C. J. GUSTAFSON.

MOTOR CYCLE.

APPLICATION FILED MAY 15, 1916.

1,249,072.

Patented Dec. 4, 1917.

Fig. 1.

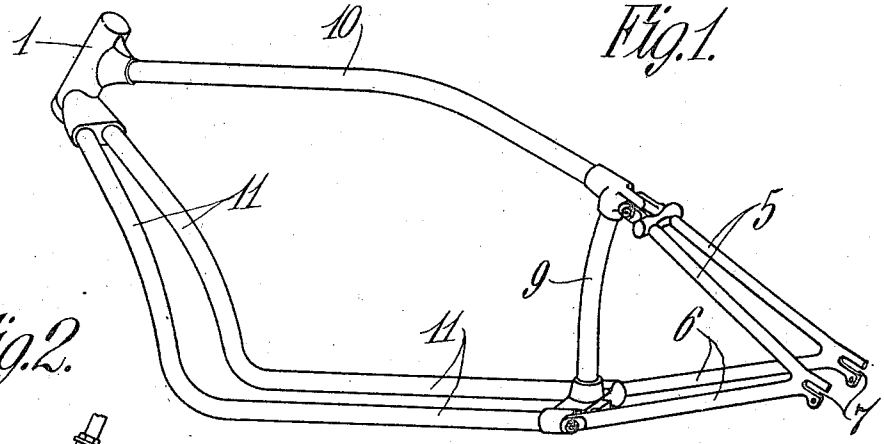
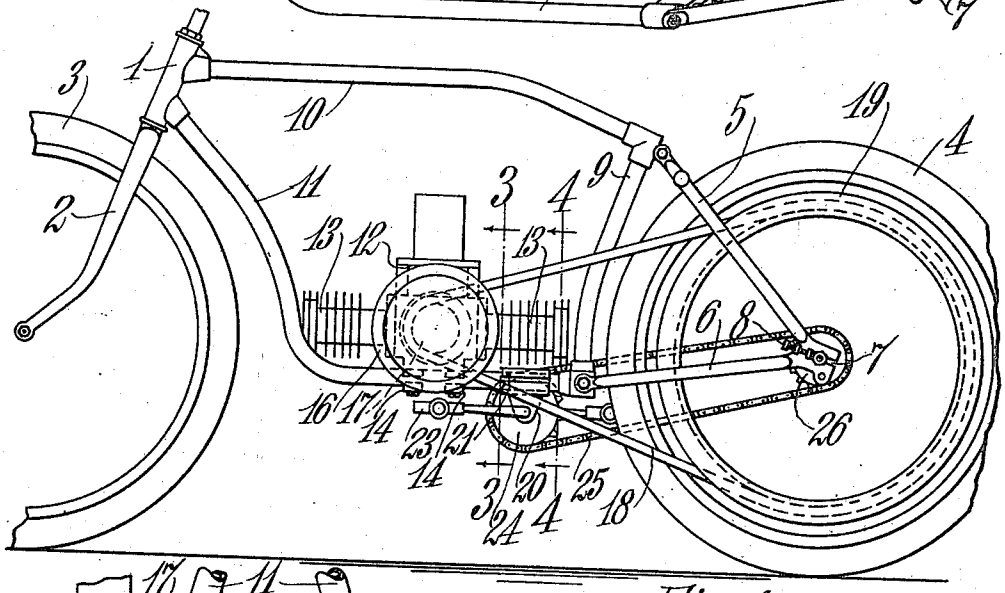


Fig. 2.



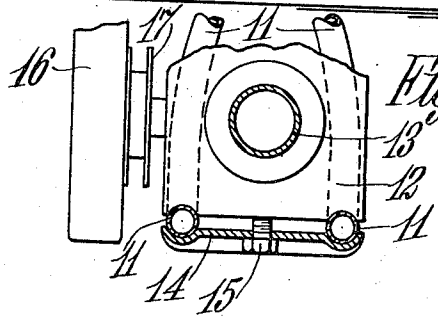
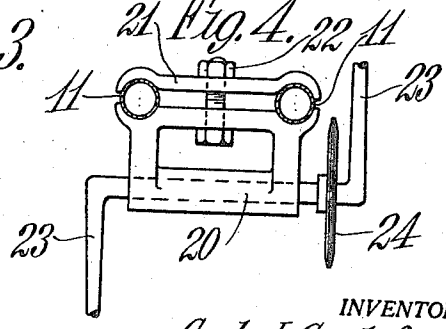


Fig. 3.

