

No. 751,236.

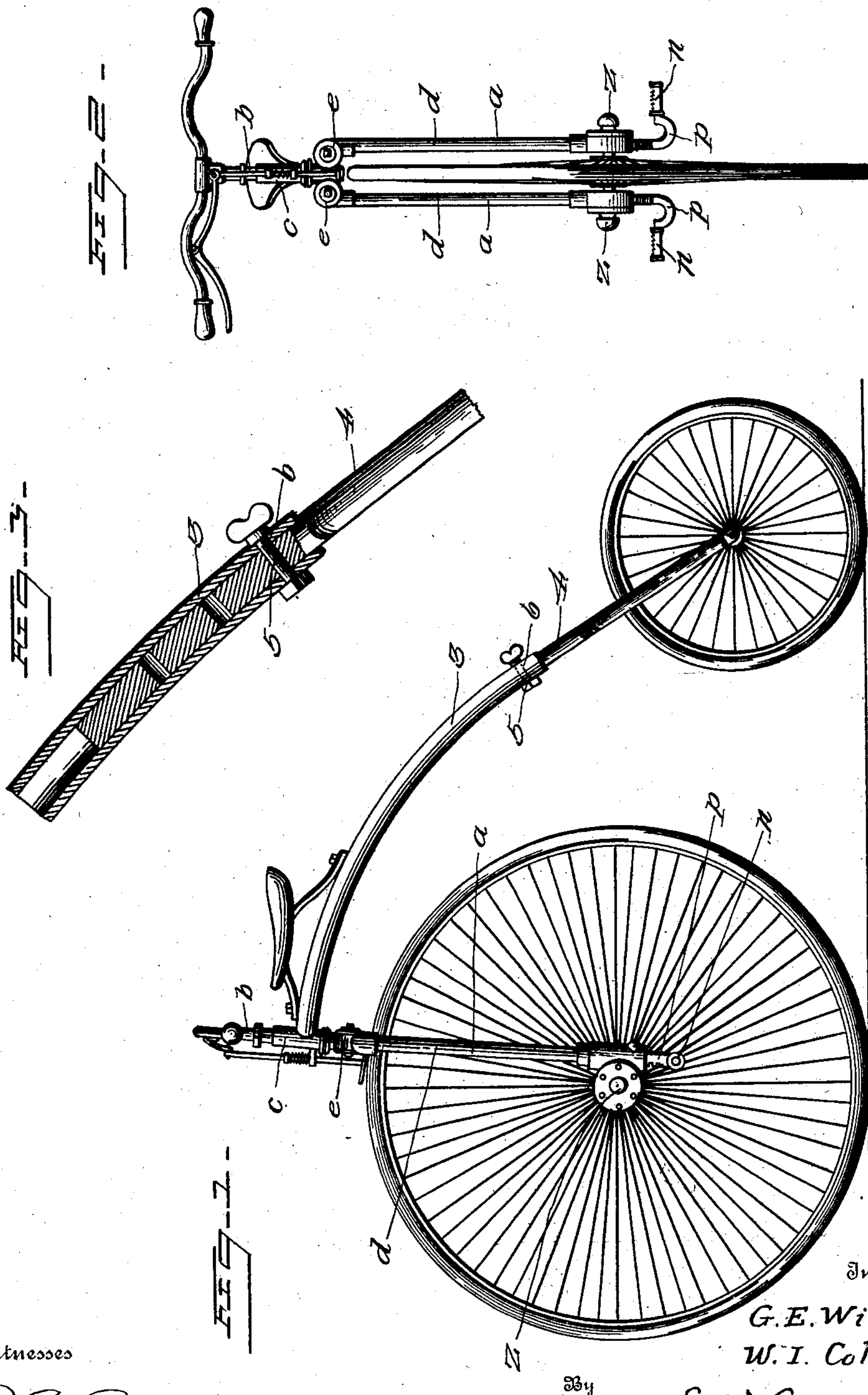
PATENTED FEB. 2, 1904.

