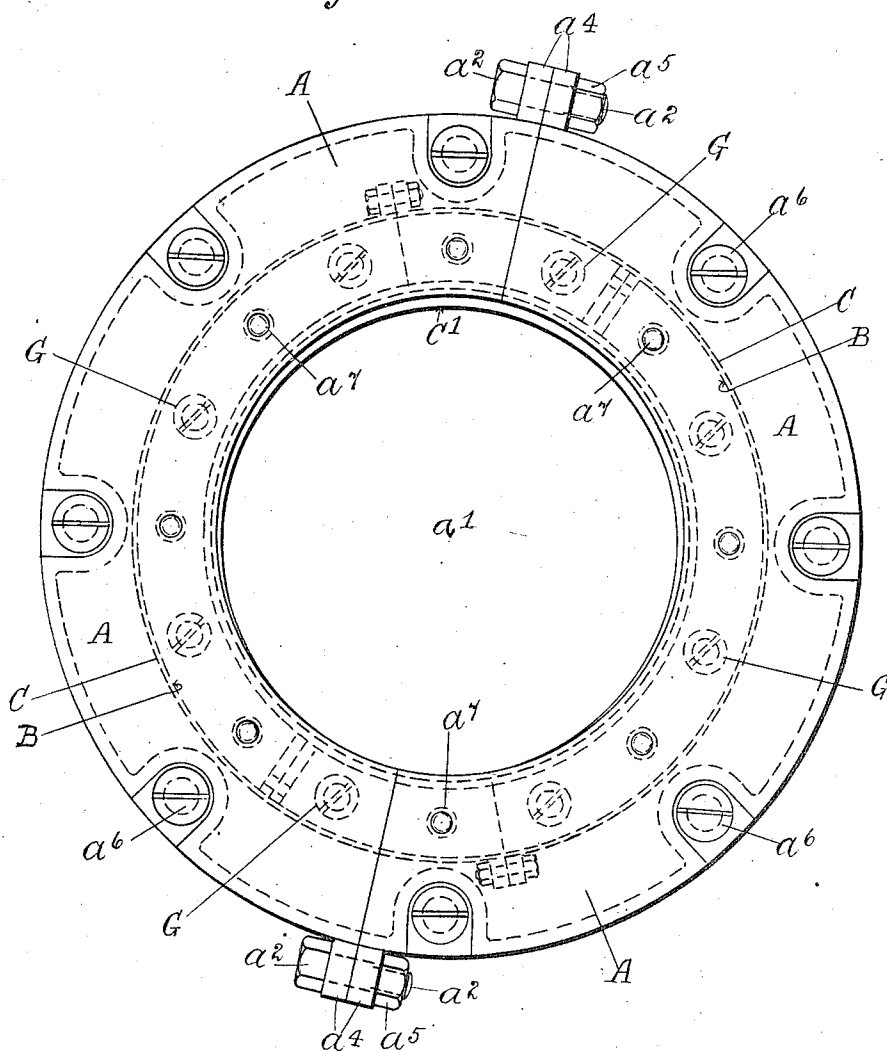


1,294,620.

Fig. 1.



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PROTECTOR FOR THE TAIL SHAFTS AND BEARINGS OF SHIPS' PROPELLERS.
APPLICATION FILED JULY 31, 1918.

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3 SHEETS--SHEET 2.

The drawing consists of two cross-sectional views of a mechanical device. The top view shows a cylindrical body with a central vertical shaft. The shaft has a top flange with a central hole. The body has a central hole. The bottom view shows a similar cylindrical body with a central vertical shaft. The shaft has a bottom flange with a central hole. The body has a central hole. Various components are labeled with letters and numbers.

Labels in the top view include: a^b , A , c , a^y , b^6 , b^3 , G , b^6 , c , a^8 , a^1 , b^6 , B^1 , b^3 , a^y , b^2 , b^1 , b^4 , b^5 , a , A , a^4 , a^3 , a^3 , a^4 .

Labels in the bottom view include: c , a^8 , a^1 , b , B , a^y , b^3 , b^1 , b^4 , b^5 , a , A , a^6 , a^3 , a^4 .

