M. L. JENKINS.

VELOCIPEDE.

APPLICATION FILED JULY 6, 1908.

914,845.

Patented Mar. 9, 1909.

5 SHEETS—SHEET 1.

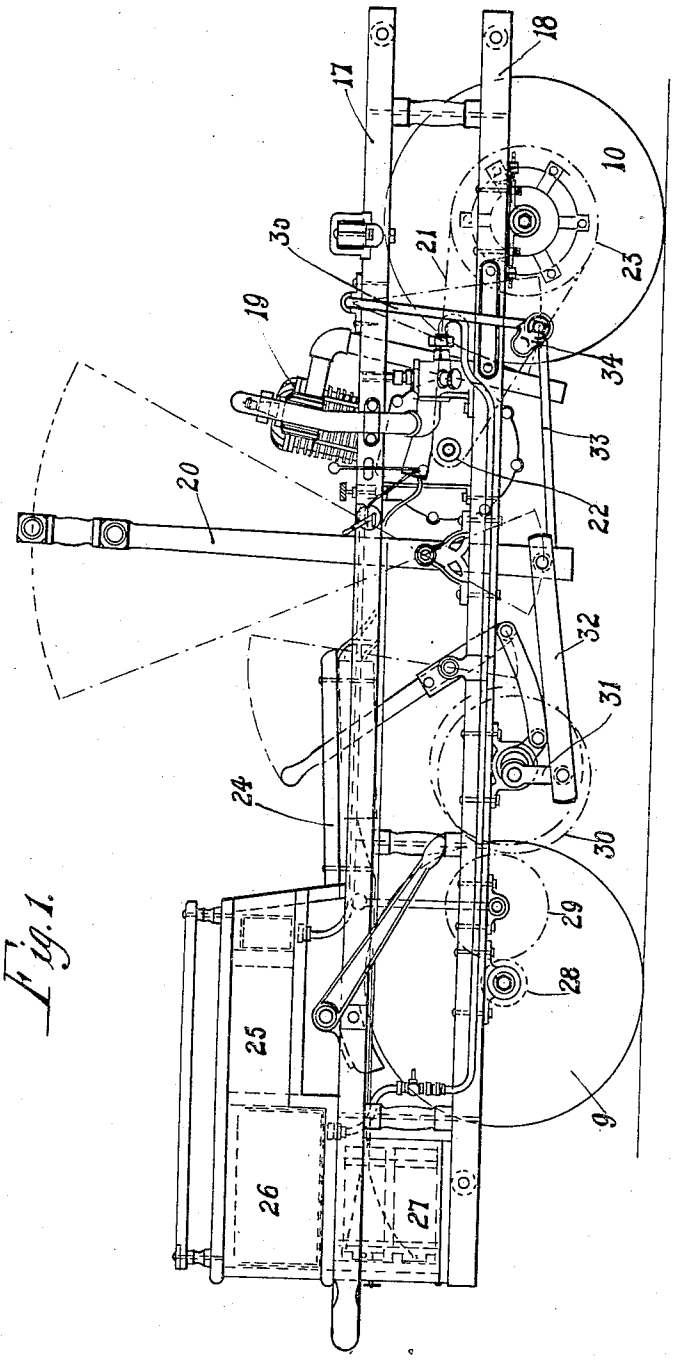

Fig. 1.

