No. 773,036. PATENTED OCT. 25, 1904.

H. SMITH.

APPARATUS FOR RENEWING THE STERN BUSHINGS OF SHIP PROPELLER SHAFTS.

APPLICATION FILED SEPT. 8, 1903.

NO MODEL.

Fig. 2.

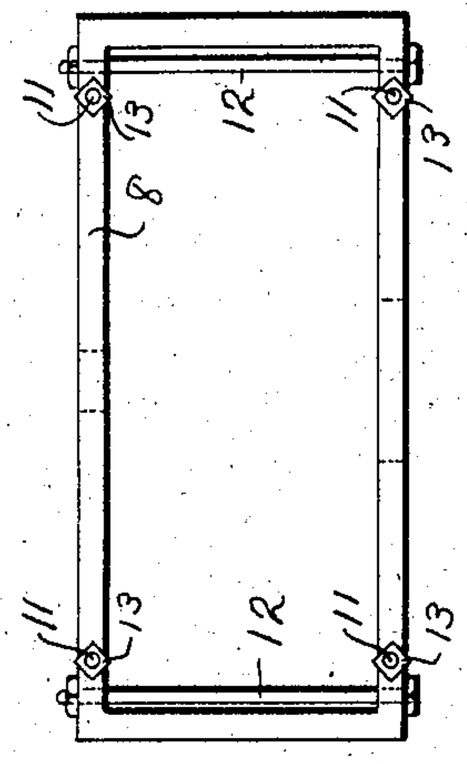

Fig. 3.

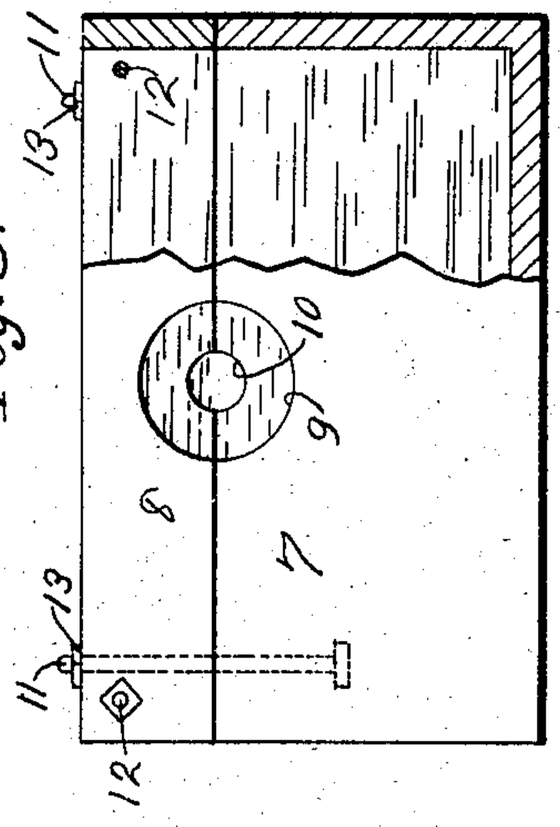

Fig. 1.

