May 12, 1953 R. L. WHITELEY ET AL 2,638,389

SIDE MOUNT PILLOW BLOCK BEARING

Filed April 5, 1947

Fig. 1.

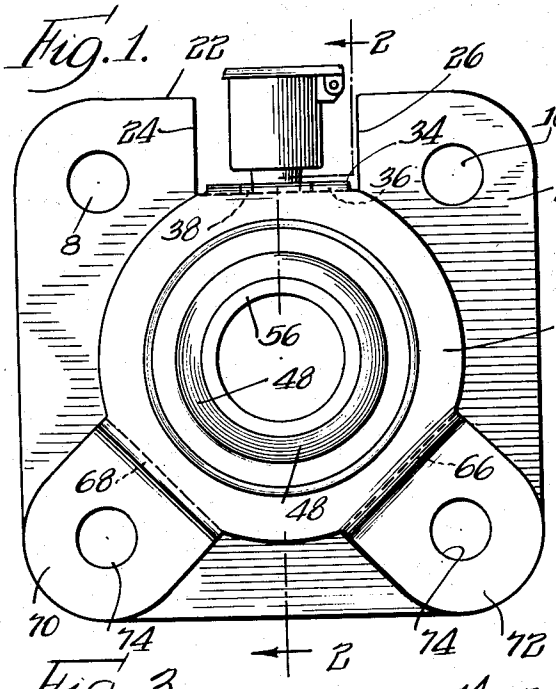


Fig. 2.

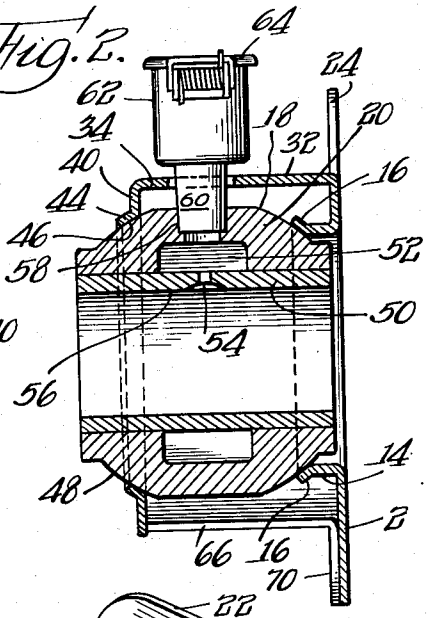
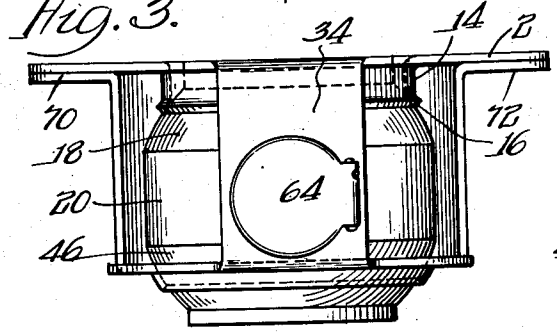


Fig. 3.



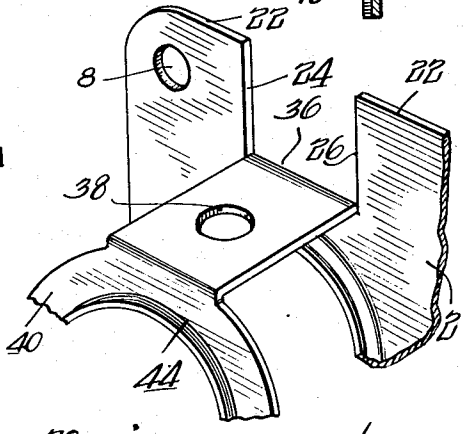
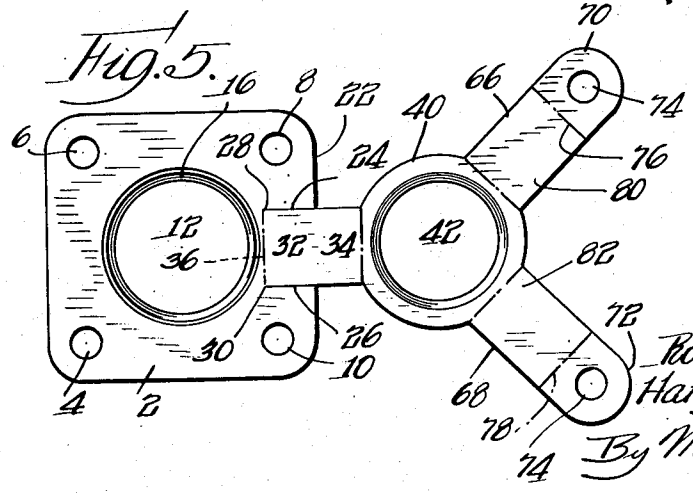


Fig. 4.

