

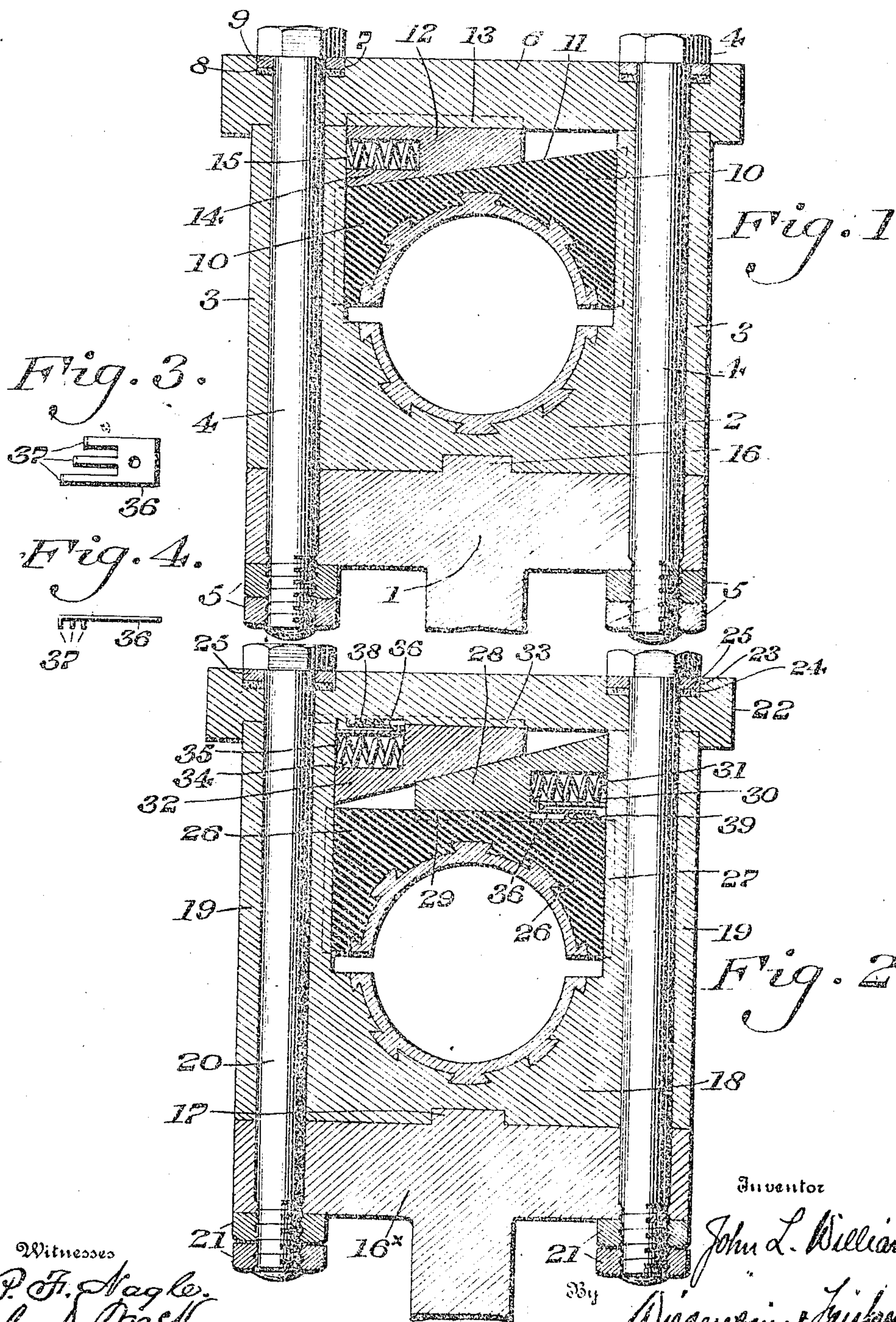
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J. L. WILLIAMS.

SELF ADJUSTABLE JOURNAL, CRANK, AND AXLE BEARING.

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JOHN L. WILLIAMS, OF PHILADELPHIA, PENNSYLVANIA.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN L. WILLIAMS, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Self-Adjustable Journal, Crank, and Axle Bearing, of which the following is a specification.

My invention consists of a novel construction of self-adjustable journal or crank bearing in which the shaft will not bind or stick in case the bearing becomes heated and expands, and is especially adapted for use with shafts which revolve at a high rate of speed.

