

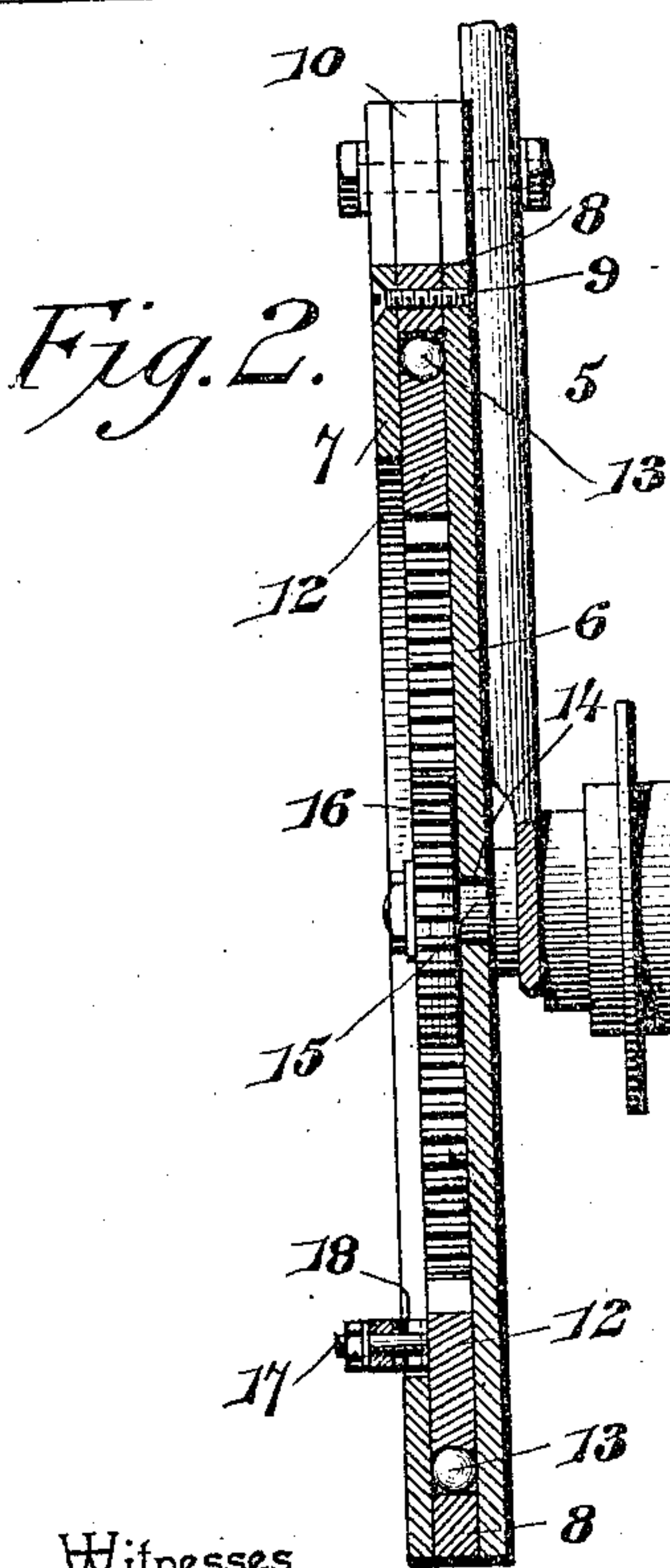
