

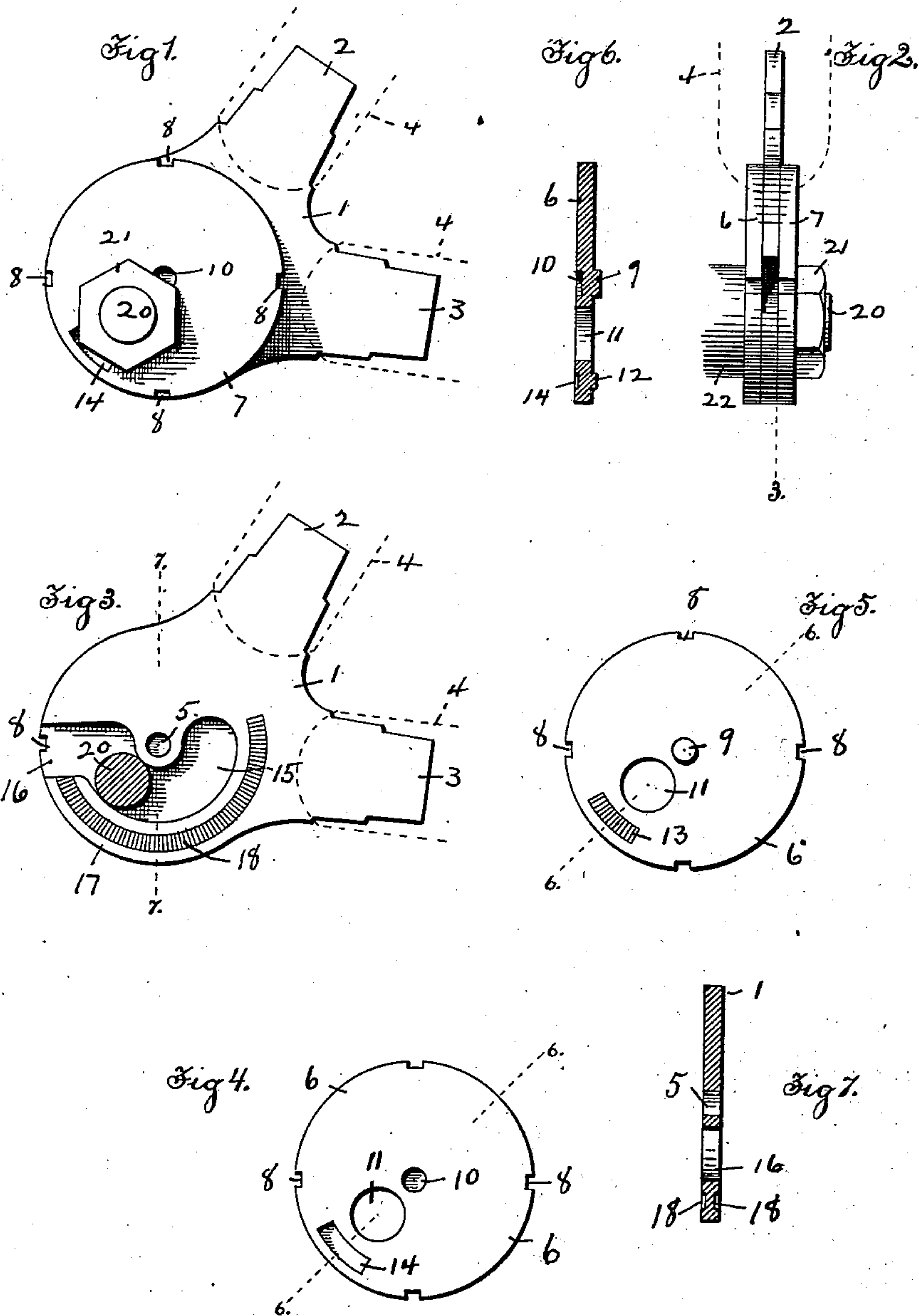
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A. G. ANDERSON.
DEVICE FOR TIGHTENING BICYCLE CHAINS.

APPLICATION FILED AUG. 20, 1900.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

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DEVICE FOR TIGHTENING BICYCLE-CHAINS.

SPECIFICATION forming part of Letters Patent No. 724,417, dated April 7, 1903.

Application filed August 20, 1900. Serial No. 27,379. (No model.)

To all whom it may concern:

Be it known that I, ANDERS G. ANDERSON, a citizen of the United States, and a resident of Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Devices for Tightening Bicycle-Chains, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 represents a side elevation of a portion of a bicycle-frame comprising the plate at the end of the rear fork in which the spindle of the rear wheel is supported with my improved chain-tightening device held therein. Fig. 2 is a rear view of the same. Fig. 3 is a side elevation with one of the adjusting-disks removed. Figs. 4 and 5 represent opposite sides of one of the adjusting-disks. Fig. 6 is a sectional view of one of the adjusting-disks on line 6 6, Figs. 4 and 5. Fig. 7 is a sectional view of the wheel-holding plate or rear fork end on line 7 7, Fig. 3, the chain-adjusting disks having been removed therefrom.

Similar reference-figures refer to similar parts in the different views.

The object of my invention is to provide means for changing the position of the spindle carrying the rear or driving wheel of a bicycle for the purpose of tightening the driving-chain; and it consists of an improvement in that class of chain-tightening devices in which the spindle of the rear wheel is held eccentrically in adjusting-disks which are supported in the frame of the bicycle, my said improvement being hereinafter described and set forth in the annexed claim.

