

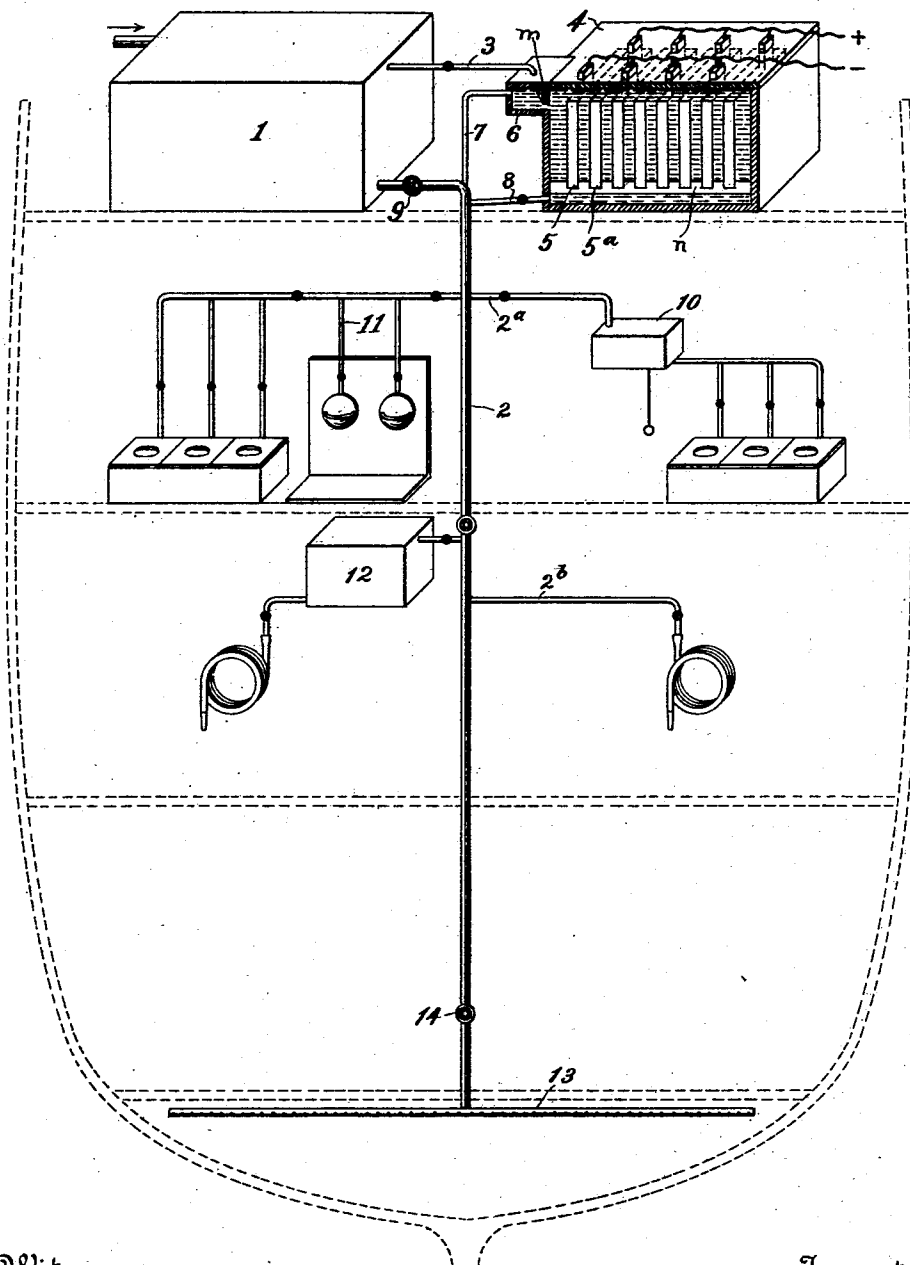
(No Model.)