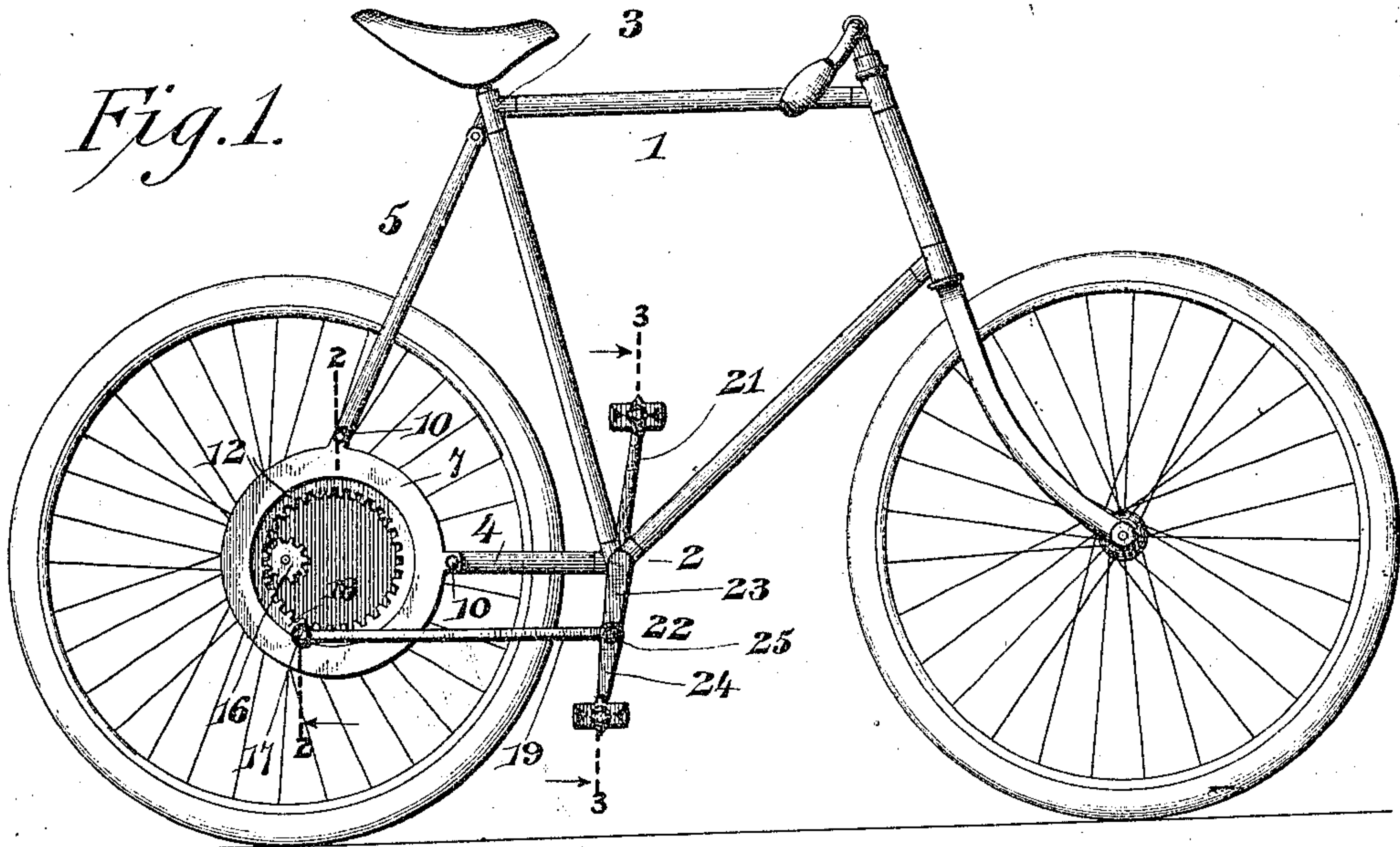
No. 617,631.

