

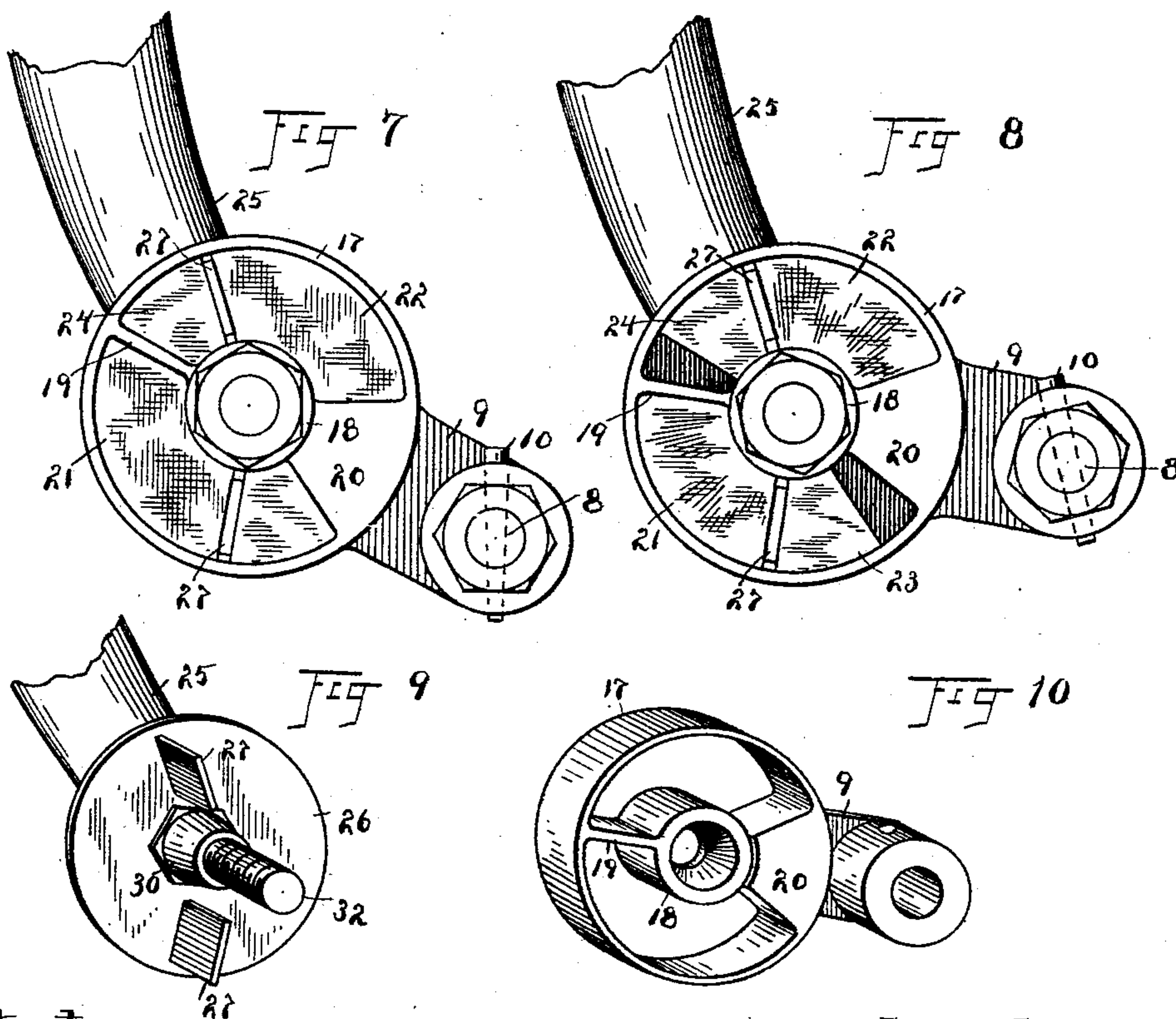