WITNESSES

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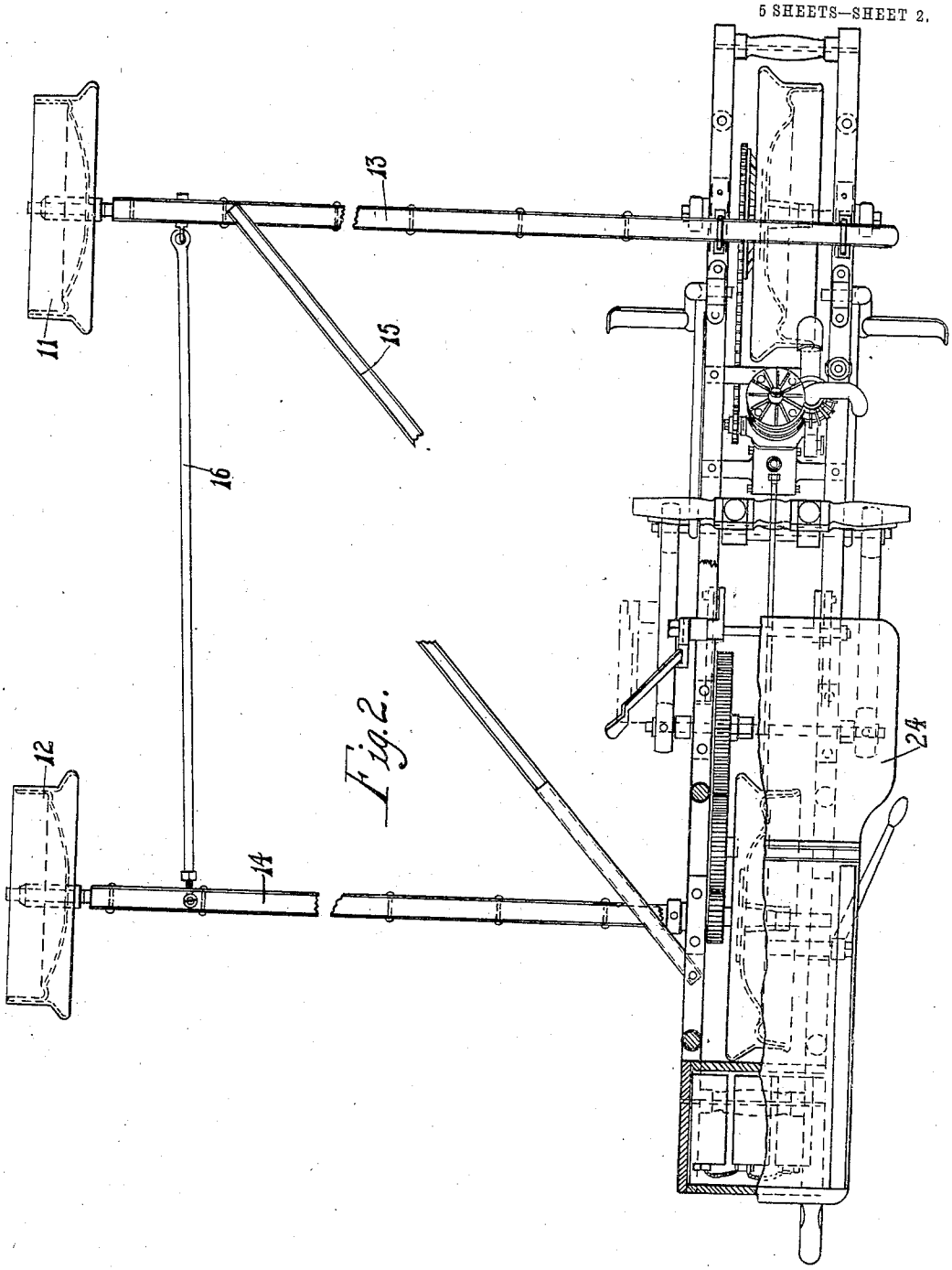

Fig. 2.

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5 SHEETS—SHEET 3.

Fig. 5.

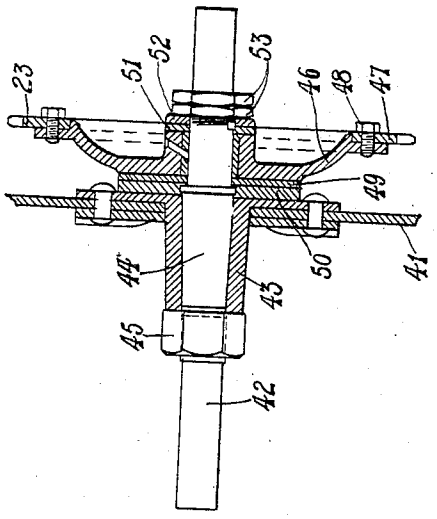


Fig. 4.

