J. FUKAO.

STERN TUBE AND ITS STUFFING BOX.

APPLICATION FILED MAY 8 1918

1,307,815.

Patented June 24, 1919.

2 SHEETS—SHEET 1.

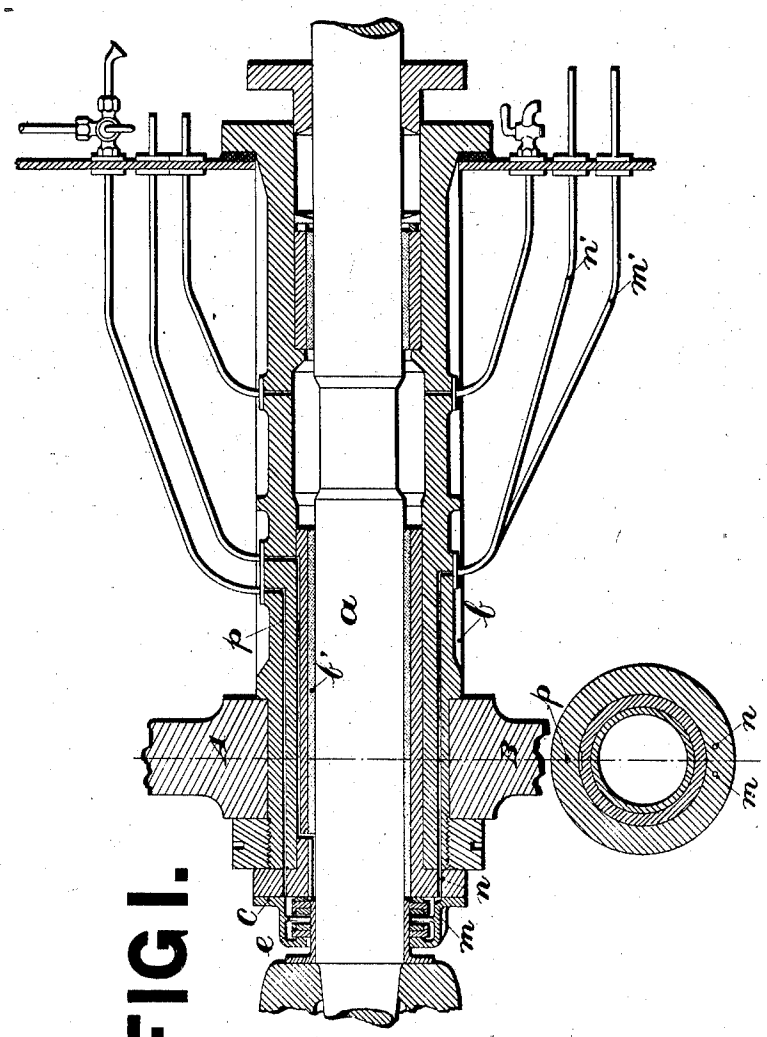


FIG. I.

Inventor.

Junji Fukao

by M. C. Massie

his attorney

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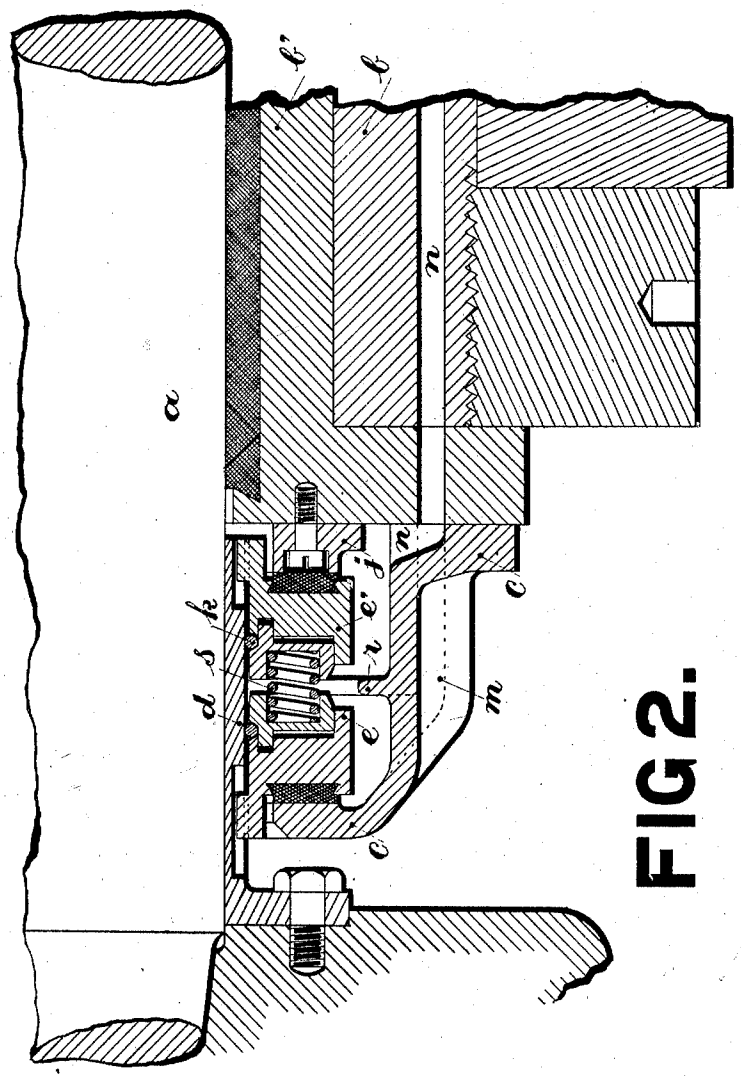


FIG 2.

