

(No Model.)

M. CÔTÉ & A. VUILLIER.
BICYCLE.

No. 587,116.

Patented July 27, 1897.

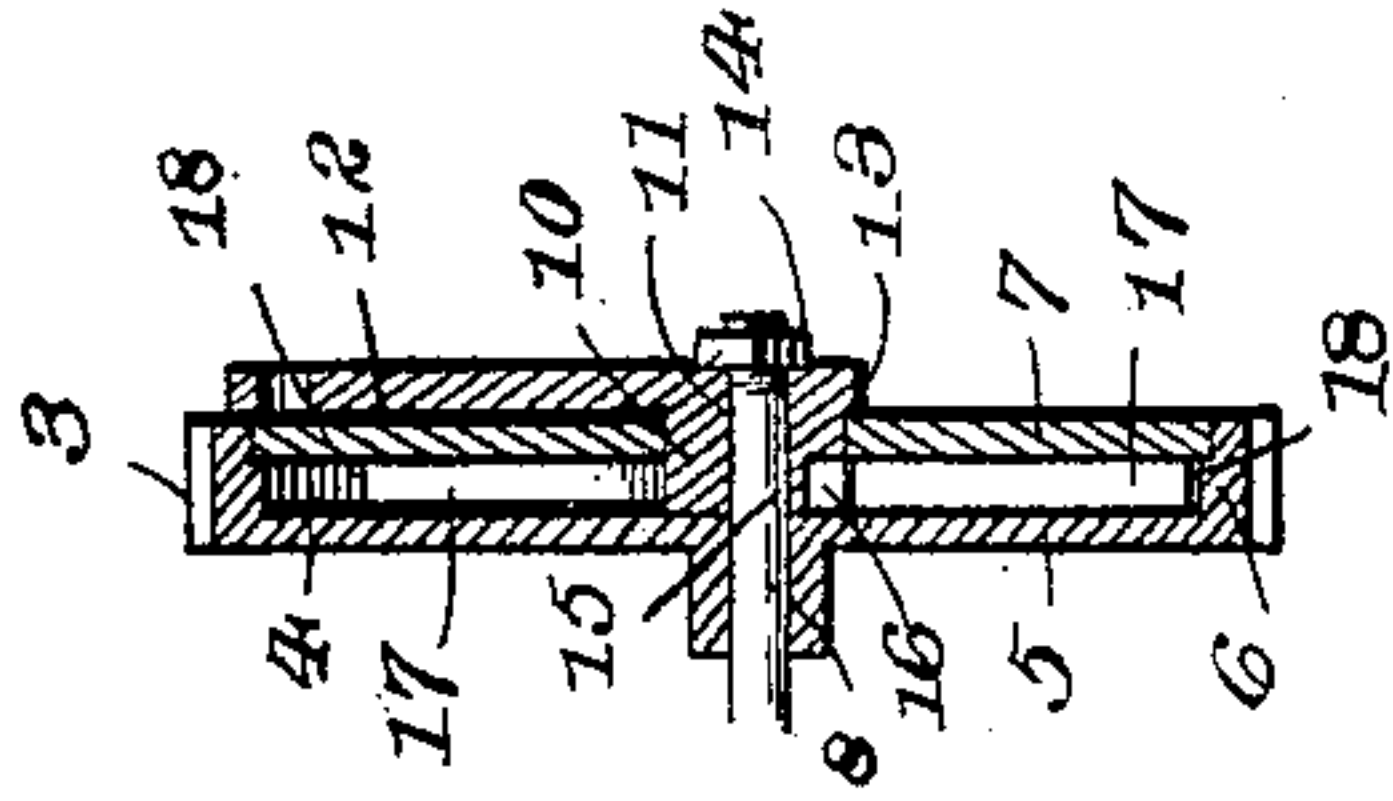


Fig. 4.