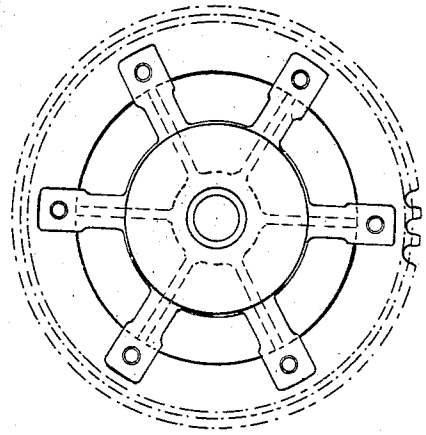
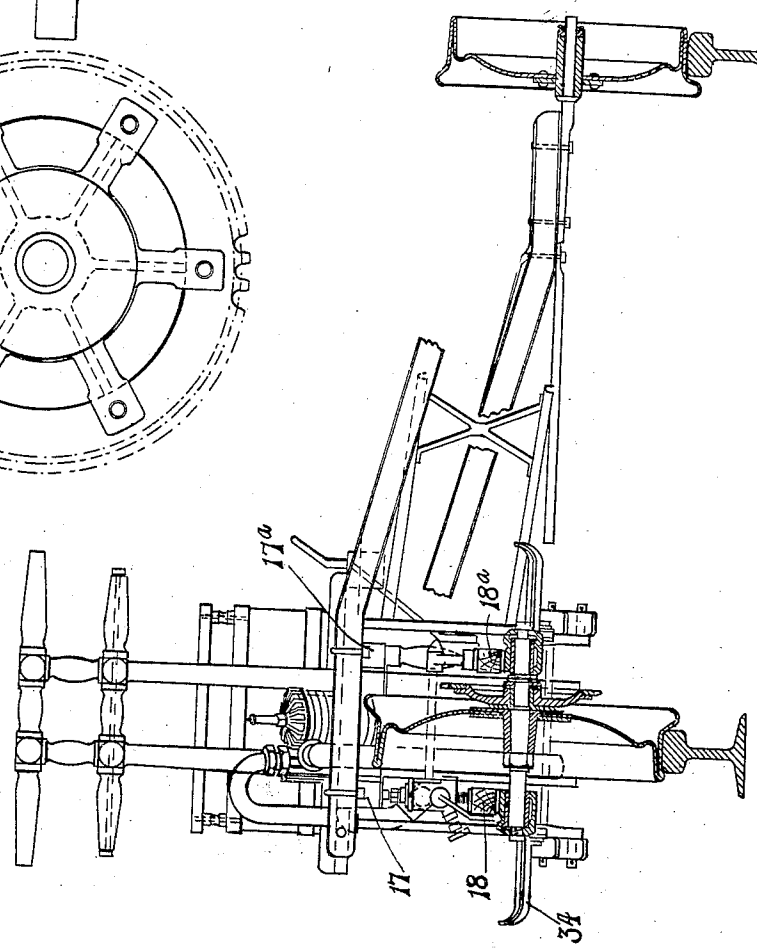


Fig. 3.



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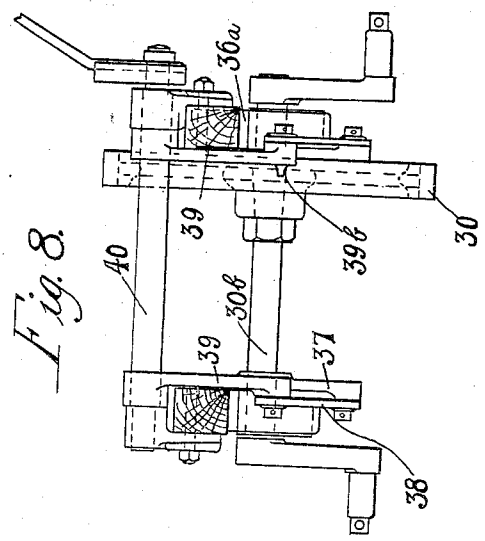

Fig. 8.

