No. 652,865. Patented July 3, 1900.

J. P. SCOVILL.

VELOCIPEDE CRANK AXLE.

(Application filed July 18, 1898.)

(No Model.)

Fig. 1

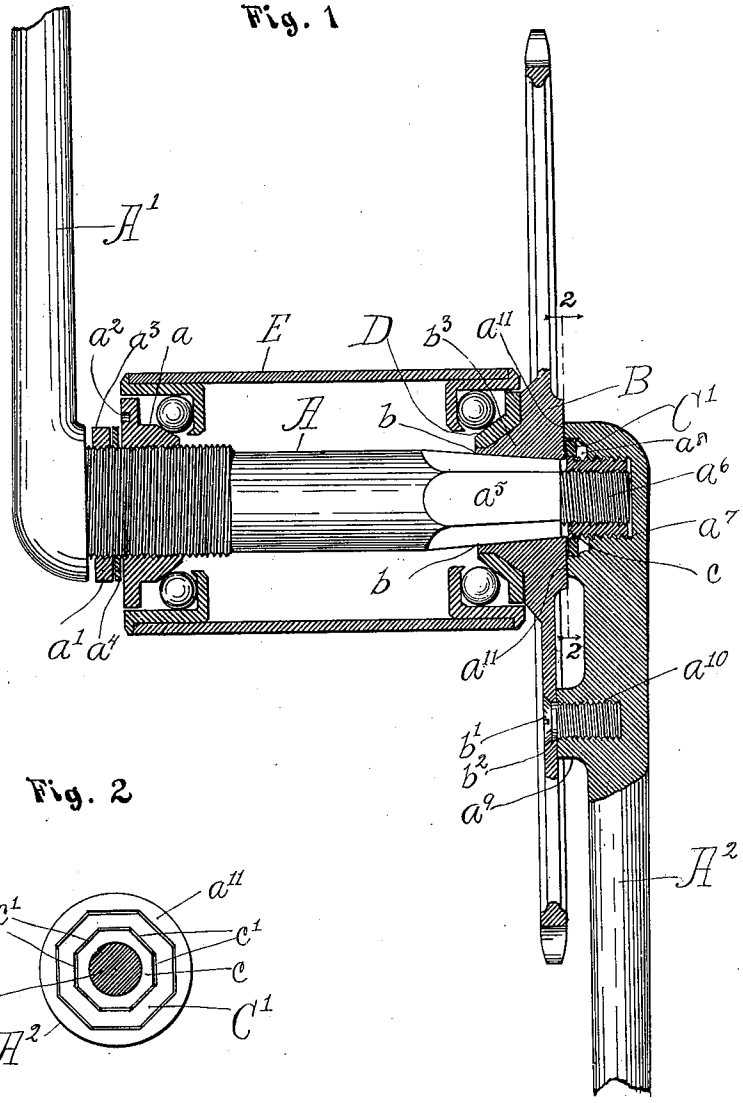


Fig. 2

Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES P. SCOVILL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GEORGE L. THOMPSON MANUFACTURING COMPANY, OF SAME PLACE.

VELOCIPEDE CRANK-AXLE.

SPECIFICATION forming part of Letters Patent No. 652,865, dated July 3, 1900.

Application filed July 18, 1898. Serial No. 686,208. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. SCOVILL, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Velocipede Crank-Axles, of which the following is a specification.

This invention relates to improvements in velocipede crank-axles, and refers more particularly to improvements in adjustable mechanical connections for detachable cranks.

The object of the invention is to provide a device of simple and economical construction which is extremely strong and durable and which embraces means of adjustment between the uniting parts to enable the latter to be brought to a rigid lock and to compensate for any working loose which may occur in use.

Incidentally the construction permits convenient access to the locking parts and is simple and readily understood, so that any person of ordinary skill can readily unite, separate, or adjust the parts.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims, and will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a view, partly in elevation and partly in axial section, of a velocipede crank-axle embodying my invention. Fig. 2 is a transverse sectional view taken on line 2 2 of Fig. 1 and looking in the direction of the arrows.

