Dec. 2, 1952 R. D. BEATTY, JR 2,620,244

PILLOW BLOCK

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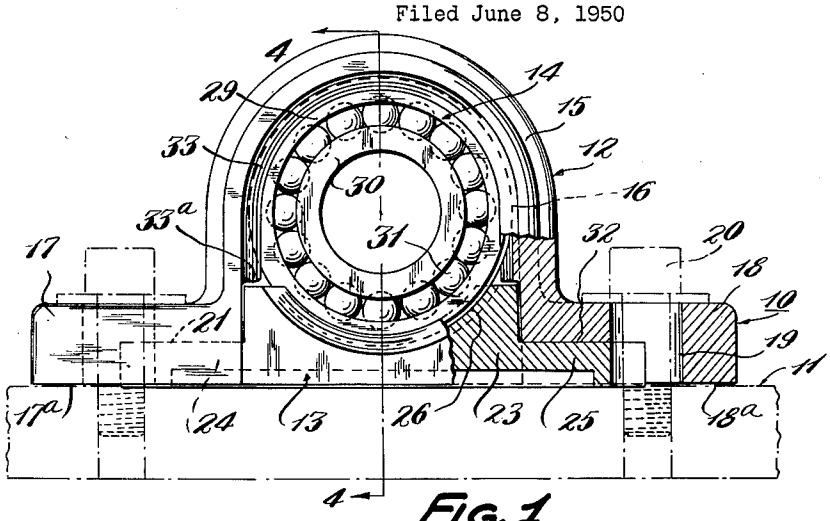

FIG. 1

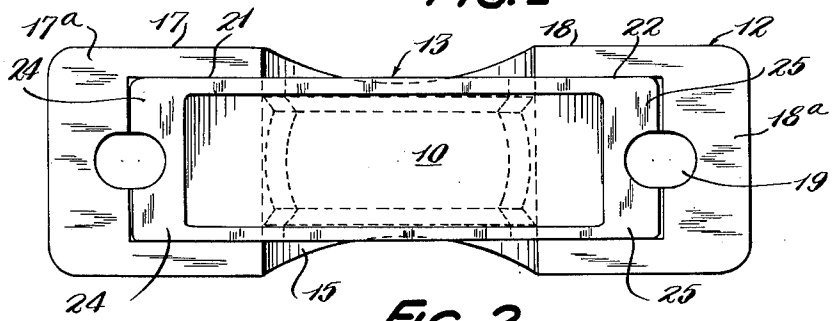

FIG. 2

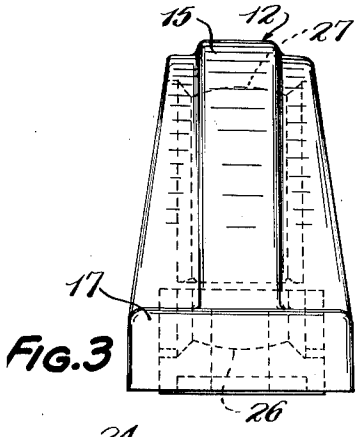

FIG. 3

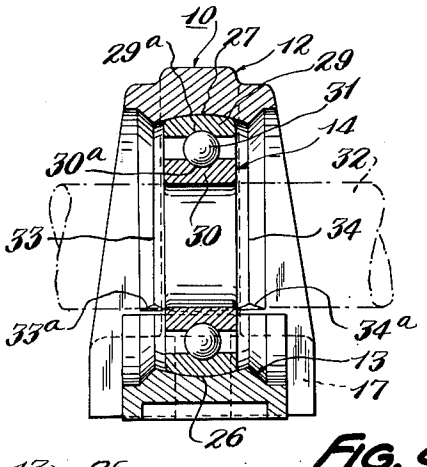

FIG. 4

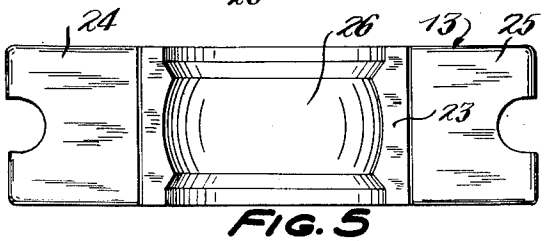

FIG. 5

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PILLOW BLOCK

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4 Claims. (Cl. 308—194)

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This invention relates to pillow blocks for shaft bearings and, as its principal object, provides an improved pillow block of a two-piece construction which can be economically produced and readily assembled.

Another object of this invention is to provide an improved pillow block of a two-piece construction adapted for the use of a prefabricated antifriction bearing therein and in which the antifriction bearing can be easily assembled in place and adjusted for proper alignment and will be securely clamped and held when the adjustment has been made.

A further object is to provide an improved pillow block comprising complemental bearing cap and bearing base members adapted to grip therebetween the outer race of an antifriction bearing unit and in which the bearing cap has recesses in the underside thereof and the bearing base has lugs engageable in such recesses.