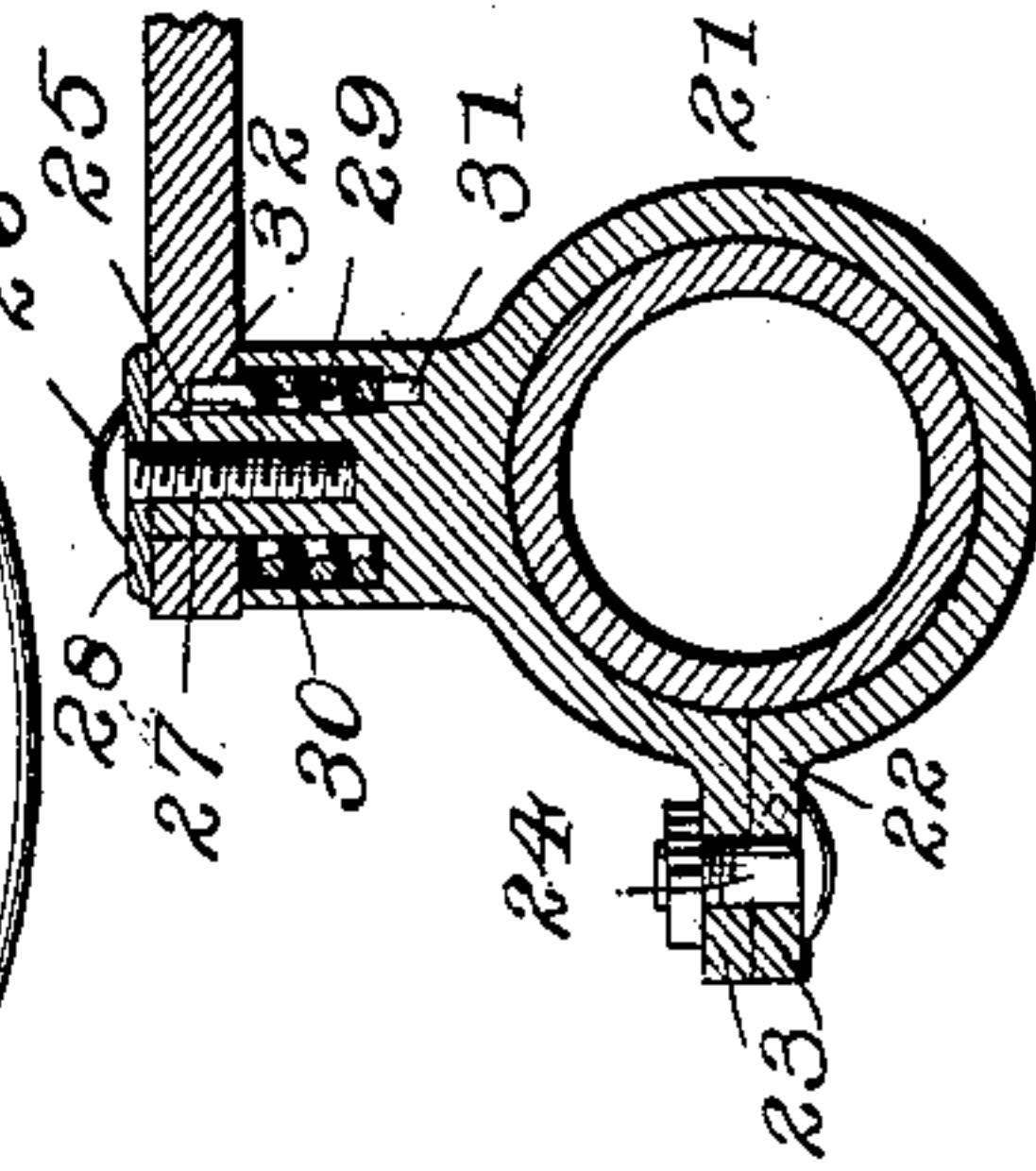


Fig. 3.

