

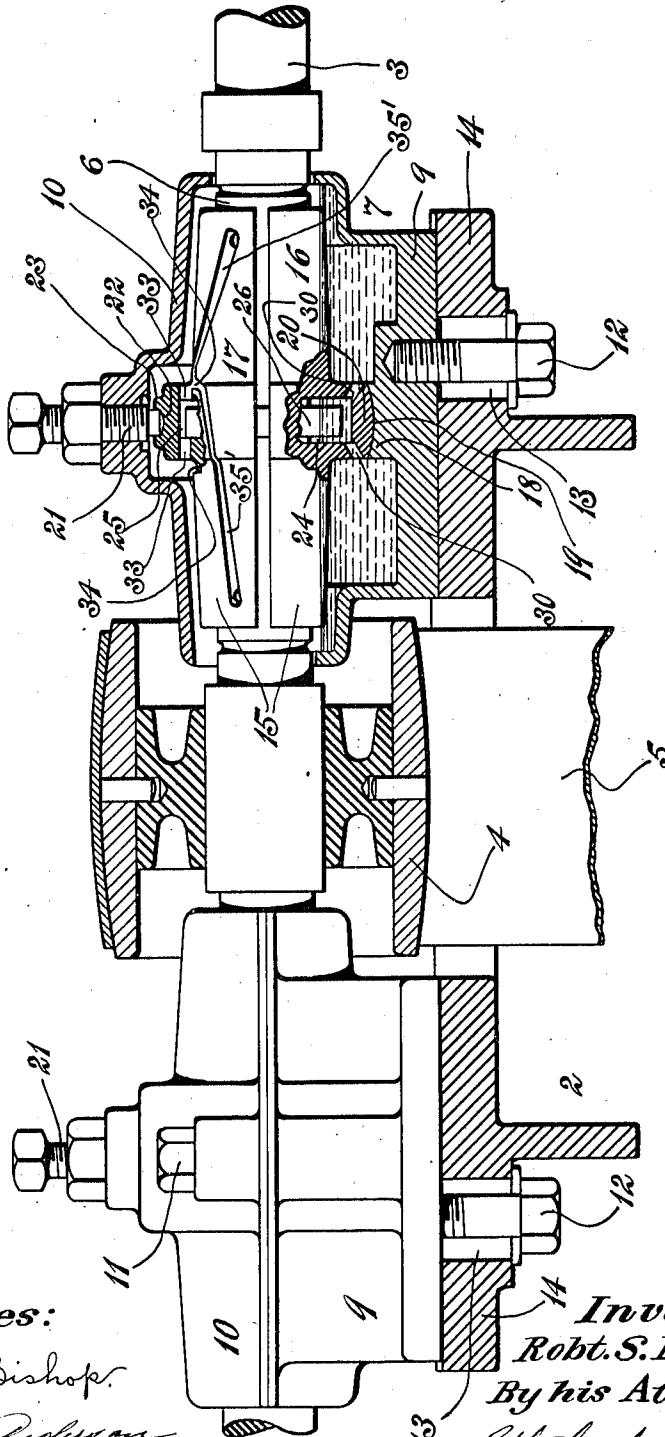
R. S. BROWN.
JOURNAL BEARING.
APPLICATION FILED JUNE 19, 1909.

1,003,868.

Patented Sept. 19, 1911.

2 SHEETS-SHEET 1.

Fig. 1



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2 SHEETS—SHEET 2.

Fig. 2.

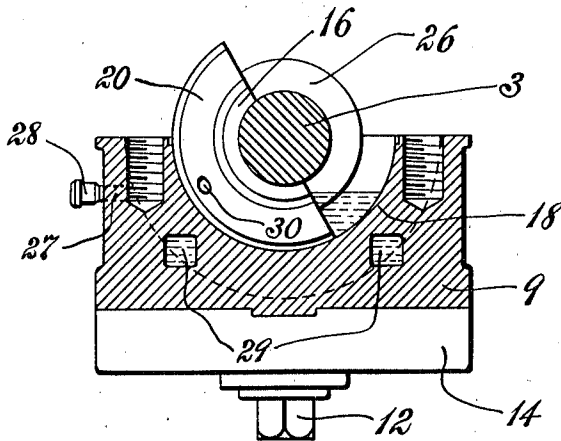


Fig. 3.

