

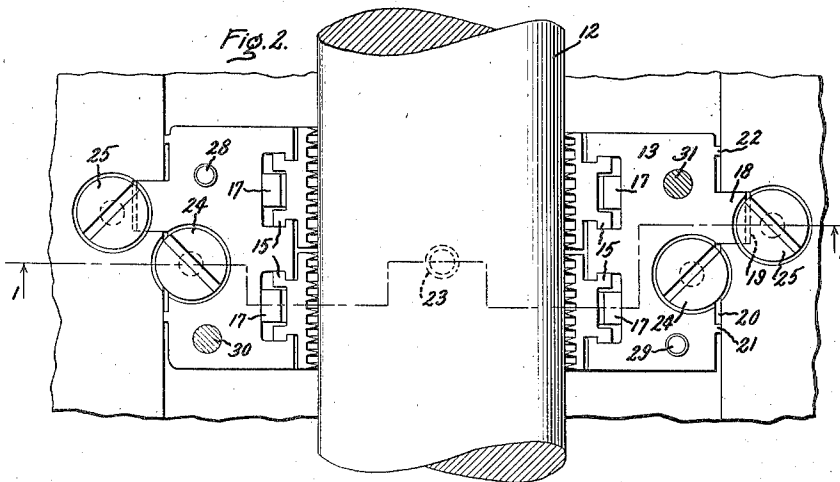
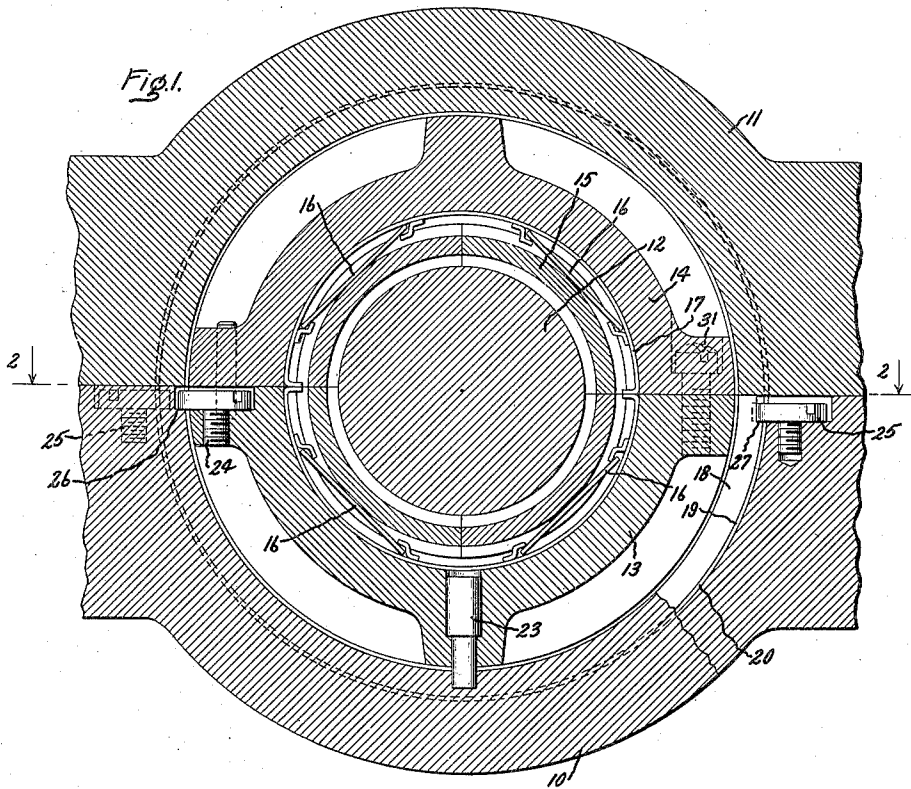
Jan. 28, 1941.

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2,229,963

CENTERING AND SUPPORTING ARRANGEMENT FOR PACKINGS AND THE LIKE

Filed Dec. 6, 1939



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UNITED STATES PATENT OFFICE

2,229,963

CENTERING AND SUPPORTING ARRANGEMENT FOR PACKINGS AND THE LIKE

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Application December 6, 1939, Serial No. 307,800

4 Claims. (Cl. 286—24)

The present invention relates to centering and supporting arrangements for packings and the like, more particularly to arrangements for supporting and centering an inner casing member or box within an outer casing. The invention is of particular significance with regard to packings such as are used in elastic fluid turbines to reduce leakage along a shaft projecting through an opening in a casing. These packings usually include an inner casing or box supported on an outer casing which may form an integral part of a turbine casing. In order to assure proper operation of such packings it is important that the packing box be maintained in concentric relation with the shaft and that this relation be not disturbed by relative expansion between the casing and the box during operation.

The object of my invention is to provide an improved construction and arrangement of centering and supporting arrangements of the type described above.

For a consideration of what I believe to be novel and my invention, attention is directed to the following description and the claims appended thereto in connection with the accompanying drawing.

In the drawing Fig. 1 illustrates a sectional view along lines 1—1 of Fig. 2, and Fig. 2 is a section along line 2—2 of Fig. 1.