Patented Jan. 10, 1899.

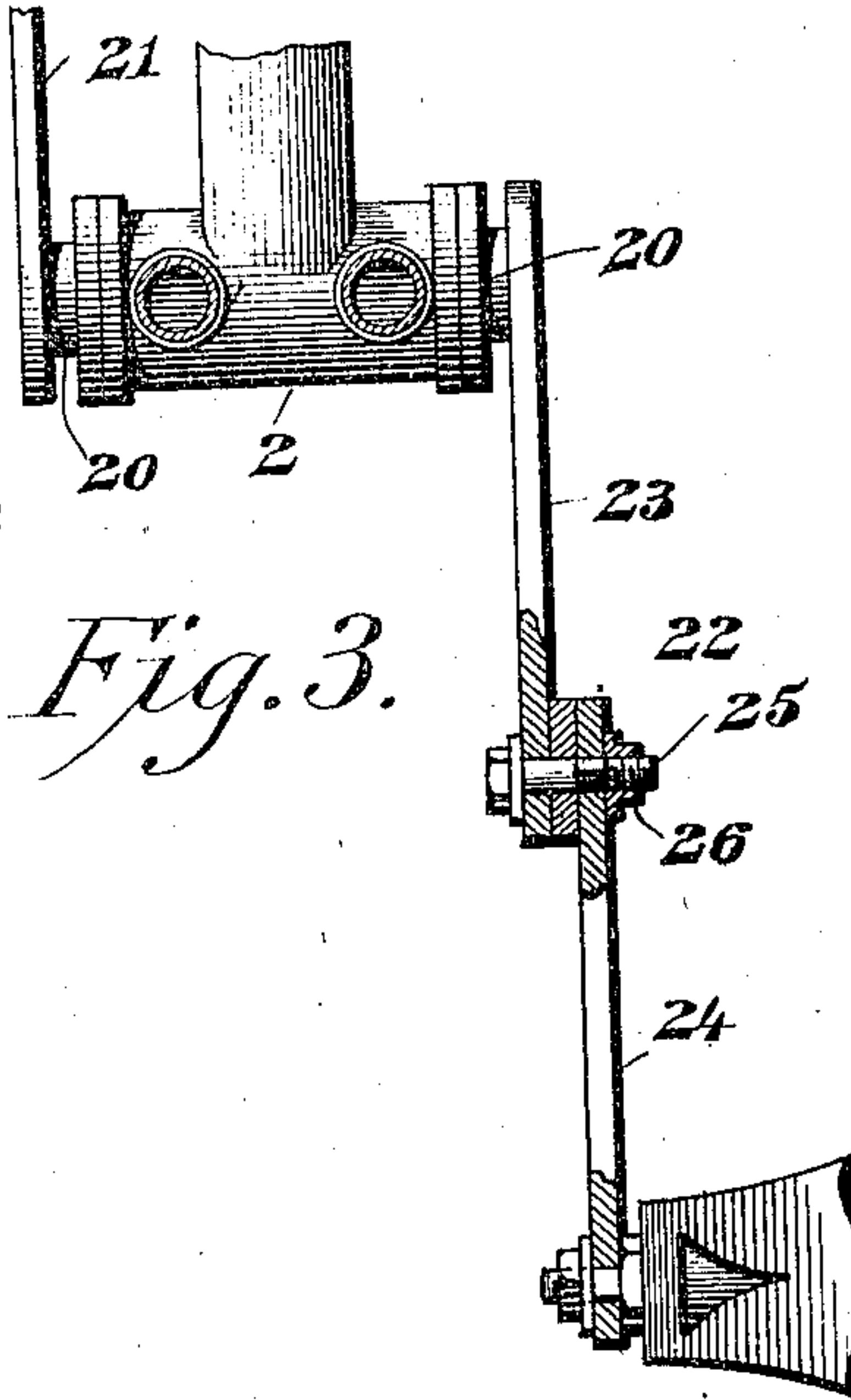
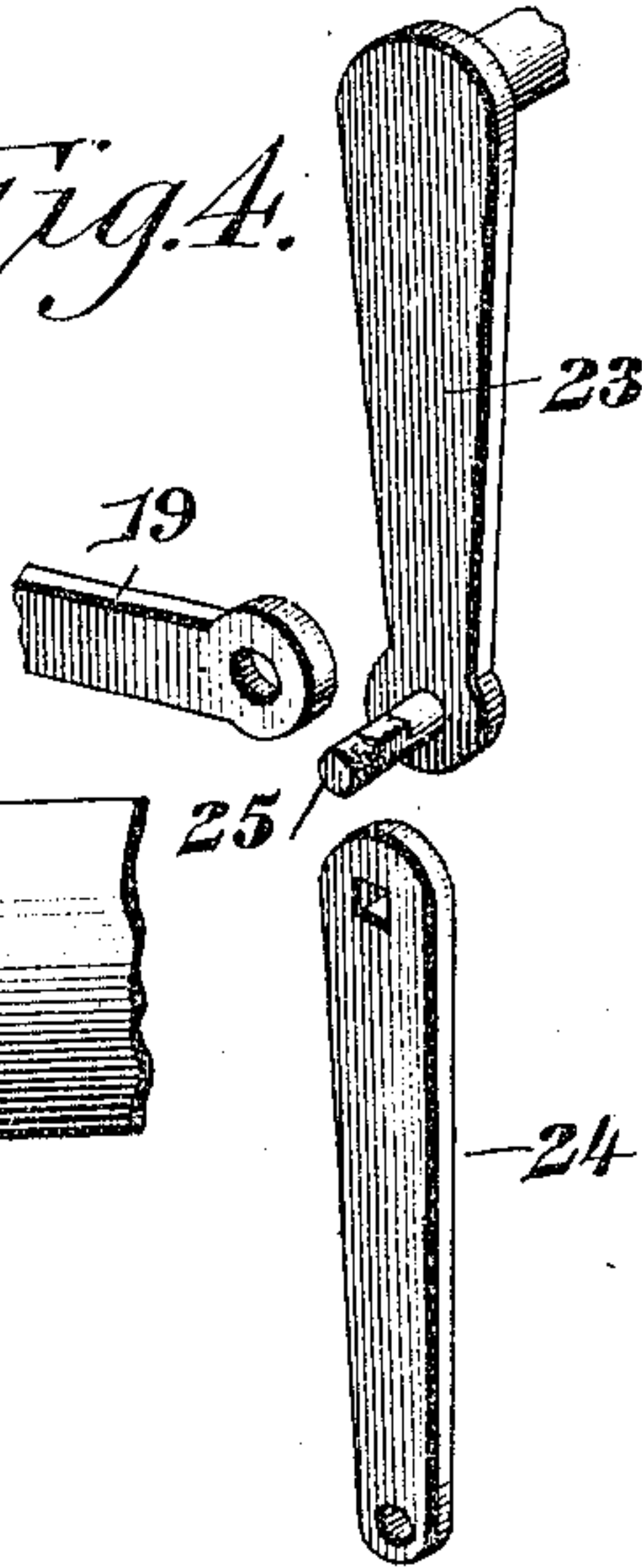
W. J. BOSCH.  
BICYCLE PROPELLING MECHANISM.

