J. W. VAN METER.

METHOD AND APPARATUS FOR FREEING THE BOTTOMS OF VESSELS FROM BARNACLES AND THE LIKE

APPLICATION FILED SEPT. 15, 1921.

1,430,773. Patented Oct. 3, 1922.

Fig. 1.

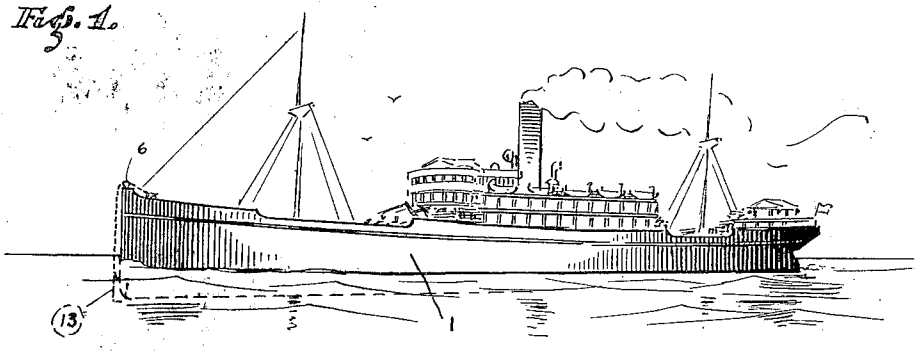


Fig. 2.

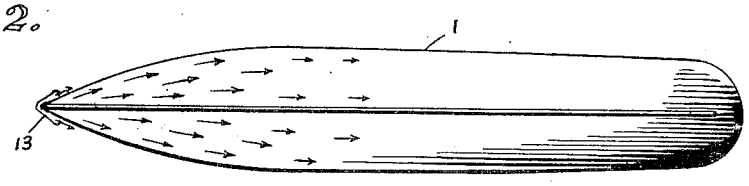


Fig. 3.

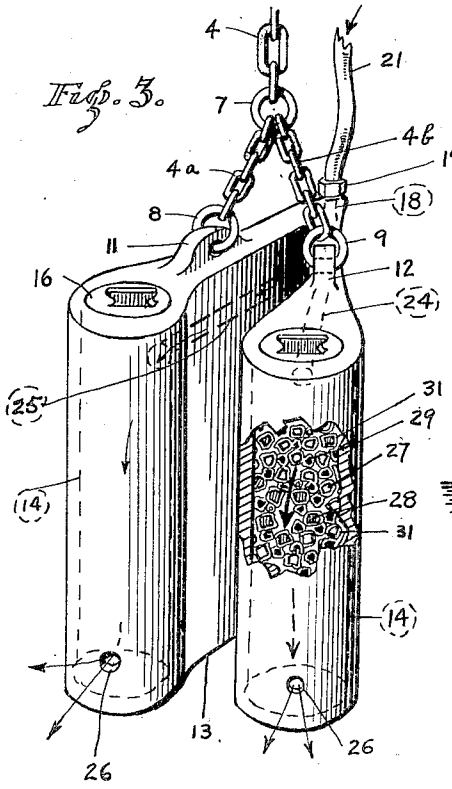
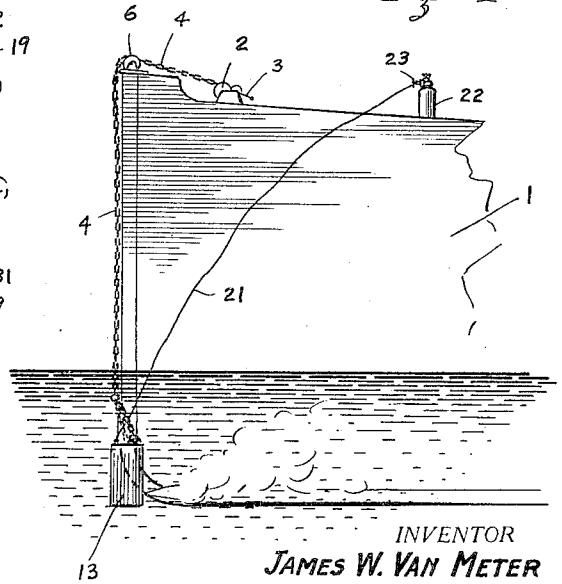


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES W. VAN METER, OF SAN RAFAEL, CALIFORNIA.

METHOD AND APPARATUS FOR FREEING THE BOTTOMS OF VESSELS FROM BARNACLES AND THE LIKE.

Application filed September 15 1921. Serial No. 500,885.

To all whom it may concern:

Be it known that I, JAMES W. VAN METER, a citizen of the United States of America, residing at San Rafael, in the county of Marin and State of California, have invented certain new and useful Improvements in Methods and Apparatus for Freeing the Bottoms of Vessels from Barnacles and the like, of which the following is a specification.

The present invention is an improved method and apparatus for freeing the bottoms of vessels from barnacles and the like.

The primary object of the invention is to provide a method and apparatus whereby a ship's crew may rid the under water portion of the hull of barnacles and marine parasites while the ship is under way.

It is a well known fact that barnacles adhere to the bottoms of vessels in such countless numbers as to greatly diminish the vessel's speed. The barnacle is a marine crustacean free-swimming in the larval state, but permanently fixed in adult state. The parent barnacle is usually found attached to rocks along shore. The larvæ infest the waters near shore and adhere to the hulls of visiting vessels, subsequently developing large culcified shells, which in the aggregate add great weight and seriously impede the vessel's movements. Vessels are dry-docked periodically and the hulls scraped to remove the parasite growth. This entails expense and loss of time.