Inventor.

Junji Fukao

by M.C. Massie

his attorney

UNITED STATES PATENT OFFICE.

JUNJI FUKAO, OF KOBE, JAPAN.

STERN-TUBE AND ITS STUFFING-BOX.

1,307,815. Specification of Letters Patent. Patented June 24, 1919.

Application filed May 8, 1918. Serial No. 233,391.

To all whom it may concern:

Be it known that I, JUNJI FUKAO, citizen of Japan, residing at No. 1A, Rokubancho, Kobe, Japan, have invented certain new and useful Improvements in Stern-Tubes and Their Stuffing-Boxes; and I do hereby 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.

The title of the invention.

Stern tubes and their stuffing boxes.

The nature of the invention and its object.

This invention relates to stern tubes and their stuffing boxes, in which a passage or passages from the external stuffing box of a stern tube to the shaft tunnel of the ship is provided in order to lead away the oil and sea water leaked into the stuffing box, and it has for its object to restore the leaked lubricating oil and to protect the propeller shaft from corrosion caused by the leaked sea water.

The accompanying drawings show an example of the arrangement according to the invention. The Figure 1 is a sectional elevation of the stern tube, and the Fig. 2 is a detail of the stuffing box.

In the Fig. 1, (*a*) is a propeller shaft, (*b*) is a stern tube that is disposed in an opening in the hull of the ship and serves as supporting means for the shaft *a*, (*b'*) is a stern tube bush, (*c*) is a stuffing box, and (*e*) is a packing ring, which is shown in detail in another figure. In the Fig. 2, (*d*) is a protecting tube for the propeller shaft attached to the propeller, (*e*) (*e'*) are packing rings which are to be pressed on the back of their rubbing surfaces by springs (*s*) and it is arranged that they rotate with the tube (*d*). The clearances between the tube (*d*) and the rings (*e*) (*e'*) are filled with packings (*k*). The rib (*r*) of the stuffing box (*c*) keeps the sea water leaked into the box through the clearances, between (*c*) and (*e*) and (*e*) and (*d*) from mixing with the oil leaked out from the clearances between (*j*) and (*e*) and (*d*) and (*e'*), and same collects the two liquids separately at the bottom part of the box.

The liquids which leak into the stuffing box are led into the ship by some suitable means, and I have illustrated herein one desirable embodiment of such means. From the bottom part of the box (*c*) two passages (*m*) and (*n*) are provided longitudinally throughout the wall of the stern tube, and by two copper pipes (*m'*) (*n'*) they are led farther into the shaft tunnel respectively. There is also an air pipe (*p*) opening in the stuffing box, by which the atmospheric pressure can be maintained in the box. By this means the leaked sea water and the leaked oil are sent separately into the ship and the latter can be refined for further use. Of course the said passages in the wall of the stern tube can be substituted by pipes, and the two passages may be substituted by a single passage, the oil and the sea water being led together into the shaft tunnel where they are separated from each other. The stuffing box and the passages (*m*), (*n*), (*m'*) and (*n'*) can be cleaned with high pressure water or air which is to be forced in through the air pipe (*p*).

The designs of the arrangement may be altered as far as they are compatible with the principle of the invention.

Having now fully described my invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. In a ship, the combination with a propeller shaft, of means carried by the ship for supporting said shaft, a stuffing box for said shaft, and means for leading into the ship liquid which leaks into said box.

2. In a ship, the combination with a propeller shaft, of a stuffing box therefor comprising packing, and means for leading into the ship liquid that leaks past said packing into the stuffing box.

3. In a ship, the combination with a stern tube, of a propeller shaft passing therethrough, a stuffing box for said shaft comprising packing, and means comprising a passage or passages for collecting sea water and oil leaking past said packing and leading such water and oil through said tube into the ship.

4. In a ship, the combination with a stern tube, of a propeller shaft passing therethrough, a stuffing box for said shaft, comprising packing, and means for separately collecting the sea water and the oil leaking past said packing into said box, and means for leading liquid from said collecting means into the ship.

5. In a ship, the combination with a stern tube and a stuffing box, of means for leading into the ship the sea water and oil leak-

ing into said box, such means comprising a passage or passages extending through the wall of the stern tube.

6. In a ship, the combination with a stern tube and a stuffing box, of means for leading into the ship liquid leaking into said box, and means for maintaining a suitable air pressure in said stuffing box.

7. In a ship, the combination with a stern tube and a stuffing box, of means for leading into the ship water and oil leaking into said box, and a passage for supplying air to said stuffing box, said passage being adapted and arranged for supplying fluid under pressure to said stuffing box and the means for leading sea water and oil therefrom to clean such box and leading means.

8. The combination with a ship's hull, of a propeller shaft, means mounted on said hull for supporting said shaft, a stuffing box for said shaft, said stuffing box being disposed outside said hull and coöperating with such supporting means, and means for leading into said hull liquid which leaks into said box.

In testimony whereof I hereunto affix my signature.

JUNJI FUKAO.