(Application filed July 16, 1897.)

• (No Model.)



*Fig. 4.*



Witnesses  
*Jas. K. McLaughlin*  
*H. O. Berkefeld*

By *his* Attorneys,

*C. A. Snow & Co.*

Inventor  
*Wm J. Bosch*



# UNITED STATES PATENT OFFICE.

WILLIAM JOSEPH BOSCH, OF NEW ORLEANS, LOUISIANA.

## BICYCLE PROPELLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 617,631, dated January 10, 1899.

Application filed July 16, 1897. Serial No. 644,826. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM JOSEPH BOSCH, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Bicycle Propelling Mechanism, of which the following is a specification.

My invention relates to bicycles, and particularly to driving or propelling mechanism therefor; and the object in view is to provide a simple, inexpensive, and efficient construction of chainless gearing of which the members are so mounted and related as to adapt the mechanism to be applied as an attachment to bicycles manufactured with other forms of gearing.

I attain the above object by providing a driving mechanism consisting of an annular internally-toothed driving-gear having a rim-bearing in a support or casing which is provided with means for attachment to a bicycle-frame, the driving-gear being disposed eccentrically with relation to the axis of the driving-wheel and with its internal teeth in engagement with a pinion fixed to the driving-wheel axle. This construction provides for an extended bearing whereby the liability of twisting the driving-gear by the application of motion communicated thereto by means of a pitman or the equivalent thereof is reduced to the minimum, and, furthermore, the extended or rim bearing enables me to employ a support or casing of sufficient diameter to locate the fastening devices by which said support or casing is secured to the bicycle-frame at remote points, and thus insure the rigidity of the mechanism under severe tests.

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

In the drawings, Figure 1 is a side view of a bicycle provided with a driving mechanism constructed in accordance with my invention. Fig. 2 is a detail sectional view of the driving mechanism on the line 2 2 of Fig. 1. Fig. 3 is a detail sectional view on the line 3 3 of Fig. 1. Fig. 4 is a detail view in perspective of the sectional crank-arm and the contiguous

portion of the pitman with the parts disconnected.

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

1 designates a vehicle-frame, such as that of an ordinary safety-bicycle, the same as in the construction illustrated, having a crank-hanger 2 at the lower end of the seat-post tube 3, the horizontal rear fork 4, and the rear braces 5, the usual driving-wheel having its axle 15 mounted in suitable bearings at the junction of the rear fork 4 and the braces 5.

Suitably fixed to the driving-wheel axle 15 is a driving-pinion 16, and meshing with this pinion is an internally-toothed annular driving-gear 12, wholly open at its center, and obviously disposed eccentrically with relation to the driving-wheel axle in order to suit the smaller diameter of the pinion and insure a rotation of the latter at an increased speed over that of the driving-gear. This driving-gear has a rim or exterior bearing in a support or casing 8, which is provided with means to facilitate its attachment at remote points to the frame-bars 4 and 5 of a bicycle or similar vehicle. In the construction illustrated the support or casing 8 is provided with ears 10, extending radially and secured by bolts or the equivalents thereof to said frame-bars; but it will be understood that other similar means for detachably securing the support or casing to the bicycle-frame may be adopted without departing from the spirit or sacrificing any of the advantages of the invention.

