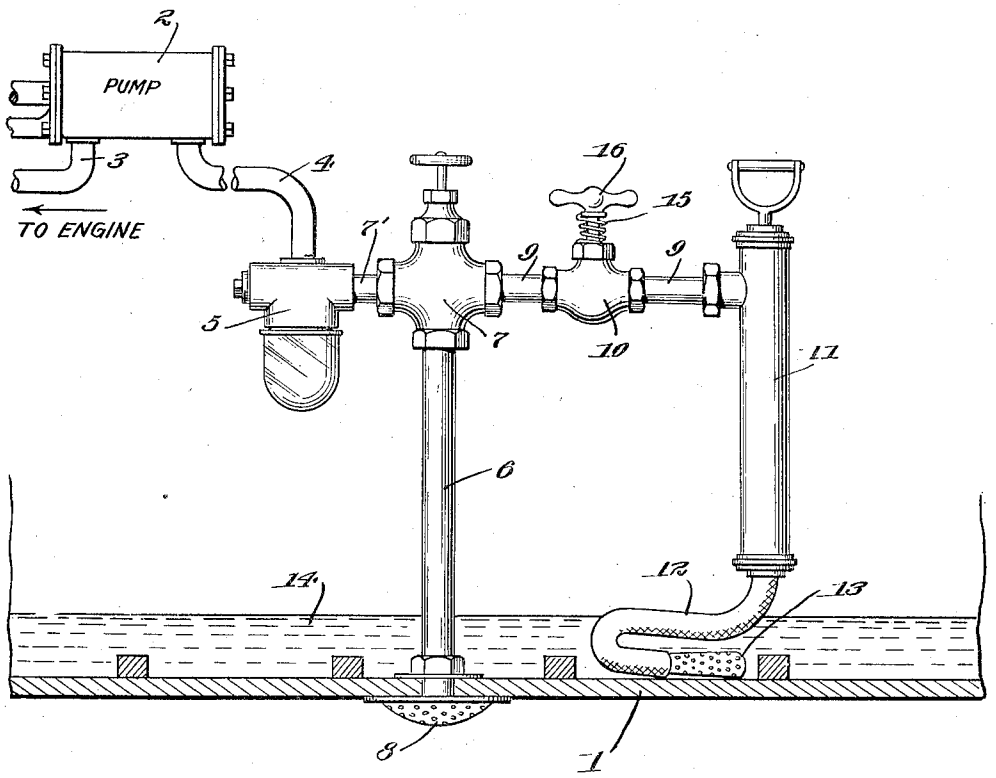
Dec. 2, 1924. 1,517,665

I. CHASE

PUMPING SYSTEM

Filed Jan. 24, 1924



INVENTOR

Irwin Chase

BY

Connie Morris Marvin & Edmonds

ATTORNEYS

Patented Dec. 2, 1924. 1,517,665

UNITED STATES PATENT OFFICE.

IRWIN CHASE, OF BAYONNE, NEW JERSEY, ASSIGNOR TO THE ELCO WORKS OF THE ELECTRIC BOAT COMPANY, A CORPORATION OF NEW JERSEY.

PUMPING SYSTEM.

Application filed January 24, 1924. Serial No. 688,173.

To all whom it may concern:

Be it known that I, IRWIN CHASE, a citizen of the United States of America, residing at Bayonne, in the county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Pumping Systems; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to pumping systems and particularly to pumping systems for use on ships for pumping cooling water to the engine.

In many types of vessels it is customary to pump cooling water to the engine. The water used for cooling the engine is ordinarily pumped directly from the sea, and after it has performed its function of cooling the engine it is discharged overboard. It has been proposed to provide a connection from the pump to the bilge of the vessel whereby the accumulation of bilge water may be pumped out of the bilge, through the engine and then discharged overboard. In this way, the bilge water may be discharged and, at the same time, it serves to cool the engine. Furthermore, the same pump that serves to pump sea water to the engine for cooling the same may be used for discharging the accumulated bilge water. This system, however, is not wholly satisfactory, for sometimes it is necessary to pump out the bilge water when the engine pump is not running.

One object of this invention is to provide an improved pumping system especially adapted for use on vessels for pumping cooling water to the engine, and which will be operative to discharge the bilge water whenever this is desired.

Another object is to provide such a pumping system in which there will be no danger of pumping sea water into the bilge.

Other objects will appear from the following description.

One embodiment of the invention is illustrated in the accompanying drawing which represents, in side elevation, the improved pumping system as applied to a vessel.

In the drawing the hull of the vessel is represented at 1. The pump for pumping cooling water to the engine is shown at 2. This pump may be the usual mechanically operated pump employed on vessels, and may be driven by the main engine, or by a separate motor or engine. The pump 2 has a pipe connection 3 leading to the engine and a pipe connection 4 leading to a strainer or trap 5. A pipe 6 which is open to the sea at its inlet end communicates with the trap 5 through a hand-valve 7 and a pipe 7′. The inlet end of the pipe 6 may have associated therewith a strainer 8. The pipe 4, trap 5 and pipes 6 and 7′ constitute one intake conduit for the pump 2. Communicating with the valve 7 is a branch pipe 9, the passage through which is controlled by a valve 10 preferably of the self-closing type. The pipe 9 connects with a hand pump 11 which has a flexible hose connection 12 extending into the bilge. The inlet end of the hose may be provided with a strainer 13. The hand pump 11 is provided with a plunger (not shown) having a valve therein, the plunger and valve being of common construction. The pipe 9, hand pump 11 and hose 12 constitute a second intake conduit for the pump 2.