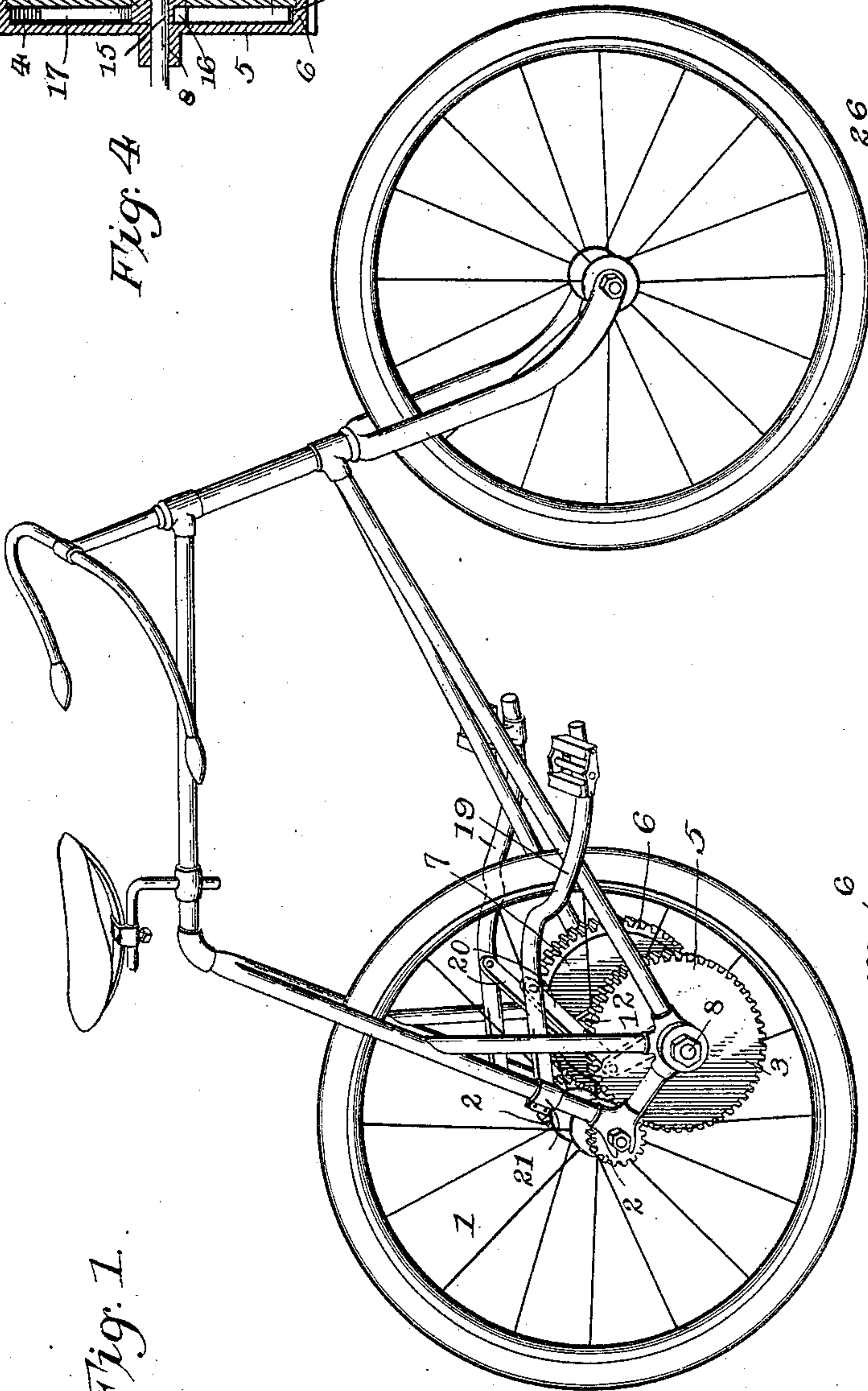


Fig. 1.