The preferred construction of the support or casing includes an inwardly-extending flange 6, which may be constructed as a separate plate from the body portion of the support, as shown, and a cap-ring 7, secured to the body portion of the support by means of screws 9, said flange and cap-ring extending inwardly to overlap the driving-gear 12 and hold the latter against transverse or axial displacement. Obviously when the flange 6 is constructed as a plate separate from the body portion of the support or casing it may be secured to said body portion by means of the above-mentioned cap-plate-securing screws 9, and this flange may be extended inwardly and provided with an opening 14 to receive



the axle 15, and thus add to the security with which the support or casing is fastened to the machine-frame. It will be seen that the flange is thus disposed between the plane of the contiguous frame members 4 and 5 and the adjacent or inner side of the pinion 16. Also it will be understood that antifriction balls or rollers 13 may be interposed between the rim of the driving-gear and the encircling wall of the bearing and that the interval between the flange 6 and the cap-ring 7 is equal to the thickness of the driving-gear 12 to hold the latter properly against transverse displacement or lost motion.

From the above description it will be seen that the device embodying the essential features of my invention may be applied to a bicycle of the ordinary construction simply by substituting a pinion for the usual rear chain-wheel and applying the support or casing 10, the latter being firmly secured to the members of the bicycle-frame by suitable means of attachment.

Various devices may be employed for communicating motion from the crank-shaft 20 to the driving-gear, but that which I have illustrated in the drawings includes a wrist-pin 17, secured to the driving-gear by means of a bracket-plate 18 and a pitman 19, mounted at one end upon said wrist-pin and pivotally connected at the other end to one of the pedal-cranks 21, 22. That pedal-crank 22 which I have illustrated in the drawings as the means whereby motion is communicated to the driving-gear is of sectional construction, comprising a fixed member 23 and a removable member 24, the former being attached to the crank-axle 20 and the other carrying the pedal. The connection between said crank members consists of a pivot-pin 25, having a squared or shouldered portion to fit in a correspondingly-constructed opening in the member 24 at an interval from the plane of the member 23 sufficient to receive the contiguous end of the pitman, and a nut 25, threaded upon the outer extremity of said pin, to hold the removable member 24 in place. It will be seen that the squared or shouldered portion of the pin prevents independent swinging or rotary movement of the member 24 with relation to the member 23, while the round portion of the pivot-pin, between the planes of the members 23 and 24, forms a bearing for the front end of the pitman 19.

Having described my invention, what I claim is—

1. An attachment for bicycles comprising a support or casing provided with means for attachment to a bicycle-frame, a pinion for attachment to the axle of the bicycle driving-wheel, and arranged in the plane of said support or casing, an annular internally-toothed

driving-gear arranged in the plane of said pinion and having a rim-bearing in said support or casing, and means for communicating rotary motion to said driving-gear, substantially as specified.

2. The combination with a bicycle-frame having a rear fork and intersecting rear braces, and a driving-wheel having its axle mounted in bearings at the intersection of said fork and rear braces, of a pinion secured to the driving-wheel axle adjacent to the plane of one of the rear braces of the frame, an annular support or casing having an internal bearing and radially-extending ears, and also provided at the inner and outer sides of the plane of its internal bearing with an inwardly-extending flange 6 and an inwardly-extending removable cap-ring 7, means for detachably securing said cap-ring in place, securing devices for fastening said radial ears respectively to the contiguous rear brace and fork of the bicycle, said flange 6 of the support or casing being arranged between the planes of said pinion and the adjacent frame-bars, and being provided with an opening through which the driving-wheel axle extends, an annular internally-toothed driving-gear mounted at its outer periphery in said internal bearing of the support or casing and meshing with the said pinion, and means for communicating rotary motion to the driving-gear, substantially as specified.

3. The herein-described attachment for bicycles, comprising a support or casing 8 having a body portion consisting of an annular plate, an inwardly-extending flange-plate 6 arranged in contact with one side surface of the plate 8 and extending inwardly beyond the inner edge thereof, a removable cap-ring arranged in contact with the opposite surface of the plate 8 and also extending inwardly beyond the inner edge thereof, means for detachably securing the cap-ring in place, said casing being provided with radial ears 10, means for securing said ears to the frame-bars of a bicycle, an annular driving-gear mounted at its outer edge in the annular bearing formed by the inner edge of the plate 8 and between the planes of the flange-plate 6 and the cap-ring 7, and a pinion arranged in the plane of, and eccentrically with relation to, the driving-gear, and meshing therewith, for attachment to the axle of a bicycle driving-wheel, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM JOSEPH BOSCH.

Witnesses:

FELIX J. DREYFOUS,  
GEO. MONTGOMERY.