Fig. 5.



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Patented May 12, 1953 2,638,389

UNITED STATES PATENT OFFICE

2,638,389

SIDE MOUNT PILLOW BLOCK BEARING

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Application April 5, 1947, Serial No. 739,590

12 Claims. (Cl. 308—72)

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This invention relates to pillow block bearings, and more particularly to a side mount pillow block bearing.

Among the objects of the present invention is to provide a side mount pillow block bearing formed of a single integral piece of sheet metal properly stamped and bent to form a side mount bearing in which a bearing block having spherical exterior surfaces fitting conforming interior surfaces of the bearing may be universally mounted.

Another object of the invention is to provide a sheet metal side mount pillow block bearing which is formed by stamping out a sheet metal blank of one-piece construction, and wherein the blank, after being stamped, may be suitably bent or folded about and enclosing the bearing to permit the latter to have universal mounting therein.

These and other objects of the invention will be apparent from a perusal of the following specification when taken in connection with the accompanying drawing, wherein:

Figure 1 is a front view of the bearing forming our invention;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a plan view of the device shown in Figure 1;

Figure 4 is a fragmentary view showing the manner of folding over a portion of the blank to its ultimate form; and

Figure 5 is a plan view of the integral blank itself.

Referring now to the drawings in detail, the blank from which the pillow block bearing is formed is shown in Figure 5. It is formed preferably of relatively heavy gauge sheet metal and comprises a relatively square back plate 2 having preferably at its four corners openings 4, 6, 8 and 10 whereby the plate may be fastened to any side support. In addition, this plate-like member 2 is provided with a central opening 12 of relatively large diameter, and the marginal edges of this opening are formed, as shown clearly in Figure 2, with a laterally disposed, circumferential, short flange 14, which flange 14 is provided with a circular wall 16 about the opening 12, which wall is formed as a part of a curve to fit about the curved wall 18 of the bearing block 20 hereinafter to be described, whereby this bearing block member 20 may have universal adjustment with respect to the sheet metal housing and support member. One side 22 of the plate-like back support 2 is provided with parallel slits 24 and 26 which begin from the points 28 and 30

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and extend outwardly thereof to the edge of the side 22 to provide an integral junction tongue or flange 32 which has an extension 34 projecting well beyond the margin 22 of that side of the plate 2. This tongue 32 is adapted to be bent along the dotted line 36, as shown in Figures 4 and 5, whereby the tongue 34 may be bent forwardly out of the plane of the plate 2, as shown in Figure 4, a distance equal to the length of the portions 32—34 of the tongue, shown in Figure 5. This tongue is preferably provided with an opening or hole 38, as shown in Figure 4, and for the purpose hereinafter set forth. The outer portion 34 of the tongue 32 is provided with an integral circular extension 40 which is provided with a relatively large opening 42 corresponding in diameter to the diameter of the opening 12, and this circular or front support portion 40 is formed by bending the same laterally out of the plane of the tongue 32—34, preferably substantially at right angles thereto as shown in Figure 2. The mouth of the opening 42 is bumped or otherwise formed in conical curved formation as at 44 to provide an inner curved annular portion 46 which conforms the circular shoulder 48 on the bearing block 20 so that, as shown in Figure 2, when the bearing block is clamped in position between the annular curved walls 16 and 44, these walls will bear against the opposed spaced apart curved portions 18 and 46 of the bearing to permit the bearing to have substantially universal mounting in the sheet metal support and housing. This bearing member 20 is a bearing block, preferably formed to receive a graphite bronze type of sleeve or a ball bearing type of sleeve 50 of the construction illustrated in Whiteley Patent 2,067,034 of January 5, 1937, or it may be of the construction shown in Whiteley Patent 2,123,872 of July 19, 1938, or any other adaptable form of sleeve. In the instance shown, the bearing block 20 is provided with an annular internal chamber 52 which by means of a passageway 54 communicates with the inner wall 56 of the bearing sleeve 50, and in addition the block is provided with an opening 58 in which a shank 60 makes a tight fit or screwed fit, the shank being a hollow conduit supporting stem for an oil cup 62 having the usual spring held cover 64. The shank 60 of this oil cup passes through the hole 38 of the tongue 34, as shown clearly in Figure 2, whereby the walls of the opening 38 form means to prevent the bearing 20 from moving beyond a predetermined angular position with respect to the sheet metal housing member 34.