H. R. CASSEL.

APPARATUS FOR DISINFECTING SHIPS OR OTHER STRUCTURES.

No. 569,173.

Patented Oct. 13, 1896.



Witnesses
W. Lloyd.
E. C. Grigg.

Inventor
Henry R. Cassel
By his Attorneys
Popple & Rogers

UNITED STATES PATENT OFFICE.

HENRY R. CASSEL, OF NEW YORK, N. Y.

APPARATUS FOR DISINFECTING SHIPS OR OTHER STRUCTURES.

SPECIFICATION forming part of Letters Patent No. 569,173, dated October 13, 1896.

Application filed June 29, 1894. Serial No. 516,072. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. CASSEL, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Disinfecting Ships or other Structures, of which the following is a specification.

This invention relates to disinfecting ships or buildings.

The invention is carried out by electrolytically producing a disinfecting fluid and distributing it to various parts of the structure in which the process is applied and providing at various points where disinfection may be needed means for liberating the fluid and flushing or otherwise treating the surfaces to be disinfected. The fluid from which I prefer to produce the disinfectant is a solution containing chlorid of sodium. In the process as applied on shipboard the salt water of the ocean may be pumped into a supply-tank which supplies the vessel with salt water for cleaning purposes and which is connected to the decomposing tank or vat in which the disinfecting fluid is developed. The decomposing-tank is provided with means for maintaining it continuously full and contains a series of anodes and cathodes through which a sufficiently-strong current to decompose the salt water in the quantities desired is led. The primary action of the electrolytic decomposition is to liberate chlorin at the anode, and by secondary reaction hypochlorites are formed, which, together with the free chlorin taken into solution by the water, forms a most powerful oxidizing agent and an excellent disinfectant. The distributing-pipes by which the disinfecting fluid generated in the decomposing-tank is carried to the different points of service and the several valves and floats controlling the valves, as well as the flush-tanks, are preferably lined or coated with some suitable material capable of resisting the action of chlorin, such, for example, as pitch, lead, rubber, porcelain, &c. Throughout the structure in which the plant is located, and at the various points where disinfection may be required, cocks, valves, or nozzles are located for withdrawing the disinfecting solution from the distributing system and spraying or otherwise applying

it to the points to be disinfected. At certain points where continuous disinfection is desirable the disinfecting fluid may be permitted to flow or drop continuously, as, for example, in ships, where it is desired to counteract the foul and unwholesome odors arising, for example, from the bilge-water. At points where occasional disinfection only is required the cocks and valves which permit the application of the disinfecting fluid may be arranged to be manually or automatically operated periodically.

In carrying out my invention I provide a tank of suitable size, preferably made of iron and lined or coated with a compound of pitch or other suitable material capable of resisting the action of the products of decomposition. Where the apparatus is employed on shipboard, the tank is supplied with a water-tight cover, which should be screwed or otherwise fastened down to prevent the solution to be decomposed from displacement by the rolling of the ship. Through this cover and reaching almost to the bottom of the tank are arranged a number of anodes and cathodes, preferably made of retort-carbon or plumbago. The upper ends of the electrodes protrude through the cover to enable electrical connections to be made for leading through the anodes and cathodes a current from a suitable electrical source, preferably a direct-current dynamo-electric machine. This provision becomes highly important from the tendency of the metallic connections to corrode, and an increase of resistance is developed if the connections between the conductor and the material of the electrode is made at or below the level of the liquid, thus interfering with successful or economical production of the disinfectant. The electrodes should be insulated from the cover and the openings through which they project made water-tight. Near the bottom of the tank, or at any desirable distance therefrom, is fixed a frame of wood saturated with pitch or other suitable compound to steady the electrodes and prevent their displacement and fracture by the rolling of the ship.

