Nov. 1, 1932. J. M. BRYAN ET AL 1,885,586

SELF LUBRICATING BEARING

Filed Aug. 5, 1931 2 Sheets-Sheet 1

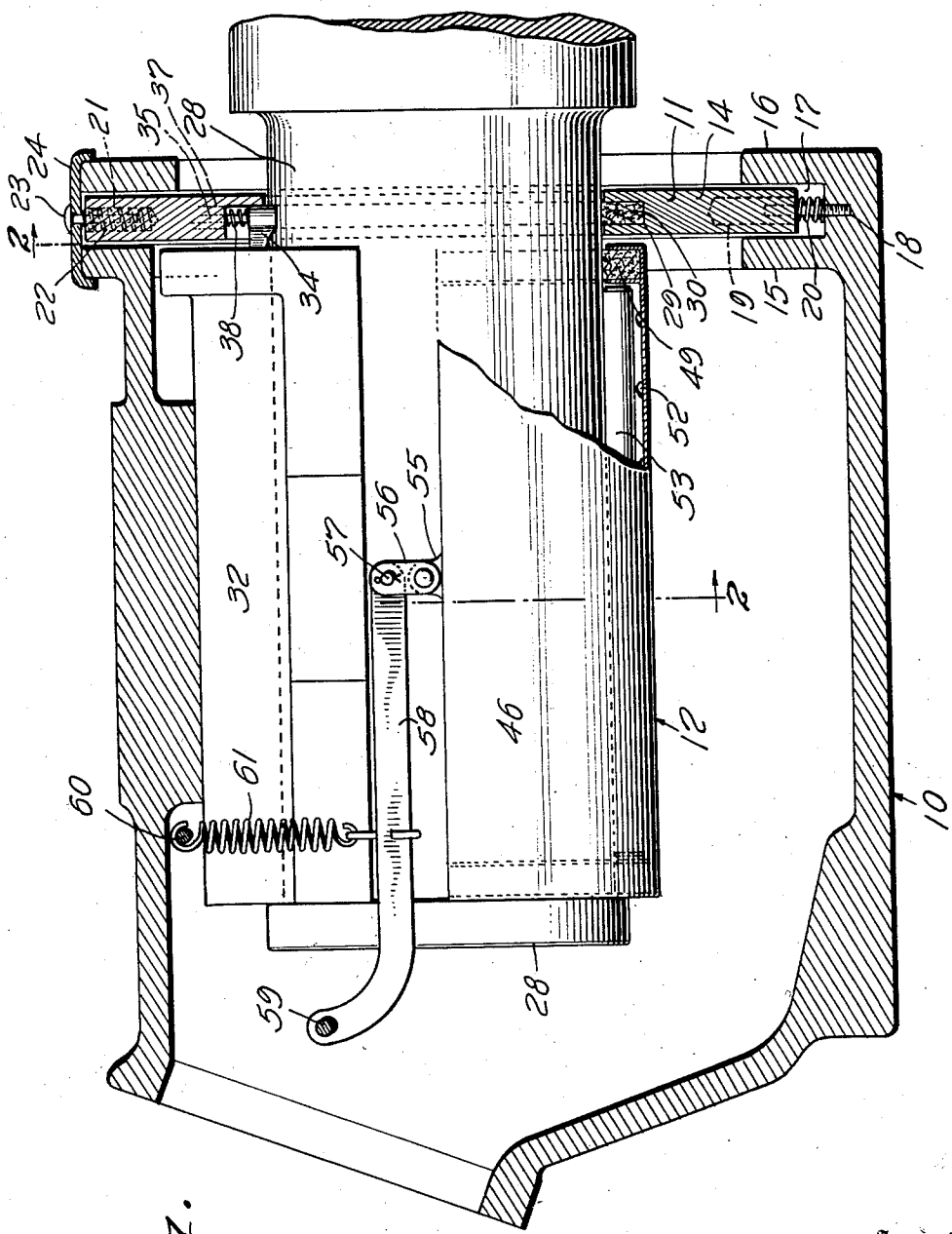



Fig. 1.

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Fig. 3.

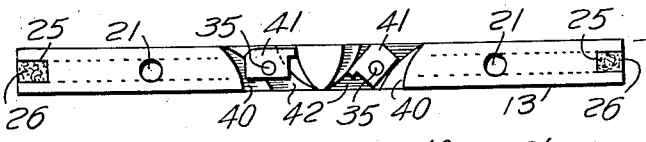



Fig. 2.