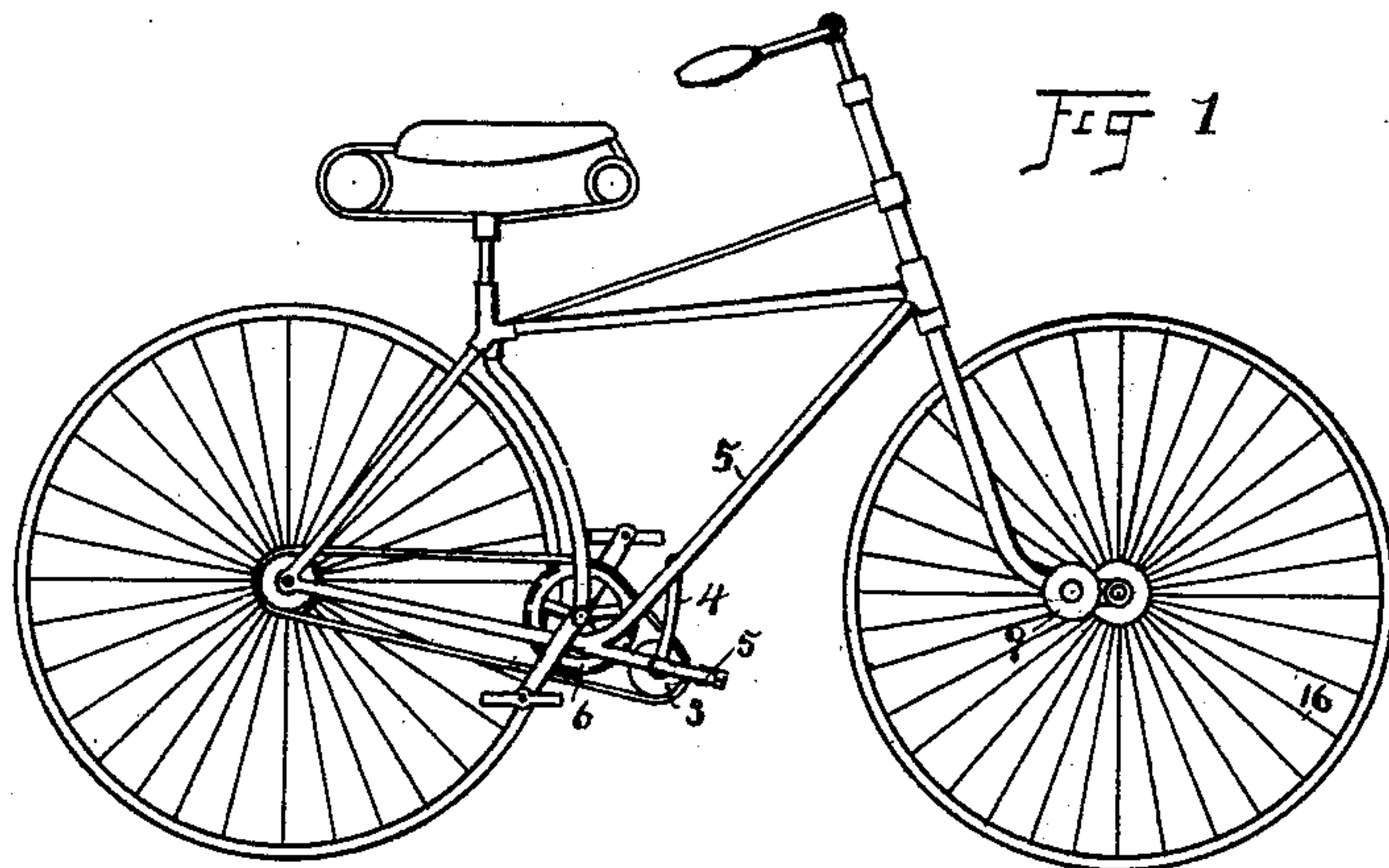
(No Model.)