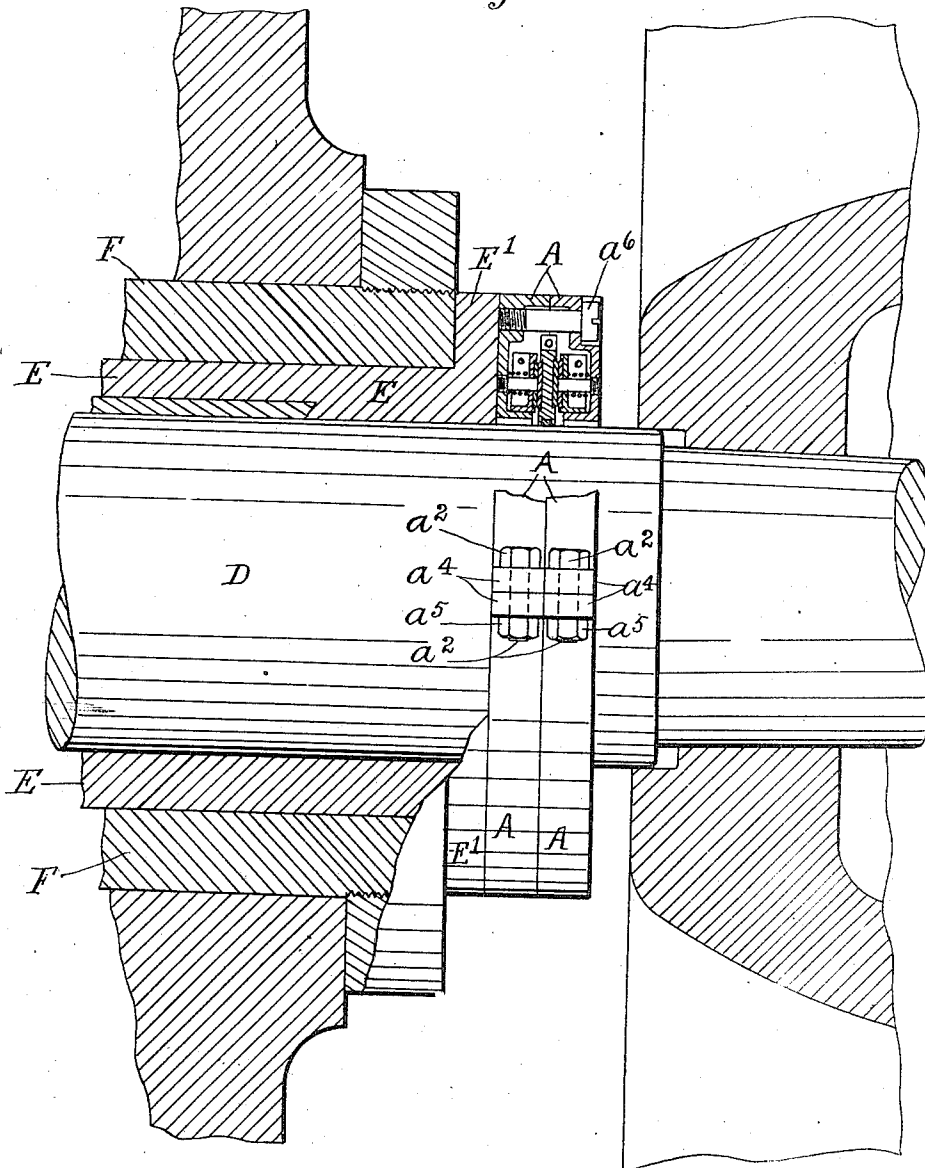
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Patented Feb. 18, 1919.
 3 SHEETS—SHEET 3.

Fig. 3.



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PROTECTOR FOR THE TAIL-SHAFTS AND BEARINGS OF SHIPS' PROPELLERS.

1,294,620.

Specification of Letters Patent.

Patented Feb. 18, 1919.

Application filed July 31, 1918. Serial No. 247,584.

To all whom it may concern:

Be it known that I, EDWARD WILLIAM CLARKE, a subject of the King of Great Britain, residing in the city and county of Kingston-upon-Hull, England, have invented certain new and useful Improvements in Protectors for the Tail-Shafts and Bearings of Ships' Propellers, of which the following is a specification.

10 This invention has reference to what are known as propeller shaft protectors, that is, devices attached to or fitted up to the stern tubes of ships and in which the propeller shaft works, for the purpose of preventing
15 water from entering the stern tube and causing pitting, or otherwise detrimentally affecting the shaft and the bearings in such stern tube.

20 The present invention has for its object an improved shaft and bearing protector which shall be simple of construction, easy to fix and remove, should its removal be necessary through any cause, and extremely effective in preventing water from entering
25 the stern tube.

