P. A. SOLEM.

JOURNAL BEARING.

APPLICATION FILED FEB. 3, 1913.

1,067,382.

Patented July 15, 1913.

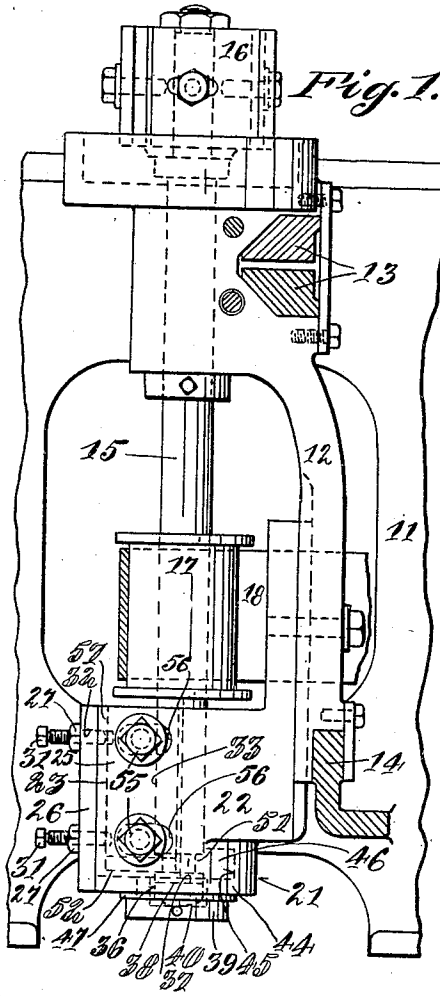


Fig. 1.

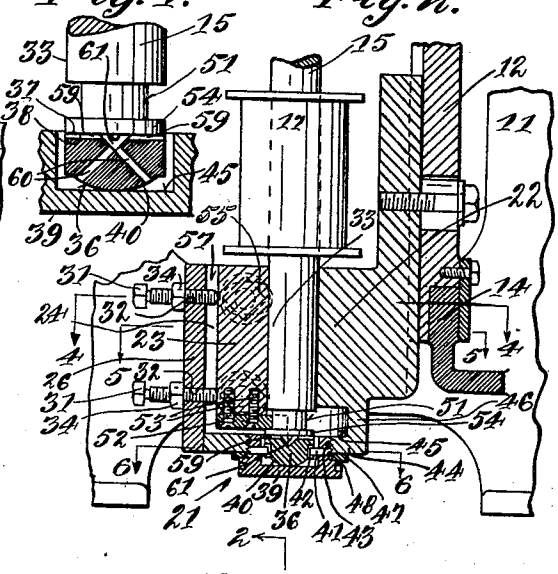


Fig. 7.

Fig. 2.

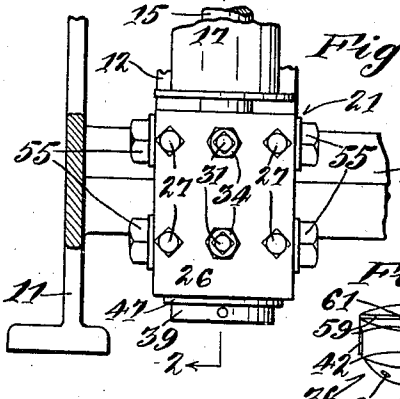


Fig. 3.

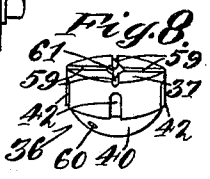


Fig. 8.

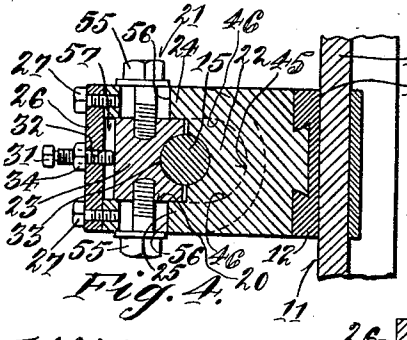


Fig. 4.

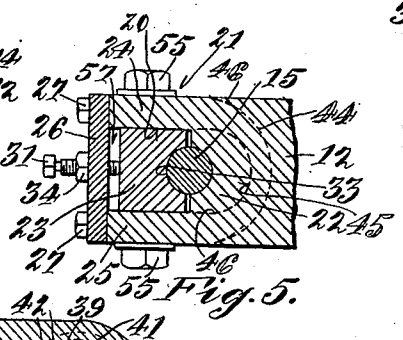


Fig. 5.

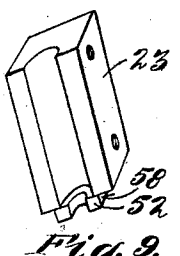


Fig. 9.

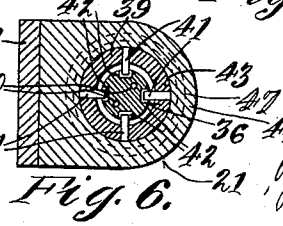


Fig. 6.