Fig. 4.



WITNESS

H. E. Hartwell.

INVENTOR.

Carl J. Gustafson.

BY Chapin & Neal.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CARL JOHAN GUSTAFSON, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO HENDEE MANUFACTURING COMPANY, OF SPRINGFIELD, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

MOTOR-CYCLE.

1,249,072. Specification of Letters Patent. Patented Dec. 4, 1917.

Application filed May 15, 1916. Serial No. 97,637.

To all whom it may concern:

Be it known that I, CARL JOHAN GUSTAFSON, a subject of the King of Sweden, residing at Springfield, in the county of Hampden and State of Massachusetts, United States of America, have invented certain new and useful Improvements in Motor-Cycles, of which the following is a specification.

This invention relates to improvements in motor cycles and more particularly to an improved mounting and arrangement of the driving devices therefor.

An object of this invention is to provide in a motor cycle having automatic and foot operable driving devices with independent flexible driving connections between each thereof and the rear wheel, and improved frame arranged to support said devices in an improved manner so that either may be moved to and from the rear wheel independently of the other to vary the tension of the driving connections without displacing the rear wheel in the frame.

Another object of the invention is to provide in a motor cycle, an improved frame construction characterized by strength and simplicity and arranged particularly for an advantageous and adjustable mounting of the engine thereon.

Other objects and advantages will appear in the following description and in the appended claims.

For the purpose of illustrating one manner in which the invention may be practised, one preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the improved frame construction;

Fig. 2 is a side elevational view, with parts broken away, showing the arrangement of the driving devices on the frame; and

Figs. 3 and 4 are cross sectional views taken on the lines 3—3 and 4—4, respectively, of Fig. 2 and looking in the direction of the arrows.

Referring to these drawings, the frame is made up in the well known manner from a plurality of tubes which are connected together by suitable fittings. A front steering post 1 receives a front fork 2 in the usual manner, and the latter is supported from a front wheel 3. A rear driving wheel 4 is mounted in a frame comprising upper and lower forked members 5 and 6, respectively, and the wheel 4 may be moved in slots 7 in the frame by means of adjusting screws 8, all in the usual manner. In front of wheel 4 is an upright 9, and the members 5 and 6 are connected, as clearly shown in Figs. 1 and 2, to the upper and lower ends of the upright, respectively. A single tube 10 connects the upper ends of the steering post 1 and upright 9, and the lower ends of these elements are connected by two tubes 11. The latter, as best shown in Fig. 1, extend forwardly and horizontally from the base of upright 9 in spaced parallel relation to a point adjacent the rear of wheel 3. Thereafter, they extend upwardly to post 1 in a curve around the wheel 3 and the curved portions of the bars converge, as they pass upwardly, as clearly shown in Fig. 1.

The spaced parallel horizontal portions of tubes 11 are arranged to support the driving devices for the rear wheel 4. These devices usually comprise an engine and pedal cranks, each arranged to drive the rear wheel independently of the other. The engine may be of any suitable type, but for the purposes of illustration has been shown as of the double opposed type which may be advantageously used with the particular frame construction heretofore described. The engine has been indicated in Figs. 1 and 3 in conventional form only and for the present purposes, it will suffice to state that it comprises a central crank case 12 and axially alined cylinders 13 on either side thereof. The crank case 12 rests directly upon the tubes 11, as shown in Fig. 3, and may be clamped thereto by a pair of plates 14 and bolts 15 which latter are threaded into the bottom wall of the crank case. The fly wheel of the engine is indicated at 16 and between the fly wheel and the crank case is a pulley 17 which is connected by a suitable belt 18 to a pulley 19 secured to wheel 4. Between the crank case 12 and upright 9 is a hanger 20 which depends

from the tubes 11 and may be clamped thereto by a plate 21 and bolts 22, as best shown in Fig. 4. Mounted in the bracket 20 are the usual pedal cranks 23 and on one of the latter is a sprocket 24 which is connected by a chain 25 to a suitable sprocket 26 on the rear wheel 4.