Still another object is to provide an improved pillow block of the character just mentioned in which the bearing cap has a pocket therein adapted to receive the antifriction bearing and the bearing base has a block portion engageable in the pocket for cooperation with the bearing cap in gripping the outer race of the antifriction bearing therebetween, and in which the lugs of the bearing base have a thickness somewhat greater than the depth of the recesses of the bearing cap such that the lugs will be clamped between the cap member and the support on which the pillow block is mounted.

The invention can be further briefly summarized as consisting in certain novel combinations and arrangement of parts hereinafter described and particularly set out in the claims hereof.

In the accompanying sheet of drawings,

Fig. 1 is a side elevation showing a pillow block embodying the present invention and having a prefabricated antifriction bearing mounted therein;

Fig. 2 is a bottom plan view of the pillow block;

Fig. 3 is an end view thereof;

Fig. 4 is a vertical section taken through the pillow block on section line 4—4 of Fig. 1; and

Fig. 5 is a top plan view of the bearing base member showing the same in detached relation.

As one practical embodiment of the present invention the drawing shows a pillow block 10 adapted to be mounted on a support such as the plate 11 and comprising complemental bearing cap and bearing base members 12 and 13. The pillow block 10 is of the kind which forms a

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mount for a shaft bearing 14 of the antifriction type.

The cap member 12 comprises an intermediate yoke portion 15 having a pocket 16 therein adapted to receive the antifriction bearing 14 and arm portions 17 and 18 extending laterally in opposite directions and constituting integral extensions of the ends of the yoke portion 15. The arm portions 17 and 18 have flat faces 17*a* and 18*a* on the undersides thereof which are engageable with the support 11 when the pillow block is mounted thereon. The arms 17 and 18 also have openings 19 extending therethrough and which accommodate suitable screws 20 for attaching the pillow block to the support 11.

For an important purpose which will presently appear, the arms 17 and 18 are provided with recesses 21 and 22 extending thereinto from the lower faces 17*a* and 18*a* thereof. The recesses 21 and 22 have their adjacent ends in open communication with the bearing receiving pocket 16 of the intermediate yoke portion 15. As shown in Fig. 2 the recesses 21 and 22 are narrower in width than the arms 17 and 18 such that their side faces lie inwardly from the side faces of these arms.

The base member 13 extends in bridging relation across the opening of the pocket 16 of the cap member 12 and comprises an intermediate block portion 23 which has a snug fit in the open end of the pocket and oppositely extending lugs 24 and 25 formed integral with and projecting from the block portion 23 and which are engageable in the recesses 21 and 22 of the arms 17 and 18 of the cap member. The lugs 24 and 25 are of a width only slightly less than the width of the recesses 21 and 22, such that these lugs will be snugly received therein and the sides of the recesses will hold the base member 13 in properly aligned relation to the cap member 12. The lugs 24 and 25 are of a thickness which is slightly greater than the depth of the recesses 21 and 22 such that when the cap and base members are assembled in the relation shown in Fig. 1 and the pillow block is tightened against the support 11 by the screws 20, the lugs will be clamped between the arms 17, 18 and the surface of the support.

The block portion 23 of the base member 13 is provided in the top thereof with a transversely concave arcuate groove defined by the transversely concave arcuate wall 26. The pocket 16 of the cap member 12 is also provided around the inside thereof with a transversely concave arcuate groove defined by a transversely concave

arcuate wall 27. The walls 26 and 27 together form a transversely concave annular seat for the prefabricated antifriction bearing 14.

The antifriction bearing 14 shown in this instance is a prefabricated standard ball bearing comprising outer and inner races 29 and 30 and an annular series of balls 31 received therebetween and engaging in grooves 29a and 30a of these races. The outer race 29 is of the same diameter as the concave annular seat formed by the walls 26 and 27 of the base and cap members and has a transverse convex curvature matching the transverse concave curvature of this seat such that when the antifriction bearing is received between the cap and base members it will be adjustably movable by rocking of the outer race 29 in the concave annular seat to permit alignment of the shaft member 32 which extends through and is supported by the inner race 30. When such adjustment of the antifriction bearing in the concave annular seat has been made, the connecting screws 20 are tightened to draw the cap member against the support 11 thereby causing the cap and base members to apply a tight clamping action against the outer race 29 by which the antifriction bearing will be securely held in the desired adjusted relation in the pillow block 10.

As shown in Figs. 1 and 4, the portions of the cap member 12 which define the concave arcuate wall 27 of the bearing receiving pocket 16 include a pair of laterally spaced ridges 33 and 34 which follow the contour of the yoke portion 15. These ridges terminate in the pocket at a point inwardly of the bottom faces 17a and 18a of the arms 17 and 18 so as to provide shoulders 33a and 34a facing outwardly of the pocket. When the block portion 23 of the base member 13 is assembled in the outer end of the pocket 16 the top of the block portion comes into substantially meeting engagement with the shoulders 33 and 34 which act as stops to prevent the block portion from applying an excessive pinching force to the outer race 29.