When the pump 2 is operating, cooling water is pumped to the engine directly from the sea through strainer 8, pipe 6, valve 7, trap 5, pipe 4, thence through the pump and the pipe 3 to the engine. From the engine the cooling water can be discharged directly overboard. The valve 7 is of such a construction that when it is open it establishes communication between pipe 6 and pipes 7′ and 9, and when it is closed it entirely cuts off this communication, but leaves a clear passage from the pipe 9 to the pipe 7′. When water is being pumped from the sea to the engine through pipe 6, the valve 7 should, of course, be open. It should be remembered at this point that the valve 10 is a self-closing valve, and, therefore, normally closed. The valve in the hand pump 11 serves as an additional check to prevent water from flowing into the bilge, and therefore when the pump 2 is operating and the valve 7 is open, the normal course for the cooling water is through the pipes 6 and 4 and the intermediate connections. It is of course possible to supplement the supply of cooling water pumped into the engine in this manner by operating the hand pump 11, the valve 10 of course being held open while the hand pump is operated. In this manner the bilge water can be pumped into the main supply line for the engine pump and the bilge water can be disposed of while the en-

gine pump is drawing water through the main pipe connection 6 instead of through the bottom of the vessel.

An accumulation of bilge water is represented at 14. If it be desired to pump this out at any time when the pump 2 is operating it is only necessary to close the valve 7 and to hold open the valve 10. The pump 2 will then serve to draw the bilge water 14 through the hand pump 11, pipes 9 and 7', trap 5, pipe 4, thence through the pump 2, which forces it to the engine and then overboard. The valve 10 may be made self closing by means of a spring 15. When it is desired to open the valve the handle 16 may be turned against the action of the spring 15. When the force applied to the handle 16 is removed the spring 15 closes the valve.

Should it become necessary to pump out the bilge water when the pump 2 is not operating, the valve 10 is held open. The hand pump 11 is then operated to pump out the bilge water through hose 12, pipes 9 and 6, and strainer 8. Ordinarily, it is not possible to pump water from the bilge through the main engine pump by means of the hand pump, when the engine pump 2 is not operating. If the engine pump should become broken, however, the hand pump can be used to supply cooling water to the engine for a short time by pumping the bilge water directly to the engine through the broken pump 2. A further advantage of this invention lies in the fact that the hand pump can be used for the means of supplying water to the engine pump 2, for the purpose of priming this pump, should this ever become necessary.

It will be seen that valve 10, being self closing, acts as a safety device and precludes any possibility of water being pumped or siphoned from the sea through pipe 6 and through hand pump 11 into the bilge. The valve in the hand pump 11 supplements the action of the valve 10 in preventing water from being siphoned into the bilge through the pipe 6. It should also be noted that when the bilge water is pumped out by means of the engine pump 2, the water passes directly through the hand pump 11, no other connection or by-pass being necessary.

Although the improved pumping system has been described as applied to a vessel, it is apparent that it may be used in other relations where the particular combination herein described may be of value. Furthermore, the details of construction can be varied without departing from the principle of the invention, which is not confined to the particular embodiment illustrated and described, but includes such modifications thereof as fall within the scope of the appended claims.

What I claim is:

1. A pumping system comprising a pump, an intake conduit for said pump, having an inlet adapted to receive fluid from one source, and a second intake conduit for said pump, having an inlet adapted to receive fluid from a second source, a hand pump interposed in the second intake conduit, and means for controlling the passage of fluid through said conduits.

2. In a vessel, a pumping system comprising a pump having an intake conduit communicating with the sea, and a second intake conduit communicating with the bilge of the ship, a hand pump interposed in the second intake conduit, and means for controlling the passage of water through said intake conduits.

3. In a vessel, a pumping system comprising a mechanically operated pump, an intake conduit communicating with the sea, a second intake conduit communicating with the bilge of the ship, a hand pump interposed in the second intake conduit, a valve for opening or closing the first intake conduit and a self closing valve located in the second intake conduit between the mechanical pump and the hand pump.

4. In a vessel, a pumping system for pumping cooling water to the engine, comprising a mechanically operated pump, an intake conduit communicating with the sea, a second intake conduit communicating with the bilge of the vessel, a hand pump interposed in the second intake conduit, a valve for opening or closing the first intake conduit, and a self closing valve in the second intake conduit between the hand pump and the mechanical pump, whereby cooling water may be pumped by the mechanical pump from the sea to the engine, or bilge water pumped by the mechanical pump through the hand pump to the engine, and whereby the bilge water may be discharged by the hand pump when the mechanical pump is not operating.

5. A pumping system comprising a pump, an intake conduit for said pump, having an inlet adapted to receive fluid from one source, a second intake conduit for said pump adapted to receive fluid from a second source, a hand pump interposed in the second intake conduit, a value for opening or closing the first intake conduit, and a self closing valve controlling said second intake conduit, said self closing valve normally preventing the first named pump from pumping fluid from the second source although permitting this operation when opened, and also normally preventing fluid from passing from the first source to the second.

In testimony whereof I affix my signature.

IRWIN CHASE.