Referring to said drawings, A designates a velocipede crank-axle desirably provided at one end (the end remote from the sprocket) with an integral crank-arm A′ and with a bearing-cone a threaded thereon, so as to be capable of adjustment, and at its opposite end with a detachable crank-arm A^2. The cone a is conveniently held locked in adjusted position by means of a check-nut a', both cone and check-nut being operable while seated within the hanger E conveniently by means of suitable spanners applied to spanner-holes a^2 of the cone and to the faceted periphery a^3 of the nut, respectively. In order to prevent rotation of the cone with the check-nut, a separating-washer a^4 is shown as interposed between said parts. Referring now to the parts constituting the novel connection whereby the opposite crank-arm and sprocket-wheel are detachably united with the axle, the end of the latter is provided with a non-circular portion a^5, (herein shown as hexagonal in cross-section,) made tapering and adapted to receive the hub of the sprocket B, which is provided with a correspondingly-shaped aperture b, adapted to fit accurately upon said non-circular portion. The extreme end portion a^6 of the axle is reduced or made considerably smaller than the part a^5 and is screw-threaded to enter an adjusting-sleeve C, which is preferably made of approximately the same length as the reduced part a^6 and is externally threaded throughout the greater part of its length and seated within a correspondingly-threaded socket a^7, formed in the crank-arm A^2. The end c of the sleeve next the angular part of the axle is, however, unprovided with threads and is made externally angular or provided with facets c' (in the present instance of octagonal form) and adapted to fit within a correspondingly-shaped washer or holding-ring C′, which in turn fits within an annular enlargement a^8 of the crank-arm socket a^7. The washer is in turn held from rotation within its seat desirably by being made polygonal at its periphery to fit the correspondingly-shaped annular enlargement a^8.

The end of the crank-arm which receives the end of the axle is provided with an annular face a^{11}, surrounding the threaded socket thereof, which is formed to fit accurately against the end face of the sprocket to hold the same rigidly upon the angular part of the axle, and in order to form a driving connection between the sprocket and the crank-arm the latter is provided with a lug a^9 at a point intermediate of its length, which is provided with a threaded socket a^{10}, adapted to receive a screw b', inserted through a suitable aperture b^2 in the web or spoke-arm of the sprocket.

Obviously the crank-arm must always have a fixed relation to the opposite arm A′, while at the same time if the detachable arm is to act as a locking member to hold the sprocket rigid upon the non-circular and tapering part of the axle and to force it farther upon said tapered portion in case of working loose means must be provided for varying or adjusting the relations between the end face of the

sprocket against which the crank-arm acts and the threads by which the crank-arm is united with the axle. The construction described embodies such means, since by detaching the crank-arm and removing the holding-ring and giving the sleeve, say. an eighth, quarter, or half turn the sleeve will be bodily moved endwise a corresponding eighth, quarter, or half of the thread-pitch of the threads by which the sleeve and crank-arm are united, and will thus change and determine the angular position of the crank when it comes to a clamping lock or, what is equivalent to the same thing, will enable the crank to be brought to a clamping-lock at the same time it registers with the screw-aperture of the sprocket and is in proper relation to the opposite crank-arm. It will be understood that the sleeve will be held immovable in adjusted position by engagement of its angular portion with the holding-ring, which is of course replaced after the adjusting-sleeve has been rotated a sufficient distance. Obviously the parts may be separated as often as necessary without losing the adjustment; but at any time required the sleeve may be readily adjusted to force the sprocket more firmly upon its seat by simply moving the holding-ring and turning the sleeve in the proper direction.

As a preferred construction the sprocket is provided with an inwardly-projecting hub portion b^3, arranged to fit accurately upon the tapered portion of the axle, and the bearing-cone D at this end of the hanger is seated upon said inwardly-projecting part. Obviously the particular means whereby the sprocket is held from rotation upon the axle is immaterial in the broader sense of the invention so long as the construction be such as to admit of tightening by adjustment of the sleeve in the manner described.

The construction hereinbefore described is a modification of a construction embodying the same principle of adjustment set forth in another application filed by me contemporaneously herewith and wherein I have claimed the same broadly. The present embodiment, however, possesses certain advantages over that described in the application referred to. For instance, the sleeve may be adjusted without removing the sprocket from the axle, and consequently without opening the ball-bearings. In the present construction also no part of the socket-aperture of the hub is occupied by the sleeve, and consequently a larger bearing-surface is provided between the axle and sprocket.

I claim as my invention—

1. The combination with a shaft having a screw-threaded portion, a driving member non-rotatably mounted upon the shaft adjacent to the screw-threaded part, a locking member for holding the driving member against endwise movement upon the shaft provided with a socket adapted to receive the threaded part of the shaft, an adjusting-sleeve interposed between, and having screw-threaded connection with the shaft and locking member, and means for adjustably locking the sleeve and locking member rigid with each other.

2. The combination with a crank-axle having a screw-threaded end portion and a tapered seat adjacent to the threaded portion, a sprocket-wheel non-rotatably mounted upon said seat, a crank-arm provided with a socket to receive the threaded end of the axle and arranged to hold the sprocket upon its seat, an adjusting-sleeve interposed between, and having screw-threaded connection with, the shaft and crank-arm, a locking-ring for adjustably locking the adjusting-sleeve immovable within said crank-arm socket, and means for locking the crank-arm and sprocket-wheel together to form a driving connection.

In testimony that I claim the foregoing as my invention I affix my signature hereto, in the presence of two subscribing witnesses, this 14th day of July, A. D. 1898.

JAMES P. SCOVILL.

Witnesses:
HENRY J. HARZ,
ALBERT H. GRAVES.