3 Sheets—Sheet 1.

A. WINTON.
BICYCLE.

No. 481,536.

Patented Aug. 23, 1892.



Attest.
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H. L. M. Laine.

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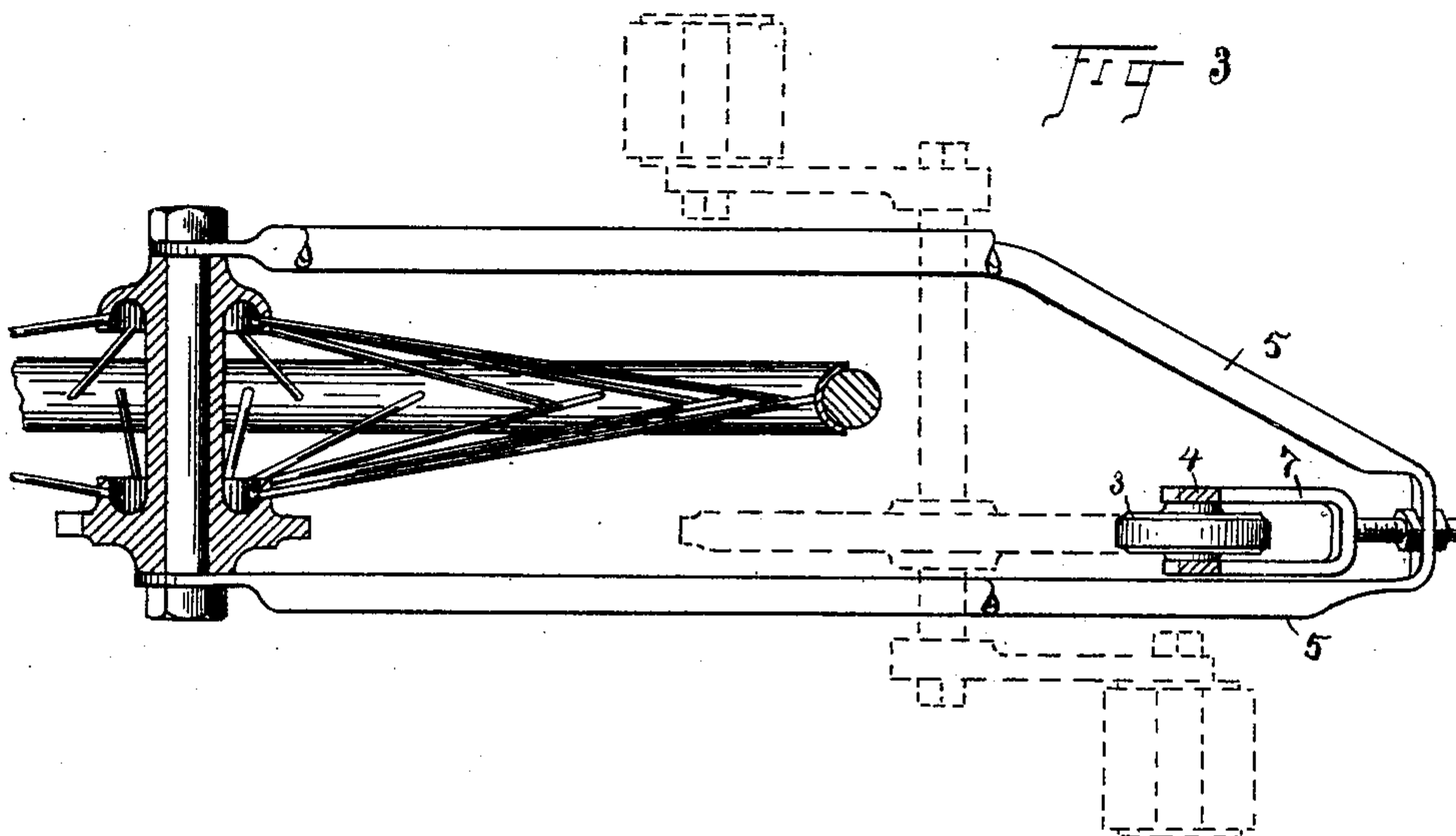
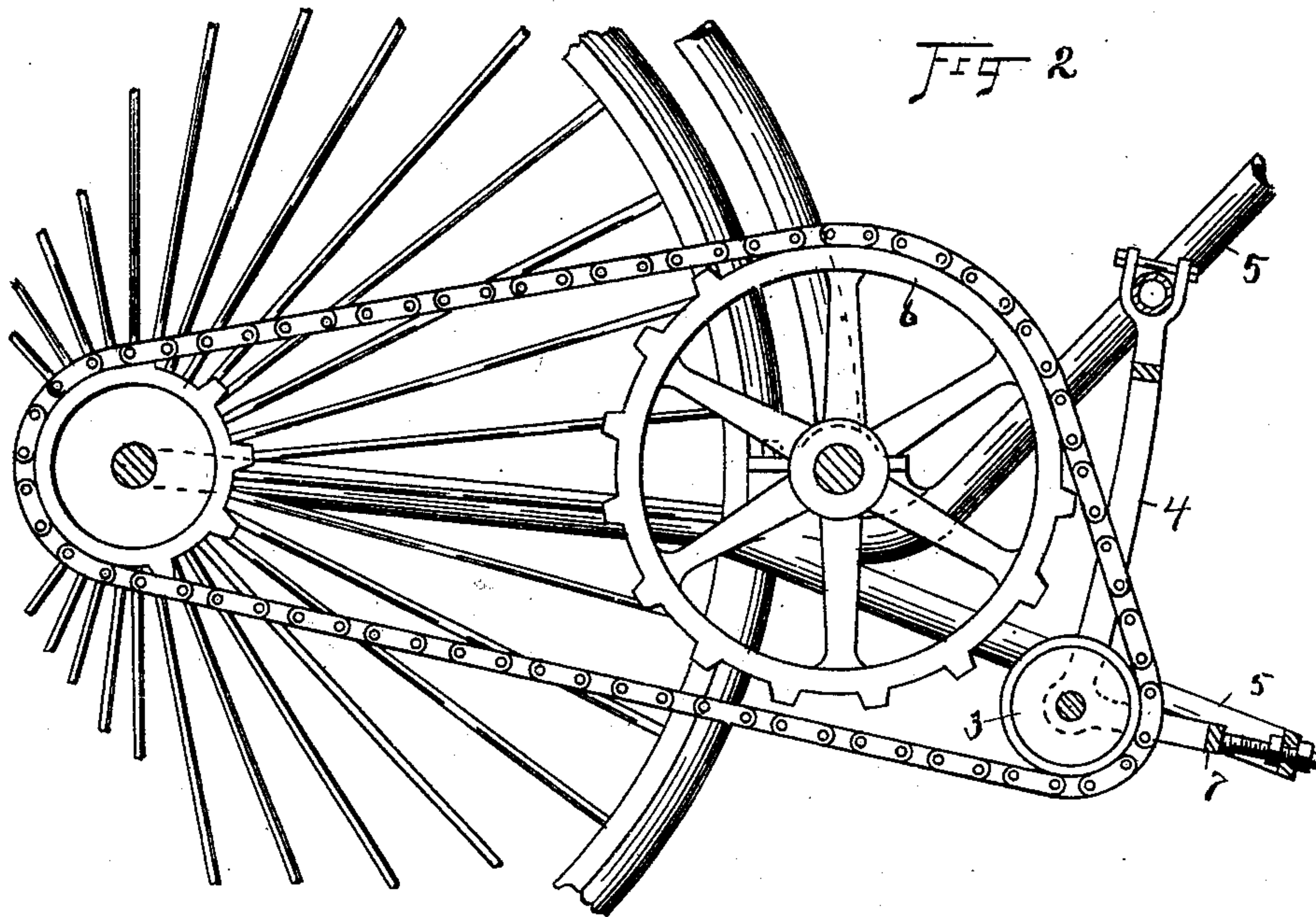
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3 Sheets—Sheet 2.