Referring to the accompanying drawings, 1 denotes one of the plates in which the spindle of the rear wheel is carried. The plate 1 is provided with prongs 2 and 3, which are suitably attached in the usual manner to the tubular framework of the machine, (indicated by the broken lines 4 4.) Two of these plates are held in the framework of a bicycle at a proper distance apart to support the opposite ends of the spindle upon which the rear wheel is journaled. As the plates and adjusting-disks are duplicates, I have represented only those at one end of the rear-wheel spindle, and the description of the chain-ad-

justing device at one end of the wheel-spindle is applicable to that at the opposite end. The plate 1 is provided with a central hole 5 to receive concentric studs upon the two circular chain-adjusting disks and hold them with their axes in alinement. Against each side of the plate 1 are placed the two chain-adjusting disks 6 and 7, one of said disks being shown in Figs. 4 and 5, the other disk being a duplicate thereof. The disks 6 and 7 are cut by suitable punch and die from a piece of sheet metal, and each disk is provided with a series of equidistant notches 8 in its periphery adapted to receive a spanner, by which the disk is rotated. On one side of each disk is formed a short stud 9, concentric with the periphery of the disk. This is accomplished by means of a suitable punch and die, which forms a recess upon one side, as at 10, Fig. 6, and raises a corresponding projection 9 on the opposite side. An eccentric hole 11 is punched in each of the disks to receive the end of the spindle carrying the rear wheel. Each of the disks 6 and 7 is stamped by an appropriate punch and die, by which a recess 14 is formed on one side of the disk and a corresponding elevation 12 of the metal is formed on the opposite side, in which a series of teeth 13 are formed by providing the die with a series of serrations, said teeth 13 being arranged radially on the side of the disk and concentrically to the stud 9. The plate 1 is provided with a curved slot 15, concentric with the hole 5 and extending a little more than half-way around it, and the slot 15 is open on one side, as at 16, to allow the wheel-spindle and disks 6 and 7, carried thereon, to be removed from the frame. Below the curved slot 15 is a curved arm 17 and provided on opposite sides with a series of indented teeth 18, arranged radially and concentrically with the hole 5 and adapted to be engaged by the teeth 13 on the adjusting-disks 6 and 7. The disks 6 and 7 are applied to opposite sides of the plate 1, with the holes 11 in alinement.

The spindle 20 of the rear wheel is screw-threaded at its ends and passes through the holes 11 in the disks 6 and 7 and receives upon the outer end a nut 21, which clamps the adjusting-disks 6 and 7 and plate 1 be-

tween the nut 21 and a collar 22, with the teeth 13 of each of the disks engaging the teeth 18 on the plate 1, whereby the two disks 6 and 7 are held from turning.

5 In order to adjust the chain, the nuts 21 at the opposite ends of the spindle 20 are loosened, thereby releasing the disks 6 and 7 and allowing them to be turned, by means of a spanner engaging the recesses 8, so as to carry
10 the wheel-spindle 20 around the axes of the disks 6 and 7, and thereby vary the distance between the axis of the wheel-spindle 20 and the axis of the crank-shaft. When the chain has been adjusted, the nuts 21 are screwed
15 up and the disks 6 and 7 clamped against the sides of the plate 1, with their teeth 13 in engagement with the teeth 18 on the plate.

I am aware that it is not new to hold the wheel-spindle eccentrically in rotating disks
20 with means for holding the disks from rotation in any fixed position; but so far as I am aware such disks have been journaled in circular bearings in the plate 1, having holes through the plates large enough to allow the
25 wheel-spindles to make a complete rotation about the axes of the disks, thereby weakening the plate 1 and requiring accurately-fitted bearings and having disk-latching devices adapted to engage the outer edges of the
30 disks. In my improved device the plate 1 on the rear fork end is left entirely solid above the hole 5, thereby adding to the strength of the plate, as this portion receives the entire strain of the load, the lower arm 17 only serv-
35 ing to hold the disks apart and provide a surface for the concentric teeth 18. As the curved slots 15 extend more than half-way around the holes 5, the disks 6 and 7, with the wheel-spindle 20 held therein, are capable
40 of rotating slightly more than half a revolution, allowing the spindle 20 to be moved from an extreme forward to an extreme rear-ward position.

The above-described adjusting device not

only increases the strength of the frame, but 45 it reduces the cost by enabling the entire device to be stamped from sheet metal and the parts accurately fitted by means of suitable punches and dies. The operation of adjusting the chain is rendered more simple, and 50 the tightening of the nuts 21 serves to hold the teeth 13 and 18 in engagement and securely lock the disks without the use of an independent latching device.

The adjusting-disks 6 and 7 are cut from 55 sheet-metal blanks, with the short studs 9 raised from the disks and integral therewith and with the teeth 13 integral with the body of the disk, and the studs and teeth are both formed in a single operation by a suitable 60 punch and die. The teeth 18 are simultaneously formed on the opposite sides of the plate 1 by compressing the plate between two opposing dies having serrated faces. The disks 6 and 7 are obliged to turn simultane- 65 ously about their axes, as they are connected by the spindle 20, and therefore the teeth 18 can be omitted from one side of the plate 1, and the teeth 13 may be omitted from one of the disks; but I prefer the construction as 70 shown.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination with a bicycle-fork plate having a central hole and an open slot curved 75 concentric thereto, of a pair of disks provided with central studs adapted to fit and turn in the central hole in the plate, said disks each having a hole adapted to register with curved slot in the plate, an axle extending through 80 the slot and holes and means for clutching and clamping the disks to the plate.

Dated this 15th day of August, 1900.

ANDERS G. ANDERSON.

Witnesses:

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M. C. PRICE.