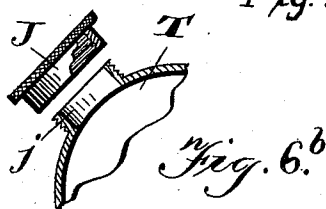
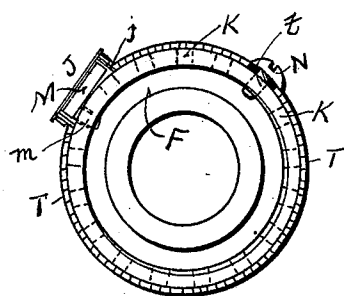
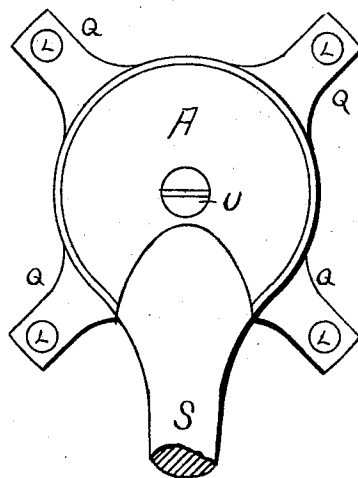
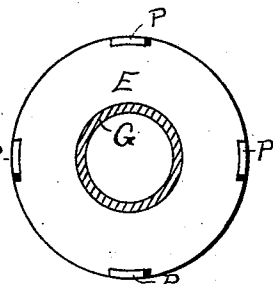
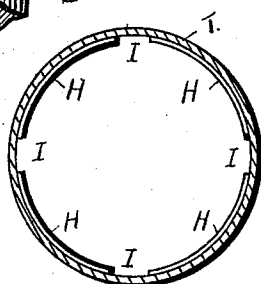
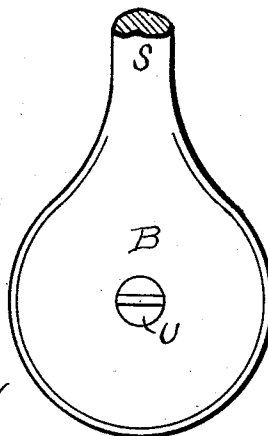
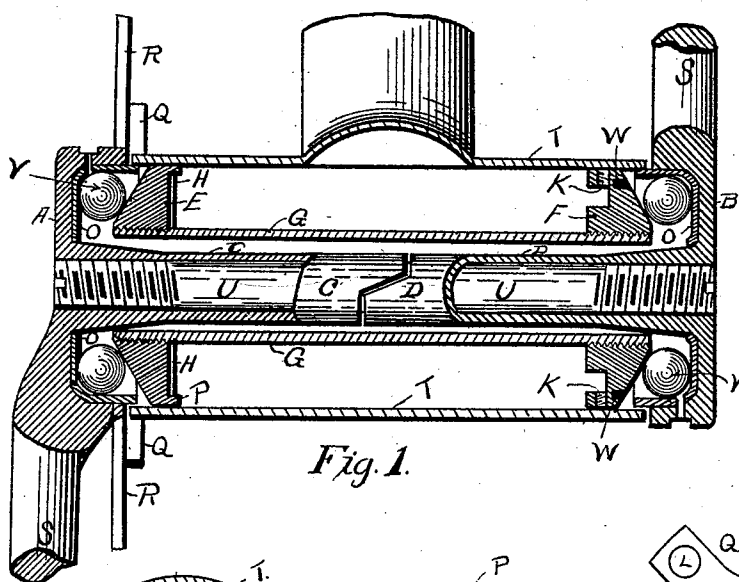


W. F. HAWES.
CRANK HANGER FOR BICYCLES.

Patented Apr. 27, 1897.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILBER F. HAWES, OF DENVER, COLORADO.

CRANK-HANGER FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 581,395, dated April 27, 1897.

Application filed April 14, 1896. Serial No. 587,493. (No model.)

To all whom it may concern:

Be it known that I, WILBER F. HAWES, a citizen of the United States, and a resident of Denver, Arapahoe county, State of Colorado, have invented certain new and useful Improvements in Crank-Hangers for Bicycles; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to velocipedes, and more especially to the bearings thereof; and the object of the same is to produce certain improvements in the bearing for the crank-shaft on an ordinary safety-bicycle.

To this end the invention consists in the specific details of construction hereinafter more fully described and claimed, and as illustrated in the accompanying drawings, wherein—

Figure 1 is a central longitudinal section of one form of this improved bearing complete. Fig. 2 is an elevation of the right end, and Fig. 3 an elevation of the left end, thereof. Fig. 4 is a cross-section showing the inner end of the left-hand cone. Fig. 5 is a cross-section of the casing, showing the notched ridge with which the lugs on said cone engage. Fig. 6^a is a section looking toward the inner end of the right-hand cone. Fig. 6^b is an enlarged sectional detail of the threaded sleeve and cap with the latter removed. Fig. 7 is a side elevation of the bolt for connecting the crank-axles, with an end view of the wrench for turning the same.