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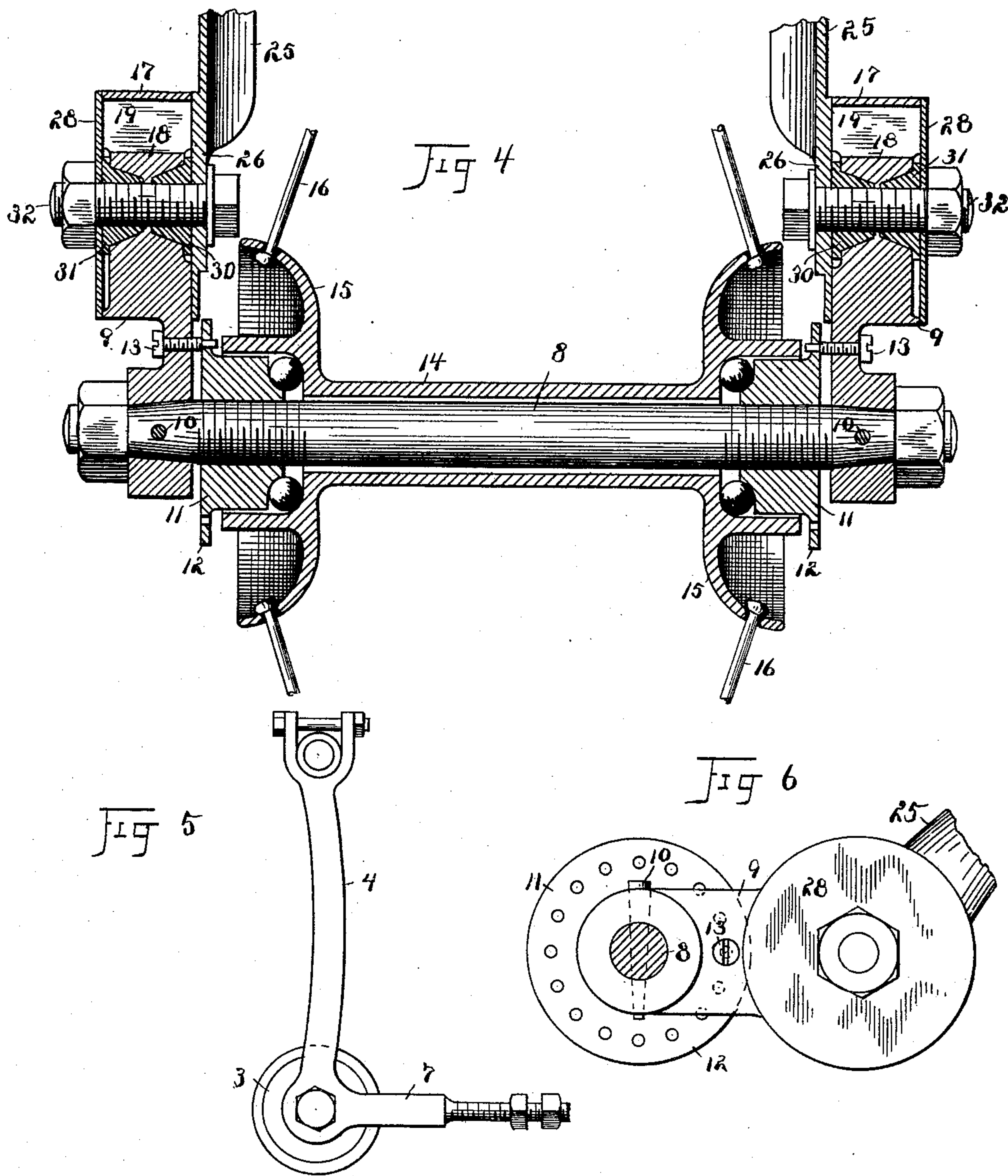
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3 Sheets—Sheet 3.