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UNITED STATES PATENT OFFICE.

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JOURNAL-BEARING.

1,067,382. Specification of Letters Patent. **Patented July 15, 1913.**

Application filed February 3, 1913. Serial No. 745,924.

To all whom it may concern:

Be it known that I, PETER A. SOLEM, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Journal-Bearings, of which the following is a specification.

My invention relates to journal bearings, especially to such of step-bearing form, and I have illustrated the same as applied to an upright spindle such as employed in a wood-planing machine.

In machines of the character herein exemplified, the pulley for the upright cutter-head shaft or side-head spindle is usually located adjacent the lower end of the shaft and adjacent to the lower bearing, the pull of the belt being received from the front of the machine, by reason of which the front half of the lower bearing is subjected to the principal strain and wear. These shafts rotate at high speeds. Great difficulty has been found heretofore in adjusting the lower bearing so as to prevent the same from heating while providing a close enough fit of the bearing upon the journal to cause proper running of the shaft. I obviate these objections and difficulties in my improved device.

It is the object of my invention to provide novel means for adjusting the bearing with relation to the journal, to provide novel means for taking up wear, and to provide novel means for end-adjustment, and the invention will be further readily understood from the following description and claims, and from the drawings, in which latter:

Figure 1 is a side elevation of my improved device shown in connection with so much of a wood-planing machine as is necessary to illustrate its application thereto. Fig. 2 is a central axial section of my improved device taken on a line corresponding to the line 2—2 of Fig. 3. Fig. 3 is an end elevation of my improved device. Fig. 4 is a cross-section of the same on the line 4—4 of Fig. 2. Fig. 5 is a cross-section of the same on the line 5—5 of Fig. 2. Fig. 6 is a cross-section of the same on the line 6—6 of Fig. 2. Fig. 7 is an enlarged axial section of the step-end of the upright shaft and of the step-block. Fig. 8 is a perspective view of the step-block; and, Fig. 9 is a perspective view of the shiftable bearing-block.

11 represents the main frame of a suitable machine, such as a wood-planing machine, in which a so-called matcher-leg 12 is adjustable laterally in suitable manner on guide-ways 13, 14.

15 is an upright shaft having a cutter-head 16 secured thereto. A pulley 17 is secured to the spindle operated by a suitable belt 18.

My invention is directed to the bearing, instanced as the bearing 21 in the present exemplification.

22 is a relatively rigid part of the bearing, preferably at that side from which the strain of the belt is received, this being the bearing-part ordinarily subjected to the greatest strain and consequently the greatest wear.

I provide novel means for taking up wear by providing an adjustable bearing-block 23. The bearing-part 22 has side cheeks 24, 25, extending therefrom, preferably rigid therewith, the bearing-block 23 being received between these side-cheeks. A spanner-plate 26 is received across the outer ends of the side-cheeks outside said adjustable bearing-block, being preferably spaced from the latter. The spanner-plate is rigidly secured to the side-cheeks, as by means of bolts 27. The side-cheeks are preferably integral with the bearing-part 22, the construction forming a channel 20 parallel to the axis of rotation of the shaft in which the adjustable bearing-block 23 has movement.

31, 31, are set-screws having threaded bearings at 32 in the spanner-plate. These set-screws are caused to approach the adjustable bearing-block just sufficiently to position the adjustable block in proper bearing relation with the journal 33 of the shaft, so that a slight push upon the end of the adjustable bearing-block will cause lengthwise movement of said bearing-block. A lock-nut 34 locks the set-screws in adjusted positions. A plurality of these set-screws is preferably employed, spaced apart

at distances lengthwise of the axis of rotation of the spindle so as to properly position the adjustable bearing-block throughout its length in the relation stated to the journal of the shaft.

The maintenance of proper relation of the bearing-block to the journal is thus assured and a too close approach of the bearing-block to the journal during endwise adjustment of the bearing-block is prevented, as the adjustment described is not disturbed for endwise adjustment of the bearing-block.

36 is a step-block which preferably has a flat upper end 37 bearing against the flat lower end 38 of the upright shaft.

39 is a step-support upon which the step-block has support, there being a rounded bearing-portion between the step-support and the step-block, in this instance shown by the rounded lower end 40 of the step-block. The step-block is preferably prevented from turning, which is accomplished by means of pins 41 in the step-support received in slots 42 extending lengthwise of the step-block, that is, parallel to the axis of rotation of the upright shaft. The step-support is shown as having threaded connection 43 with a lower wall 44 of the relatively rigid bearing-part. This lower wall forms a shelf below the bearing 21, this shelf preferably forming the bottom of an oil-reservoir 45 for the bearing, the sides of the oil-reservoir being formed by the webs 46 between said shelf and relatively rigid part and by the lower ends of the side-cheeks and spanner-plate. A washer 47 is preferably interposed between a flange 48 on the step-support and said lower wall for definitely positioning the step-support on the said lower wall with relation to said bearing. Various thicknesses of these washers may be employed.

