

No. 634,525.

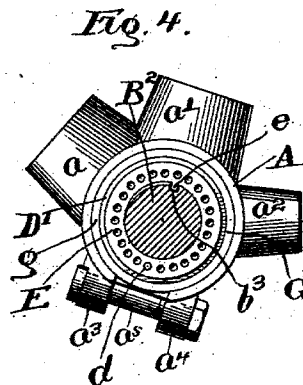
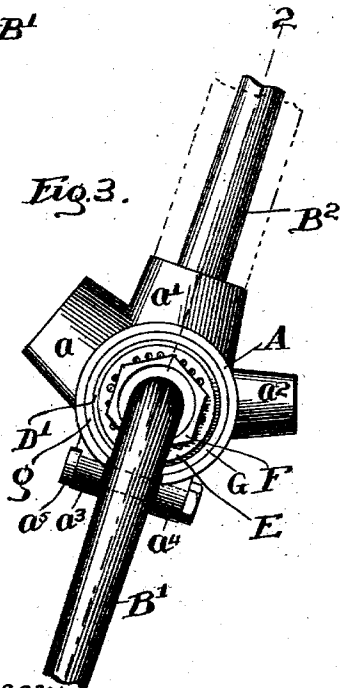
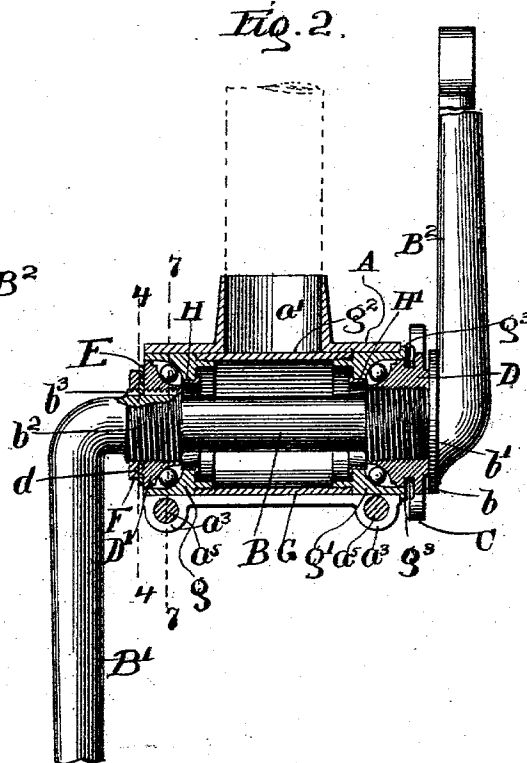
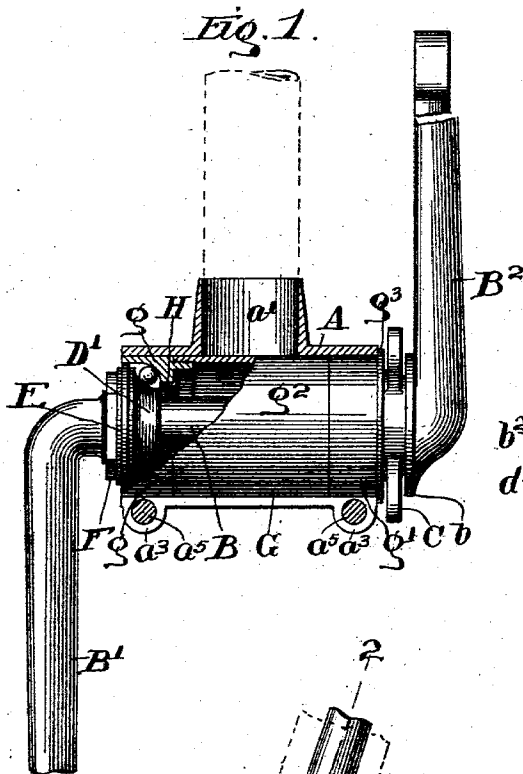
Patented Oct. 10, 1899.