A. WINTON.
BICYCLE.

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Patented Aug. 23, 1892.



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UNITED STATES PATENT OFFICE.

ALEXANDER WINTON, OF CLEVELAND, OHIO.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 481,536, dated August 23, 1892.

Application filed November 27, 1891. Serial No. 413,215. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER WINTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Bicycles; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to

which it appertains to make and use the same. My invention relates generally to bicycles; and it consists in sundry different improvements, among which are, first, means for taking up the slack and wear of the sprocket-chain. It is well known that in a comparatively short time more or less wear comes on the links of the sprocket-chain where they engage the teeth of the sprocket-wheel and that this wear is liable to be uneven, so that some of the links will be in working engagement with said teeth and others will be idle and that more or less bagging of the chain will occur here or there on the sprocket-wheel and only the engaging teeth will really do the work. To remedy this defect, I have provided an idler over which the sprocket-chain travels, and so arranged and supported that the said chain is in engagement with only a comparatively few teeth at a time, while the slack is taken up by the idler, hung in an adjustable support.

Another feature of the invention is found in the rigid frame for supporting the front wheel. Great difficulty has hitherto been experienced in getting a support for this wheel which in itself was rigid from side to side, so that whatever the conditions on either side they both would work and move together in unison, and the said frame at the same time have a pivotal spring-support on the fork of the main frame to cushion the jars or vibrations to the rider. I have provided such a frame by making the axle absolutely rigid with the supporting-arms at either side by means hereinafter more fully described.

Another feature of the invention is the novel construction of spring-arms and springs therein for cushioning the vibrations of the front wheel.

Another feature of the invention is the construction for taking up the wear on the cones in the hub of the wheel.

In the accompanying drawings, Figure 1 is a side elevation of a bicycle in which my improvements are shown on a small scale. Fig. 2, sheet 2, is a side elevation, considerably enlarged from Fig. 1, of the sprocket mechanism, showing especially the position and arrangement of the idler for carrying the sprocket-chain. Fig. 3 is a sectional view through the center of the drive-wheel and showing the part of the main frame supporting the idler with the idler thereon, the sprocket-chain being omitted and the sprocket-wheel and pedals in dotted lines. Fig. 4 is an enlarged sectional view of the drive-wheel, hub, and spindle, and the supporting-arms therefor, the section-line being taken substantially through the center of the supporting-arms and of the hub and spindle or shaft. Fig. 5 is a side elevation of the yoke for supporting the idler. Fig. 6 is a side elevation of one of the arms for supporting the front shaft and showing the face of the cone and means for adjusting the cone on said shaft to take up the wear thereof. Figs. 7 and 8 are side views, respectively, of the spring mechanism in the arm aforesaid for supporting the front wheel and constructed and arranged as hereinafter fully described. Fig. 9 is a perspective view of one of the ends of the fork, and Fig. 10 a perspective of one of the arms.

Referring first to the means for taking up the slack of the sprocket-chain, we have an idler 3, supported in a yoke 4, suspended from a cross-rod on the main frame 5. The arrangement of the idler is at the front of and slightly beneath the sprocket-wheel 6, provided with the shaft on which the pedals are connected, as usual, and the said idler is so placed in respect to said sprocket-wheel that it will relieve the said wheel of the chain over half or more of the distance the chain would otherwise occupy thereon. This leaves the chain in engagement with only about four teeth at any time, and this overcomes the objection hereinbefore referred to of having a number of idle teeth on the wheel and the incident slack of chain while other teeth on either side of the slack are in engagement and doing the work. The said idler comes down low enough to prevent engagement at the lower portion of the sprocket-wheel and is set far enough back to prevent such en-

gagement except at the upper portion of the wheel. This idler is preferably provided with ball-bearings, (not shown,) and is intended to run as lightly as possible. The supporting-
 5 yoke has an arm 7 at right angles at its bottom, which passes through the end of frame 5 and is threaded to be adjusted by nuts to take up slack in the chain. The front wheel is supported on or in a rigid frame, consisting of the axle 8 and the spring-supported arms 9. The perfect rigidity of the
 10 said frame thus composed is effected by making the extremities of the shaft 8 tapering where it passes through said arms, substantially as shown in Fig. 4, and fitting the said arms closely upon said tapered portion. Then to make this union absolutely firm the said parts are provided with transverse holes,
 15 into which are driven tapered pins 10, and lock or jam nuts on the extremities of the axle bear against the outside of the arms. The two arms 9 are in this way as rigidly connected through shaft 8 as if said arms and shaft were made in a single piece, and when
 20 either arm moves at all the other is moved with it in like degree and manner. This keeps the wheel in the center of the machine and there is no wobbling of the wheel, as would occur if the frame were more or less
 25 loose in its joints. The front wheel has the usual cone-bearings 11, threaded and adjusted on the axle 8, and in order that a very fine adjustment of said cones may be made and the cones at the same time held away from
 30 the arms 9 I provide the cones with flanges 12, having a series of somewhat closely arranged holes adapted to receive the end of the locking-pin 13, threaded through the corresponding arm 9. When wear on the bearings
 35 has occurred, it can be quickly and easily taken up by releasing the pin 12 from the flange 11, turning the cone one or more holes, as may be needed, and then resetting the locking-pin.
 40 At either end the hub 14 has an outwardly-flaring flange 15, provided with holes for the insertion of the wire spokes 16. These holes are enlarged or beveled on either side of the flange, as seen in Fig. 4, so that the wires 16
 45 can be inserted or removed without bending from within the said flange, and extended through to the periphery of the wheel, and the said wires leave heads upset thereon and resting against the inside of the flange.
 50 The arms 9 are provided with circular heads 17, having a central hub 18, connected with the band-like outer portion by webs 19 and 20, said webs serving as bearings on one side for the interposed blocks of rubber 21, 22, 23,
 55 and 24. The fork 25, which straddles the wheel, has a disk-flange 26 at each of its lower ends, either integral therewith or rigidly fixed thereto, and on this flange are two inward projections 27, corresponding to the webs 19 and
 60 20, but so arranged on said disk that a space will intervene on either side of each projec-