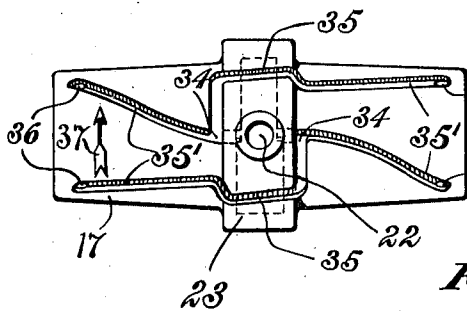


Fig. 4.

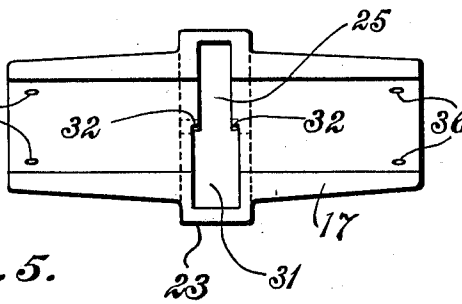
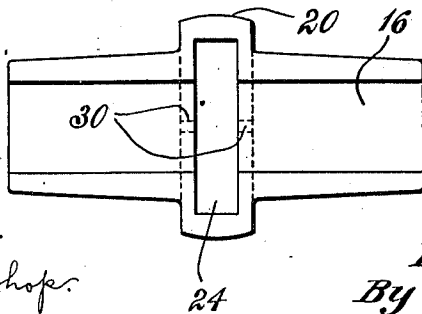


Fig. 5.



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UNITED STATES PATENT OFFICE.

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JOURNAL-BEARING.

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To all whom it may concern:

Be it known that I, ROBERT S. BROWN, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Journal-Bearings, of which the following is a specification.

This invention relates to journal bearings the object of the invention being to provide a simple article of this character wherein effective lubrication of the surface or surfaces to be lubricated is assured and wherein access to certain of the parts can be readily and quickly secured.

The device possesses other features of advantage which with the foregoing will be set forth at length in the following description wherein I outline in detail that form of embodiment of the invention which I have selected for illustration in the drawings accompanying and forming part of the present description. This specific disclosure is to enable those skilled in the art to practice the invention. I wish it to be understood that I do not restrict myself to such showing as many deviations may be adopted within the scope of my invention as expressed in the claims succeeding said description.

Referring to said drawings, Figure 1 is a front elevation partly in section, of journal bearings involving my invention. Fig. 2 is a transverse section of the body portion of a box and the base member of a bearing showing particularly the manner of removing said base member. Figs. 3 and 4 are top and bottom plan views respectively of the upper portion of a bearing, and, Fig. 5 is a top plan view of said base member.

Like characters refer to like parts throughout the several figures.

A journal bearing comprising my invention can be employed with advantage in many different connections. In Fig. 1 of the drawings I have represented two of such bearings in combination with the shaft and certain other elements of a well known type of grinding machine the framework of which is denoted in a general way by 2. The shaft which carries the grinding wheel (not shown) is designated by 3 and to it is fastened a suitable driver as the pulley 4 the operating belt for which is denoted by 5. These several parts are common in cer-

tain classes of grinding machines for which reason it is unnecessary to describe them in detail. I employ two bearings for the shaft as it is the custom to do so; there are or may be instances where one bearing might answer the purpose at hand. As the two bearings are similar in construction I will describe but one of them in detail similar parts in the other where they appear bearing like identifying symbols.