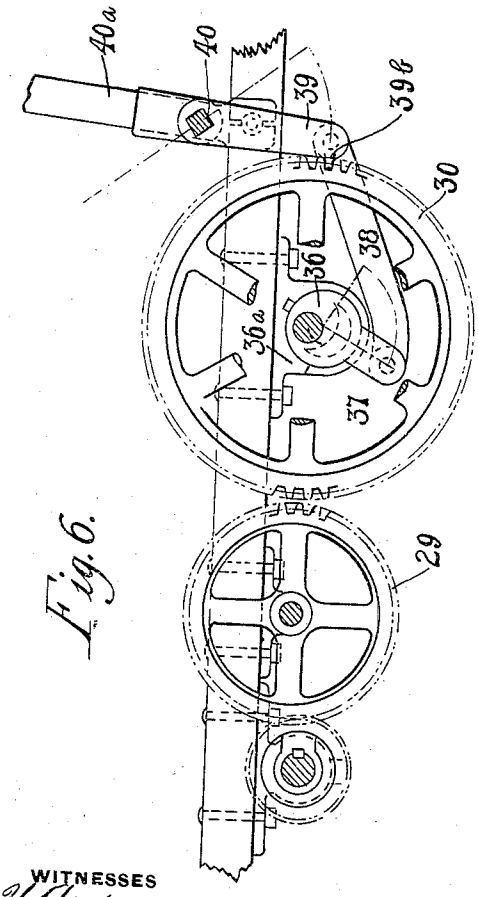

Fig. 6.

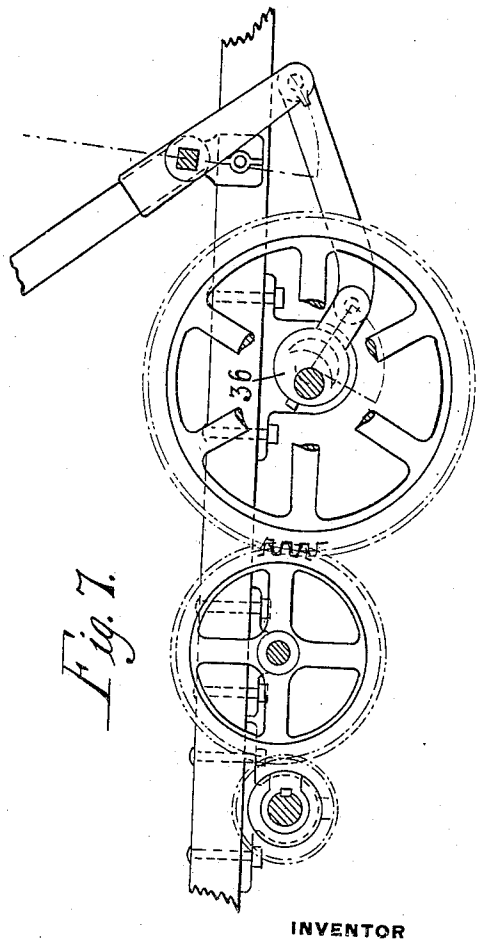

Fig. 7.

WITNESSES

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APPLICATION FILED JULY 6, 1908.

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5 SHEETS—SHEET 5.

Fig. 9.