Where the system is applied on passenger vessels which are equipped with a reservoir of salt water for cleaning purposes connecting with a pipe system leading to the various

decks and floors of the ship, the decomposing-tank may be supplied from the reservoir and have an egress-pipe communicating with the distribution-pipe. Means are also provided for regulating the quantity of outflow of disinfecting fluid, which, in entering the distributing-pipe, will mix with the water flowing from the reservoir and thus be carried to the various portions of the vessel.

The several features of novelty of the invention will be more particularly hereinafter described, and will be definitely indicated in the claims appended to this specification.

In the accompanying drawing, which illustrates the invention, is shown a sectional elevation of a ship equipped with my system.

1 represents a reservoir into which salt water is pumped and from which it may be distributed to the various parts of the ship by a distributing-pipe system 2 ^{2a} 2^b, &c. From the reservoir leads a feed-pipe 3, provided with a regulating-cock, the pipe communicating with the decomposing-tank 4. This tank is provided with a water-tight cover, through which project the terminals of a series of anodes and cathodes 5 5^a, which are connected in multiple with the supply-terminals (marked + and -) leading to a suitable source of electric energy. The electrodes are preferably formed of gas-retort carbon and have their lower edges anchored against displacement. This may be accomplished by embedding them in strips of wood or vulcanite, or in any other suitable insulating material, or by placing them in frame *n*, provided with notches or grooves to receive the edges of the electrodes.

The decomposing-tank is preferably provided at its upper end with an auxiliary tank or compartment 6, with which the induction-pipe 3 and the overflow-pipe 7 communicate, and a partition is placed between the auxiliary and main tank, having a contracted feed-opening for supply of water to the main tank 4, as shown in the drawing. By the employment of this auxiliary compartment the disinfecting fluid developed by electrolysis is not wasted, for the reason that an excess of supply of water when the tank is filled flows off through the pipe 7 without mixing with the chlorinated water produced by decomposition.

At or near the bottom of the decomposing-tank 4 is an eduction-pipe 8, provided with a controlling-valve and leading to the distributing system 2. By a relative adjustment of the valves controlling the egress of the chlorinated water and the valve 9 of a pipe which

connects tank 1 with pipe 2 the water distributed through the vessel may be adjusted to any desired disinfecting strength.

On the several floors of the ship the main pipe 2 leads to the various rooms and closets where disinfection is needed, and taps, valves, and spray or drip nozzles may be suitably located for controlling or regulating the application of the liquid.

For example, at 10 is shown a flush-tank for flushing a system of water-closets, as indicated, and the admission of flush-water by the operation of the valve will also produce disinfection, for the reason that such water is charged with the disinfecting fluid. So at 11, where urinals are shown, the chlorinated water may be allowed to drip continuously.

At 12 is shown a supply-reservoir from which water for washing the floor of the steerage or other parts of the ship may be supplied. Similar provisions may be adopted on the decks and other parts of the vessel.

At 13 is a spray-pipe, controlled by a cock 14, by which the disinfecting fluid may be mixed with the bilge-water in the hold.

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

1. An apparatus for disinfecting ships comprising a reservoir, an electrolytic tank connecting therewith by a feed-pipe, a distributing-pipe and a pair of branch pipes connecting both the reservoir and the electrolytic tank with the distributing-pipe.

2. The combination of an electrolytic tank having a raised compartment with an open partition, as described, a feed-pipe, a distributing-pipe, and branch pipes connecting the compartment and the lower end of the tank, respectively, with the distributing-pipe.

3. An apparatus for disinfecting ships comprising a reservoir for salt water, a tank connected therewith and containing anodes and cathodes for electrolytic decomposition, a pipe distributing system for leading the water from the reservoir to different parts of the ship, a duct establishing communication between the decomposing-tank and said pipe system, and a valve for regulating the flow of disinfecting fluid through said duct.

In testimony whereof I have hereunto subscribed my name this 27th day of June, A. D. 1894.

HENRY R. CASSEL.

Witnesses:

ROBT. H. READ,
CHARLES M. CATLIN.