In addition, the blank portion 40 of the bear-

ing housing is provided with two radially disposed, outwardly extending straps 66 and 68 which are integral therewith and which straps are preferably elongated and provided with rounded terminals 70 and 72. Each terminal tab 70 and 72 is provided with a fastener opening 74 and 76 which are preferably of the same diameter as the openings 4, 6, 8 and 10 of the plate 2. These tabs 66 and 68 are bent at right angles to the general plane of the flat flange portion 40, see Figure 2, and each tab 66 and 68 has its outer end bent, as along the lines 76 and 78, at right angles to the plane of the main portions 80 and 82 of these tabs, as shown at 70 in Figure 2, with the holes 74 of each laterally bent ear registering with the holes 4 and 6 of the plate-like member 2 so that when a fastener is passed through the registering holes 74 in the ears 70 and 72, a single fastener will suffice to clamp the bent down leg portions 66 and 68 resiliently against the back plate 2 and the resiliency of the tongue member 34, together with the curved annular wall portions 44 and 16, will tend to clamp and grip the curved walls 18 and 46 in place while permitting their universal movement with respect to the sheet metal housing member. It will be understood, of course, that additional fastening bolts will pass through the upper holes 8 and 10 of the plate 2 to hold the same in position.

It will thus be appreciated from the foregoing that we have provided a very simple, economical type of side mount pillow block bearing formed of sheet metal which can be stamped as a unitary blank from a piece of sheet metal and which then can be bent in a form to desired shape so that it will surround and enclose and reiliently embrace a spherical bearing block adapted to hold an elongated bearing sleeve in position so that a shaft may rotate in the bearing sleeve and be capable of universal mounting in the side mount bearing block wherein the shaft can be adequately lubricated during its rotation in the bearing sleeve. It will also be appreciated that by reason of this construction the requisite resiliency and clamping action is afforded by our simple one-piece sheet metal bearing. It will also be appreciated that by reason of this construction two of the same bolts or other fastening means may be used for clamping the portions of the one-piece housing about the spherical bearing and for also forming at least one half of the fastening means for attaching the sheet metal housing to the side support.

Obviously the invention is not limited to the specific details of construction disclosed herein but is capable of other modifications and changes without departing from the spirit and scope of the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A sheet metal blank for forming a side mount pillow block bearing housing comprising a substantially square plate-like member having a central, substantially large diametered opening therein, the circular edges of the opening being bumped laterally and provided with annular walls of curved cross section to provide a first universal mounting seat, one of the sides of said substantially square plate-like member being centrally slit at spaced portions extending transversely of the edge to provide an integral strap, said strap extending well beyond said side of said plate-like member centrally thereof, said strap being provided with a generally circular extension, said generally circular extension being provided with a central, relatively large diametered opening, the diameter of said last mentioned opening corresponding with the diameter of the large diametered opening of the plate-like member, the mouth of the opening in said circular extension being formed annularly and provided with inner curved walls corresponding to the curvature of the walls of the mouth of said opening in the plate-like member, said substantially circular extension being formed with a pair of radially extending, elongated tabs, each of said tabs at its outer end being provided with a central opening.

2. A sheet metal blank for forming a side mount pillow block bearing housing comprising a substantially square plate-like member having a central, substantially large diametered opening therein, the circular edges of the opening being bumped laterally and provided with annular walls of curved cross section to provide a first universal mounting seat, one of the sides of said substantially square plate-like member being centrally slit at spaced portions extending transversely of the edge to provide an integral strap, said strap extending well beyond said side of said plate-like member centrally thereof, said strap being provided with a generally circular extension, said generally circular extension being provided with a central, relatively large diametered opening, the diameter of said last mentioned opening corresponding with the diameter of the opening of the plate-like member, the mouth of the opening in said circular extension being formed annularly and provided with inner curved walls corresponding to the curvature of the walls of the mouth of said opening in the plate-like member, said substantially circular extension being formed with a pair of radially extending, elongated tabs disposed angularly with respect to each other at an angle of ninety degrees, each of said tabs at its outer end being provided with a central opening.

