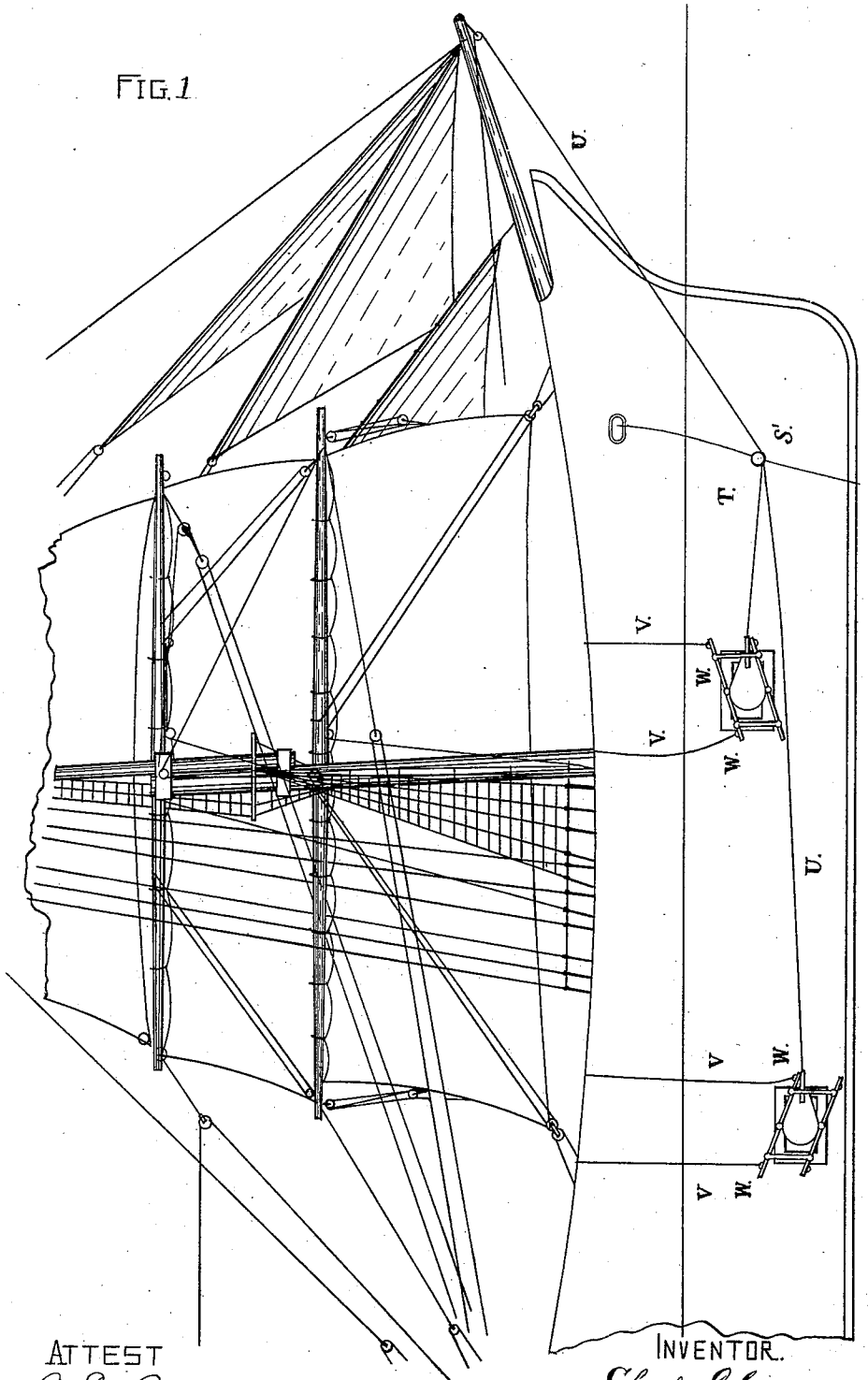
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C. G. CROSS.

IMPLEMENT FOR BRUSHING AND SCRAPING SHIPS' HULLS.

No. 333,503. Patented Jan. 5, 1886.

FIG. 1



ATTEST

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FIG. 2.