A pillow block comprising the above described complemental cap and base members 12 and 13 can be very economically produced because these cap and base members are of such simple form that they can be readily manufactured as die castings which will be very accurate as to size and shape and will require substantially no machine operations thereon. It will also be seen that the pillow block provided by this invention can be very quickly and easily installed and that the insertion of the prefabricated antifriction bearing 14 is a very simple matter because it amounts only to the dropping of the bearing into the pocket of the cap member before the base member is assembled into bridging relation to the pocket. When the pillow block 10 with the antifriction bearing therein is applied to the support 11 and the connecting screws 20 are partially tightened, the antifriction bearing will be rockable in the annular seat formed by the concave grooves of the cap and base members for properly aligning the bearing with respect to the axis of the shaft or other member to be supported. When this adjustment has been completed, the tightening of the connecting screws completes the assembly operation and results in the antifriction bearing being gripped and securely held in the adjusted position between the cap and base members of the pillow block.

Although the improved pillow block of this invention has been illustrated and described herein to a somewhat detailed extent it will be understood, of course, that the invention should not be regarded as being limited correspondingly in scope since it is intended to include all changes and modifications coming within the terms of the claims hereof.

Having thus described my invention, I claim:

1. A pillow block comprising, a pair of complemental members one being a substantially rigid bearing cap in the form of a die casting and the other being a substantially rigid bearing base also in the form of a die casting, said bearing cap comprising an intermediate yoke portion having a bearing pocket therein and oppositely extending arms formed as integral lateral extensions of the ends of said yoke portion and adapted for connection with a support for mounting the pillow block thereon, said yoke portion having a pair of opposed flat internal vertical locating surfaces thereon defining a lower entrance portion into said bearing pocket, said arms having recesses in the underside thereof which communicate with said bearing pocket, said bearing base extending in bridging relation across said bearing pocket and comprising a flat-sided block portion extending into and substantially filling said lower entrance portion of said pocket and lugs projecting from said block portion and seating in the recesses of said arms.

2. A pillow block comprising, a pair of complemental members one being a substantially rigid bearing cap in the form of a die casting and the other being a substantially rigid bearing base also in the form of a die casting, said bearing cap comprising an intermediate yoke portion having a bearing pocket therein and oppositely extending arms formed as integral lateral extensions of the ends of said yoke portion and adapted for connection with a support for mounting the pillow block thereon, said yoke portion having a pair of opposed flat internal vertical locating surfaces thereon defining a lower entrance portion into said bearing pocket, said arms having recesses in the underside thereof which communicate with said bearing pocket and which recesses are of narrower width than said arms such that depending portions of said arms form other locating surfaces along the side edges of said recesses, said bearing case extending in bridging relation across said bearing pocket and comprising a block portion extending into and substantially filling said entrance portion of said pocket and lugs projecting from said block portion and seating in the recesses of said arms, the block portion of said bearing base having a pair of flat sides thereon engaging said locating surfaces for positioning said bearing base relative to said bearing cap in one lateral direction and said lugs having side edges engaging said other locating surfaces for positioning said bearing base relative to said bearing cap in another lateral direction substantially normal to the first mentioned lateral direction.

3. In a pillow block, a bearing cap comprising an intermediate yoke portion having a bearing pocket therein and arm portions extending outwardly from said yoke portion and adapted for attachment to a support for mounting the pillow block thereon, said yoke portion having a transversely concave arcuate groove therein defining a portion of the wall of said pocket and also having a pair of shoulders thereon adjacent the ends of said groove and facing outwardly of the pocket, said arm portions having recesses extending thereinto from the underside thereof and communicating with said pocket, and a bearing base

extending in bridging relation across said pocket and comprising a block portion projecting into said pocket substantially to said shoulders and having therein a transversely concave arcuate groove, said bearing base also having lugs projecting from said block portion and seating in the recesses of said arm portions, the arcuate grooves of said yoke portion and said block portion forming a seat for the outer race of an antifriction bearing.

4. In a bearing of the pillow block type, a support, a bearing cap comprising a substantially rigid die casting including an intermediate yoke portion having a pocket therein and mounting arms projecting from said yoke portion and engageable with said support, said arms having recesses extending thereinto from the support-engaging side thereof and communicating with said pocket, a bearing base extending in bridging relation across said pocket and comprising a substantially rigid die casting including a block portion engaging in and substantially filling the entrance portion of said pocket and lugs projecting from said block portion and seating in said recesses, said yoke portion having a pair of opposed flat internal vertical locating surfaces thereon defining a lower entrance portion for said pocket, said recesses being of narrower width than said arms such that depending portions of said arms form other locating surfaces along the side edges of said recesses, the block portion of said bearing base having a pair of flat sides thereon engaging the first mentioned locating surfaces for positioning said bearing cap in one lateral direction

and said lugs having side edges engaging said other locating surfaces for positioning said bearing base relative to said bearing cap in another lateral direction substantially normal to the first mentioned lateral direction, an antifriction bearing in said pocket and having an outer race gripped between said yoke portion and said block portion, and attaching means holding said arms and said lugs in a clamped engagement against said support, said outer race having an outer annular periphery of a convex transverse curvature and said yoke and block portions having complemental arcuate grooves therein of a concave transverse curvature forming an annular seat in which said outer race is received and gripped and is substantially universally adjustably shiftable upon slackening of said attaching means.

ROBERT D. BEATTY, JR.

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