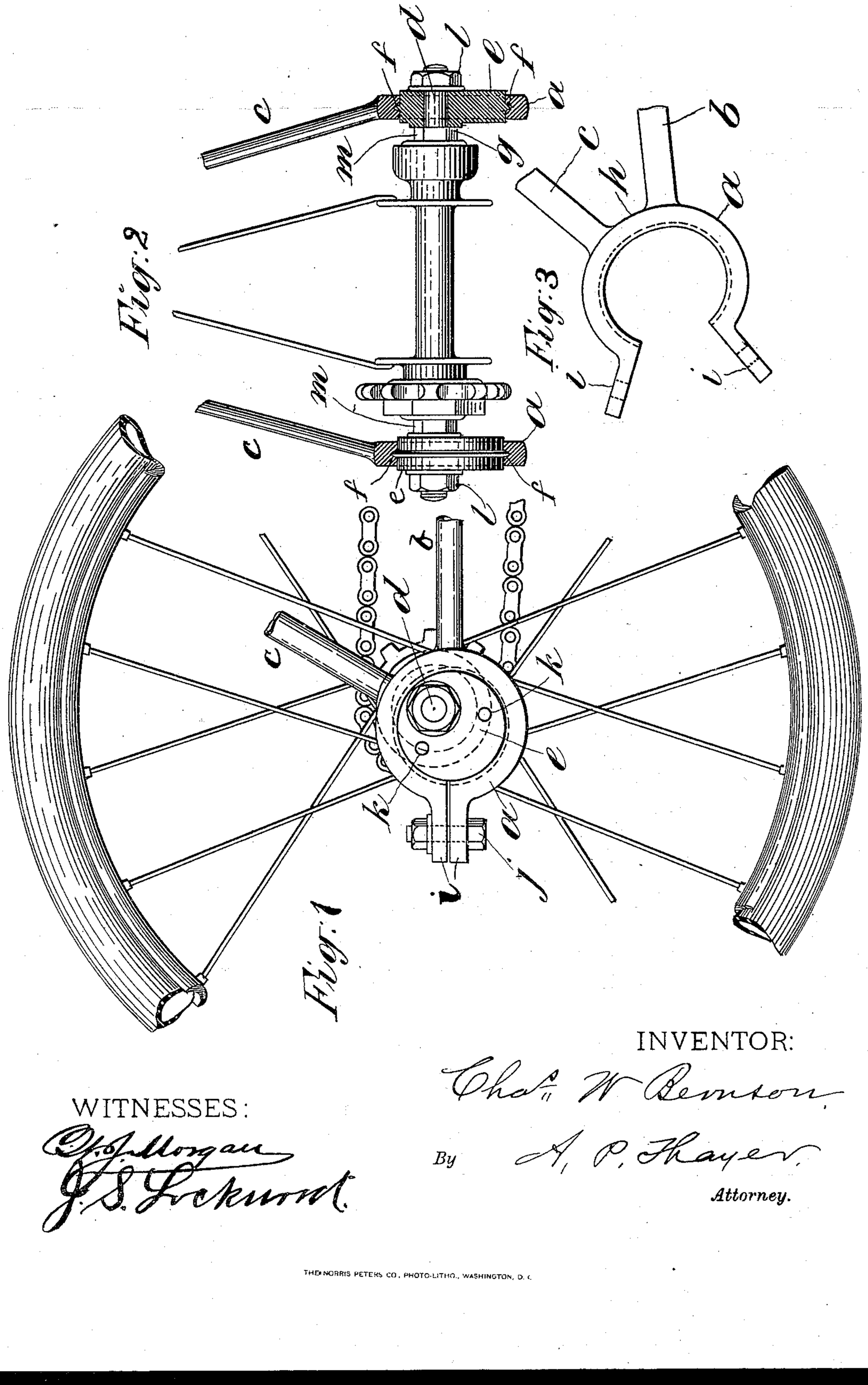
(No Model.)

C. W. BERNSON.

CHAIN ADJUSTMENT FOR BICYCLES.

No. 604,294. Patented May 17, 1898.



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UNITED STATES PATENT OFFICE.

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CHAIN ADJUSTMENT FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 604,294, dated May 17, 1898.

Application filed December 28, 1896. Serial No. 617,197. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. BERNSON, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Chain-Adjusting Apparatus for Bicycles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists of improved apparatus for adjusting the tension of bicycle-chains, whereby the arrangement of adjustable eccentric axle-carrying disks for such adjustment is made more simple and efficient, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 represents a side elevation of my improved chain-adjusting apparatus applied to a bicycle. Fig. 2 is a transverse section of parts of the bicycle-frame and one of the eccentric-disks and side view of the axle, wheel-hub, and sprocket-wheel; and Fig. 3 is a side view of part of the frame with one of the disk-holding rings opened for the application of the disk.