G. E. WILEY & W. I. COLEY.
MEANS FOR PROPELLING BICYCLES.

APPLICATION FILED JULY 8, 1902. RENEWED NOV. 13, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

R. A. Boswell.
George M. Anderson.

Inventors

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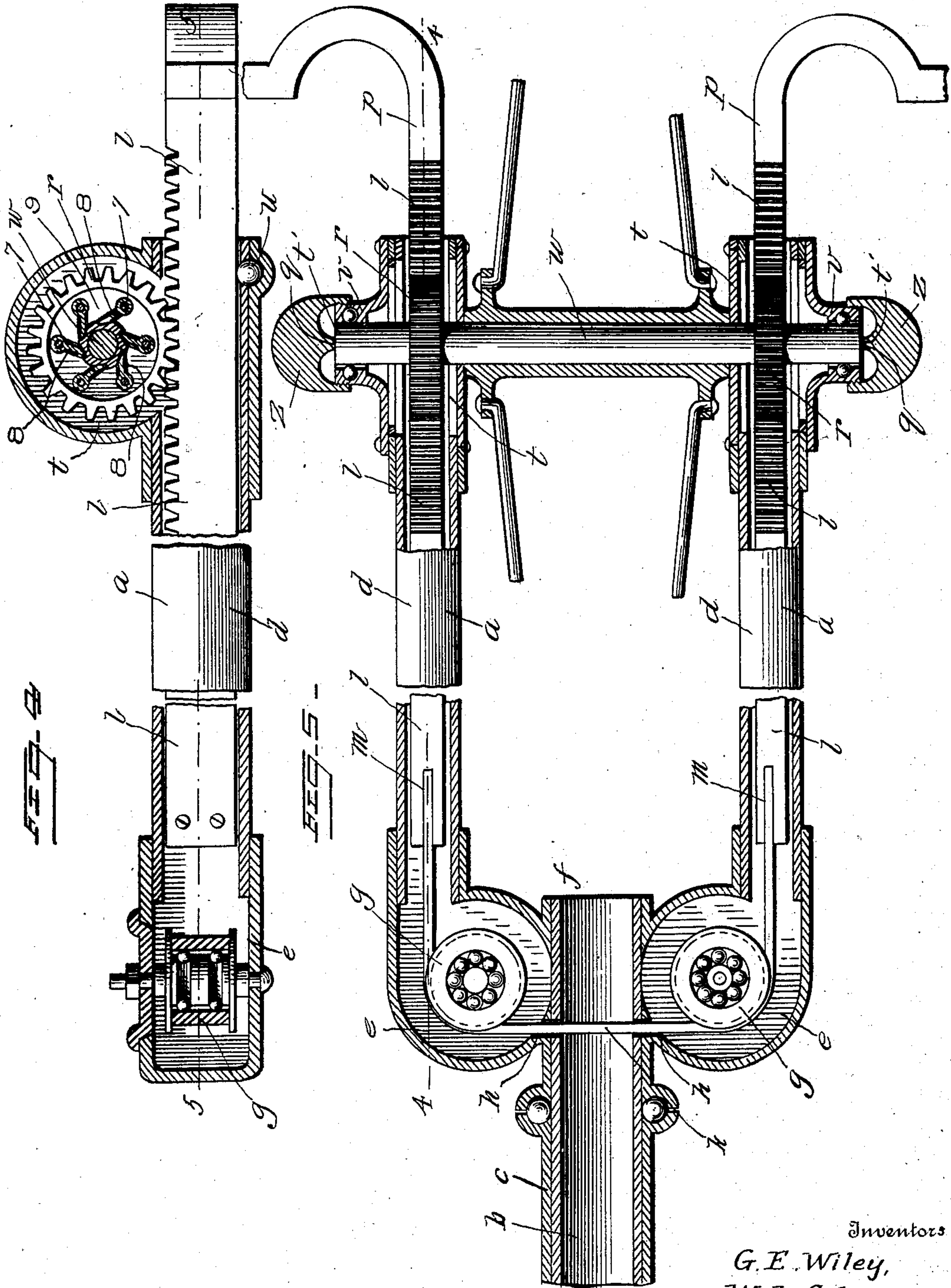
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UNITED STATES PATENT OFFICE.

GEORGE E. WILEY AND WILLIAM I. COLEY, OF SALTVILLE, VIRGINIA.

MEANS FOR PROPELLING BICYCLES.

SPECIFICATION forming part of Letters Patent No. 751,236, dated February 2, 1904.

Application filed July 8, 1902. Renewed November 13, 1903. Serial No. 181,098. (No model.)

To all whom it may concern:

Be it known that we, GEORGE E. WILEY and WILLIAM I. COLEY, citizens of the United States, and residents of Saltville, in the county of Smyth and State of Virginia, have made a certain new and useful Invention in Means for Propelling Bicycles; and we declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation of the bicycle. Fig. 2 is a front elevation of the same. Fig. 3 is a detail view, partly in section and illustrating the adjustment for the backbone. Fig. 4 is a section on the line 4 4, Fig. 5, and partly broken away. Fig. 5 is a partial section on the line 5 5, Fig. 4, to illustrate the driving mechanism in detail.

