

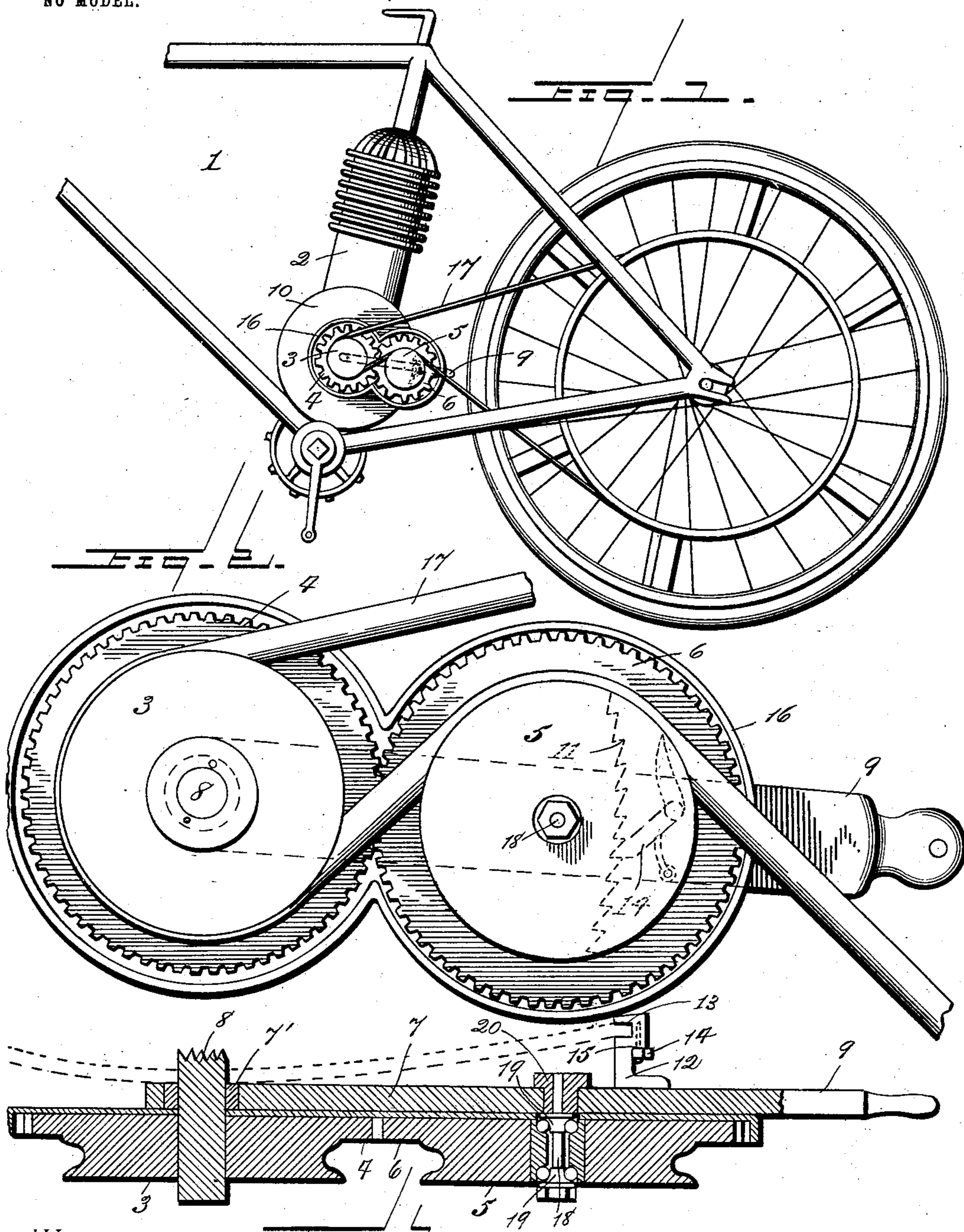
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PATENTED OCT. 27, 1903.

J. W. GRUBBS.  
MOTOR VEHICLE.

APPLICATION FILED FEB. 10, 1903.

NO MODEL.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN WORTMAN GRUBBS, OF LATROBE, PENNSYLVANIA.

## MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 742,413, dated October 27, 1903.

Application filed February 10, 1903. Serial No. 142,780. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WORTMAN GRUBBS, a citizen of the United States, residing at Latrobe, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Motor-Vehicles; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to "motor-vehicles," but more particularly to "motor-cycles," but specifically to the gearing-and-belt arrangement thereof; and my invention has for its object to provide a device for reducing the friction caused by the very taut belt as at present used on motor-cycles and the like.

A further object of my invention is to provide a device which will allow the driving-belt on a motor-cycle or the like to be comparatively slack, which will at the same time cause said belt to be comparatively free from any slipping on the driving-pulley.

A further object of my invention is to provide a novel belt-tightener.

A further object of my invention is to provide a belt-tightener which helps to drive the belt.

With all these objects in view my invention consists in the novel arrangement and construction of my combined belt tightener and driver.

My invention also consists in certain other novel features of construction and in combination of parts, which will be first described, and afterward specifically pointed out in the appended claims.