W. A. HANCE.
CRANK SHAFT BEARING.

(Application filed Jan. 12, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
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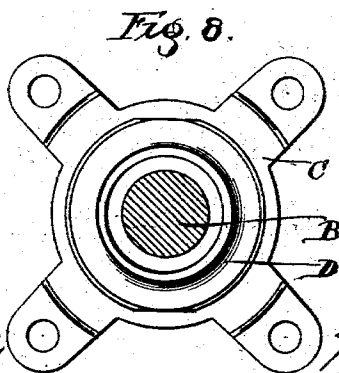
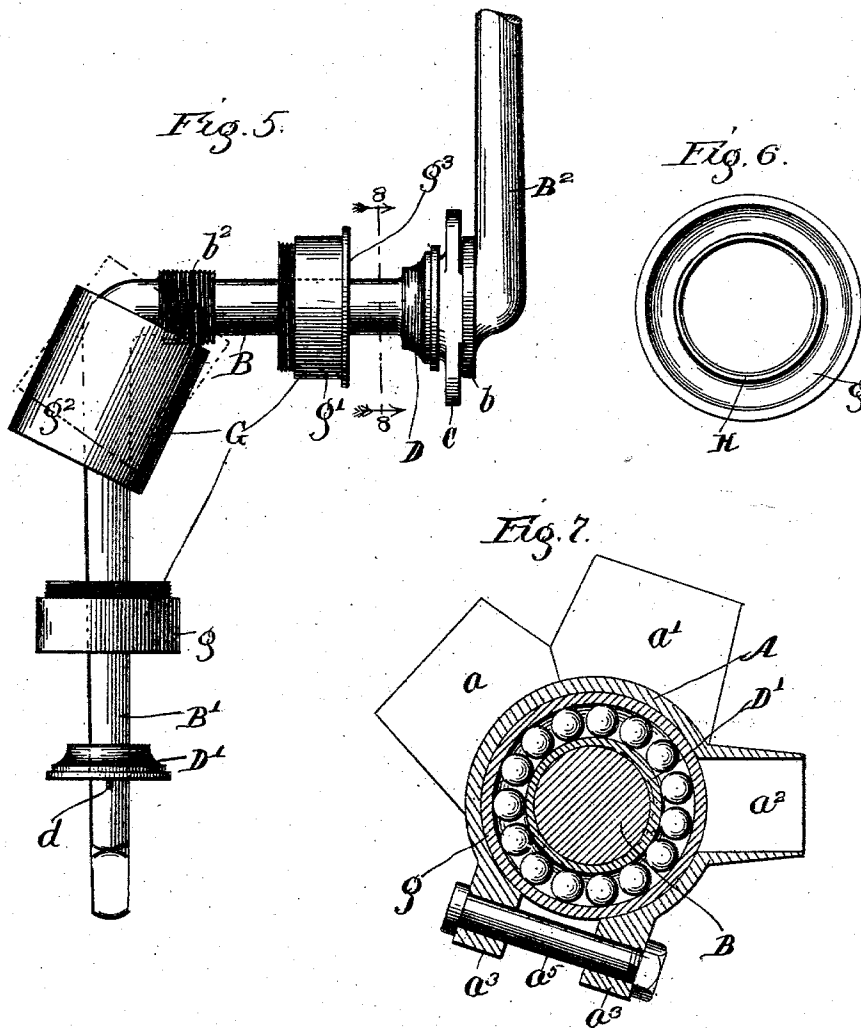
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CRANK SHAFT BEARING.

(Application filed Jan. 12, 1898.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM A. HANCE, OF FREEPORT, ILLINOIS, ASSIGNOR TO THE STOVER
BICYCLE MANUFACTURING COMPANY, OF SAME PLACE.

CRANK-SHAFT BEARING.

SPECIFICATION forming part of Letters Patent No. 634,525, dated October 10, 1899.

Application filed January 12, 1898. Serial No. 666,395. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. HANCE, a citizen of the United States of America, residing at Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Crank-Shaft Bearings, of which the following is a specification.

My invention has for its purpose the production of a bearing for crank-shafts of bicycles and the like which shall enable the parts adjacent to and connected with said crank-shafts to be taken apart and assembled with the greatest possible ease.

To such end the invention consists in a bearing having certain novel features, which will be fully described in connection with the preferred auxiliary devices and the essential features of which will be hereinafter defined.

To illustrate the invention, drawings are herewith presented consisting of eight figures or views, and said drawings show the preferred form in which I have embodied my invention and also certain devices adapted to use in connection therewith.

Of the drawings, Figure 1 is an end elevation of a crank-shaft bearing as it appears in a bicycle-frame, certain parts being broken away to reduce the size of the figure and to reveal devices which would otherwise be hidden and the hanger being shown in section, the half in front of the bearing being cut away to reveal the latter. Fig. 2 is a section of the hanger and bearing in plane 2 2 of Fig. 3. Fig. 3 is a side elevation looking toward the right in Fig. 1. Fig. 4 is a vertical section in plane 4 4 of Fig. 2. Fig. 5 is a view of the crank-shaft and bearing-pieces separated from each other and showing the way in which the said pieces may be removed from the crank-shaft. Fig. 6 is an end view of a bearing-cup. Fig. 7 is a section looking toward the right in plane 7 7 of Fig. 2, and Fig. 8 is a section looking toward the right in plane 8 8 of Fig. 5.