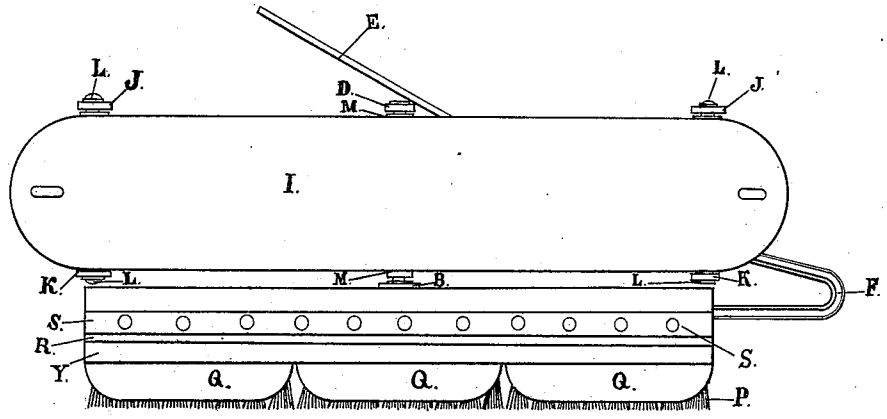
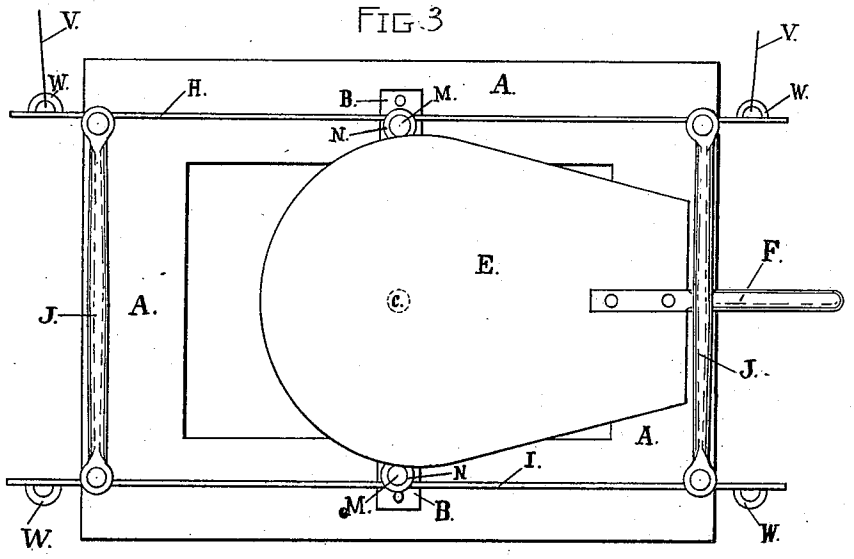


FIG. 3.



ATTEST.

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FIG. 4

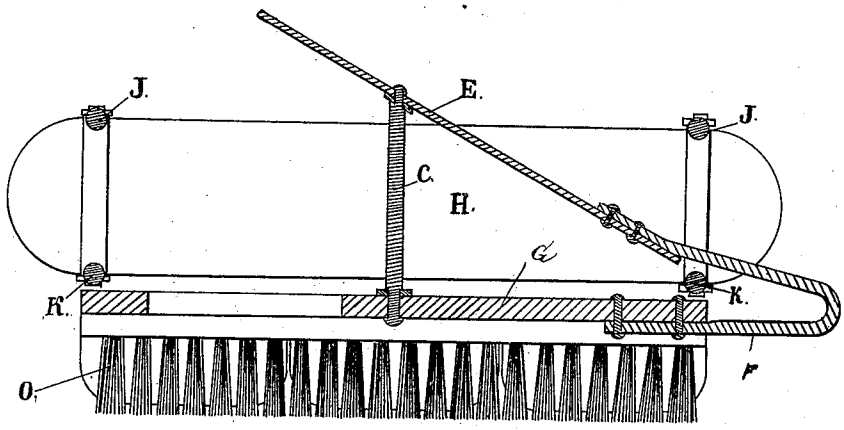
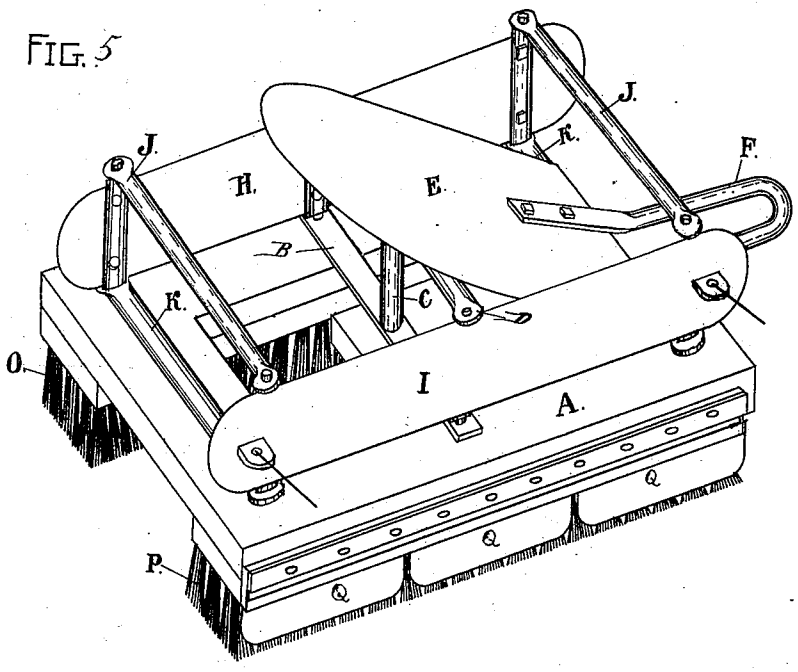


FIG. 5



ATTEST.