The bracket 20 and crank case 12 are movable along tubes 11 to any position desired within the limits of upright 9 and front wheel 3. It is to be noted particularly that the upwardly bent portions of tubes 11 are spaced sufficiently to permit the left hand cylinder in Fig. 2 to pass therebetween, as shown in Fig. 3, so that a considerable range of movement of the engine is permitted. It is also to be noted that bracket 20, since it depends from the tubes, may be moved through a substantial range, for the plate 21 underlies and clears the right hand cylinder, as shown in Fig. 2.

Aside from the slidable mounting of the driving devices permitted by the frame as described, the construction is advantageous on the score of strength and simplicity. The frame is not a radical departure from existing standards and differs essentially only in the tubes 11. The pair of tubes, as against a single tube, permit the engine to be rigidly supported solely from the tubes and at a single point by simple means. No elaborate suspensions nor tie bars are necessary, and all that is required is to lay the engine upon the tubes and apply the plates 14.

In the operation of motor cycles, trouble has arisen in properly adjusting the tension of the driving belt and chain. The engine belt, due to its more frequent operation, stretches more rapidly than the chain from the pedal cranks. In order to tighten one, it has been necessary also to tighten the other as by moving wheel 4 rearwardly in slots 7 by means of screws 8. It will thus be seen that, if belt 18 is adjusted to the proper tension, chain 25 is much too tight and, if the latter is adjusted to the proper tension, belt 18 is much too loose. The difficulty lies in lack of independent adjustment of the belt and chain. However, with the arrangement described, the engine may be conveniently moved along tubes 11 to tighten belt 18 the proper amount without disturbing the adjustment of chain 25, as by moving the rear wheel. If both belt and chain are slack, of course, the wheel 4 may be moved as described to simultaneously effect the adjustment of both but the usual condition is that one only is slack so that it is desirable to provide means whereby either may be moved relatively to the other to adjust their respective driving connections properly.

The invention has been described in a single preferred form for illustrative purposes, but the scope of the invention is defined by the appended claims rather than by the foregoing description.

What I claim is—

1. The combination in a motor cycle, of a frame having two spaced parallel bars, automatic and foot operable propelling devices independently mounted for sliding movements on said bars, means to secure said devices in their various positions of adjustment, a driving wheel mounted in said frame, and flexible driving connections between each of said devices and said wheel, all constructed and arranged so that the tension of each connection may be independently varied by sliding its respective propelling device on said bars.

2. The combination in a motor cycle of a frame having two spaced parallel bars, of an engine supported thereon and adapted to be moved longitudinally with respect thereto, means to clamp the engine to the frame, a bracket depending from said bars and adapted to be moved longitudinally thereon, means to clamp the bracket to the bars, pedal cranks mounted in said bracket, a drive wheel mounted in the frame, and independent flexible driving connections from the engine and cranks to the drive wheel, all constructed and arranged so that the tension of each connection may be adjusted independently of the other, and without moving the drive wheel, by sliding the engine or bracket on said bars.

3. The combination in a motor cycle of a frame having two spaced parallel and substantially horizontal bars, a drive wheel rotatably mounted therein and arranged for adjustment relatively thereto, an engine resting upon said bars and adapted for sliding movements thereon, means to clamp the engine to said bars, a hanger depending from the bars and adapted for sliding movement thereon, means to clamp the hanger to the bars, pedal cranks mounted in the hanger, and independent flexible driving connections from the cranks and the engine to said wheel, all constructed and arranged so that the tension of either connection may be adjusted independently of the other and so that the tension of both may be varied simultaneously by moving the rear wheel in its frame.

4. A motor cycle, comprising, front and rear wheels, forks therefor, a steering post to receive the front fork, an upright in front of the rear wheel connected at its upper end to the rear fork, means connecting the lower ends of the latter and said upright, a single bar connecting the upper ends of the latter and said steering post, two bars connecting the lower ends of the post and upright, the last-named bars arranged to lie in spaced parallel horizontal relation from the upright to a

point adjacent the front wheel and being bent from said point upwardly around the front wheel in converging relation, an engine slidably mounted on said horizontal portions, and means to clamp the engine to said portions, the engine having opposed cylinders arranged in parallel relation to said bars, the upwardly bent portions of the latter being spaced sufficiently to permit a cylinder to pass therebetween, all constructed and arranged so that the engine may be moved horizontally within the limits of the upright and front wheel.

CARL JOHAN GUSTAFSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."