J. JONES.

Apparatus for Cleansing Ships' Bottoms, &c.

No. 209,343. Patented Oct. 29, 1878.

Fig. 1.

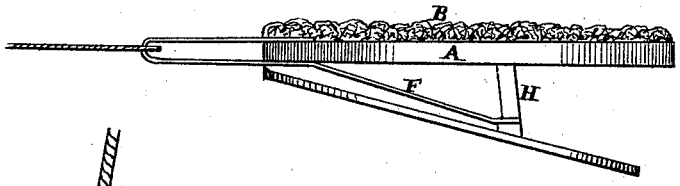


Fig. 2.

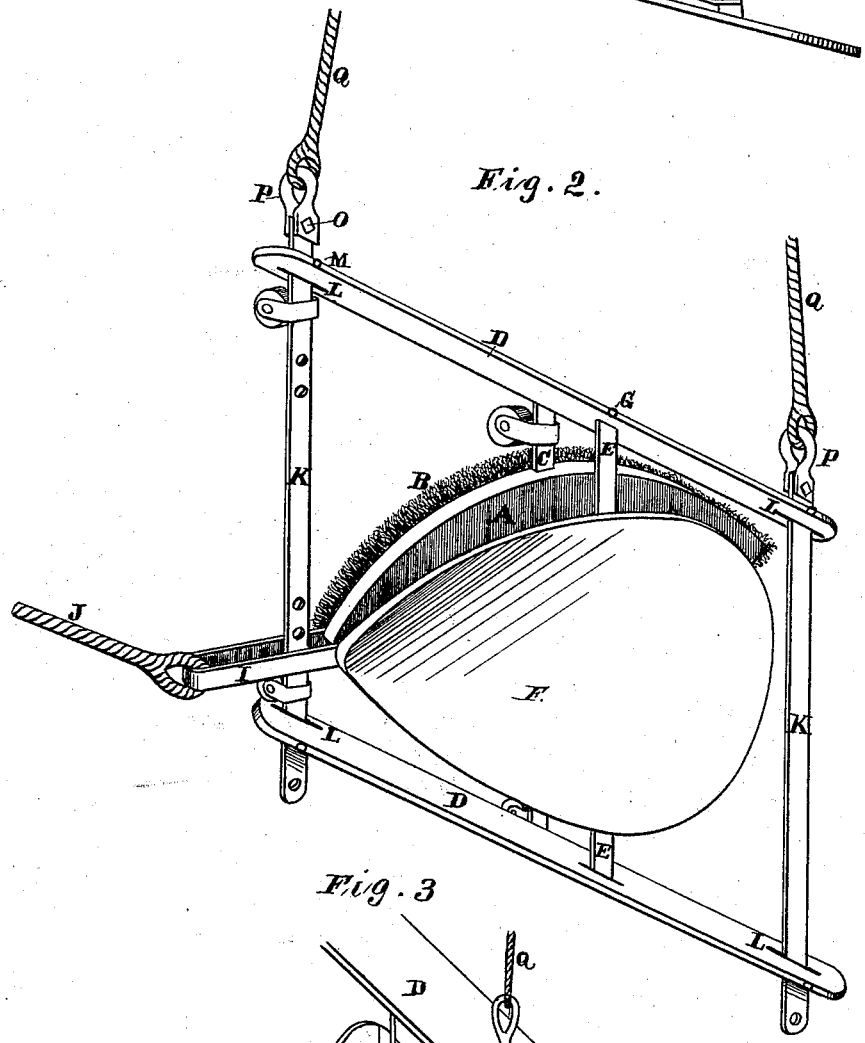
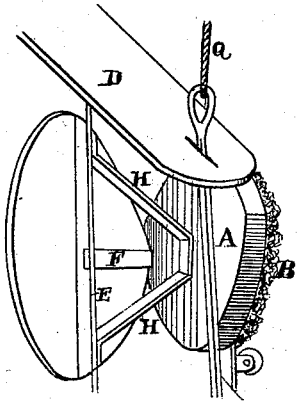


Fig. 3



Witnesses

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN APPARATUS FOR CLEANSING SHIPS' BOTTOMS, &c.

Specification forming part of Letters Patent No. **209,343**, dated October 29, 1878; application filed September 2, 1878.

To all whom it may concern:

Be it known that I, JOHN JONES, of Llandebie, Carmarthenshire, South Wales, have invented a Device for Scrubbing the Bottoms of Vessels; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to a device for cleaning the bottoms of vessels while they are afloat, so that the marine vegetation which accumulates on the bottoms may be scrubbed off without the necessity of taking the vessel on the ways or in a dry dock.

It consists of a scrubber placed in a swinging frame, and so arranged that the pressure of the water will hold it against the vessel's side, while the momentum of the vessel supplies the power to move it up and down the vessel's sides and bottom by means of change of angle of the supporting-frame. Suitable guide and steering ropes are provided for directing the action of the scrubber, its motion being under control from the vessel's deck.

It is well known that vessels remaining any length of time in the water accumulate on their submerged surfaces quantities of slime, grass, barnacles, and other substances, which retard the progress through the water. On iron vessels particularly great difficulty is experienced, as they cannot be sheathed with copper, as wooden vessels are. It is necessary therefore to haul them out of the water very frequently to be cleaned, thus causing great expense, as the constant accumulation of this marine growth is such as to materially reduce the speed, interfere with the quick working of the ship, and thus lengthen the voyages.