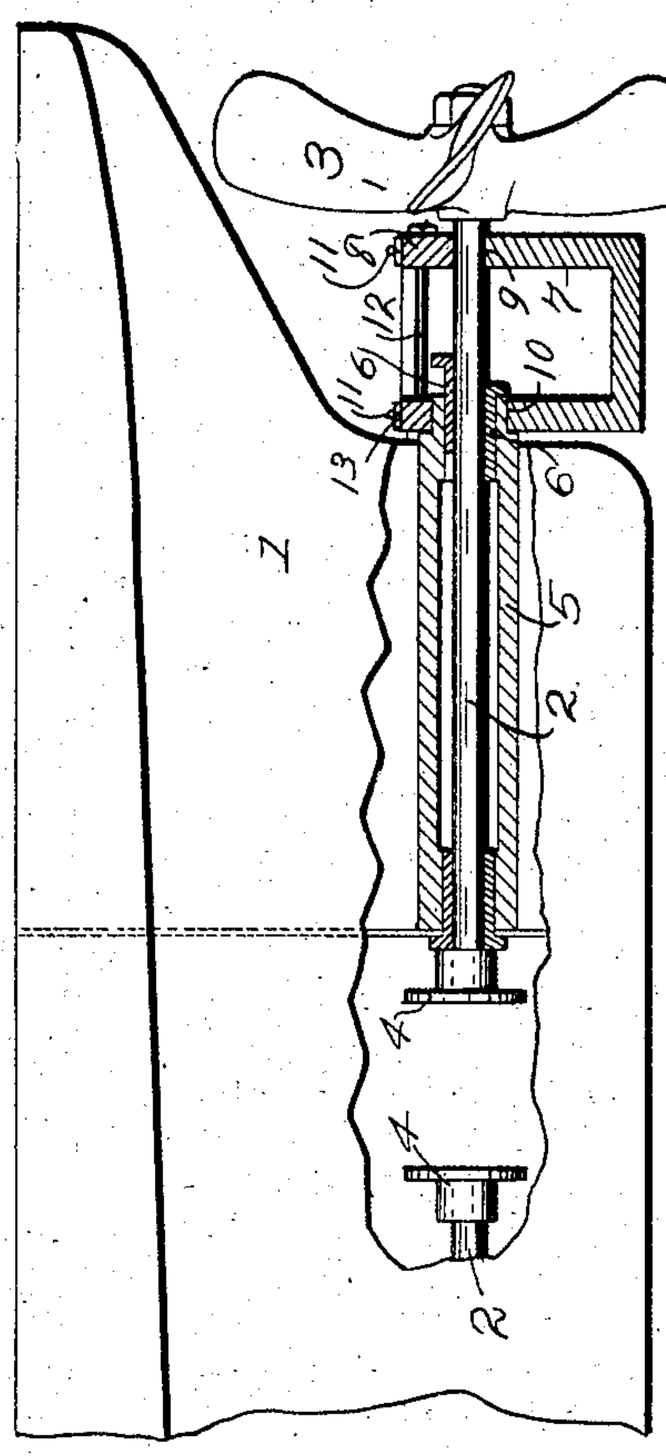

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PHOTO-LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 773,036. Patented October 25, 1904.

UNITED STATES PATENT OFFICE.

HERMAN SMITH, OF LUDINGTON, MICHIGAN.

APPARATUS FOR RENEWING THE STERN-BUSHINGS OF SHIP PROPELLER-SHAFTS.

SPECIFICATION forming part of Letters Patent No. 773,036, dated October 25, 1904.

Application filed September 8, 1903. Serial No. 172,420. (No model.)

To all whom it may concern:

Be it known that I, HERMAN SMITH, a citizen of the United States, residing at Ludington, county of Mason, and State of Michigan, have invented new and useful Improvements in Apparatus for Renewing the Stern-Bushings of Ship Propeller-Shafts, of which the following is a specification.

My invention relates to improvements in apparatus for renewing the shaft-bushings of ship-propellers.

The object of the invention is to avoid the expense and delay of putting the vessel in dry-dock. The invention contemplates the adjustment of a water-excluding chamber or so-called "coffer-dam" to the propeller-shaft and stern-tube pending the removal and replacement of the bushings.

In the following description reference is had to the accompanying drawings, in which—

Figure 1 shows a portion of the stern of a vessel partially broken away to show the propeller-shaft uncoupled and my invention applied in position of use. Fig. 2 is a plan view of my invention; and Fig. 3 is a side view of the same, partially broken away.

Like parts are identified by the same reference characters throughout the several views.

1 represents the hull of a vessel, 2 the propeller-shaft, 3 the propeller, and 4 the coupling members of the shaft.

5 is the shaft-tube, the same being made to project rearwardly for a short distance at the stern, as shown, the usual sectional bushings 6 being also illustrated. The coffer-dam is formed in sections 7 and 8, with apertures 9 and 10 in its respective sides at the meeting edges of said sections. The line of the joint between said sections passes centrally through said apertures 9 and 10. The aperture 9 is larger than the aperture 10 and is adapted for the reception of the shaft-tube, which fits snugly in said aperture. The aperture 10 is of the same diameter as the shaft 2. When it is desired to replace the shaft-bushings 6, the vessel is tilted by loading the bow until the propeller-shaft is raised to a point at or near the surface of the water. The rear portion of the shaft is then uncoupled at 4 and adjusted rearwardly in the tube 5, as shown in Fig. 1, thus leaving a space between the propeller and the rear end of the said tube. The section 8 is then removed from the coffer-dam and the section 7 floated under the shaft and adjusted to the shaft and stern-tube, whereupon the section 8 is replaced and secured to the section 7 by bolts 11. The walls of the section 8 may, if desired, be made separable and secured together by bolts 12.

When the section 8 is secured by bolts 11 to the section 7, the side walls of the sections fit snugly around the shaft 2 and tube 5, respectively, and the section 8 is of sufficient height to project above the surface of the water. By pumping the water out of the receptacle the bushings 6 may be easily reached, removed, and replaced by new bushings. The nuts 13 of the bolts 11 may then be removed to permit the separation and removal of the coffer-dam sections, whereupon the shaft and propeller are again adjusted to normal position.

The coffer-dam sections are preferably made of wood or other material buoyant in water, whereby the lower or larger section 7 may be floated into position, the same being filled with water or weights to facilitate its adjustment underneath the shaft. The upper section 8 may be easily lifted and adjusted in position either integrally or by adjusting each wall separately, as desired.

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

1. The combination with a ship of a removable receptacle open at the top and located between the propeller-wheel and the stern wall of the ship, with the propeller-shaft extending through suitable apertures in the wall of the receptacle and with the shaft-tube fitting and projecting into the aperture of the inner receptacle-wall.

2. The combination with a ship, of a remov-

able receptacle located between the propeller-wheel and the stern wall of the ship, with the propeller-shaft extending through suitable apertures in the wall of the receptacle and with the shaft-tube fitting and projecting into the aperture of the inner receptacle-wall; said receptacle being composed of sections separable in the horizontal plane of the propeller-shaft and the lower section being formed of buoyant material.

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

HERMAN SMITH.

Witnesses:

EDWIN HOSEA MOWEN,

ROBERT ELLIOTT.