30 In order that my invention may be readily understood and carried into effect, I have appended hereunto three sheets of explanatory drawings of which Figure 1 represents a side view of a propeller shaft and bearing protector in accordance with my invention and constructed according to one mode, Fig.
35 2 is a transverse view of the same, partly in section shown on a portion of a propeller shaft, and Fig. 3 is a view showing the device fitted in position between the stern of a ship and the propeller, the device being shown partly in section. Fig. 3 is drawn to a smaller scale than Figs. 1 and 2.

40 In constructing a device in accordance with my invention, and for the purposes mentioned, I employ a metal casing A of preferably circular shape which is built up according to one mode of four semi-circular
45 pieces, two of which pieces form one half of the casing or "box", as I will call it, and the other two pieces the other half of the box whereby the box is divided into two parts both annularly and transversely. In
50 the inner face of each of the four pieces which form the complete box is a semi-annular groove of a suitable width and depth whereby when the four pieces are placed together such pieces form a box the interior
55 of which is in the form of an annular passage a , the said box having a central hole

a^1 through which the propeller shaft passes and whereby such box is caused to encircle such shaft.

The two pieces which form one circular half of the box are shown connected by bolts
60 a^2 passed through holes a^3 in lugs a^4 formed on or secured to adjoining ends of the said pieces, on each of which bolts a nut a^5 , or more than one, is turned to secure such
65 two pieces together, the corresponding two pieces which form the other circular half of the box being shown secured together in a similar manner. The two circular half
70 pieces of the box are secured together by any suitable means, as for example, by screws a^6 passed through holes in one circular half piece and turned into correspondingly situated tapped holes in the other circular half
75 piece, as shown more clearly at Fig. 2 of the drawings.

In the annular passage or groove a in the box I place two metal rings B, B¹ each of which is composed according to one mode, of two semi-circular half pieces, each of such
80 rings being provided with an annular flange b , the inner face of each ring being according to a preferred mode, provided with an annular recess filled with white metal or the like
85 b^1 , studs a^7 being formed on or so fitted in the side walls of the annular passage in the box A as to project inwardly from such walls and enter holes b^2 in the rings B, B¹ to prevent such rings from rotating in the box A, and on each of such studs is placed a helical
90 spring b^3 , such springs being situated between the inside faces of the side walls of the box A and the outside faces of the rings B, B¹ for the purpose of keeping the said rings pressed into contact with the center
95 ring hereinafter referred to.

The two half pieces of the rings B, B¹ are shown secured together by means of bolts passed through holes b^4 in lugs b^5 formed on or secured to the periphery of adjoining
100 ends of such half pieces.

Fitted between the two rings B, B¹ is a third metal ring C, hereinbefore referred to as the center ring, such ring being also preferably built up of two semi-circular half
105 pieces, both sides of such ring being by preference provided with an annular recess filled with white metal or the like c , the wall of the hole through this intermediate or center ring having a suitably deep annular groove
110 in it in which is fitted a ring or packing C¹ preferably of india-rubber or the like, the

hole through this ring being of a less size than the hole through each of the rings B, B¹ and that through the box A.

This intermediate or center ring C is adapted by means of the india-rubber or like ring or packing C¹ with which it is provided to fit the propeller shaft so tightly that it will not slip around such shaft but will rotate with it and also by so gripping it will effectively prevent water from passing between such ring itself and the shaft and entering the stern tube of the ship.

The wall of the hole through the box A is provided with an annular opening *a*² connected with the annular passage *a*, through which opening the intermediate or center ring C projects into such annular passage and rotates between the two rings B, B¹ therein as it rotates with the propeller shaft, the said two rings B, B¹ being pressed into contact with the sides of the said intermediate or center ring C by the springs *b*³, such ring C being a sufficiently tight working fit between the rings B, and B¹ to prevent water which enters the box A through the center hole therethrough, passing between the rings B and B¹ and the said intermediate or center ring C and thus into the stern-tube of the ship or vessel by way of the bush in such stern-tube.

A ring or rings or bedding of india-rubber or other suitable water-proof composition or material *b*⁶ may be and is by preference fitted in the annular passage *a* in the box A for the flanges *b* of the rings B and B¹ to bed on to further assist in preventing water from passing through the box and thence into the stern-tube of the ship or vessel.

The box when in position on the propeller shaft D fits up to the outer end of the bush E in the stern tube F of the ship or vessel as shown at Fig. 3 of the drawings, that side of the box which is in contact with the stern tube bush E having holes in it through which project bolts or screws G which are turned into correspondingly situated tapped holes in the outer end of the flange E¹ of the stern-tube bush E, such bolts or screws securing the box firmly to the stern-tube bush of the ship or vessel.