Looking at the figures, A is intended to represent the crank-shaft hanger of a bicycle-frame. It is provided with the bosses a' a^2 , by means of which it is to be brazed to the tubing of the frame, and is slotted across the bottom to a width equal to or greater than the thickness of the cranks. Upon each side

of the slot is a pair of downwardly-projecting perforated ears or lugs a^3 a^4 , and through these perforations are run clamping-bolts a^5 . A crank-shaft is shown at B, the cranks being represented at B' B². The crank-shaft and the cranks are shown as integral, and at the right-hand end of the shaft in Fig. 2 will be seen an annular shoulder b , adjacent to which is a screw-thread b' upon a portion of the shaft somewhat larger than the adjacent portions and also larger than the cranks. Near the other end of the shaft is a second screw-thread b^2 , and the diameter of the shaft at this point should be equal to or less than at the screw-thread b' . Upon the screw-thread b' will be seen a spider C and a bearing-cone D. The spider is adapted to receive a sprocket-wheel and support the same and the bearing-cone to furnish a bearing-surface upon one side of a series of antifriction-balls. Upon the screw-thread b^2 is a second bearing-cone D', adapted to furnish a track upon one side of a second series of antifriction-balls. Adjacent to the cone D' is a perforated ring E, and a pin d is provided upon the cone in position to enter one of the perforations. The ring has a tongue e , (see Fig. 4,) and in the screw-threaded portion b^2 of the shaft is a groove b^3 (shown in Figs. 2 and 4) to receive this tongue. A nut F is screwed upon the shaft to hold the ring against the cone. When the ring E is slipped off of the pin d , the bearing-cone may be adjusted as desired. When such adjustment is made and the ring E slipped back upon the pin and held there by the nut F, the parts are locked against any displacement, the bearing-cone being held against rotation by the ring and the ring by the shaft. All of the parts thus far described as being screwed upon the shaft are large enough to be slipped on and off over the cranks.

Within the hanger A and about the shaft B is a bearing-collar G, which is fitted to the interior of the hanger and may be firmly clamped in position therein by means of the clamping-bolts a^5 . Said collar preferably contains and supports all portions of the bearing except those secured upon the shaft itself. Figs. 1 and 3 show this bearing-collar in position in the hanger, and it should be noticed that the removal of the clamping-bolts a^5 loosens up the hanger upon the collar and en-

ables the collar, together with the entire bearing, crank-shaft, and cranks, to be slipped laterally out of the hanger. This is a great advantage, inasmuch as the entire bearing 5 may be assembled and adjusted out of the bicycle-frame. It is also an advantage, because in case of an injury to the frame the bearing can be removed while such injury is being repaired without interfering with the 10 adjustment and without any danger of losing the parts of the bearing, as is the case when they must be taken apart to remove them from the frame. It is also an advantage, because in case of an injury to the bearing or 15 any part thereof the entire bearing can be removed in a moment and sent to the maker for repairs without sending the frame along and with a certainty that when such repairs are made all of the parts will be fitted to- 20 gether and properly adjusted.

The bearing-collar G is preferably divided transversely into parts to reduce the length of the same and consequently the size necessary to enable such parts to be slipped over the 25 angle at which the cranks join the crank-shaft. A convenient division is to make up said collar of end portions g g' , formed into cups to complete the ball-races, and an intermediate portion g^2 , secured to the end portions 30 and serving merely to connect said end portions. The portion g' is preferably provided with a flange g^3 to bear against the end of the hanger and act as a stop in putting the collar in the hanger. The form of the intermediate 35 portion is entirely immaterial, and it is of course obvious that instead of making the end pieces into ball-cups they may be adapted to receive separate ball-cups and support the same. Short rings H H' are wedged into the 40 ball-cups g g' to hold the balls in place and in putting the bearing together.

The exact form, construction, and arrange-

ment of the bearing above described I consider to be immaterial to my invention broadly considered, and I recognize the fact that great 45 variation is possible in these respects without departing from the essential features of my invention. I desire, therefore, not to limit myself to the specific construction, form, or arrangement shown in the drawings and de- 50 scribed in the above specification.

I claim as new and desire to secure by Letters Patent—

1. The combination with a crank-shaft having suitable cones and cranks of cups corre- 55 sponding to the cones, a collar connecting the cups, balls between the cups and cones and a rigid hanger adapted to embrace the collar and cups, said hanger being slotted to the width of one of the cranks and provided with 60 means for clamping it upon the cups; substantially as described.

2. The combination with the one-piece crank-shaft and cranks, of suitable cones upon the shaft, cups corresponding to said 65 cones, balls adapted to run between said cups and cones, a connecting-collar threaded to the cups, said cups and collar being of sufficient diameter and short enough to slip readily over the cranks and a rigid hanger containing a 70 longitudinal slot wide enough to permit of the passage through it of one of the cranks and clamping devices upon the opposite ends of the hanger adapted to clamp the cups and hold them in place; substantially as de- 75 scribed.

In witness whereof I have hereunto set my hand, at Freeport, in the county of Stephenson and State of Illinois, this 21st day of December, A. D. 1897.

WILLIAM A. HANCE.

Witnesses:

W. A. MERRIFIELD,
L. HUGHES.