In the said drawings the letter T designates the casing, such as usually comprises a part of the framework of an ordinary rear-driving safety-bicycle, which casing has a hollow cylindrical portion for the reception of the entire bearing for the crank-axles. Within this casing is located a hollow shaft G, concentric therewith and exteriorly threaded at its extremities. On one end (here shown as the left) of this shaft is screwed the cone E, whose operative face stands outward and whose vertical inner face is provided with lugs P, adapted when the shaft is in position to engage notches I, cut in an inwardly-projecting ridge H, formed on the inner face of the casing T, by which means the cone E is

prevented from rotation after it (with the shaft G) has been placed in position. It will be obvious that this cone E might be fixed upon or cast integral with the shaft G, if preferred, as it is not intended for adjustment thereon. Upon the opposite threaded end of the shaft G is screwed the adjustable cone F, whose operative face stands outward and is preferably provided with openings W for the reception of a suitable spanner-wrench, by means of which it can be turned, and whose radially outward face is also provided with threaded holes K. At a suitable point in the casing T is cut a rather large opening surrounded by a threaded sleeve *j*, adapted to be closed by a threaded cap J, and M is a key adapted to fit within this sleeve and of such size and shape that its opposite sides rest against the inner wall of the sleeve *j*. This key is provided with a projecting tongue or point *m* near one end thereof and on its under side, which point is of a size to pass loosely into one of the holes K, whereby it serves, in addition to the screw N, as a means for locking the cone F in position. The point *m* is of such length that when the key M is raised out of position within the sleeve *j* the tip of the point may be inserted in one of the holes K, whereby after the cone F has been turned as far as possible by means of a spanner-wrench the key M may be employed to turn it still farther by pushing or pulling it, after which the key is inserted within the sleeve to hold the cone in adjusted position, as will be clear, the cap J closing the orifice through the sleeve and preventing the entrance of dust. The casing T is, furthermore, preferably provided with a slot *t*, through which may be passed a screw N, whose head is of sufficient size to close the slot and whose point takes into one of the threaded holes K in the periphery of the adjustable cone F, whereby this cone may be further held against rotation after adjustment, or by means of which alone it may be so held, provided the key M is not employed.

The cranks S terminate in heads A and B, and preferably cast integral therewith are the hollow crank-axles C and D, respectively, which are notched or shouldered at their inner ends so as to engage each other when the cranks S stand opposite, said hollow axles

being interiorly threaded, as will be understood.

The heads A and B are provided with openings or runways for the reception of the balls V, and seated therein are wear-plates O, to receive the wear of such balls, but obviously these wear-plates may be omitted, if preferred, suitable inlet-openings being provided in either construction for the admission of a lubricant, as will be clear.

The letter R designates the spokes of the sprocket-wheel, and the crank-head A is preferably provided with ears Q, which are attached by screws or bolts passing through holes L to said spokes, so that the rotation of the cranks produces the revolution of the sprocket, as will be clear.

After assembling the various parts of this device a double screw U is inserted, the threads at its extremities taking into corresponding threads in the interior of the crank-axes C and D, and by turning this screw with a screw-driver, as seen in Fig. 1, or with a hollow wrench, as elsewhere shown, the notched or shouldered ends of the crank-axes C and D will be drawn firmly into engagement, as will be clear. The adjustment of the movable cone F outward from the center of the casing T may then occur until the two series of balls V are tightly clamped within their respective runways, so as to prevent too great looseness of parts.

All portions of this device are of the desired sizes, shapes, proportions, and materials, and considerable change in the specific details of construction may be made without departing from the principle of my invention.

What is claimed as new is—

1. In a bicycle-bearing, the combination with a hollow casing having near one extremity an inwardly-projecting ridge provided with notches; of an interior hollow shaft, a cone carried thereby and having lugs engaging the said notches, an adjustable cone mounted on its opposite extremity, two series of balls, and the crank-axes having runways for the latter, as and for the purpose set forth.

2. In a bicycle-bearing, the combination with a hollow casing provided near one extremity with an opening surrounded by a threaded sleeve, a cap removably fitting said sleeve, and a key adapted to pass thereinto and having a point; of a hollow shaft within the casing, a cone at one end thereof attached to the opposite extremity of the casing, a second cone adjustable upon the other end of the shaft and having radial holes adapted for the reception of said point, two series of balls, and the crank-axes having runways for the latter, as and for the purpose set forth.

3. In a bicycle-bearing, the combination with a hollow casing provided near one extremity with a capped opening and adjacent thereto with a slot, a key fitting within said opening and having a point, and a screw whose head closes the slot and whose shank passes through the same; of an interior hollow shaft having a cone at one end connected with the opposite extremity of the casing, an adjustable cone at the other end of the shaft having radial screw-threaded openings for the purpose set forth, two series of balls, and the crank-axes having runways for the latter, as and for the purpose set forth.

4. In a bicycle-bearing, the combination with a hollow casing having at one extremity an inwardly-projecting ridge provided with notches, an internal hollow shaft having threads at its opposite ends, a cone mounted on one end and provided with lugs engaging said notches, a cone mounted on the opposite end and provided with openings in its oblique face for the reception of a spanner, and means for holding this cone in adjusted position; of two series of balls, and the crank-axes having runways for the latter, as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my signature on this the 11th day of April, A. D. 1896.

WILBER F. HAWES.

Witnesses:

MARY HAMPTON LLOYD,
WM. FRANCIS ROBINSON.