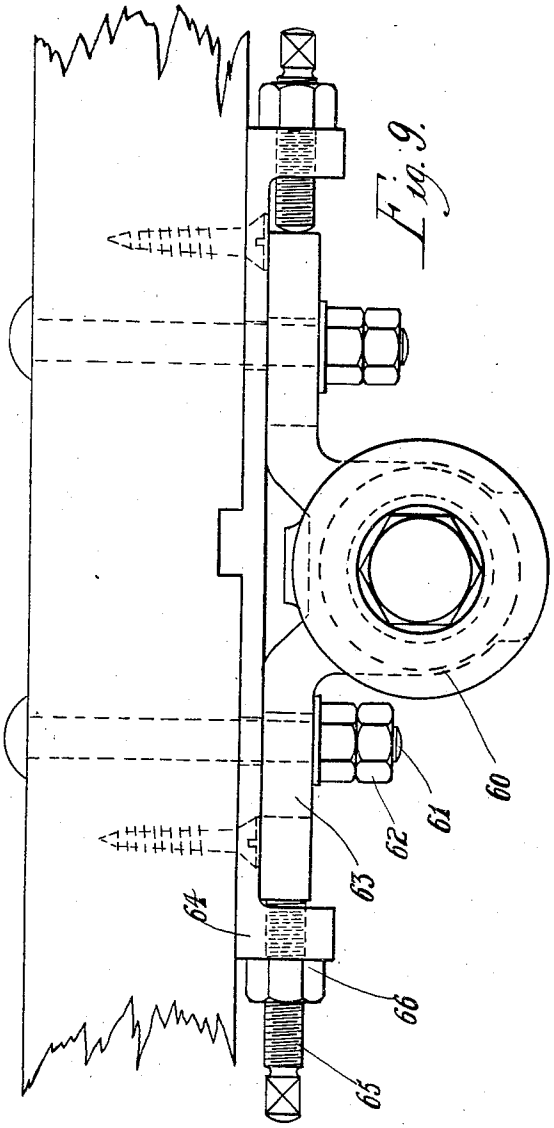
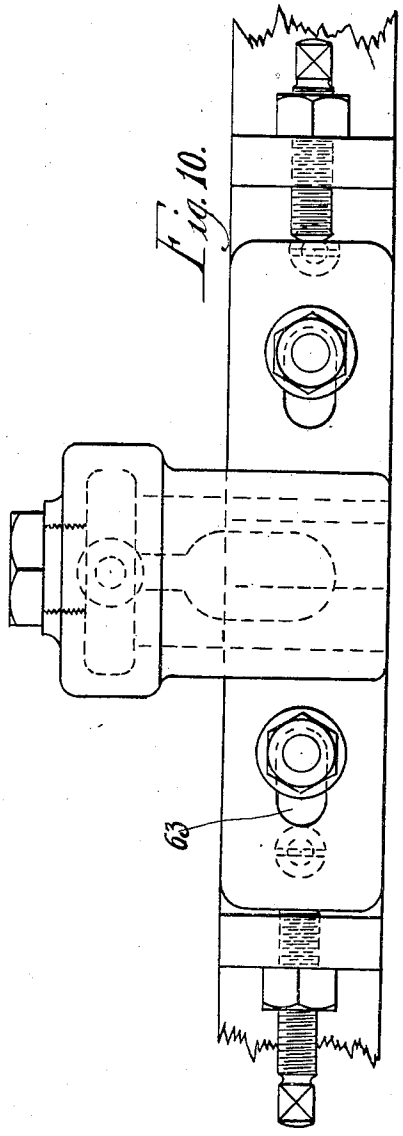


Fig. 10.



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UNITED STATES PATENT OFFICE.

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VELOCIPEDE.

No. 914,845. Specification of Letters Patent. Patented March 9, 1909.

Application filed July 6, 1908. Serial No. 442,017.

To all whom it may concern:

Be it known that I, MERRILL L. JENKINS, a citizen of the United States, residing at Harvey, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Velocipedes, of which the following is a specification.

