Feb. 6, 1934. M. S. VILE 1,946,431

PILLOW BLOCK

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Fig. 2.

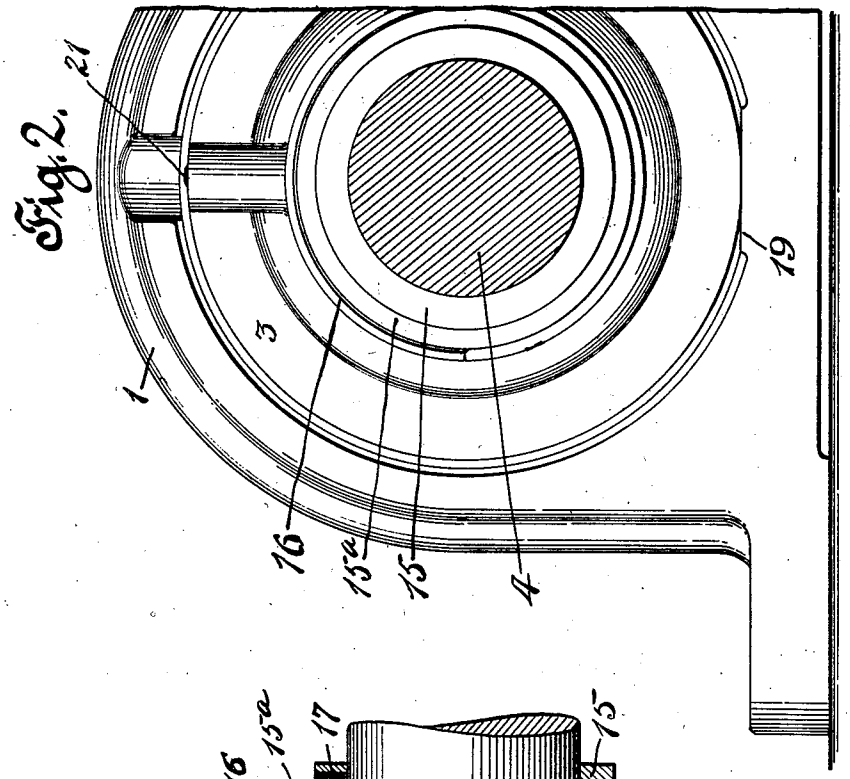
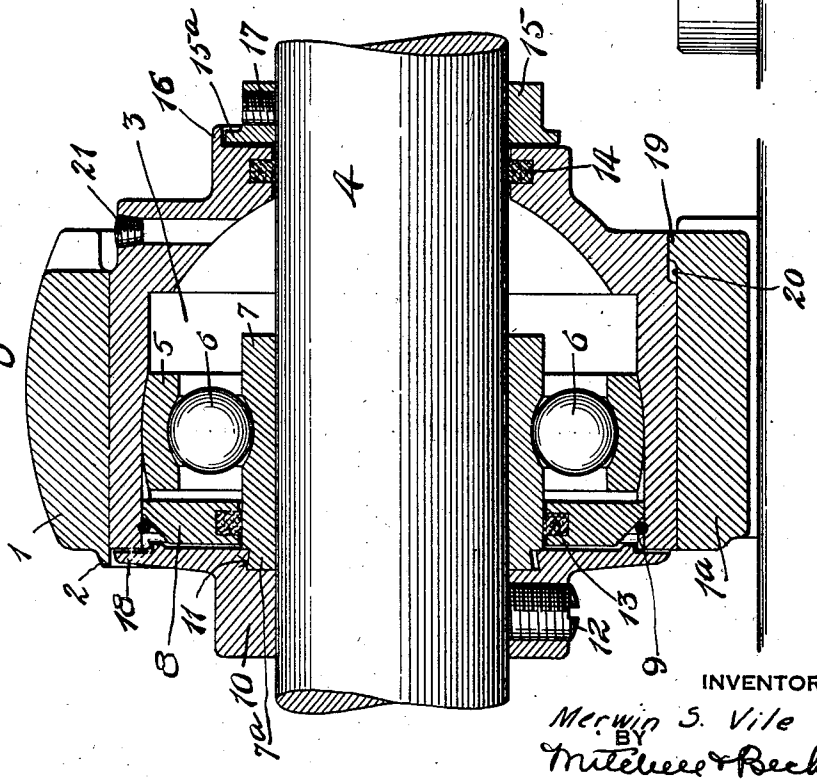


Fig. 1.



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PILLOW BLOCK

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1 Claim. (Cl. 308—189)

This invention relates to pillow blocks of the type for supporting shafts.

Among the objects of the invention are, simplicity and efficiency of construction; the provision of means to exclude dust; the provision of improved means to permit a certain amount of oscillation and endwise movement of the supported shaft without cramping the antifriction bearing elements.

Other advantages will be appreciated by those acquainted in the art by a reading of the following specification and an examination of the accompanying drawing, in which—

Fig. 1 is a longitudinal section of a preferred form of the invention, the supported shaft being shown in elevation with its ends broken away;

Fig. 2 is an end view of the parts shown in Fig. 1 looking from right to left.

