No. 670,519. Patented Mar. 26, 1901.

J. P. SCOVILL.

VELOCIPEDE CRANK AXLE.

(Application filed July 18, 1898.)

(No Model.)

Fig. 1.

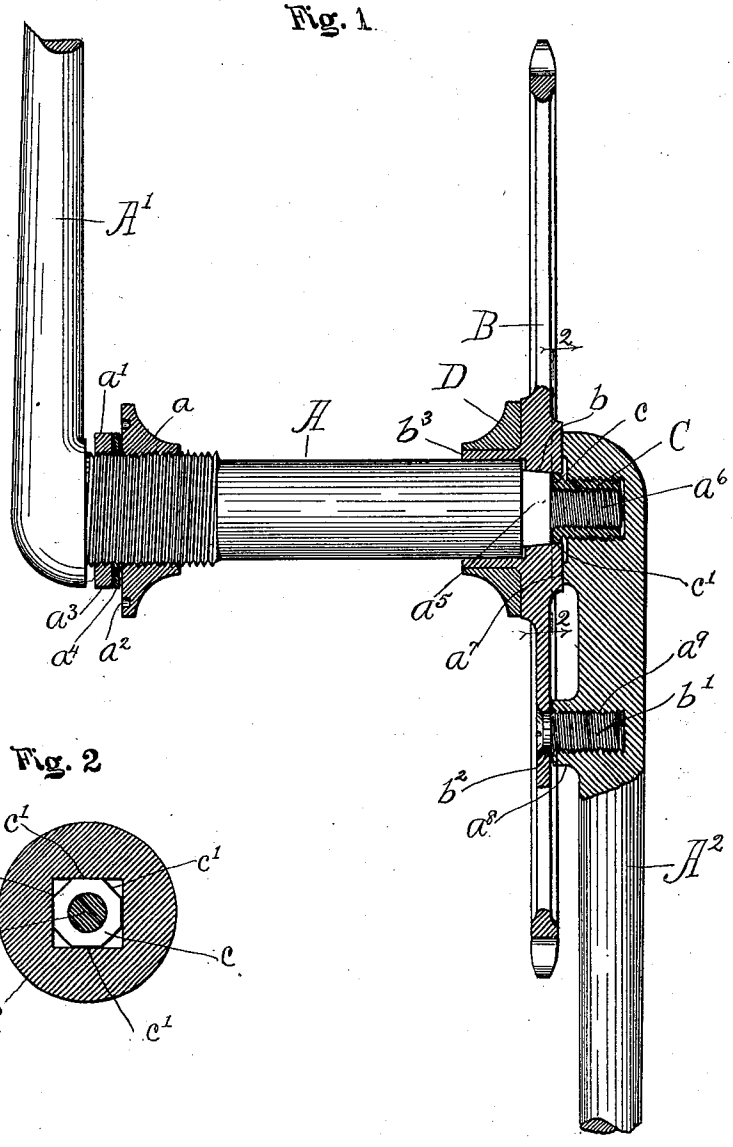

Fig. 2.

Witnesses:

S. S. Noble,
L. R. Billings

Inventor.

James P. Scovill,
By Carter & Graves,
Att'ys.

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. 670,519, dated March 26, 1901.

Application filed July 18, 1898. Serial No. 686,207. (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.

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 in elevation, with parts 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 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 the rotation of the cone with the check-nut during adjustment, a separating-washer a^4 is shown as interposed between said parts.

Referring now to the parts constituting the novel connection whereby the 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 rectangular 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 receive 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 to receive the crank-arm A^2. The extreme inner end c of the sleeve 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 the aperture of the sprocket-hub, which latter is constructed to overhang the reduced threaded portion of the axle sufficiently to receive the angular portion of the sleeve.

The end of the crank-arm which receives the end of the axle is provided with an annular face a^7, 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 crank-arm the latter is provided with a lug a^8 at a point intermediate of its length, which is provided with a threaded socket a^9, 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 relation between the end face of the sprocket, against which the crank-arm acts, and the sleeve, the exterior of which is provided with the threads, engaged by the crank-arm. The construction described em-

bodies such means, since by removing the sprocket 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 axle are united, and thus 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 against the sprocket at the same time that it registers with the screw-aperture of the latter and is in proper relation with the opposite crank-arm. Obviously the sleeve will be held immovable or from rotation in adjusted position by engagement of its angular portion with the angular aperture of the sprocket, so that the parts may be separated as often as necessary without losing the adjustment; but at the same time the sleeve may be instantly adjusted in the manner described to force the sprocket more firmly upon its seat.