This invention has for its objects, primarily the construction of a new and improved form of railway velocipede with motor actuating means therefor, which said improved form of construction will be both compact and strong and at the same time as light as is consistent with safety in operation, and to further provide an improved form of chain driving means for transmitting the power of the driving motor to said velocipede, which said chain driving means will combine with the usual advantages of a chain drive over other forms of power transmission of flexible character, the positive advantage as applied, of greater simplicity and freedom from slippage under slight strains.

Another object of this invention is to provide an improved form of driving connection between the motor and the driving wheel, such improved form of driving connection embodying a positive driving connection between the motor shaft and the large driven gear or sprocket, and a slip clutch connection to take care of unusual stresses such as might be incident in cases of accident, or jar or shock, such for example as often occur in the starting of the motor.

A further object of this invention is to provide an improved form of throw-out mechanism for disengaging the hand driving gear, so that after the machine has started and the engine has come into operation, the hand mechanism can be readily disconnected and locked in the desired position.

Still another object of this invention is the provision of an improved form of reinforced framework which will satisfactorily withstand the shocks of service and not have a tendency to spread or to break at the connections, or collapse under stress or in collisions.

Still another object of this invention is the provision of an improved means whereby at the time the hand driving mechanism is thrown out, the gear of the same may be locked so as to retain the operating handle in any desired position, according to the will of the operator; that is to say in any position which will most naturally and comfortably suit his height and convenience.

The above as well as such other objects as will hereinafter appear, I attain by means of a construction which I have illustrated in preferred form in the accompanying drawings, wherein—

Figure 1 shows in side elevation an improved motor driven railway velocipede with my invention applied thereto;

Figure 2 is a plan view of the same;

Figure 3 is an end elevation of my improved construction;

Figure 4 is a view of the details connected with the driving means for transferring the power of the motor to the forward driving wheel;

Figure 5 is a sectional view of said detailed driving device indicated in Fig. 4;

Figure 6 is another detailed view indicating the mounting of the hand driving gears and the devices employed for throwing them into and out of engagement;

Figure 7 is another view similar to Figure 6, but indicating the parts in position for driving operation.

Figure 8 is a sectional view indicating another elevation of the mechanism shown in Figures 6 and 7, and

Figures 9 and 10 are elevation and inverted plan view respectively of the preferred shaft mounting of the forward driving wheel.

Referring now more particularly to Figures 1, 2, and 3, it will be seen that in carrying out my invention I provide first the rear driving wheel 9 and the forward driving wheel 10, with a third wheel 11 and the fourth wheel 12 for running upon the other rail, said wheels 11 and 12, being mounted on the ends of connecting bars 13 and 14 which are held by means of the diagonal brace 15 and the connecting rod 16, and secured as shown, with adjustable means.

The main frame of the mechanism consists primarily of upper and lower longitudinal bars marked respectively 17 and 17^a and 18 and 18^a, between which pairs of bars 17 and 18, and 17^a and 18^a are mounted the driving wheels and also a driving motor 19

secured as shown, between the hand lever 20 and the forward driving wheel, and having a chain 21 running from a pinion 22 on the engine or motor shaft to a large sprocket wheel 23 on the axle of the forward driving wheel.

At the rear of the hand lever 20 is arranged the operator's seat 24, and back of this extension casing or box 25 within which are located an oil supply reservoir 26 and a plurality of battery cells 27, as well as other detail devices.

The rear driving wheel 9 is arranged to be driven by a small gear 28 which receives its motion from an idler gear 29 that is in turn driven from a gear 30, the latter receiving its power from the cranks 31 and connections 32, from the hand lever 20 which is pivoted to the frame as shown, and also connected by means of the rod connections 33 to the foot treadles 34 which are suspended by the links 35 in the usual manner.