Referring to the accompanying drawings, Figure 1 is an elevation of a portion of a motor-cycle provided with my invention. Fig. 2 is an elevation of the driving-pulley and my combined belt tightener and driver. Fig. 3 is a horizontal section taken through the center of Fig. 2.

Like numerals of reference indicate the same parts throughout the several figures.

It might be well to state that the greatest difficulty encountered with driving-belts on motor-cycles is caused by the fact that in order to get sufficient power from the motor the driving-pulley must necessarily be constructed of a much smaller diameter than the wheel-pulley. Consequently that portion of the periphery of the driving-pulley which is engaged by the driving-belt is so small in comparison with the surface engaged by the driving-belt on the wheel-pulley that there is the greatest tendency on the part of the belt to slip on the driving-pulley. In order to overcome this, the belt must be kept very tight, which causes undue friction, and the continual stretching of the belt, due to the strain on the same, makes the arrangement far from satisfactory. It is for the purpose of overcoming every one of these defects in a simple manner that I have constructed my present invention, which I will now fully describe.

Referring to the accompanying drawings by reference-numerals, 1 indicates that portion of a bicycle which is sufficient to illustrate my invention, and 2 is the motor.

3 indicates my driving-pulley, which is provided around its periphery with a toothed flange 4, and 5 indicates my combined belt-tightening and auxiliary driving pulley, which may be of the same diameter as the driving-pulley proper or as much larger as circumstances will permit, as the larger this idler-pulley the more driving-surface will be in contact with the belt; but any increase in size must be accompanied by a proportionate increase of its toothed flange 6.

7 indicates a lever, which is fulcrumed on an annular shoulder 7', formed on the motor-casing 10 around the shaft 8 of the driving-pulley which carries the pulley 5, and said lever is provided with a handle 9 for manipulating the same.

10 indicates the casing of the motor, and along the rear of the periphery thereof I provide a series of ratchet-teeth 11. (Shown in dotted lines in Fig. 2.) On the said lever 7 I provide a bracket 12, and on the end of said bracket is a guide 13, which straddles the said ratchet-teeth 11 and holds the entire ar-

5 rangement in position and prevents any lateral movement thereof. 14 indicates a pawl, which is pivoted to said bracket at 15 and which engages the ratchet-teeth 11, as shown in dotted lines in Fig. 2.

16 indicates the casing covering toothed portion of drive-pulleys, protecting belt from same, and 17 is the belt.

10 It will be seen by referring to Fig. 3 that the pulley 5 is eccentrically journaled on the lever 7, as the axle 18 which carries the bearing-cones 19 passes through an eccentric opening in the pin 20. Consequently by turning said pin the mesh of the gear-teeth on the two  
15 pulleys can be nicely adjusted to take up the wear, &c.

Having thus described the several parts of my invention, its operation is as follows: The belt 17 is put on as shown and in the  
20 usual manner, and it should be slack enough to allow the lever 7 to be raised so as to bring the pulley 5 into or near the position shown in Fig. 2. Following the course of the belt in Fig. 2 it is plainly seen that it engages  
25 quite a portion of the periphery of the pulley 5 and that it is in contact with considerably more than half of the periphery of pulley 3. When the driving-shaft 8 revolves the driving-pulley 3, the pulley 5 is also re-  
30 volved in the contrary direction, and as the belt passes from the driving-pulley 3 and over the pulley 5 said pulley 5 assists in driving the belt. Thus it is evident the driving power exerted on the driving-belt is almost  
35 doubled, the effect of which is that a much greater driving power can be given a belt which is comparatively loose than can be given a belt under the present existing arrangements.

40 I wish it to be understood that the result would be practically the same if two motors were employed—one to drive the driving-pulley and the other to drive the pulley 5. In this event said pulleys could, of course, be

arranged so as not to mesh or be otherwise 45 connected together.

The simplicity of my invention is apparent, and I deem it unnecessary to go further into details of description. I do not, however, wish to be understood as limiting myself to the exact construction herein set forth, as various slight changes may be made in the construction and arrangement of parts which would fall within the limit and scope of my invention, and I consider myself clearly en- 55 titled to all such changes and modifications.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination with the driving-pul- 60 ley of a belt passing over the same, and a belt-tightener in direct engagement with the said driving-pulley.

2. The combination with a driving-pulley and a belt-tightener in direct engagement 65 therewith, of a belt passing over said driving-pulley and said belt-tightener.

3. The combination with the driving-pulley of a combined belt tightener and driver in direct engagement therewith, a belt pass- 70 ing over said driving-pulley and over said belt tightener and driver.

4. The combination with a belt and driving-pulley of a belt-tightener eccentrically journaled and in direct engagement with the 75 driving-pulley.

5. The combination with a belt and driving-pulley, of a belt-tightener in direct engagement with said driving-pulley, and means for adjusting said belt-tightener in relation 80 to the driving-pulley.

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

JOHN WORTMAN GRUBBS.

Witnesses:

JOS. E. BARNETT,  
JAS. T. HUGHES.