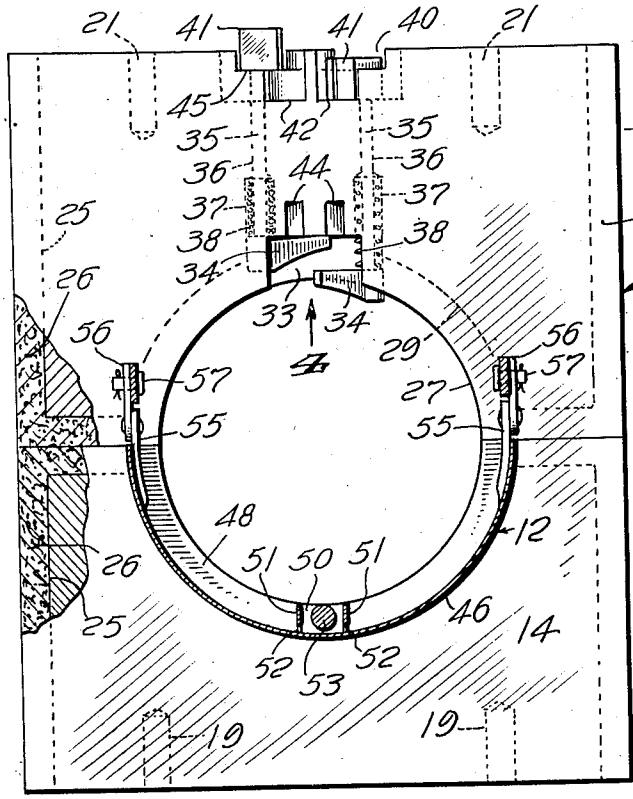



Fig. 4.

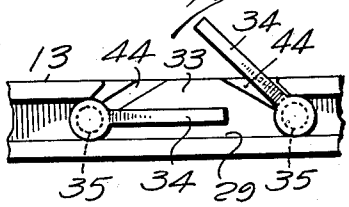



Fig. 5.

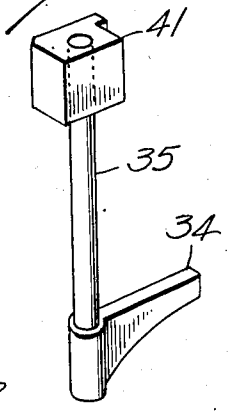
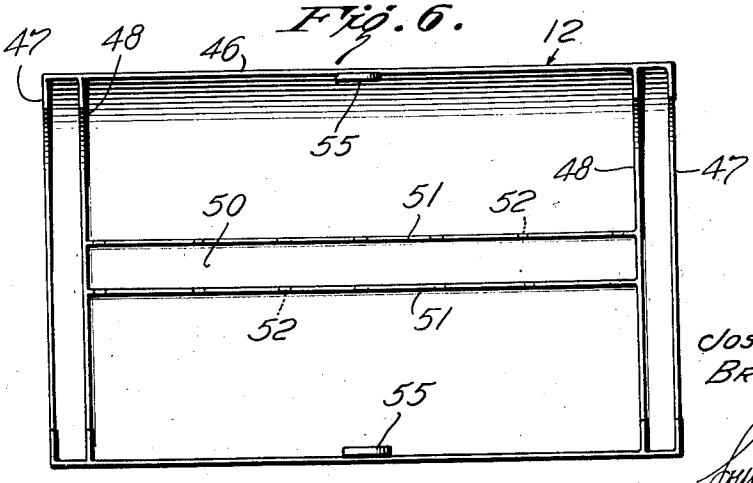



Fig. 6.




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# UNITED STATES PATENT OFFICE

JOSEPH M. BRYAN AND BRINAY SMARTT, OF INDIANAPOLIS, INDIANA

## SELF LUBRICATING BEARING

Application filed August 5, 1931. Serial No. 555,314.

Our present invention relates to journal bearings of the general type disclosed and set forth in our application for patent for self-lubricating bearings, Serial No. 514641, filed February 9, 1931.

In the above mentioned application, provision was made within the journal-box for constantly lubricating it while it is in motion, this being accomplished by means of a self-contained and directly connected rotary pump. Our present invention, however, may be used in connection with the above mentioned application or it may be used separately therefrom, as desired. One of the principal objects of our invention resides in an extremely simple and highly effective device which will effectually lubricate the bearing with a minimum amount of oil, this device being associated with means for preventing entrance of dust or gritty matter from the exterior of the journal-box.