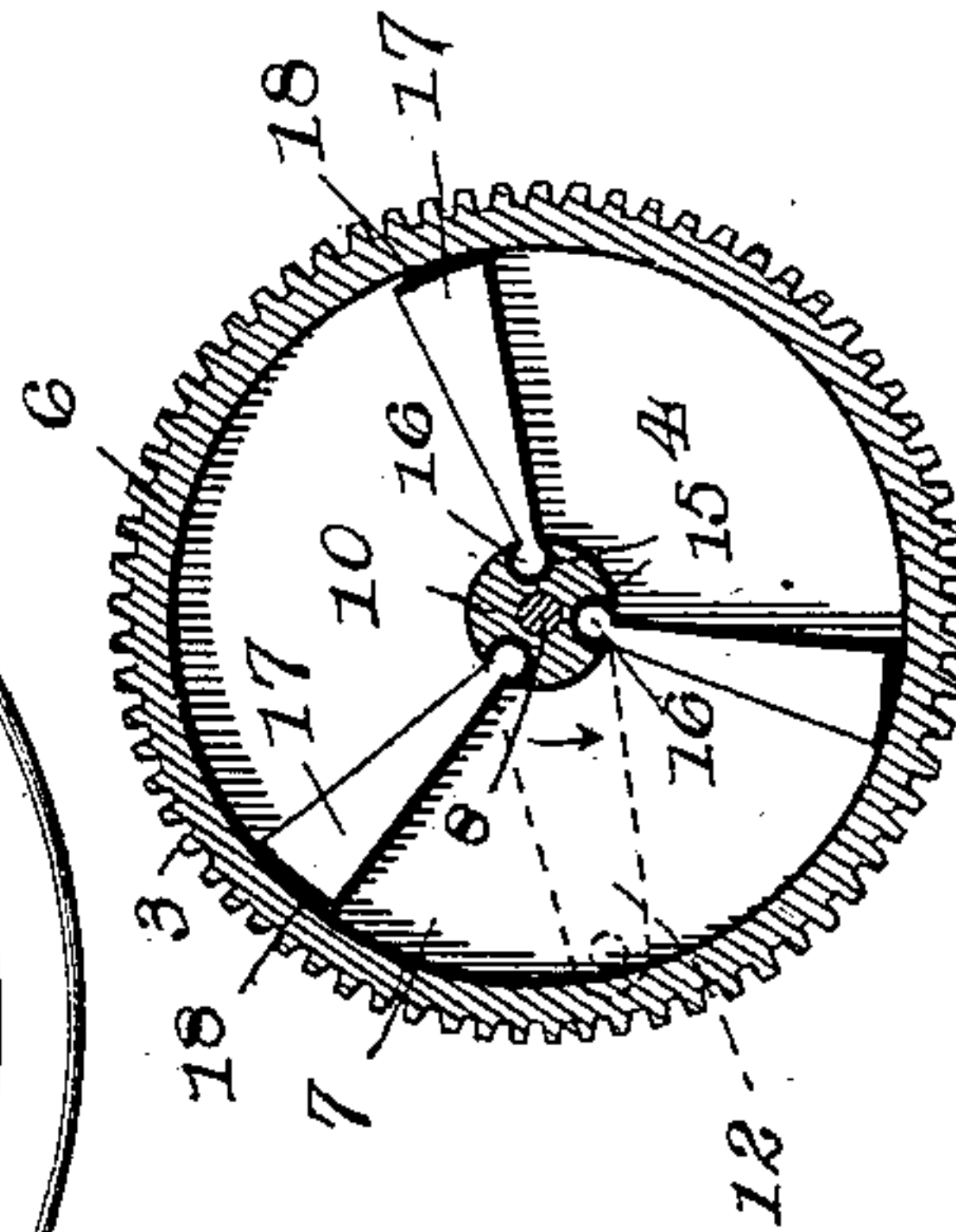


Fig. 2.

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UNITED STATES PATENT OFFICE.

MAJARIQUE CÔTÉ AND AIMÉ VUILLIER, OF MILLIS, MASSACHUSETTS.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 587,116, dated July 27, 1897.

Application filed April 13, 1894. Serial No. 507,345. (No model.)

To all whom it may concern:

Be it known that we, MAJARIQUE CÔTÉ and AIMÉ VUILLIER, citizens of the United States, residing at Millis, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Bicycles, of which the following is a specification.

Our invention relates to a multiplying-gear for bicycles and similar vehicles, the objects in view being to provide a gear adapted to be operated by levers in contradistinction to cranks, said gear being so constructed as to allow free rotation of the driving-wheel except during the depression of the free ends of the operating-levers.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings, Figure 1 is a perspective view of a gear embodying our invention applied in the operative position to a bicycle. Fig. 2 is a detail view in section of the gear to show the construction of the clutch for communicating motion from the crank to the gear. Fig. 3 is a detail view in section of the yoke for connecting the lever to the frame of the machine to show the return-spring which is employed in connection therewith. Fig. 4 is a transverse section of the gear.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the construction illustrated in the drawings, 1 represents a driving-wheel, to the axle of which is fixed a pinion 2, and with this pinion meshes a large gear 3, which is recessed, as shown at 4. The recess is closed at one side by a web 5, which is integral with the rim 6, and at the other side by a removable cap 7, held in place by a central stud 8, which is rigidly secured to the web 5 and extends through a central opening in the cap-plate. This opening 9 in the cap-plate is of larger diameter than said stud and is of sufficient size to receive a circular core or block 10, having a central opening 11, which is fitted rotatably upon the fixed stud, and formed integral with said core or block is the crank 12, which is arranged parallel with the plane of

the gear 11 and preferably extends rearwardly from its fulcrum. The core or block is provided at its outer side in the plane of said crank with a slight projecting edge or flange 13 of greater diameter than the opening in the cap-plate, whereby it overlaps the outer surface of said plate, and the core or block and the crank are held in place by means of a nut 14 upon the reduced projecting extremity of the stud.