The shaft 3 has a journal portion 6 and I make provision for thoroughly lubricating the same as will hereinafter appear. This journal portion is inclosed by and turns in a bearing within a box such as that denoted in a general way by 7 which though normally stationary has provision for adjustment longitudinally of the shaft 3 for a purpose that will hereinafter appear. The box 7 is supported by the framework 2 and it is shown as consisting of a lower portion 9 and an upper portion 10 which are fitted somewhat closely together and united in some desirable manner for instance by screws 11. The lower portion 9 has an under flattened face so that it can freely slide on the framework 2 the box as a whole being held in an adjusted position by a holding screw 12 tapped into said lower portion 9 and extending through a slot 13 formed in the flange 14 of the framing 2 and elongated in the direction of the length of the shaft 3. The head of the screw by acting against the flange 14 maintains the said box in an adjusted position and the adjustment can be easily changed by backing out the screw. The said box 7 presents a convenient means for inclosing the bearing proper and which I will hereinafter refer to simply as the "bearing". Such a bearing as answers effectively my purpose is denoted in a general way by 15. The bearing 15 consists preferably of two members as 16 and 17 which are made practically in the form of elongated shells which comparatively closely fit or hug the journal portion 6. The said bearing 15 is so mounted that it is capable of universal movement by virtue of which it can automatically align itself with the shaft 3 and avoid the possibility of binding, and I will hereinafter describe a means whereby the function in question can be effectively and simply secured.

Within the box 7 and preferably on the lower portion or section 9 thereof I form a

flange or rib as 18 which is shown as being situated substantially midway of the said box although the particular disposition thereof is not a matter of prime consideration. The upper surface 19 of this rib or flange is shown as being of channel form and preferably spherical to present a seat for the like spherical surface on a rib or flange as 20 formed on the exterior of the lower bearing or base member 16. This relation as will be apparent prevents possibility of the said base member 16 having any endwise movement although it is free to rock longitudinally and laterally. It will be obvious that by the described construction it will be a very simple and easy matter to remove the bearing 15 without dismounting the shaft 3 or disturbing any of the parts associated with said shaft. To remove said bearing it will be of course first necessary to take off the cap portion 10 of the box 7 after which the bearing member 17 will be lifted off the complemental bearing member 16. The latter will then be slipped from place by a lateral sliding motion as shown in Fig. 2. This operation is one which can be quickly and easily performed and the parts can be reassembled just as readily, the two described ribs acting as positioning means of a positive and certain nature to definitely and precisely locate the lower or base member of the bearing 15. It will be understood that except for the slight universal movement of said bearing the latter is stationary.

While the two members or shells of the bearing 15 fit the journal portion 6 somewhat snugly there is no contact between said two members their lateral edges being separated or spaced apart so as to provide for a better distribution of the lubricant. The upper section or shell 17 is held in proper relation by some suitable means such as by the screw 21 represented as tapped through the cap portion 10 and the reduced lower end or tip of which fits freely in a depression or pocket as 22 formed in a rib 23 formed externally of the member 17. This relation permits the upper member 17 to rock or oscillate longitudinally and laterally by reason of which it can partake of the tipping movements of the shaft 3 and of the base member 16; in other words the two members of the bearing can rock in unison or as one. Said screw 21 also presents a convenient means for moving the upper section of the bearing 15 bodily with the box 7 as the latter is adjusted longitudinally of the shaft 3 by reason of which I can always insure a proper relation between a scraping shoulder and a collar both hereinafter described.

On the inner surfaces of the bearing members 16 and 17 are complemental semi-annular channels 24 and 25 which jointly re-

ceive the collar 26 on the journal portion 6 and their function will be hereinafter set forth. At this point I should state that the lower section 9 of the box 7 constitutes an oil-receiver or reservoir the oil being fed into said section 9 substantially up to the level shown in Figs. 1 and 2 and the collar 26 in connection with the two channels or grooves in connection with other means hereinafter described, serving to lubricate thoroughly the journal portion 6 throughout its entire area. The two grooves or channels 24 and 25 are shown as extending into the ribs 20 and 23 respectively.