A further object of our invention aims to provide a device for accomplishing the above purpose, which may be readily secured in its proper position within a journal-box of the usual construction.

The invention, therefore, may be said to contemplate the provision, in the journal-bearing, of an attachment for entirely excluding all dust and foreign matter from entry into the journal-bearing and, at the same time, for yieldingly supporting the oil-pan, whereby the minimum amount of oil may be used for thoroughly lubricating the shaft within its bearing.

In the drawings, in which the same reference characters refer to the same parts throughout, preferred embodiments of my invention are illustrated.

Figure 1 is a longitudinal sectional view taken through a journal-bearing, illustrating our attachment in its operative position;

Figure 2 is a transverse sectional view taken on the line 2—2 of Figure 1, the axle and the casing of the journal-bearing being removed for the sake of clearness;

Figure 3 is a top plan view thereof;

Figure 4 is a fragmentary view, slightly enlarged, of Figure 2, looking in the direction of the arrow indicated as 4;

Figure 5 is a view in perspective of one of the details associated with our invention; and

Figure 6 is a top plan view of the oil-pan.

Our invention, in the form or embodiment shown in the drawings and briefly described, comprises a casing or housing of a journal-bearing 10, a dust-proof guard shown generally at 11, and the oil-pan 12, associated therewith.

Referring particularly to figures from 1 to 5, the dust-proof guard 11 consists of upper and lower plate members 13 and 14, which are adapted to be yieldingly supported in their operative position with respect to the casing of the journal-bearing 10, and held against accidental displacement therein. The means for preventing the displacement of this guard 11 may be described as a pair of flanges 15 and 16, which are integrally formed with one end of the casing of the journal-bearing 10, providing therebetween a recess 17, within which the guard is supported.

A pair of pins 18 may be threaded into the channel or groove 17, and are adapted to align with a pair of vertically extending openings 19, formed through the lower edge of the bottom section 14 of the guard 11. A coil spring 20 is mounted upon each pin 18, and is adapted to extend within the opening 19, for yieldingly supporting the guard 11. The upper end of the guard is likewise provided with a pair of openings 21, for the purpose of receiving the springs 22, which are in turn properly supported by means of the pins or rivets 23, which are supported by the cover plate 24.

Each of the side edges of both of the sections 13 and 14, is provided with a channel 25, extending its entire length, for the purpose of supporting the felt strip or packing 26, which is adapted to be engaged by the walls of the lateral portions of groove 17, thereby preventing entrance of dust or other foreign matter between these contacting surfaces. Each of the sections 13 and 14, in their respective lower central portions, is provided with a semi-circular opening 27, slightly larger in diameter than the axle or shaft 28. An annular groove or recess 29 is formed adjacent each opening 27, for the purpose of receiving the felt or

packing 30, which is, of course, adapted to contact with a rotating shaft or axle 28. It will now be appreciated that guard 11, although not coming in direct contact with the axle 28, is yieldingly supported with respect thereto, by means of the flanges 15 and 16, and the respective coil springs 20 and 22, there being sufficient clearance or play between the dust-guard and the groove 17 to permit any sidewise movement, due to wear of the bearing-block 32, with respect to this axle or shaft 28.

We will now describe the novel means associated with our invention for deflecting the course of oil which has been carried around the axle 28, away from the packing or felt ring 30, thereby preventing saturation and the collection of dust thereon. The upper edge of the opening 27 in section 13 is cut away, shown at 33, for the purpose of receiving the deflectors or blades 34, which are, in turn, supported from their vertically extending shafts 35, mounted for oscillation within the openings 36. The portions of the openings 36 are counter-bored, as shown at 37, for the purpose of receiving the expansion coil springs 38, which are adapted to be supported between the upper edge of the counter-bored openings and the upper face of each of the blades or deflectors 34, for a purpose which will be readily obvious.

The upper edge of the section 13, is provided with a pair of substantially similarly formed depressions 40, for the purpose of retaining the headed members 41 in various positions. These headed members 41 are each rigidly secured to the upper end of their respective shafts 35, so that they may be turned into or out of the operative postion of the deflectors 34 with respect to the axle 28.

The lower edge of each of the deflectors 34 is formed arcuate and of the same contour as the axle 28 upon which the deflectors are adapted to rest when in their operative position.