It further consists in the interposition between the movable parts of the box of a bearing of a wedge-shaped sliding key adapted to lie upon the oblique face of the movable part of said bearing and provided with a suitable spring whereby the sliding key is constantly forced forward as the journal or axle wears away the contiguous face of the bearing, thus causing the boxes to always have substantially the same relation to the shaft mounted therein.

It further consists in the employment of a fibrous washer between the heads of the bolts and the adjacent portions of the cap, said cap being suitably recessed, so that a flush joint is formed.

It further consists in means for preventing the rearward movement of said keys.

It further consists in novel features of construction, all as will be hereinafter fully set forth.

Figure 1 represents a sectional elevation of an adjustable bearing embodying my invention. Fig. 2 represents a sectional elevation of another embodiment thereof in which two wedge-shaped sliding keys are employed. Fig. 3 represents a plan view of one of the springs in detached position. Fig. 4 represents a side elevation of Fig. 3.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates a connecting-rod to which the pillow-block 2 is suitably secured, the same being integral therewith, if desired.

3 designates upwardly-extending sides, through which pass the bolts 4, provided with suitable nuts 5.

6 designates a cap which is provided with recesses 7, within which are contained the fibrous washers 8, between which and the heads of the bolts 4 are metal washers 9.

10 designates a movable bearing which has an inclined face 11 and is provided with a suitable flange for retaining said bearing in place.

12 designates a wedge-shaped key which is adapted to move between the cap 6 and the inclined face 11 of the movable bearing 10 and is provided with a flange 13, whereby said key is retained in place. 14 designates a chamber or recess extending into said key 12, in which is inserted the spring 15, one end of said spring engaging one end of said recess and the other end of said spring engaging the inner wall of the side 3. The spring 15 always tends to move the sliding key 12 forwardly or to the right, as seen in Fig. 1, so that as the bearing material of the boxes wears away the said boxes will always have the same relation to the shaft, owing to the spring 15 forcing the key 12 forwardly, and thus moving the movable bearing 10 downwardly against said shaft.

16 designates a lug or projection extending from the connecting-rod 1, which prevents any improper movement of the lower box 2.

In the embodiment seen in Fig. 3, 16^x designates a connecting-rod provided with a lug 17, which engages the pillow-block 18 and prevents improper movement thereof, said block 18 being provided with the upwardly-extending sides 19, through which pass the bolts or rods 20, provided with suitable nuts 21 and by means of which the cap 22, pillow-block 18, and the connecting-rod are secured together.

23 designates a recess in the cap 22, in which is placed a fibrous washer 24 and a metal washer 25, said recess being of such depth that the metal washer is flush with the surface of the cap when the parts are in assembled position.

26 designates the upper movable bearing, which is provided with a suitable flange 27, whereby it is retained in position.

28 designates a sliding key which is wedge-shaped and provided with a flange 29, which retains the same in place.

30 designates a chamber or recess in said key, in which is placed a spring 31, which tends to move said key toward the left.

32 designates a wedge-shaped key similar to the key 28, but adapted to be moved in the opposite direction, the plane surface of said key engaging with the under side of the cap and the inclined face of said key engaging the inclined face of the wedge 28. This key is

also provided with a suitable flange 33, which retains the same in position.

34 designates a chamber or recess in which is placed a spring 35, which always tends to move the key 32 toward the right.

In order to prevent the keys 28 and 32 from moving rearwardly, I secure thereto in any suitable manner a spring 36, having the three arms or members 37 of different lengths. 38 designates teeth located on the under side of the cap, with which the spring secured to the upper key is adapted to engage, and 39 designates similar teeth on the upper bearing, with which the spring secured to the lower key is adapted to engage. It is readily apparent that as the keys 28 and 32 move toward each other the springs secured thereto engaging with the teeth will prevent any rearward movement of said keys. I employ a spring having two or more arms 37, for the reason that it will not be necessary for a key to move as great a distance as when I employ a single spring-arm before one of the arms 37 engages one of said teeth.

It will be seen that the upper bearing 10 is held in engagement with the shaft by means of a wedge-shaped sliding key. The spring 15, inserted in the chamber 14, always tends to move the key 12 to the right, as seen in Fig. 1, and as the bearing wears this spring 15 will move the said key 12 toward the right and the box will always be in life, and the wear of the bearings will be automatically taken up as fast as it occurs, because the movement of the key 12 always tends to force the upper bearing downwardly toward the lower bearing. In the embodiment seen in Fig. 2 I have employed two similar wedge-shaped keys, but adapted to move in opposite directions, the inclined face of the key 28 engaging the inclined face of the key 32, and as each of these keys is provided with a suitable spring adapted to automatically move the key forwardly it will be seen that a central downward pressure will be exerted against the movable bearing 26 of the box.