In order to provide convenient means for throwing the gear 30 into and out of engagement, I mount the said gear upon a shaft 30^b shown more in detail in Figures 6, 7, and 8, which shaft is provided with the eccentrics 36 carried in brackets 36^a mounted upon the lower bars of the frame as shown, and as a means for moving said eccentrics I provide levers 37 connected by bars 38 to the lower ends of the levers 39 which being fast to the rockshaft 40 can be readily moved by the operator, through the hand lever 40^a, so as to secure partial rotation of the said eccentrics 36 which move the gear 30 into and out of engagement with the gear 29. The eccentrics 36, the boxes 36^a, and the levers 37 and 39, and other parts referred to, are all made in pairs as shown, and carried by the respective side bars of the frame, while the gear 30 is carried intermediate the two side bars of the frame upon the shaft 30^b.

From examination of the structure above described, it will be evident that the driving gear which is carried on the shaft, which latter is mounted in the eccentric, will have a motion that will bring the teeth of the gear into engagement with its coöperating gear, in a direction transverse to the axis of rotation of the gear; that is to say, longitudinally of the latter, instead of by sliding the teeth into and out of engagement, by direction of motion parallel with the axis of rotation. By this provision I secure the object of shifting the gears into and out of operative position with less danger of damage to the same, such as often results in shifting gears into and out of operative position by movement parallel with the axis of the same, which when the gears are in motion and especially when under heavy strain sometimes tends to strip the teeth or damage them.

In order to provide a convenient means for locking the gear 30 in position when it is out of engagement with the gear 29, I have arranged the mechanism indicated in Figure 6, which employs a projection or stop 39^b which as shown, is carried by one of the levers 39, and is adapted to engage with any of the teeth on the said gear 30, to hold it in any desired position, said stop 39^b coming into such engagement when the lever 39 is moved to the position shown in said Figure 6, so as to shift the gear out of engagement.

It will be seen that by the use of this locking arrangement which prevents the rotation of the gear 30 and consequently any movement of driving handle 20 and the foot treadles 34, the hand driving lever and foot treadles may be locked in any desired portion of their stroke, thus providing adjustable rests for the hands and feet when the motor is running, and it is not desirous to utilize the handles or treadles as driving means, or when coasting.

In order to provide a means which will compensate for undue jars or shocks, and relieve the driving chain from damaging effects thereof, I arrange mechanism indicated in Figures 4 and 5 in detail, wherein 41 indicates the web of the forward driving wheel 10 which is carried upon an axle 42 by means of a center piece 43 held upon the conical part 44 by means of the nut 45. The large sprocket wheel is composed of the central part or spider 46 with the detachable toothed ring 47 held by the cap screws 48, and provided with a smooth machined face arranged to bear against a fiber disk 49 which in turn on its opposite face bears against a steel plate 50, so as to provide a frictional contact between the chain sprocket and the driving wheel in the transmission of power. Another fiber disk is arranged at 51, pressed by the metal washer 52 through the instrumentality of the screw nuts 53 which are mounted about the shaft 42 and arranged to be locked in any desired position to determine the compression or pressure operating upon the fiber disks.

It will thus be seen by the arrangement last described that in carrying out my invention I provide a slip connection between the motor and the wheel which is driven thereby, to take care of uneven stresses, and yet which will be at all times in engagement, and which does not involve the employment of any complicated clutch mechanism or connecting device of other character, which I find to be undesirable.

In order to cause the machine to track properly and obviate any tendency to climb the rail, such as is sometimes especially observable in the case of the smaller wheel or wheels opposite the driving side I provide an improved mounting for the shaft of the forward motor actuated driving wheel said mounting, as shown in Figures 9, and 10, having block 60 held by bolts 61, and nuts 62, and provided with slots 63 and a base

part 64 carrying the set screws 65 and lock nuts 66 to serve as a means for adjusting the position of the blocks 60 longitudinally of the frame. By proper setting of the angle of the axle of the forward wheel or, as it is called, pointing the wheel, the desired tracking of the machine is secured. If the outer small wheel 11 tends to climb the rail, such tendency can be readily overcome by simply pointing the flange of the forward driving wheel a little more toward its own rail.

The mechanism just described further serves as a means to adjust the slack of the drive chain.