3. A sheet metal blank comprising a square plate-like member having a central aperture and provided with spaced openings for the reception of fastening means, the central aperture having a relatively large diameter and the walls at the mouth of the aperture being curved out of the plane of the plate and disposed at an angle to said plane, one of the sides of said substantially square-like plate having parallel slits extending inwardly of said side to form a tongue, said tongue having an integral extension extending well beyond said side, said tongue extending transversely to said side, said tongue having at its outer end a substantially circular extension, said circular extension being formed with a relatively large central opening corresponding in size to the central aperture in said plate-like member, said central opening of said circular extension having its annular walls curvilinear with the curve formed at an angle to said circular extension, and said circular extension being provided with two radially extending integral tabs of relatively elongated dimension, the outer portions of said tabs being formed with central apertures.

4. A side mount pillow block bearing comprising in combination with a bearing block having a central elongated opening, a bearing sleeve mounted therein, the external portions of said bearing block being provided with spaced annular curved walls and a one-piece sheet metal housing for said bearing block comprising a relatively square, plate-like member having a cir-

cular, laterally extending flange formed thereon, said flange terminating in a circular opening, the inner walls of which are bent flaringly outwardly and curved to conform to and contact the curvature of one of the annular curved walls of said bearing block, said plate-like member having one of its sides formed centrally with parallel slits extending inwardly toward said circular opening, a portion of said width of said side being slitted to provide a bendable tongue, said tongue having an extension extending well beyond said side, and said tongue being bent substantially ninety degrees out of the plane of said plate-like member to extend forwardly substantially parallel with the general direction of the bearing block, the outer portion of said tongue being provided with an integral, generally circular extension bent substantially ninety degrees out of the plane of said tongue, said extension being provided with a central aperture, the diameter of which corresponds with the diameter of the circular opening in said first mentioned plate-like member, the annular inner wall of the aperture formed in said circular extension being formed on a curve to correspond with the curve of the outer wall of said bearing block to contact the same, said circular extension having a pair of radially extending, integral tabs of considerable elongation, said tabs being bent at ninety degrees out of the plane of said circular extension for the major portion of their distance and lying substantially parallel to the central annular opening of said bearing block, each of said tabs having a bent tip which is bent at right angles to the plane of the tab, and each of said tips having an opening to register with a corresponding opening in the plate-like member whereby the bearing block may be clamped by fastener means between the resilient circular flange of the plate-like member and the annular inner wall surrounding the opening in said circular extension for universal movement therein.

5. The combination comprising a one-piece pillow block sheet metal mounting and a bearing block, said pillow block mounting comprising a single piece of sheet metal bent and cut to provide a rear plate-like member having spaced apertures to secure it to a side wall, said plate-like member being provided with a central, relatively large opening, and the inner walls of the opening being curved, said plate-like member having an integral, forwardly extending tongue projecting integrally from one portion of the plate-like member, said tongue extending forwardly and being provided with a laterally bent, integral, substantially ring-like extension, the plane of which lies substantially parallel with the plane of said plate-like member, said extension having a central aperture, the annular inner walls of said aperture being curved, said ring-like extension being formed with a pair of integral, inwardly extending tabs bent substantially at right angles to the plane of said plate-like member, each of said tabs having a terminal tip bent at right angles into planes parallel with the planes of said plate-like member, each of said tips being provided with apertures to receive fastening means whereby the tips may be clamped to said plate-like member, said bearing block mounted in and between the opening in said plate-like member and the aperture in said integral, circular, ring-like extension, said bearing block having a central opening to receive an elongated bearing sleeve, the outer spaced circumferential wall portions of said block being curved to correspondingly fit within the curved walls of said opening in said plate-like member and the aperture in said ring-like extension whereby clampingly and resiliently to hold said bearing block in position for universal shifting movement with respect to said pillow block mounting.

6. A device as set forth in claim 5 wherein the openings in said tips of said tabs register with openings in the plate-like member whereby the fastening members which resiliently clamp said tips to said plate-like member may be utilized for securing a portion of said plate-like member to its side support.