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UNITED STATES PATENT OFFICE.

CHARLES G. CROSS, OF LONGSIGHT, MANCHESTER, ENGLAND.

IMPLEMENT FOR BRUSHING AND SCRAPING SHIPS' HULLS.

SPECIFICATION forming part of Letters Patent No. 333,503, dated January 5, 1886.

Application filed March 30, 1885. Serial No. 160,634. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. CROSS, a subject of the Queen of Great Britain, residing at 10 Clitheroe street, Slade Lane, Longsight, Manchester, England, have invented a new and useful Combined Brush and Scraper for Removing Barnacles and Cleaning the Hulls of Vessels, of which the following is a specification.

My invention relates to improvements in brush and scraper for removing barnacles and cleaning the hulls of vessels while on a voyage at sea.

Figure 1 is a side elevation of a ship, showing the mode of arranging my improved combined brush and scraper when in the act of scraping the hull. Fig. 2 is a side elevation, Fig. 3 a plan view, Fig. 4 a longitudinal section, and Fig. 5 a perspective view, of my improved combined brush and scraper, showing the construction and general arrangement of the same.

The following is the construction of the same: I generally form the frame A of wood, and in the center longitudinally I place the metallic cross-bar B, to which I attach the metal standard C. In the center, to this metal standard C, I attach the upper cross-bar, D, and rivet the pressure-board E to the same. I attach the clevis F to the turtle-back or pressure-board E and to the frame A under the longitudinal central frame-piece, G, which is framed into the forward rail of the wooden frame A and extends back to the central cross-bar, B, where it is joined to the cross-bar B and the central standard, C. I form the propelling guide-pins H and I of sheet metal, and connect them by the upper connecting-rods, J, and the lower connecting-rods, K, and the vertical end pivot-bars, L, and by the central pivot-bars, M, which are attached to the guide-pins H and I about in the center with journals at the top in the upper cross-bar, N, and at the bottom to the central cross-bar, B. I attach the brushes O and P to the side rails of the frame A by means of screws, so as to be taken off when it is required. I construct the brushes of bamboo or metal or any other suitable material. I attach the metal scrapers Q to a heavy india-rubber strip, Y, which I attach to the body or wooden back of the brush by means of screws, first placing a heavy sole-leather strip, R, and a thin metal plate, S, (to serve as a washer-strip,) under the screw-heads.

In order to show clearly the operation of my combined brush and scraper, I have shown, Fig. 1, a side elevation of a ship with a wire, S', passed out through the hawse-pipe and down under the ship for the purpose of carrying the bull's-eye T to serve as a guide for the guy U, which is attached to the clevis F. I attach the regulating and directing wires V in the eyes or staples W. The water-line is indicated by the line X. The combined scraper and brush is let down by the regulating and directing wires V. As soon as it enters the water, the turtle-back or pressure-plate E, standing at an angle and being carried swiftly through the water, is borne closely to the hull of the vessel, so that the scrapers and brushes touch the same. The rear wire V is then raised and the forward wire lowered, and the action of the water upon the guide-fins H and I carries the same down with great force, and the scrapers take off the barnacles and other accumulations from the hull, and the brushes complete the process of cleaning. By this arrangement the bottom is readily reached, and thus every portion of the hull is cleaned. When the scrapers and brushes have been let down as far as it is desired to clean at one operation, then the rear regulating and directing wire V is lowered, while the forward one is drawn up, thus reversing the angle of the guide-fins H and I, and the action of the water forces the scraper upward.

I generally construct the combined scraper and brush about four feet in length, and I let it back about two feet at each motion up and down the hull. Thus every part is gone over twice, once in an upward and once in a downward direction. The scraper, Q, being attached by means of the india-rubber strip Y, give back when met by an unyielding substance, the brushes allowing them to incline to an angle that will allow them to pass over the edge of an iron plate or other part of the structure.

The fins H and I are set back from the edge of the brushes to allow the brushes to pass close to the keel of the ship.

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

1. The combination, with the frame and brushes, of the scrapers Q, arranged along the sides of the frame and extending below the same, and the rubber strips Y, arranged between the scrapers and the frame, and the pressure-board, as set forth.

2. The combination, with the frame, of fins pivoted to said frame midway their ends and connected at their ends by bars J K, the inclined pressure-board E, the brushes secured to the under side of the frame, the scrapers secured to the sides of the frame, and the elastic strips under the scrapers, as set forth.

CHARLES G. CROSS.

Witnesses:
JOHN H. REDSTONE,
L. E. REDSTONE.