tion and the said webs, into which space the compressible rubber blocks are placed and held. An outer disk 28 forms the face of the head 17 and bears against the edge thereof.
 70 Two cone-shaped nuts 30 and 31, screwed onto the threaded spindle 32 and extending into the hub of the head 18, serve as bearings for said head and arm, and the spindle is made rigid with the fork 25. A nut on the outside
 75 serves to hold said parts together on the spindle.

It will be observed that the springs about the pivot-point of the arms are inclosed by the housing of the several parts. The stop-
 80 blocks 23 and 24 are preferably of slightly-yielding material, as nearly solid blocks of rubber; but they might be unyielding and solid with the arm. The webs of the arm normally rest against these blocks under pressure
 85 from the springs 21 22, as shown in Fig. 7; but when the weight of the rider is on and the springs are compressed there is more or less space between said webs and said blocks, as seen in Fig. 8. If the arm flies back suddenly to normal position, it cushions against
 90 blocks 23 24 in an easy and noiseless way. Any suitable springs 21 and 22 may be used.

The sprocket-wheel 6 is the actuating-wheel herein referred to and may be of any well-
 95 known or suitable construction.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An arm for supporting a wheel of a bicycle, pivoted on the fork and provided with a head having springs inclosed therein, substantially as described. 100

2. The fork of a bicycle, wheel-supporting arms pivoted on the said fork, and inclosed
 105 springs about said pivot-point, substantially as described.

3. In a bicycle, the fork having a spindle fixed on its lower end and lateral projections about the spindle, an arm having a hub adapted to turn on said spindle, the hub having lateral webs, and springs between the said webs and the projections about the spindle, substantially as described. 110

4. In a bicycle, the fork having a disk with lateral projections and a spindle rigid with its lower end, in combination with an arm pivoted on said spindle, having a rim and webbing within the rim about said spindle, and springs between the opposed parts of the
 115 arm and the fork, substantially as described. 120

5. In a bicycle, a fork having a spindle and a disk with lateral projections on opposite sides of the spindle, in combination with an arm having a head with a hub on said spindle and webs radiating from said hub, and rubber springs interposed between the said lateral projections on the fork and the webs of the said head, substantially as described. 125

6. The fork with a lateral spindle and cone-bearings thereon, in combination with an arm having a hub adapted to said bearings and 130

springs about said hub between parts of said head and parts of the said fork, substantially as described.

5 7. The fork having a disk with lateral projections and a spindle central with the disk at its lower end, in combination with an arm having a head pivoted on said spindle and provided with webbing-springs of different tension interposed between said webbing and
10 the said lateral projections on opposite sides of the said webbing, substantially as described.

15 8. In a bicycle, a carrying-wheel, a shaft for said wheel, and arms rigidly connected with the ends of said shaft, in combination with the fork of the bicycle, on which said

arms are pivoted, and inclosed springs at the pivot-points connecting said parts, substantially as described.

9. In a bicycle, the cone-bearings for the 20 wheel, having flanges, and the axle on which said cones are adjustable, in combination with the arms fixed to the axle and locking mechanism between said arms and said cone-flanges, substantially as described. 25

Witness my hand to the foregoing specification.

ALEXANDER WINTON.

Witnesses:

H. T. FISHER,

NELLIE L. McLANE.