As a preferred construction, the sprocket is provided with an inwardly-projecting integral sleeve extension b^3, arranged to telescope and fit accurately upon the portion of the axle adjacent to the sprocket, and the bearing-cone D at this end is seated upon said integral sleeve extension.

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 tightening by means of the crank-arm and adjustment of the sleeve. It will also be obvious that the essential elements which are combined to form the adjustable lock described may be embodied in other mechanisms than that shown herein. For example, the sprocket-wheel, which is essentially a stop or shoulder against which the locking member acts, may be any other element constituting an equivalent in forming the adjustable lock. I do not, therefore, wish to be limited to the use of such combination in a velocipede-crank alone nor to the details shown and described herein, except as made the subject of specific claims.

It will be understood that by the terms "driving member," "movable part," and "adjustable stop" as used in the claims I do not intend including the extension on the hub of the sprocket-wheel that overhangs the angular end c' of the adjusting member and also that by the terms "adjusting-sleeve" and "adjusting member" I do not intend including said angular part c', but that said hub extension and angular part are included in the claims as a separate element—namely, a locking device for locking the adjusting member or sleeve to the driving member.

I claim as my invention—

1. The combination, to form a locking device, of a relatively-fixed member provided with a threaded portion, an adjusting member having screw-threaded engagement with said fixed member so as to be capable of endwise adjustment thereon, a locking member having a threaded engagement with the adjusting member, a longitudinally-movable part adapted to serve as a stop to limit the travel of the locking member, and means for holding the adjusting member in its various endwise adjustments with relation to the longitudinally-movable part, whereby the locking member may be brought into locked position at various points in its rotation around the adjusting member, for the purpose set forth.

2. The combination with a relatively-fixed member, a movable stop thereon, a movable locking member having screw-threads by means of which it is adapted to be advanced, said movable stop serving to limit the travel of this locking member, of an internally and externally threaded adjusting-sleeve interposed between and connecting said fixed member and locking member, and means for adjustably locking said sleeve to said stop, whereby the two members may be brought into locked position with their parts in desired angular relation.

3. In combination, a crank-shaft carrying a pair of cranks and a longitudinally-adjustable driving member held non-rotatably on the shaft, and means for locking said driving member against endwise movement on the shaft and the cranks in the proper relation to each other, said means comprising an adjusting member externally threaded and endwisely and rotatably adjustable on the shaft, means for locking this adjusting member in its adjusted positions, one of said cranks being screwed on the externally-threaded part and serving to lock the driving member in place.

4. In combination, a relatively-fixed member, an adjusting member threaded externally and mounted on said fixed member, means for adjusting this member rotatively and endwisely on the fixed member, means for locking it in its adjusted positions, a locking member threaded on the adjusting member, and a longitudinally-movable non-rotatable part on the fixed member serving as a stop to limit the travel of the locking member, for the purposes set forth.

5. A velocipede crank-axle provided at one end with a tapered angular seat and a reduced and screw-threaded portion forming the extreme end of the axle, a sprocket-wheel provided with a hub-aperture adapted to fit accurately upon said seat and the walls of which overhang or project beyond the seat, an internally and externally screw-threaded sleeve fitting upon the end of the axle and provided with an externally-angular end portion adapted to fit the angular aperture of the sprocket, a detachable crank-arm provided with a socket threaded to receive the sleeve and serving to lock the sprocket-wheel in place, and means locking the crank-arm and sprocket together to form a driving connection.

6. In combination, a relatively-fixed member, a movable part on said fixed member, an adjusting member externally threaded and endwisely and rotatably adjustable on said relatively-fixed member, means carried by said adjusting member and said movable part for locking this adjusting member in its adjusted positions, and a locking member threaded on the adjusting member, said movable part serving as a stop to limit the travel of this locking member.

7. In combination, a relatively-fixed member having a screw-threaded portion, a driving member longitudinally movable on said relatively-fixed member and provided with an extension partially overhanging said threaded portion, an adjusting member screwed on said threaded portion and carrying means at its inner end adapted to engage said overhanging portion and lock the adjusting member to the driving member, said adjusting member being externally threaded, and a locking member threaded on said adjusting member and having a locking engagement with said driving member.

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.