The invention relates to velocipedes, and especially to bicycles; and it consists in the novel construction and combinations of parts, as hereinafter set forth.

In the accompanying drawings, illustrating the invention, the letter *a* designates the front fork of a bicycle, having the steering-post *b*, on which is located the sleeve *c* of the backbone, which carries the saddle and to which the rear wheel is pivoted. Each of the legs *d* of the front fork is hollow and communicates at its upper end with a hollow head *e*, of circular form, these heads being connected by a bridge sleeve portion *f*, to which the steering-post is secured. The walls of the head are perforated for the reception of the pivots or journals of the internal pulleys *g*, which run on ball-bearings. At the level of the upper portions of the pulleys there are provided transverse openings or passages *h* through the wall of the steering-post for the passage of the flexible connection or rawhide band *k*, which passes transversely over the pulleys, engaging the same and being continued down the hollow of each leg of the fork, where its ends are attached to the upper ends of the upright pedal-racks *l*, which play in said legs up and down. The ends of the band *k* are secured

in clefts or seats *m* in the ends of the pedal-racks. The lower ends of the fork-legs are open for the passage downward of the pedal ends or extensions *p* of the racks. These ends are turned outward in bracket form for the attachment of the pedals *n*. The axle-bearing portions *t* of the fork-legs are tangent to the latter and are of circular form, containing the fast and loose pinion *r*. A ball-bearing and seat is placed in each leg opposite the pinion to engage the back of the rack, as indicated at *u*. The pinions have fast and loose clutches and are located on the axle *w*, which passes through the pinion-boxes *t* and plays on ball-bearings therein. These pinion-boxes have their middle portions projecting outward laterally, as indicated at *v*, and these projections are usually exteriorly threaded, as shown, to receive the screw-caps *z*. These caps may be provided with interior center-bearings *q*, which engage the centers of the ends of the axle and provide for micrometric adjustment when necessary.

The backbone or bow of the bicycle is designed usually to be made adjustable in length. To this end it is made in two parts, which lap or telescope for such adjustment, as may be advisable in going downhill or uphill or on level ground. The two parts are indicated at 3 and 4. Proper seats for a securing-pin are indicated at 6.

The operation is readily understood. The pedals have reciprocating motion, being pushed down alternately, pulling down the rack, and operating the pinion of each side of the fork to turn the axle. On the up movement of each rack, which is brought about by the downward movement of the opposite rack through the flexible band connection, the pinion is disengaged through the action of the fast and loose clutch 7, which is provided in connection with each pinion. This clutch usually consists of several inclined pawls 8, pivoted to the wall of the recess 9 of the pulley and engaging the axle when moving in one direction and sliding freely when the pulley is moved in the opposite direction by the connecting-band. The adjustment of the backbone or rear bow of the bicycle is important in this connection, as the rider is com-

5 pelled to operate the pedal with pressure in the direction of the length of the fork-leg. The adjustment of the angle of inclination of the bicycle facilitates this pedaling action, especially in traveling on long stretches upgrade.

10 We claim that our bicycle can be propelled under all circumstances with a minimum expenditure of energy, that it will go up or down hill and over rough roads with great ease to the rider, and that a maximum speed may be attained therewith.

Having described this invention, what we claim, and desire to secure by Letters Patent, is—

15 1. In a velocipede, the combination with the hollow legs of the front fork, the head thereof, the steering-post and the transverse passages through the same, of the axle, its fast and loose pinions, the pulleys in the head, the
20 upright pedal-racks, and the flexible band connecting said racks, and passing over said pulleys, substantially as specified.

2. In a velocipede, the combination with the hollow legs, of the fork, the head thereof, the pulley in said head, and the tangent axle- 25 boxes, of the axle, its fast and loose pinions, the pedal-racks in said hollow legs, and the flexible band connecting said racks, substantially as specified.

3. In a velocipede, the combination with the 30 upright pedal-racks, in the legs of the front fork, the pulley in the head of said fork, the flexible connection for said racks passing over said pulley, the axle and the fast and loose pinions, of the longitudinally-adjustable back- 35 bone or rear wheel-bow, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

GEO. E. WILEY.
WM. I. COLEY.

Witnesses:

CHAS. E. WILEY,
H. B. EDMONDSON.