(No Model.)

H. ARENTZ.

APPARATUS FOR CLEANING THE SIDES AND BOTTOMS OF SHIPS.

No. 328,744. Patented Oct. 20, 1885.

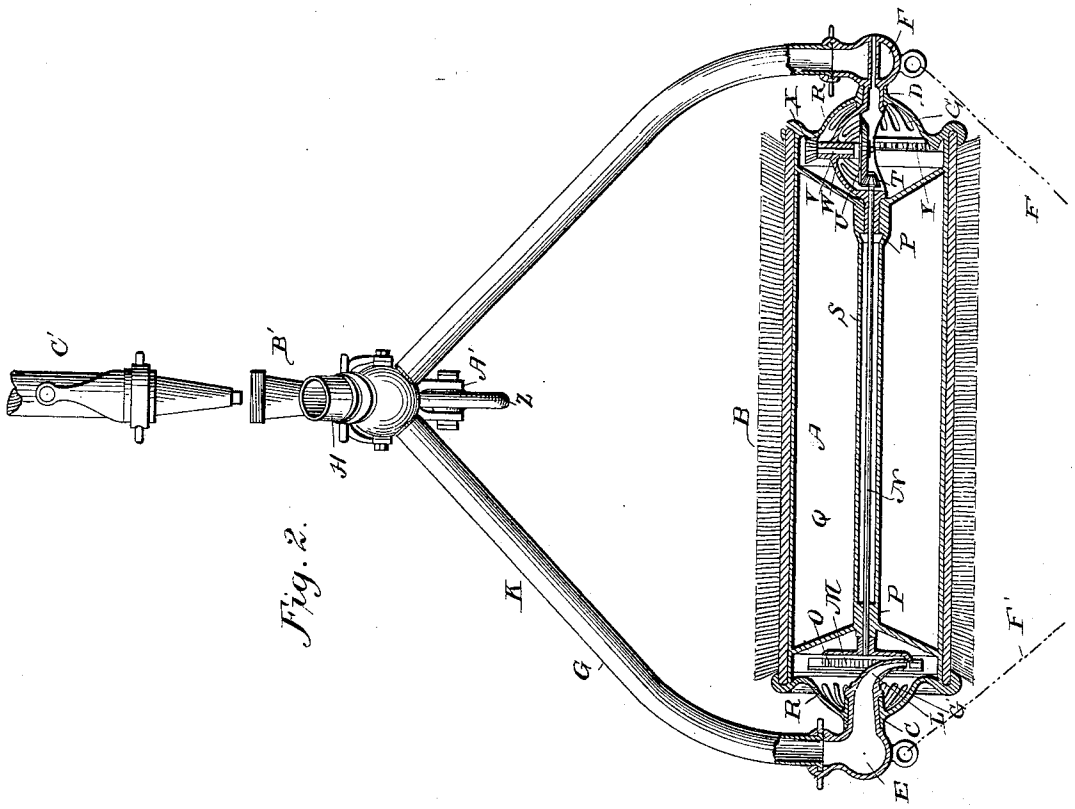


Fig. 2.

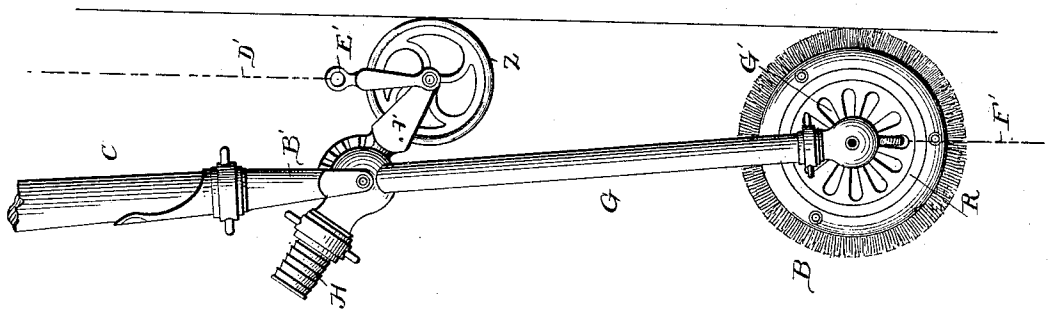


Fig. 1.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CLEANING THE SIDES AND BOTTOMS OF SHIPS.

SPECIFICATION forming part of Letters Patent No. 328,744, dated October 20, 1885.

Application filed July 21, 1885. Serial No. 172,214. (No model.)

To all whom it may concern:

Be it known that I, HJALMAR ARENTZ, a subject of the King of Denmark, residing at Copenhagen, in the Kingdom of Denmark, have invented certain new and useful Improvements in Apparatus for Cleaning the Sides and Bottoms of Vessels; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a side view of my improved apparatus for cleaning the sides of vessels, and Fig. 2 is a plan view of the same, showing the brush-cylinder and the ends of the bifurcated frame in axial section.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to apparatus for cleaning the sides and bottoms of vessels without taking the vessels in dry-dock; and it consists in the improved construction and combination of parts of the same, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates a cylinder having its outer surface provided with brushes B, and having hollow trunnions C and D at its closed ends, which turn upon hollow stub-axles E and F, which project inward from the ends of a bifurcated frame, G, of pipes.