For the junction-piece *a*, to which the two members *b* and *c* of each side of the hind part of the frame are joined and in which the axle *d* of the hind wheel is mounted, I provide a ring bored centrally and internally grooved circumferentially for reception of a disk *e*, having a rib *f* for locking it in the ring and having a hole *g* eccentric to its axis for receiving one end of the axle, the said parts *b* and *c* of the frame being connected to the ring at a suitable distance apart to allow the ring to be bent when heated in the part between said members, and opposite the section *h* or thereabout the ring is parted transversely, and each part has a radial jaw *i*, through which a clamping-bolt *j* is fitted to clamp the ring on the disk after said disk is inserted and hold it as set.

The hole for the disk and the groove thereon are bored before the ring is cut. The ring is then heated to redness in the part *h* and is bent or sprung by pressing the parts *b c* toward each other before they are connected to the rest of the frame, and thus opened for reception of the disk, the disk being inserted sidewise, which does not require very wide opening of the jaws. Then the ring is closed on the disk and the bolt inserted to grip and hold the disk when set in the desired position, the grip of the ring on the disk being sufficiently slack when the bolt is not screwed tightly to allow the disks to be shifted freely by a spanner inserted in sockets *k* in one or both of them. The two disks and the axle are clamped rigidly together by the nuts *l* and the cone-bearings *m*, so that a spanner applied to one disk will shift both alike, said disks being a little thicker than the rings, so that the nuts and cones will not bind on the rings.

It will be seen that while the parting of the ring may be located otherwise than opposite the section *h*, and still the ring may be opened by bending at a part not between the members *b c*, yet the bending will be more difficult and not so accurate as when the members *b c* are available as levers by which to effect the bending, and the device is not so symmetrical as when the parting and the clamping-jaws are opposite the locality of the junction of the two members *b* and *c* with the ring, or thereabout, and it is to be noted that the ring is stronger and more symmetrical than a clamping-ring having two opposite partings and two sets of jaws and bolts for clamping the parts together, and the disk is more securely held than a disk having a groove in its face, with which the clamping-bolt engages at one point only.

Although I have represented the rings as having the grooves and the disks as being ribbed for the locking device, it is manifest that the rings may have the ribs and the disks may be grooved, and I do not limit myself to either arrangement.

The rib *f* is somewhat exaggerated in its radial dimension in the drawings to show it more distinctly. In practice a rib of a sixty-fourth of an inch radially or even less is ample for securely keeping the disk in the ring, but may be larger without requiring undue opening of the ring for inserting it or causing distorting effect on the ring.

I am aware that a crank-axle box has been applied in the crank-hanger of the frame with

an eccentric-bush in the hanger, said hanger being parted through one side and clamped on the eccentric-bush by a bolt with a groove in the eccentric and a pin in the hanger for preventing sidewise displacement for a chain-adjusting device; but I make no claim to such a device, which is not feasible in apparatus for shifting the hind-wheel axle for adjusting the chain. In the crank-axle bearing there is a box of considerable length, at the extremities of which the two shaft-bearings are respectively fixed, and it is the shaft that revolves, the box being stationary, and this arrangement affords space for an eccentric of such breadth of face proportionately to its diameter that a pin is a satisfactory means of holding it.

In a hind-wheel-adjusting device the shaft is stationary and the box revolves, so that the adjusting-disks must be outside of the extremity of the box, and very narrow-faced eccentric adjusting-disks are necessary to avoid too clumsy and objectionable terminal hind parts of the frame. Such narrow disks, held by a pin at one point only, would not be secure against the violent lateral shocks to which they are exposed through most of the load being carried directly on them and such as the crank-shaft is not subject to. When such narrow-faced disks should happen to be set in the correspondingly narrow terminals with the shaft at the opposite side to where the pin takes effect, or thereabout, severe lateral thrusts would wrench the disks out of the rings.

I claim—

In an eccentric chain-adjusting axle-carrying device for the driving-wheel in a bicycle, the combination of ring-terminals of the hind forks of the frame, said rings being parted for opening and provided with suitable lugs and a device for clamping them together, a disk fitted and adapted to be clamped in each terminal ring and being ribbed and grooved therein for resisting lateral displacement and also being eccentrically perforated for the axle, the axle inserted in the disks and clamped at the ends therein respectively, and the wheel mounted on the axle between said disks, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHAS. W. BERNSON.

Witnesses:

W. J. MORGAN,

A. P. THAYER.