A second set of depressions 42, greater in depth than the depressions 40, are provided adjacent depressions 40, for the purpose of permitting the headed members 41 to enter therein, so as to permit the deflectors or blades 34 to yieldingly bear against the axle 28.

A pair of angularly disposed slots or grooves 44 are upwardly extended beyond the cut-out portion 33, they being slightly wider than the width of the deflector blades 34, so that these blades may enter their respective grooves 44 when it is desired to raise them out of their operative position. The headed member 41 will, of course, rest upon the ledge or surface 45, formed between both of the depressions 40 and 42, when it is desired to hold the deflectors 30 and 34 in their elevated position, out of engagement with the axle 28. In Figure 2 of the accompanying drawings, we clearly illustrate one of these deflectors as being raised out of position whereas the other is in its lowermost position.

Having already described the means for entirely excluding dust and gritty matter which is so harmful to bearings together with our novel means for preventing the accumulation of oil or grease at the upper ends of the axle by means of deflectors, we will now describe the oil-pan and the support therefor, whereby the axle may be completely lubricated with but a small amount of lubricant. The oil-pan 12 is preferably formed semi-circularly and of a radius slightly greater than of the axle 28, so that it may contain but a relatively small amount of lubricant. This oil-pan is preferably formed of relatively thin sheet metal and comprises the shell 46, and a pair of inwardly extending, semi-circular flanges 47, which are adapted to be slightly spaced from the axle 28. The semi-circular flanges 48, of the same substantial shape as the flanges 47, are integrally formed in the oil-pan 12; and are located sufficiently close to the outer flanges 47, which will permit the reception of the felt packing 49 therebetween. This packing, it will be readily understood by reference to Figure 1, is adapted to bear against the underside of the axle 28, for the purpose of effectually preventing the escape of oil to the outer side thereof. A longitudinal trough 50 is provided in the substantial center of the oil pan 12, and is preferably formed of a pair of parallel strips 51, which are secured to the oil-pan at the adjacent flanges 48. Each of these parallel edges 51 is provided with a plurality of openings 52, located in the lower sides thereof, for the purpose of permitting the oil or the lubricant to enter the trough 50 from the oil pan. An elongated roller 53, formed of any desired material, is loosely mounted to rotate within the trough 50, and is adapted, during operation, to be turned from the axle 28, it being held in its elevated or buoyant position by reason of its floating upon the surface of its lubricant. This roller 53, it will be appreciated, will assure the deposit upon the axle 28 of a comparatively thin film of oil uniformly spread upon the entire length thereof. It may be here stated that the oil-pan is of the same substantial length as the bearing block 32, thereby assuring the deposit of the lubricant upon its entire bearing surface.

Our novel means for yieldingly supporting the oil-pan 12, against the axle 28, whereby it will effectually function at all times despite the usual shocks and jars incidental to journal-bearings of this nature, may be briefly described as follows:

A lug or ear 55 is secured to each side of the oil-pan 12, in the substantial middle thereof; each is provided with an opening for receiving the lower end of the link 56,

which is, in turn, pivotally mounted, as shown at 57, to the free end of the arm 58. Each of the arms 58, it will be noted, is pivotally mounted to a transversely extending rod 59, which may be supported from the side walls of the casing for the journal-bearing in any desired manner. A second rod 60 is likewise secured to the journal-bearing for the purpose of supporting a pair of downwardly extending contraction coil springs 61. The lower end of each spring, it will be noted, is connected by a hook or the like to this pivotally mounted arm 58.

The invention is not intended to be necessarily restricted to the particular constructions and arrangements of parts, nor to the particular applications of such constructions, herein shown and described, as the same may be modified in various particulars or be applied in many varied relations without departing from the spirit and scope of the invention, practical embodiments herein illustrated and described attempting merely to show some of the various forms and modifications in which the invention might be embodied.

What we claim is:

A journal-bearing comprising a casing, a shaft rotatably mounted therein, a substantially rectangular oil-pan extending lengthwise with respect to said shaft, a pair of parallel strips secured to the oil-pan providing a trough therefor, a roller loosely mounted in the trough and disposed between said shaft and the oil-pan, a pair of pivotally mounted arms flexibly connected to said oil-pan, and a pair of coil springs interposed between the casing and said arms for supporting the pan resiliently against said shaft.

In witness thereof we have signed this specification.

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