Obviously, a method and apparatus by which barnacles and the like may be removed in transit, and by which the parasites may be removed or destroyed while in the larval state, will be most useful and will effect great economy.

Another object of the invention is to provide a method and apparatus for the purpose described which will require a minimum number of parts which, when not in use, may be stowed aboard in very little space, and which when in use may be lowered over the vessel's prow while the vessel is under way, and the operation successfully carried out without interfering with the navigation of the vessel.

In this specification and the annexed drawings, the invention is illustrated in the form considered to be the best, but it is to be understood that the invention is not limited to such form, because it may be embodied in other forms, and it is also to be understood that in and by the claims following the description it is desired to cover the invention in whatever form it may be embodied.

In the accompanying one sheet of drawings, Fig. 1 is a side elevation of a vessel under way, equipped in accordance with my invention.

Fig. 2 is a bottom plan view of the vessel shown in Fig. 1, showing direction arrows used to indicate the direction taken by gases liberated at the prow as the vessel is under way.

Fig. 3 is a perspective view of the preferred form of apparatus adapted to be lowered on the stem of a ship, and showing a portion broken away to reveal a container for chemicals.

Fig. 4 is a fragmentary view of a ship prow on a relatively larger scale than that of Figs. 1 and 2, and showing the method of applying my invention.

Referring to the drawings, the numeral 1 indicates the hull of a ship at sea. On the deck of the ship at 2 I show a windlass operated by a crank 3 for raising and lowering a chain 4 reeved through or over a pulley 6 on the prow.

The chain 4 terminates in a ring 7, Fig. 3, to which are secured chains 4^a and 4^b, which are welded to rings 8 and 9, secured in eyes 11 and 12 on the top surface of a casting 13. This casting is V shaped in plan and is designed to conform as nearly as possible to the prow of the vessel, and when lowered on the stem thereof to be held in contact with the stem by momentum of the vessel as it is lowered into the water as shown in Figs. 1 and 4. At the rear of the casting 13 on each side of the hull are enlarged portions which are hollow, as indicated at 14 in dotted lines.

By this means a container is provided on either side of the vessel, and each container is closed by a cover 16.

By my method, I liberate under water a poisonous gas and an oily film, both created by the reaction of chlorine on metallic elements in the presence of gas producing chemicals such as sodium cyanide. The chemicals and metallic elements are loaded into the containers 14 before the device is lowered into the water.

At the forward end of the V-shaped

casting 13, at 17, I show in dotted lines passage 18, into which is threaded a union 19 for connection with a flexible conduit or hose 21.

Liquid chlorine, under pressure, is discharged from a cylinder 22 on the deck of the vessel by means of a control valve 23, and is introduced through hose 21 to the passage 18, which is split and has legs 23 and 24 leading to the top of the containers 14. As the chlorine enters the containers 14 and permeates the contents, an intense chemical heat is created which liberates gases. These gases leave the containers 14 through discharge apertures 26 into the water, close to the hull of the vessel on either side, as shown in Fig. 4.

Due to the speed of the vessel and to the bulging stream line configuration of the hull, the gases and oily film, discharged rearwardly from the apertures 26, rake the vessel's bottom and sides, below the water line, from stem to stern.

Attention is called to my co-pending application for patent, filed June 9, 1921, Serial No. 476,239.

At 27, in Fig. 3, I show sawdust particles intermingled with finely divided sodium cyanide 28. Scattered throughout the mixture are metallic particles 29, such as iron filings or the like. I prefer to mix with the sawdust and metallic elements a quantity of creosote or other suitable oil. This films the various particles as shown at 31 and assists in cohesion.

As the chlorine reacts on the metallic particles an intense chemical heat is created, chloro-cyanic gas is discharged through ports 26, and an oily condensation or scum encounters the hull of the vessel and adheres thereto.

In reducing my invention to practice, I find that adult barnacles are killed by this means, and that the larvæ will not attach to the filmed surface.

A vessel in mid-ocean is not so liable to attack as when near shore. If the hull is clean when the vessel nears shore, and the ship is anchored for several days near shore, the bottom is soon attacked by the swimming larvæ. When the vessel gets under way, if my treatment be applied as described, the bottom and sides under water will be swept clean of all parasites in a short time.

I claim:

1. An apparatus for freeing the bottoms of vessels from barnacles and the like, comprising a container provided with a passage therethrough, means for lowering said container over the prow of a moving vessel, and means for passing a stream of gas through said container while submerged for the purpose of discharging a deadly emanation against the hull of the vessel.

2. An apparatus for freeing the bottoms of vessels from barnacles and the like, comprising a V-shaped body adapted to overlie the prow of a vessel, containers in the legs of said body adapted to carry gas-forming elements, and means for passing a stream of chlorine through said body to liberate gases from said elements.

3. The method of freeing the submerged surfaces of vessels and other structures from barnacles and the like, consisting in submerging in proximity to such surfaces a charge of inert material which when acted upon by a reaction causing agent produces a poisonous gas, protecting such inert material from contact with the water, and subjecting such inert material, while so protected, to the action of such reaction causing agent.

In testimony whereof I affix my signature.

JAMES W. VAN METER.