It is apparent that if I employ two wedge-shaped keys adapted to move in opposite directions it will be necessary for the keys to move only half the distance which one key would be obliged to move to produce the same result, and I find in practice that the employment of a fibrous washer between the cap and the bolt is very advantageous, as it permits a slight yielding action of the cap, which will serve to prevent any binding of the shaft which might be caused by a sudden variation in its revolution or in any expansion due to heating.

It is readily apparent that by varying the inclined faces of the wedges the distance to which said wedges must advance to move the upper bearing downwardly will be correspondingly varied and also that by increasing the strength of the springs which auto-

matically move the keys the tension of the upper bearing against the shaft may be varied as desired.

I have shown my device as being adapted to be secured to the connecting-rod of a gas-engine and have shown a lug on the connecting-rod for preventing the improper movement of the lower bearing; but I do not desire to be limited to this feature.

It will be seen in my novel construction that the strain is substantially axial and that there will be no binding of the upper bearing against the sides of the pillow-block, so that a very durable construction is produced. It is evident that I may employ my novel construction in connection with a pillow-block or shaft-hanger or in connection with any bearing adapted to support a revolving shaft, the broad principle of my invention being the movement of one or more spring-pressed keys which are adapted to be moved laterally by means of a spring acting thereagainst in order to automatically move the movable bearing toward the fixed bearing, and thus take up any wear which may occur in the said bearings, and also means to prevent the rearward movement of any of said keys. It will be further apparent that it is immaterial whether the inclined face with which the inclined face of the key engages is located on the movable bearing or on the cap.

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

1. In a device of the character described, a connecting-rod, a fixed lower bearing-block having upwardly-extending sides, a movable bearing-block guided between said sides and having flanges engaging therewith, a cap at the upper end of said sides, bolts passing through said cap, sides and connecting-rod, nuts for said bolts, and spring-actuated means interposed between said cap and said movable bearing-block for automatically moving said movable bearing-block toward said fixed bearing-block.

2. In a journal-bearing, a fixed bearing-block having sides extending therefrom and integral therewith, a cap secured to said sides, a movable bearing-block having flanges extending therefrom and engaging said sides to prevent improper lateral movement of said block, wedge-shaped keys coacting with each other and interposed between said cap and said movable bearing-block and springs adapted to advance said keys in opposite directions to move said movable bearing toward said fixed bearing.

3. In a journal-bearing, a fixed bearing-block having sides extending therefrom, a cap secured to said sides, a movable bearing-block, keys having inclined faces engaging with each other and interposed between said cap and said movable bearing-block, springs adapted to automatically advance said keys

as the bearing-block wears and means for preventing the rearward movement of said keys.

4. In a device of the character described, a fixed bearing-block having sides extending therefrom and integral therewith, a movable bearing-block having guiding-flanges engaging said sides, a cap at the upper end of said sides, there being recesses in the upper face of said cap, yielding washers in said recesses, bolts passing through said washers, said cap and said sides, nuts for said bolts, and resiliently-actuated means interposed between said cap and said bearing for automatically taking up the wear of said bearings.

5. In a journal-bearing, a fixed bearing-block having sides extending therefrom, a cap yieldingly secured to said sides, a bearing-block movable between said sides, keys interposed between said movable bearing-block and said cap and each having an inclined face coacting with the inclined face of another key, springs adapted to automatically advance said keys in opposite directions, a spring secured on the plane face of each key, there being teeth on the contiguous face of said cap and said movable bearing-block with which said springs engage to prevent any rearward movement of said keys.

6. In a device of the character described, a bearing-block having sides extending therefrom, a bearing-block movable between said sides, a cap yieldingly secured to said sides,

keys, each having an inclined face coacting with the inclined face of another key and interposed between said cap and said movable bearing-block, and provided with a recess on its plane face, springs for advancing said keys in opposite directions, a spring secured in each of said recesses, there being a plurality of arms of different lengths extending from said last-mentioned springs and teeth on said cap and movable bearing-block contiguous said recesses with which one or more of said arms engage to prevent rearward movement of said keys.

7. In a device of the character described, a connecting-rod, a fixed bearing-block having integral extending sides connected therewith, means for preventing the improper movement of said fixed bearing-block with respect to said rod, a cap yieldingly secured to said sides, a movable bearing-block guided between said sides and having flanges which prevent improper lateral movement of said movable block, keys interposed between said movable bearing-block and said cap, each having an inclined face coacting with the inclined face of another key and springs adapted to automatically advance said keys in opposite directions.

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