It will be understood that the term "velocipede" is used throughout in its generic sense, and that certain of the features of construction are not limited to use in a vehicle employing foot driving means, driven cars of this general character being generally known as velocipedes even when foot driving means are omitted.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. A railway motor velocipede comprising in combination, a driving wheel, a motor, a chain connection for driving said wheel from said motor, a sprocket wheel and a friction disk with means for pressing said sprocket wheel against said disk and said disk against the driving wheel, substantially as described.

2. A railway velocipede comprising in combination a driving wheel, a hand lever device for driving said wheel, a motor, non-disconnectible positive means for driving the velocipede from said motor, means for disconnecting the hand driving connection, and means for locking the hand lever in any desired position when its driving connection is disconnected substantially as described.

3. A motor velocipede comprising in combination, a hand driven mechanism, means for shifting said hand driven mechanism into and out of engagement, and mechanism for locking the hand driven mechanism in a predetermined position, substantially as described.

4. A velocipede driving gear comprising in combination, a driven wheel, a driving spur gear, a shaft carrying said driving gear, a driven spur gear lying in substantially the same plane as the driving gear, and an eccentric mounting for said shaft whereby to shift the driving gear into and out of operating position.

5. A velocipede driving gear comprising in combination, a driven wheel, a driving spur gear, a shaft carrying said driving gear, a driven spur gear lying in substantially the same plane as the driving gear, and an eccentric mounting for said shaft whereby to shift the driving gear into and out of operative position, said eccentric mounting comprising a pair of eccentrics carrying said shaft on either side of said driving gear, said eccentric carried in stationary bearings, and means connecting said eccentric with a hand-actuated mechanism, substantially as described.

6. A velocipede driving gear comprising in combination, a frame, a driving wheel, means for driving said wheel, an adjustable support for the wheel whereby the angularity or alinement of the said wheel relative to the frame may be varied, and means for maintaining the wheel in adjusted position.

7. A track velocipede driving gear comprising in combination, a frame, a flanged driving wheel for engaging the track, means for driving the wheel, means whereby the wheel may be shifted about a vertical axis so that it is out of alinement with the track, and means for securing the wheel in such shifted position.

8. In combination in a motor velocipede, a driving wheel, a toothed gear for driving the wheel, a second coöperating toothed gear having its axis movable toward and from the first gear, stop means for engaging the periphery of the second gear when it is moved to inoperative position, and means for driving the second gear.

9. In combination in a motor velocipede, a driving wheel, a toothed gear for driving the wheel, a second coöperating toothed gear having its axis movable toward and from the first gear, stop means for engaging the teeth of the second gear when it is moved to inoperative position, and means for driving the second gear.

10. In combination in a motor velocipede, a driving wheel, a toothed gear for driving the wheel, a second coöperating toothed gear having its axis movable toward and from the first gear, stop means for engaging the teeth of the second gear when it is moved to inoperative position, means for moving the second gear to inoperative position and maintaining it in such position, and an operating handle having a driving connection with the second gear.

11. In combination in a vehicle of the character described having a driving wheel, a hand driving lever, driving connections between the lever and wheel, means whereby the handle may be thrown out of driving connection with the wheel and means whereby the handle may be locked in any desired position.

12. In combination in a vehicle of the character described, having a driving wheel, a foot driving means, driving connections between the foot driving means and wheel, means whereby the foot driving means may be thrown out of driving connection with the wheel, and means whereby the foot driving means may be locked in any desired position.

13. In combination in a vehicle of the character described having a driving wheel,

hand and foot driving means, driving connections between the driving means and the wheel, means whereby the driving means may be thrown out of driving connection with the wheel, and means whereby the driving means may be locked in any desired position.

In testimony whereof I have hereunder signed my name in the presence of the subscribed witnesses.

MERRILL L. JENKINS.

Witnesses:

JOHN L. WALKER,

C. K. WHITTINGTON.