Suitable waterproof packing may be arranged between that face of the box which fits up to the stern-tube bush E and the said bush for the purpose of preventing water from penetrating between the said box and the stern tube bush and by that means entering the stern-tube.

Although I have described the box A as being built up of two circular half portions, each consisting of two semi-circularly shaped pieces and the rings B, B¹ and C as being each composed of two semi-circularly shaped half pieces, I would have it understood that I do not limit myself to that

method of constructing them as I may for example, construct the box of two pieces only each piece being of circular shape whereby when the two pieces are placed together the box is divided annularly only and not both annularly and transversely, and I may make the rings B, B¹ and C each in one piece, but I prefer to make the several parts mentioned in the manner as first described, and illustrated in the drawings as by that means they can be placed on the propeller shaft and secured to the stern-tube bush without the propeller having to be removed, whereas if the box were not divided transversely and the rings B, B¹ and C were not in half pieces they would have to be forced on the shaft from the outer end of such shaft which would not only render the device more difficult to fix but would necessitate the propeller having to be removed from the shaft to enable the device to be fitted.

I claim:—

1. The combination, with a stationary tubular member, and a rotary shaft projecting therefrom; of a casing secured to the tubular member around the shaft and provided with an annular recess, a central plate secured on the shaft and projecting into the said recess, laterally slidable rings arranged in the recess one on each side of the central plate, means for preventing the slidable rings from revolving in the recess, and springs which press the slidable rings toward the central plate.

2. The combination, with a stationary tubular member, and a rotary shaft projecting therefrom; of a casing secured to the tubular member around the shaft and provided with an annular recess, a central plate secured on the shaft and projecting into the said recess, laterally slidable rings arranged in the recess one on each side of the central plate, bearing pieces of anti-friction material secured to the adjacent faces of the said rings and plate, means for preventing the slidable rings from revolving in the recess, and springs which press the slidable rings toward the central plate.

3. The combination, with a stationary tubular member, and a rotary shaft projecting therefrom; of a casing secured to the tubular member around the shaft and formed in sections and provided with an annular recess, a central plate also formed in sections and secured on the shaft and projecting into the said recess, laterally slidable rings arranged in the recess one on each side of the central plate, means for preventing the slidable rings from revolving in the recess, and springs which press the slidable rings toward the central plate.

4. The combination, with a stationary tubular member, and a rotary shaft projecting therefrom; of a casing secured to the tubular member around the shaft and pro-

vided with an annular recess, a central plate secured on the shaft and projecting into the said recess, laterally slidable rings arranged in the recess one on each side of the central plate, said slidable rings being provided with tubular guide flanges which engage with the casing, bedding rings arranged in the casing between it and the outer ends of the said guide flanges, means for pressing the slidable rings toward the central plate, and means for preventing the slidable rings from revolving in the recess.

5. The combination, with a stationary tubular member, and a rotary shaft projecting therefrom; of a casing secured to the tubular member around the shaft and provided with an annular recess, a central plate secured on the shaft and projecting into the said recess, laterally slidable rings arranged in the recess one on each side of the central plate, said slidable rings being provided with tubular guide flanges which engage with the casing, studs projecting from the casing into holes in the slidable rings and preventing them from revolving in the recess, and springs encircling the said studs and operating to press the slidable rings toward the central plate.

6. In a device for preventing water from having access to the stern tube and the bearings of the shaft of a ship's propeller, a box or casing preferably composed of two or

more parts secured together by any suitable means to encircle the propeller shaft, said box or casing being secured to the stern tube bush, the hole through such box or casing being of a larger diameter than that of the propeller shaft, an internal annular recess in each side wall of the box or casing, two flat rings each preferably composed of a plurality of pieces, the one ring being situated in the annular recess in one side of the box or casing and the other situated in the recess in the other side thereof, a third or center flat ring situated between the before mentioned two rings, said center ring being provided with means preferably of an elastic or flexible nature whereby it will fit the propeller shaft so tightly that it is not only caused to rotate therewith but will prevent water from passing between the ring itself and the shaft, and springs situated between the sides of the box or casing and the rings in the annular recesses in the sides of the said box or casing for keeping such rings pressed into contact with the two sides of the rotatable center ring.

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

EDWARD WILLIAM CLARKE.

Witnesses:

LOUIS EDGAR KIPPAX,
CYRIL ERIC LITTLE.