The object of my device is to dispense with the necessity of drawing the vessel out for cleaning by using the scrubber to clean the bottom frequently at sea while the vessel is under way.

Referring to the accompanying drawings, Figure 1 is an edge view of my device. Fig. 2 is a perspective view. Fig. 3 shows the bracing of the blocks.

Let A represent the scrubbing-block, the outer surface of which is covered with coir or other suitably hard and rough substance, so as to form a mat, B. This block A is secured to a bar, C, which is pivoted or swiveled to both the upright sides D of the scrubber, as shown. Another bar, E, extends across between these sides through slots F, and pins or bolts G pass down through the ends of the bar, so as to form a swivel at either end.

Brace-irons H extend from the back of the scrubbing-block to the bar E, joining said block and bar together. On top of the bar E is a suitably-shaped plate, F, secured to said bar, with its point extending downward to the forward end of the scrubbing-block. The plate F then stands at an angle to the block, for the purpose hereinafter described.

A draw or leading bar, I, is secured to the lower edge of the block A, extends forward, and is turned back, so that its upper part passes under the plate F at its lower point, and is there secured to the block A, plate F, and bar E, as shown. To this is attached the guide-rope J, for the purpose hereinafter described.

Across between the sides at each end extend the guide-rods K. These guide-rods extend through the slots L in the sides, and are swiveled at each end by the pins M to the sides of the scrubber.

In the extended ends of these guide-rods are formed slots N, and a pin or key, O, passing through these slots secures to the end of the rod an eye or swivel, P, to which are attached the steering-ropes Q. These eyes P are attached to the ends on one side only, but may be removed by taking out the pin, and be placed on the other side, as hereinafter described.

The operation of my device is as follows: The scrubber is lowered over the ship's side by means of the steering-ropes Q, and the guide-rope is led to the bow of the vessel and made fast. The mat B of the scrubbing-block A then sits flat against the vessel's side or bottom, as the pressure of water against the angularly-placed plate F holds it there, the guide-rope forward preventing the scrubber from going astern. Now, as all the cross-rods between the sides are swiveled or pivoted to the sides, said sides D may be swung so as to stand obliquely to the scrubbing-block and

plate, they being secured to the sides in the center.

As the apparatus hangs against the ship's side or bottom, by pulling on the steering-rope Q at one end of the side and slacking on the other steering-rope the forward end of the sides will be depressed, and the pressure of the water as the vessel goes through it forcing against the oblique angles of the sides D will cause the scrubber to move downward, clinging, however, all the time to the vessel's side or bottom. When it is desired to have the scrubber come up again, the angle of the sides D is reversed by means of the guide-ropes, so that the forward end is elevated. The pressure of the water then striking obliquely on the side directs the scrubber up again, it moving in the radius of a circle about the point where the guide-rope is secured. By tending the steering-lines properly the scrubber may be made to travel up and down the ship's side and bottom so as to rub off all adhering substances. By slacking or pulling on the forward guide-line the device is moved to a new surface, and then allowed to move up and down again.

Where iron vessels are to be cleaned the friction-rollers S on the cross-bars are necessary. Where the plates join together there is an offset or flange, at which point the scrubber might catch and stop; but by adding these friction-rollers the scrubber may be moved up and down, as the rollers will assist it in passing over the joints without catching.

After one side of the vessel is cleaned, and it is desired to clean the other side, by removing the keys O the eyes or swivels carrying the steering-ropes may be shifted to the other ends of the guide-rods, so as to be on the upper ends of these rods when the scrubber is against the vessel's bottom.

It will be seen that the power necessary to move this scrubbing device over the sides and bottoms of vessels is derived from the momentum of the vessel and pressure of water. It can be used as frequently as desired, and the coir mat may be easily replaced. The scrubber will accommodate itself to the varying curves of the vessel's bottom, so as to clean every part, and may be made to move rapidly or slowly by altering the angles of the sides to suit requirements. This is accomplished by simply hauling or slacking on the proper steering-rope, as the case may be.

The device will also operate when the vessel is anchored in a tideway, and may be used wherever there is any considerable current, so that the bottom of a vessel may be kept clean and her speed very much increased with but little expense.

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

1. The scrubber consisting of the mat B, secured to the back A and mounted upon the side frames D, in combination with the angularly-placed plate F, by which the action of the current holds the scrubber in contact with the bottom of the vessel, substantially as and for the purpose herein described.

2. The scrubbing-mat B, mounted within the frame D by means of the transverse loosely-pivoted bars E K, and provided with the inclined holding-plate F, in combination with the guide and tow ropes J Q, whereby the sides D may be held at an angle with the current and the mat caused to move over the bottom of the vessel, substantially as herein described.

3. The scrubbing-mat B, with its inclined holding-plate F and the angularly-adjustable sides or frame D, whereby the mat may be moved up and down over the vessel's bottom, in combination with the rollers S, to carry the frame past joints in the plates and other obstructions, substantially as herein described.

In witness whereof I have hereunto set my hand this 9th day of August, 1878.

JOHN JONES.

Witnesses:

CHAS. G. YALE,

FRANK A. BROOKS.