The core or block 10 is provided with a plurality of seats 15, in which are fitted the rounded heads 16 of the pivotal clutch-levers 17, said levers being spread or enlarged toward their outer extremities and terminating in broad friction-surfaces 18, adapted to bear against the inner surface of the rim of the gear. These clutch-levers are slightly longer than the distance between the seats and the inner surface of the rim, whereby when the core or block is turned in the direction indicated by the arrow in Fig. 2 the levers are forced at their outer ends against the inner surface of the rim in a manner similar to a toggle-lever, whereby the greater the pressure or strain upon the core or block in said direction the more positive will be the frictional contact of the outer end of the lever or levers with the inner surface of the rim. Hence when the free end of the crank-arm 12 is depressed, as in imparting downward movement to the free end of one of the foot-levers, the clutch-levers will be forced into engagement with the rim and will remain in engagement until the foot-lever is released, when the forward rotation of the gear will trip the levers and throw them into a slightly-inclined position, thereby disengaging their outer extremities from the rim.

The clutch-levers are provided contiguous to the heads 16 with reduced neck portions, and the sockets are of such construction as to extend more than half-way around the heads and thus prevent the detachment of the levers and limit the swinging movement thereof to prevent too wide a deflection from their positions in contact with the rim, the sides of the levers being diverged regularly from said reduced neck portions to their outer contact extremities. Thus after each downward movement of the free end of the crank-

arm the clutch-levers are disengaged automatically from the rim of the gear and allow free rotation thereof.

The means for depressing the free ends of
5 the crank-arms consist of foot-levers 19, fulcrumed at their rear ends upon the frame of the machine and connected at intermediate points, by means of links 20, with the crank-arms. In order to provide for the attachment
10 of the foot-levers to the frame and adjusting the elevation of the fulcrums of said levers, and, as a result, the height of the pedals, we employ a band 21, split as at 22, and provided with ears 23, which are connected by a bolt
15 24, and projecting radially from this band is an enlargement from which projects a spindle 25, upon the extremity of which is pivotally mounted the foot-lever. By loosening the bolts 24 the bands 21 may be moved up or
20 down on the rear braces of the frame and the pedals correspondingly raised or lowered. The retaining-screw 26 is threaded in a socket 27 in the end of the spindle, and a washer 28 is interposed between the head of the screw
25 and the end of the spindle. We also employ a return-spring 29 to elevate the free end of the foot-lever after each depression, said spring being seated in an annular cavity 30, surrounding the spindle and closed by the
30 foot-lever, and being attached at its extremities, respectively, to the band and the foot-lever, as shown at 31 and 32, respectively.

From the above description it will be seen
35 that the clutch mechanism by which motion is communicated from a foot-lever to the driving-wheel is of such a construction that it is tripped automatically by the forward motion of the gear, whereby the feet of the operator may be allowed to rest upon the foot-levers
40 while coasting or progressing under the influ-

ence of momentum. It will be seen, furthermore, that the plurality of clutch-levers provides for the positive engagement of the clutch mechanism with the gear in any relative positions of the parts and at the same time balances or equals the strain upon all parts of the power-gear 3. It will be seen, furthermore, that the construction of the device is simple, and the parts thereof are so connected
45 as to provide for their detachment and disconnection with facility for the purpose of cleaning when such becomes necessary.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit
55 or sacrificing any of the advantages of this invention.

Having described our invention, what we claim is—

The combination of the bicycle-frame, the
60 drive-wheel mounted to turn therein, a band connected to the frame and provided with an enlargement from which projects a spindle and in the end of which is formed an annular cavity surrounding said spindle, a foot-
65 lever pivotally mounted on the spindle and geared to the drive-wheel, said foot-levers serving to close said annular cavity, a screw engaging a socket in the end of the spindle and arranged to hold the foot-lever in position,
70 and a spring coiled in said annular cavity and connected at one end to the band and at the other end to the foot-lever to retract the same, substantially as described.

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