The lower box section 9 is shown as having a filling opening 27 which receives the familiar oiler 28 and by which oil can be introduced into said section 9. The transverse rib 18 in the section 9 has two ports or passages as 29 through which oil can flow from one side of said rib to the other it being apparent that the filling opening to which I have referred is located at one side of said rib or partition 18. The grooved rib 20 presents an oil trough and is shown as having opposite ports 30 through which oil can flow from the section 9 into the groove or trough 24 to be taken therefrom by the rotating collar 26. It will be obvious that the level of the oil in the trough or groove 24 is the same as that in the section 9.

The collar 26 runs in oil in the trough or groove 24 and as the shaft 3 turns said collar lifts positively oil from said trough up into the groove or chamber 25 where the oil is positively scraped from said collar and diverted sidewise as will hereinafter appear. The groove or chamber 25 is widened as at 31 by reason of which there are produced two scraping portions or shoulders 32. Initially both scraping portions separate the oil from the side faces of the collar 26 but in time the parts will naturally become worn and in this event the box 7 will be so adjusted that one of the said scraping portions will act and I provide means of such a nature that even though but one of said scraping portions be in action the opposite ends of the journal portion 6 will be adequately lubricated. The oil scraped from the collar 26 passes oppositely (if both shoulders 32 be in action) through the opposite ports 33 extending through the rib 23 and into pockets 34. The oil flows from these pockets into the entering ends of obtuse angular channels 35 in the rib 23. From opposite ends of each of these obtuse angular channels 35 branch channels as 35' extend, there being as will be apparent four of these branch channels and each of them extending obliquely of the upper bearing member 17 externally thereof and being formed preferably directly therein. Said branch channels have at their outer termi-

nals ports each designated by 36 which extend into the inner face of the said member 17 and owing to the fact that said branch channels are obliquely disposed the proper flow of the oil along the same and through the ports 36 onto the journal portion 6 is assured. It will be understood that each port 33 supplies two coöperating branch channels 35' so that if only one of the scraping shoulders 32 be in action the oil will positively be caused to pass through two substantially alined ports. Looking at the construction set forth it might be considered that each channel 35 with its branches 35' presents a continuous channel extending longitudinally but irregularly along the exterior of the member 17 said channel having an inlet between its ends and outlets at opposite sides of said inlet. It will be perceived that this continuous channel or passage is so disposed that it can conduct the lubricant oppositely which flows thereinto from the port opening into the same between the ends thereof. Owing to the construction of the member 17 it may be reversibly mounted so as to positively cause one of the scraping shoulders 32 to operate irrespective of the direction in which the shaft 3 is rotating. The member 17 is provided on its outside with an arrow 37 stamped, cast or otherwise suitably formed thereon to indicate the direction of rotation of the shaft.

The shaft 3 as it is heated up expands longitudinally and to assure easy running thereof under such conditions the following expedient is adopted. The two collars 26 are so related with the bearings 15 that the inner faces of the said collars are contiguous to the inner walls of the semi-circular grooves so that when the shaft expands longitudinally the collars will move away from said inner walls.

What I claim is:

1. An apparatus of the class described comprising a journal, a shell fitted to said journal and having formed directly therein an exterior longitudinally extending channel, a device to contain lubricant, means for lifting the lubricant from said device, and means for positively separating the lubricant from said lifting means, said shell having a port through which the lubricant passes which is thus separated from said lifting means and said port opening into said channel between the ends thereof and serving to supply the lubricant simultaneously in opposite directions to said channel.

2. An apparatus of the class described comprising a journal, a shell fitted to said journal and having formed directly therein an exterior longitudinally-extending channel, a device to contain lubricant, a collar on said journal for lifting the lubricant from said device, means on said shell for positively scraping the lubricant from said col-

lar, said shell having a port through which the lubricant scraped from said collar passes and said port opening into said channel between the ends thereof and serving to supply the lubricant simultaneously in opposite directions to said channel.