One branch of the tubular bifurcated frame is connected to a branch, H, upon which a hose, I, is secured, and the end J of the said branch K extends beyond the portion E, which forms the stub-axle, and forms a curved nozzle, L, which supplies water to a turbine or water-motor, M, inclosed in one end of the roller and having a shaft, N, upon which the turbine wheel O is secured. The turbine-shaft passes through the entire roller axial to the same, and turns in bearings P P, formed in the centers of inside walls, Q, which close the ends of the cylinder inside of the outer end walls, R, forming casings in which the turbine and the revolving mechanism, respectively, are inclosed, and a tube, S, incloses the axial turbine or drive shaft.

The end of the drive-shaft opposite to the turbine is provide with a beveled pinion, T, which meshes with a conical cog-wheel, U, upon the end of a shaft, V, which turns in a bearing, W, formed within the casing at that end of the cylinder projecting from the stub-axle F, and the upper end of this short shaft is provided with a pinion, X, which meshes with a cog-wheel, Y, upon the inside of the cylinder.

A guide-wheel, Z, is journaled in the ends of a forked frame, A′, under the united ends of the bifurcated frame G, and serves to support and guide that part of the apparatus.

A socket, B′, extends from the united ends of the bifurcated frame and serves to receive the end of a pole, C′, which end is swiveled in the socket, and a rope or chain, D′, is secured to the bifurcated frame of the guide-wheel, which is provided with an eye, E′, for the reception of the said rope or chain, and two ropes or chains, F′, are attached to the ends of the bifurcated tubular frame G.

Both the outer end walls of the cylinder are provided with perforations G′, and the end of trunnion D passes through the end of the arm of the bifurcated frame, so that all water after having passed through the turbine may have an easy outlet.

The apparatus is used in practice by securing the ropes or chains in their respective eyes, passing the ropes from the bifurcated ends of frame G under the keel of the vessel and up at the other side of the vessel, thereupon passing the rope or chain attached to the frame of the guide-wheel up on the side of the vessel; and it will be seen that by drawing the ropes thus secured at the two ends of the apparatus the apparatus may be drawn up and down on the sides of the vessel.

For the purpose of guiding the apparatus when it is used upon the nearly vertical sides of the vessel, the pole or handle may be inserted into its socket, while when the apparatus travels upon the bottom of the vessel the buoyancy of the hollow cylinder, together with the action of the ropes, will serve to draw it up against the bottom. The water being turned on and admitted through the hose into the motor, the said water coming through the hose under pressure, it will revolve the water-wheel in the motor, revolving the drive-shaft,

and through it and the bevel-pinions and cog-wheels the cylinder will be revolved, scrubbing the bottom and sides of the vessel clean. In this manner the sides and bottom of the vessel may be cleaned and scrubbed without the necessity of taking the vessel into dry-dock, and the water surrounding the vessel will carry off all impurities scrubbed loose from the bottom of the vessel, thus rendering this manner of cleaning the sides and bottom of a vessel more effective than the comparatively dry scrubbing the vessel will receive in a dry-dock.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination of a bifurcated frame having hollow stub-axles projecting inward from its ends, and having one arm tubular and connected with a water-supply, with a cylinder having brushes upon its surface and journaled with hollow trunnions upon the hollow stub-axles, and having a water-motor for revolving it inclosed in one end and supplied from the tubular arm of the bifurcated frame, as and for the purpose shown and set forth.

2. In an apparatus for cleaning the sides and bottoms of vessels, the combination of a bifurcated frame having hollow stub-axles upon their ends and having one branch tubular, a hollow brush-cylinder journaled with hollow trunnions at its ends upon the stub-axles, a turbine at one end of the cylinder and receiving its supply from one of the hollow stub-axles and having its shaft journaled axially in the cylinder, a bevel-pinion upon the end of this shaft, a shaft journaled in a bearing projecting from the other stub-axle and having a bevel cog-wheel at its lower end and a bevel-pinion at its upper end, and a bevel cog-rim secured upon the inside of the brush-cylinder, as and for the purpose shown and set forth.

3. In an apparatus for cleaning the sides and bottoms of vessels, the combination of a bifurcated frame having one tubular branch connected with a water-supply, a brush-cylinder journaled between the ends of the frame and having a water-motor for revolving it, a guide-wheel journaled below the united ends of the branches of the frame, ropes attached to the forward ends of the frame, a rope attached to the guide-wheel frame, and a pole or handle swiveled in a socket at the end of the bifurcated frame, as and for the purpose shown and set forth.

4. In an apparatus for cleaning the sides and bottoms of vessels, the combination of a bifurcated frame having tubular stub-axles projecting inward from their ends and having one branch tubular and provided with a pipe for the attachment of a hose for supplying water under pressure, a hollow brush-cylinder having tubular trunnions in their perforated ends, and having closed end walls inside of the perforated walls, provided at their centers with an axial tube, a shaft journaled in this tube and having a water-wheel at one end receiving water from the tubular stub-axle and having a bevel-pinion at its other end, a vertical bearing projecting from the stub-axle at that end, a shaft journaled in the bearing and having a bevel cog-wheel meshing with the pinion and a bevel-pinion at its upper end, and a cog-rim meshing with the said pinion and secured upon the inner side of the brush-cylinder, as and for the purpose shown and set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HJALMAR ARENTZ.

Witnesses:
FREDERIK WOLFF,
MORITZ CLAUSEN.