The arrangement comprises a turbine casing having a lower half or portion 10 and an upper half or portion 11 engaging each other along a horizontal plane through the center. A turbine shaft 12 projects through the opening formed by the casing 10, 11. A packing is interposed between the shaft 12 and the casing 10, 11 to reduce leakage of fluid along the shaft during operation.

The packing comprises a packing box having a lower half 13 and an upper half 14 supported and centered on the casing, as will be more fully described hereinafter. A packing ring composed of a number of segments 15 is held in position and biased towards the shaft by means including a plurality of flat springs 16 held on an annular band 17 in the packing box 13, 14. The box has an annular projection 18 located in an annular groove 19 in the casing to prevent axial movement of the packing and to restrict leakage of fluid along the inner surface of the casing.

In accordance with my invention the lower half 13 of the packing box is centered and supported on the turbine casing while the upper half 14 of the packing box is centered and supported on the lower half 13. The outer surface of the lower box half 13 is spaced from the cylindrical

bore of the casing half 10 to form a clearance 20 except for two narrow strips 21 and 22 which are in close proximity to or engage the cylindrical surface of the lower casing half 10. The strips 21 and 22 are provided for line-up purposes. In case they engage the cylindrical surface of the lower casing after line-up they will gradually crush during actual service and thereby form a slight clearance between the box and the turbine casing. They do not form an essential part of the line-up support. In arrangements including several axially spaced packing boxes with drains between adjacent boxes, these strips furnish a seal against leakage. The lower box half 13 is centered horizontally in the lower casing half 10 by means of a dowel pin 23 arranged in the vertical center line of the box. Two screws or holding lugs 24, 25 are provided on each side for centering the packing box vertically. The screws 24 are secured to the lower box half 13 and have heads resting on shoulders 26 formed by the lower casing half 10, thus holding the lower box half 13 on the casing half 10, or, from another viewpoint, preventing the lower packing half 13 from dropping downward. The screws or lugs 25 are secured to the lower casing half 10 and have heads engaging shoulders 27 formed on the projection 18 of the lower box half 13 to prevent the latter from moving upward. Thus, one pair of screws 24 prevents downward movement and another pair of screws 25 prevents upward movement of the lower packing box half. Hence, both pairs of screws 24 and 25 center the lower box half 13 in vertical direction, the horizontal centering, as pointed out before, being accomplished by the dowel pin 23.

The upper box half 14 is centered by dowel pins 28, 29 secured to opposite portions of the lower box half 13 and projecting into openings in the upper box half 14 to center the latter horizontally. To prevent vertical movement the upper box half 14 is secured to the lower box half 13 by means of two bolts 30, 31 on opposite portions of the packing box.

With my invention I have accomplished an improved arrangement for centering and supporting a box, a member or an inner casing within an outer casing. The arrangement broadly includes a dowel pin between the lower half of such inner casing or member and the outer casing for horizontally centering such member or inner casing within the outer casing. In addition the arrangement includes screws or lugs for vertically centering the inner casing or member within the outer casing. In the arrangement de-

scribed above, two screws or lugs are secured to diametrically opposite portions of the lower casing half and engage shoulders on the outer casing, thereby preventing the lower casing half from dropping, and two other screws or lugs secured to diametrically opposite portions of the lower half of the outer casing and engaging shoulders formed on the lower half of the inner casing or member to prevent the latter from upward movement. The upper half of the inner casing or box is centered on and secured to the lower half of the inner casing by means including dowel pins and screws or bolts.

Having described the method of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, I desire to have it understood that the apparatus shown is only illustrative and that the invention may be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. Packing arrangement comprising a casing forming an opening for a shaft, and a packing to reduce leakage along the shaft through the opening, the packing comprising a box having lower and upper halves, a dowel pin for centering the lower half horizontally in the casing, and means including screws secured to the lower half and engaging a shoulder on the casing and other screws secured to the casing and engaging a shoulder on the lower half for centering the lower half vertically in the casing.

2. Packing arrangement comprising a casing forming an opening for a shaft, and a packing to reduce leakage along the shaft through the opening, the packing comprising a box having

lower and upper halves, a dowel pin for centering the lower half horizontally in the casing, means including lugs secured to the lower half and engaging a shoulder on the casing and other lugs secured to the casing and engaging a shoulder on the lower half for centering the lower half vertically in the casing, and means for centering and supporting the upper half on the lower half.

3. Packing arrangement comprising a casing forming an opening for a shaft and having lower and upper portions forming an annular groove, and a packing in the opening to reduce leakage of fluid along such shaft, the packing including a box having lower and upper halves with an annular projection located in the groove, a dowel pin between the lower box half and the casing for horizontally centering the lower box half in the casing, two screws secured to the lower box half and engaging shoulders on the casing and two other screws secured to the casing and engaging shoulders on the projection for vertically centering the lower box half, and means centering the upper box half on and securing it to the lower half.

4. The combination of a casing, a member having lower and upper halves located in the casing, and means centering and supporting the member on the casing, said means comprising a single dowel pin located in the vertical center line of the casing centering the lower half on the casing, lugs secured to the lower half and engaging a shoulder on the casing and other lugs secured to the casing and engaging a shoulder on the lower half.

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