7. A device as set forth in claim 5 wherein the openings in said tips of said tabs register with openings in the plate-like member whereby the fastening members which resiliently clamp said tips to said plate-like member may be utilized for securing a portion of said plate-like member to its side support, the integral portion of said housing that joins the plate-like member with the ring-like apertured central extension being provided with an opening therein and a hollow lubricant shank extending therethrough and fitting in an opening in said bearing block, and an oil cup carried on the outer end of said shank, said oil cup being generally greater in diameter than said opening through which the shank passes.

8. A side mount pillow block bearing formed of an integral single piece of sheet metal cut to provide a back plate having a central aperture, the annular walls of which are curved internally, said back plate having an integral forward extension merging in an integral ring-like extension bent to lie generally in a plane parallel to but forward of said back plate, said ring-like extension having a central aperture the internal marginal walls of which are curved, said ring-like extension having angularly disposed integral straps spaced apart and being arranged at right angles to said ring-like extension, the terminals of said straps having right angle tabs bent substantially parallel to the plane of said back plate, and said tabs and said back plate having registering apertures to receive fastening means to secure the same resiliently together, and a bearing block mounted in the registering openings of said back plate and said ring-like extension and having annular curved walls conforming to the curvature of the marginal walls of said openings in said plate and said ring-like extension for universal mounting therein.

9. The combination of a pillow block bearing housing and a bearing sleeve, said pillow block bearing housing comprising a sheet metal plate member having a laterally bumped annular flange terminating in a central opening, the inner walls of which are curved in a transverse direction to provide a first bearing seat, and a sheet metal ring-like member having a central opening the walls of which are bumped laterally to provide a second annular bearing seat the walls of which are curved transversely, said ring-like member having three integral elongated tabs bent at right angles to the plane of said ring-like member, said integral tabs being spaced apart angularly of the central axis of said ring-like member, two of said tabs having right angle bent flanges, said flanges being provided with openings registering with openings in said plate member for clamping thereto and the other integral tab from said ring-like member being formed integral with said plate member and bent at right angles to said plate member, and

said pillow block bearing having opposed annular curved outer walls lying in the bearing seats formed in said plate member and ring-like member for universal mounting therein.

10. A sheet metal one-piece pillow block bearing housing comprising a first sheet metal plate member having a bearing seat formed thereon, said first plate member having openings therein for attaching said member to a housing in a plane perpendicular to a shaft passing through said bearing seat, a second sheet metal plate member having a bearing seat formed thereon, means integrally connecting said first and second sheet metal plate members, and means integrally connected with said second plate member and extending therefrom, said last mentioned means having opening therein coinciding with certain of said first mentioned openings to receive fastener means, said integral means being adapted to be connected to said first plate member in a plane substantially adjacent to and parallel to the plane of said first plate member.

11. A slide mount pillow block bearing formed from an integral single piece of sheet metal cut to provide a back plate having a central aperture, the annular walls of said aperture being curved internally, said back plate having an integral forward extension merging in an integral ring-like extension bent to lie generally in a plane parallel to but forward of said back plate, said ring-like extension having a central aperture, the internal marginal walls of said last mentioned central aperture being curved, said ring-like extension having angularly disposed integral straps spaced apart and arranged at right angles to said ring-like extension, the terminals of said straps having right angle tabs bent substantially parallel to the plane of said back plate, and said tabs and

said back plate having registering apertures to receive fastening means to secure the same resiliently together, the apertures in said back plate and said ring-like extension being adapted to receive a bearing block having walls conforming to the shape of the annular walls surrounding said central apertures for universal mounting of said bearing block therein.

12. A sheet metal one-piece pillow block bearing housing comprising a first sheet metal plate member having an aperture formed therein, a laterally extending flange having a curved cross section surrounding said aperture and providing a first bearing seat, a second sheet metal member having an opening formed therein, a laterally extending flange having a curved cross section surrounding said opening and providing a second bearing seat, means integrally connecting said first and second sheet metal plate members, means integrally connected with said second plate member and extending therefrom, and tab means formed on the end of said integral means, said tab means having an aperture therein adapted to cooperate with an aperture in said first plate member to receive fastener means to interconnect said tab means and said first plate member.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,873,086	Watts	Aug. 23, 1932
1,946,086	Lyman	Feb. 6, 1934
2,011,493	Larsh	Aug. 13, 1935
2,123,872	Whiteley	July 19, 1938