The construction insures that if any shifting of the upright shaft out of perpendicular to the step-support takes place, that the flat end of the upright shaft will bear upon a corresponding flat surface, any such shifting causing a rocking of the step-block upon its step-support.

In order to position the step-end of the shaft in proper relation to the step-block and to prevent an axial shifting of the shaft, due for instance to the force of the cutting action of the cutter-head secured to said shaft, and to take up lost end-motion, I provide the shaft with an annular groove 51 in which a fork 52 is received, the fork being secured to the lower end of the bearing-block by means of screws 53. An annular flange 54 is thereby formed on the upright shaft. The fork is caused to bear upon this annular flange to prevent axial movement of the shaft away from the step-block. The positioning of the fork is accomplished by pressing upon the bearing-block with the finger or a small piece of wood with just sufficient pressure to locate the fork upon the flange, whereupon the clamp-screws 55 threaded into said bearing-block and received through enlarged openings 56 in the side-cheeks secure the bearing-block and the fork in adjusted positions.

Binding and heating of the parts are prevented by my improved device.

The construction permits a clearance space 57 to be formed between the bearing-block and the spanner-plate, which forms an oil-receiving channel communicating with the oil-cup, as through the passages 58 at the sides of the fork 52, whereby the journal of the upright shaft continuously rotates in an oil-bath. For causing continuous oiling of the bearing faces between the step-end of the shaft and the step-block, one of these faces, instanced as on the step-block, is provided with a series of grooves 59, shown as radial grooves, with which a hole 60 communicates, this hole being shown in the step-block, the hole opening at its outer end in the oil-reservoir, the outer ends of the grooves also communicating with the oil-reservoir. An oil-recess 61 is located in the upper face of the step-block, the hole 60 and the grooves 59 communicating at their inner ends with this recess. It will be noted that the radial length of the hole 60 is less than the radial lengths of the grooves 59. One or more of the holes 60 may be provided. The rotation of the end of the shaft upon the step-block causes centrifugal flow of the oil in said grooves which is fed through said holes and acts as a centrifugal pump fed by and emptying into said oil-reservoir for supplying the end-faces between the shaft and step-block with a continuous film of oil.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a journal bearing, the combination of a shaft having a peripheral journal, a bearing for said peripheral journal comprising a bearing-block, said bearing-block shiftable lengthwise of said journal, a step for said shaft, said shaft and bearing-block provided with coacting means for limiting recession of said shaft from said step by movement of said bearing-block longitudinally of said journal.

2. In a journal bearing, the combination of a shaft having a journal, a bearing for said journal comprising a bearing-block, a step for said shaft, adjusting means for limiting recession of said bearing-block from said journal and forming a slide-space in which said bearing-block has movement lengthwise of said journal, said bearing-block and shaft provided with coacting means for limiting recession of said shaft from said step by movement of said bearing-

block in said slide-space, and means for securing said bearing-block in adjusted positions.

3. In a journal bearing, the combination of a relatively rigid bearing-part provided with side-cheeks for forming a channel, and a spanner-plate secured to said side-cheeks across said channel, a bearing-block in said channel, locating means between said spanner-plate and bearing-block for locating said bearing-block with relation to said relatively rigid bearing-part whereby said bearing-block has movement lengthwise in said channel, and side clamping means between said side-cheeks and bearing-block.

4. In a journal bearing, the combination, with a shaft, of a relatively rigid bearing-part having side-cheeks extending therefrom for forming a channel therebetween extending lengthwise of the axis of rotation of said shaft arranged to be received in said bearing, a bearing-block received in said channel, adjusting means for limiting recession of said bearing-block in said channel from said relatively rigid bearing-part whereby said bearing-block has longitudinal movement in said channel, and clamping means between said bearing-block and side-cheeks for clamping said bearing-block in longitudinally positioned relation in said channel.

5. In a journal bearing, the combination of a relatively rigid bearing-part having a channel therein, a bearing-block in said channel, a shaft having an annular groove therein for forming an end wall, said bearing-block provided with an end-positioning part received in said annular groove and arranged to coact with said end wall, adjusting means for positioning said bearing-block in lateral relation to said relatively rigid bearing-part, said positioned relation of said bearing-block being a longitudinally shifting relation, and means for securing said bearing-block and relatively rigid bearing-part together for fixing the longitudinal position of said bearing-part.

6. In a journal bearing, the combination with an upright shaft, of a relatively rigid bearing-part having a channel therein extending lengthwise of said shaft, a bearing-block in said channel, end-positioning means between said shaft and bearing-block, adjusting means for positioning said bearing-block in transverse relation to said shaft and for sliding movement in said channel, and clamping means between said relatively rigid bearing-part and said bearing-block.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

PETER A. SOLEM.

Witnesses:
CHARLES E. WEBER,
THERESA M. SILBER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."