1 represents the main housing, which housing has a base 1a and a cylindrical passage from end to end for receiving the floating element later described. 2 is an offset shoulder on one end of the main housing which forms an outstanding visor around the upper half of the passage therethrough. 3 is the floating element, which I will term the floater, and which slidably fits in the cylindrical passage of the housing 1. 4 is a shaft. The floater 3 has within it a chamber of suitable size and shape to receive a self-alining unitary antifriction bearing comprising an outer ring 5 mounted so as to oscillate in the floater 3, balls 6—6, and an inner ring 7. The inner ring fits on shaft 4. One end of the floater 3 is contracted so as to leave a passage only slightly larger than shaft 4. The outer end of the floater is closed by a non-rotatable plate 8 held in place by a spring ring 9. The inner bearing ring 7 passes through and outside of plate 8 and is gripped by a special interlocking collar 10 also mounted on shaft 4. This collar 10 has an eccentric undercut recess for receiving an eccentric extension 7a on the end of the ring 7, said extension being outwardly flared to extend into the undercut of the eccentric recess in the collar 10 so that when the collar is turned relatively to the sleeve, the walls of the eccentric portions will be caused to bind at one point, for example at the point 11. This binding action produced by the eccentric collar is so great that it will positively lock the sleeve and collar on the shaft 4 against drifting longitudinally and also against rotating thereon. A set screw 12 may be added, if desired, to prevent any accidental loosening up of the collar on the shaft. 13 is a felt washer between the closer plate 8 and the ring 7. 14 is another felt washer between the reduced end of the floater 3 and the shaft. 15 is a sleeve on the shaft 4, the sleeve carrying an annular flange 15a which stands under the visor 16 on the upper half of the reduced end of the floater 3 and functioning similarly to the visor 2 at the opposite end of the main housing. 17 is a set screw for sleeve 15 to hold it on the shaft at a proper distance from the adjacent end of the floater so that the parts will not rub and bind. The flange 15a acts as a centrifugal dust slinger. 18 is a centrifugal dust slinger for the opposite end of the apparatus. This slinger is preferably a part of the locking collar 10 and is so shaped that it rotates under the visor 2 and with the shaft 4. It will be seen that any dust or dirt drifting down over the edge of either of the visors 2 or 16 will be thrown away from the apparatus by the rapidly revolving slingers. 21 is a screw plug for an oil or grease passage leading from the outside of the floater into the chamber within the same for lubricating the bearing. While the floater may drift longitudinally to some extent in the main housing, it is prevented from turning therein by a key 19 projecting into a longitudinal slot 20. In the drawing the key is on the base 1 and the slot is in the floater 3, but obviously these positions may be reversed. The slot 20 should, of course, be sufficiently long to allow for the expected maximum drift of the floater in the main housing.

In operation the main housing is suitably mounted against movement on a stationary support so as to in turn support the shaft indirectly through the floater and the anifriction bearing. When the parts are assembled, it is clear that the floater cannot drift on the shaft but may drift longitudinally in the main housing.

The so-called self-alining feature is permitted by having sufficient clearance, for example between the dust slingers 18 and 15a and the parts adjacent thereto respectively, and also sufficient clearance between the contracted end of the floater 3 and the shaft 4 and between the closer plate 8 and the inner ring 7 so as to provide a limited amount of oscillation or self-alining movement between the shaft 4 and the floater 3. It will be understood that the felt washers 13—14 yield sufficiently to keep the spacers adjacent thereto closed to the admission of dust and, of course, to the escape of lubricant. The presence of the non-rotatable plate 8 supplemented by the rotatable dust slinger just outside of the same doubly guards against the admission of dust or dirt into the antifriction bearing chamber from that end of the pillow block. If for any reason

that part of the shaft within the pillow block tends to oscillate, in many cases it will also reciprocate. In the ordinary pillow block construction such movements would tend to cramp the anti-friction devices and invite rapid wear or breakage. By my invention both of these movements may occur simultaneously without such cramping strain, and thus the life and efficiency of the pillow block will be enhanced.

It will be understood that I have shown and described only a preferred form of my improved construction and that I apprehend that various changes therein may be made without departure from the scope of my invention or the claim therefor.

I claim:

In a pillow block, a housing having a wide opening at one end, a smaller shaft passage at the opposite end, an anti-friction bearing comprising an inner and an outer bearing ring with anti-friction devices therebetween, means for supporting the outer ring in said housing to permit orientation of the same, the inner ring being adapted to fit upon a rotatable shaft and being longer than the outer ring and extending beyond the same toward the wide opening of the housing, a non-rotatable closure plate removably mounted on the inner wall of the housing and surrounding the extended end of said inner ring but spaced therefrom to permit limited free oscillation of the latter, means in said space to check the escape of lubricant from the interior of the housing, a collar on the shaft for rigidly connecting said inner ring thereto against movement in any direction thereon, a dust slinging flange on said collar overstanding said closure plate, and a portion of the end of said housing overstanding the edge of said flange, said flange being free of said plate and housing to permit slight oscillation of the shaft, the opposite reduced end of said housing surrounding the shaft and slightly spaced therefrom, with means in said space to check the escape of lubricant from the interior of the housing, a collar on said shaft adjacent to the contracted end of the housing and having a dust slinging flange overstanding a portion of the end of the housing, a portion of the latter in turn overstanding the edge of the flange.

MERWIN S. VILE.