3. An apparatus of the class described comprising a journal, a shell fitted to said journal and having two distinct longitudinally extending channels, a device to contain lubricant, means for lifting the lubricant from said device, means for positively separating the lubricant from said lifting means, said shell having two separate ports through one or the other of which the lubricant is directed when separated from said lifting means and the ports opening into said respective channels between their ends to supply one or the other simultaneously in opposite directions with the lubricant.

4. An apparatus of the class described comprising a lubricant containing box, a journal extending into said box, and a bearing for the journal in said box, said bearing comprising two distinct sections separated from each other for the passage of lubricant the upper of said sections having a longitudinally-extending channel formed directly therein and also having a port leading from the interior thereof into said channel between the ends thereof, a collar on said journal for lifting lubricant from said box, and means for positively separating the lubricant from said collar and for causing the same to pass through said port into said channel.

5. An apparatus of the class described comprising a lubricant-containing box, a journal extending into said box, a bearing for the journal, in said box and comprising two distinct sections separated to provide an opening therebetween at the side of said bearing and the upper section having a longitudinally-extending passage formed directly therein and also having a port opening from the interior thereof into said passage between the ends of the latter, said passage also having ports at the opposite sides of said other port, leading to said journal, means for lifting the lubricant from said box, and means for positively causing the lubricant thus lifted to pass through said first-mentioned port from which it can flow into said passage to overflow the same and to also pass through said second mentioned ports.

6. An apparatus of the class described comprising a journal, a shell fitted to said journal and having a longitudinally extending channel formed directly therein, a device to contain lubricant, means for lifting the lubricant from said device, and means for positively separating the lubricant from said lifting means said shell having a port through which the lubricant passes which is

thus separated from said lifting means and said port opening into said channel between the ends thereof and serving to supply the lubricant simultaneously in opposite directions to said channel.

7. An apparatus of the class described comprising a lubricant-containing boxing, a journal extending into said boxing, a bearing for said journal, in said boxing comprising superposed sections separated to provide for the passage of lubricant therebetween from the exterior of said bearing onto said journal, the upper section of the boxing having a longitudinally-extending channel formed directly therein and also having a port leading from the interior thereof into said channel, the latter having ports at opposite sides of said other port, opening into the interior of said upper section, a collar on said journal for lifting lubricant from said boxing, and means on said upper section for positively separating the lubricant from said collar and for causing the same to pass through said first mentioned port and into said channel from which it can flow through said second mentioned ports and also over the side of said channel and through the opening between said sections.

8. An apparatus of the class described comprising a box to contain lubricant, a journal extending into said box, the latter being adjustable bodily longitudinally of said journal, a bearing for said journal, in said box and comprising superposed distinct sections the lower of which is con-

nected with the box for movement therewith, means on the box for detachably engaging the upper section, and for moving the latter with said box on the adjustment thereof, means for lifting lubricant from the box, and means on the upper section of the bearing for separating the lubricant from the lifting means, the bearing having means for distributing the lubricant thus separated from said lifting means simultaneously in opposite directions.

9. An apparatus of the class described comprising a box to contain lubricant, a journal extending into said box, a bearing for said journal in said box comprising superposed distinct sections the lower of which is connected with the box and the latter being adjustable longitudinally of said journal, a collar on said journal for lifting the lubricant from said box, a shoulder on the upper section of the bearing, for engaging a side face of said collar and thereby separating the lubricant from the same, the bearing having means for distributing the lubricant thus separated simultaneously in opposite directions, and a screw tapped through the top of said box, the upper section of the bearing having a seat to removably receive said screw.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT S. BROWN.

Witnesses:

HEATH SUTHERLAND,
ANNA C. MALMFELDT.