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No. 876,058.

PATENTED JAN. 7, 1908.

W. S. HOVEY.
RAILWAY MOTOR VELOCIPED.
APPLICATION FILED FEB. 23, 1907.

3 SHEETS-SHEET 1.

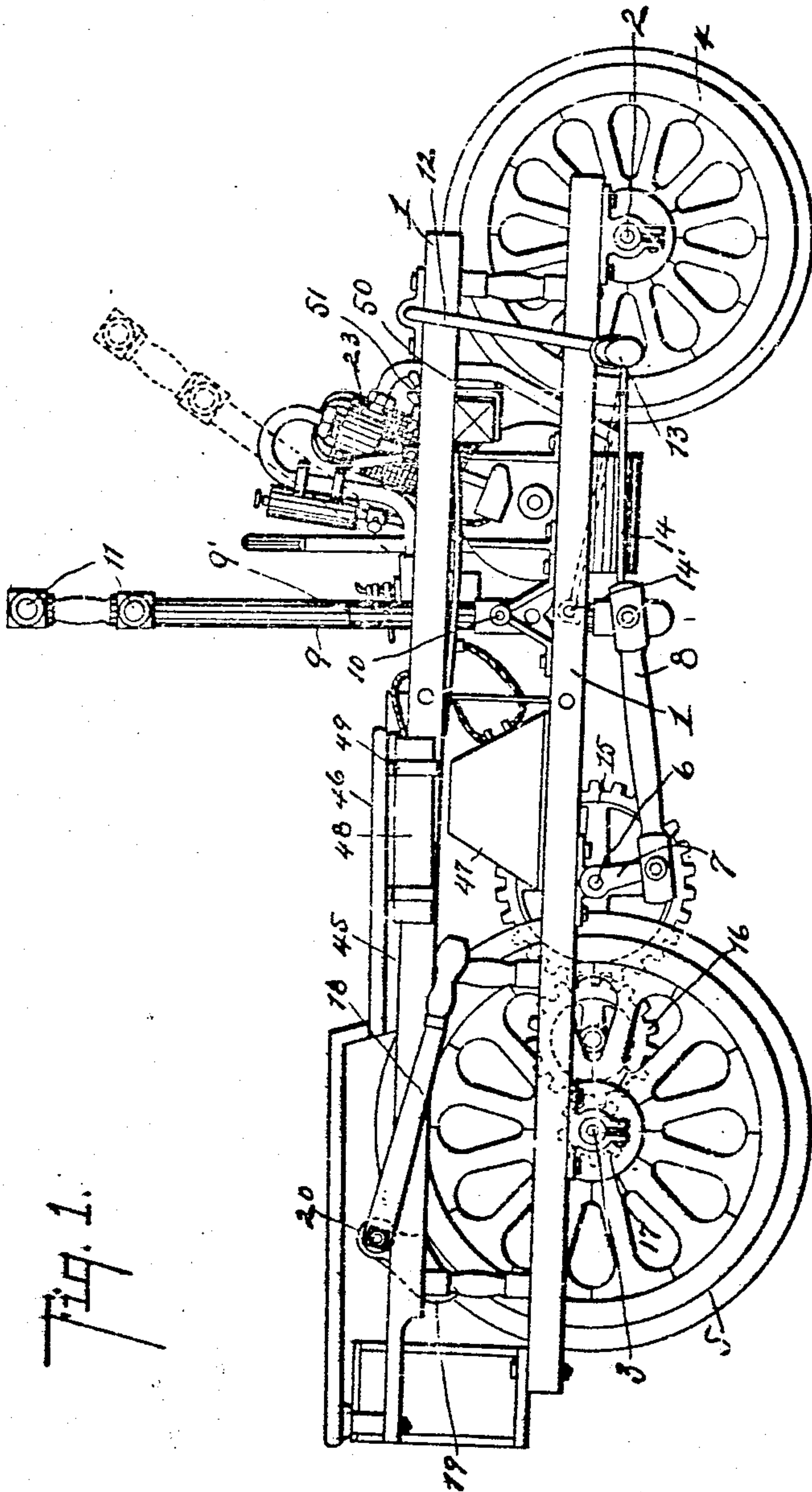


Fig. 1.

Witnesses:

Lulu Greenfield
A. S. Smith

Inventor,

William S. Hovey
By Chaffell Hall

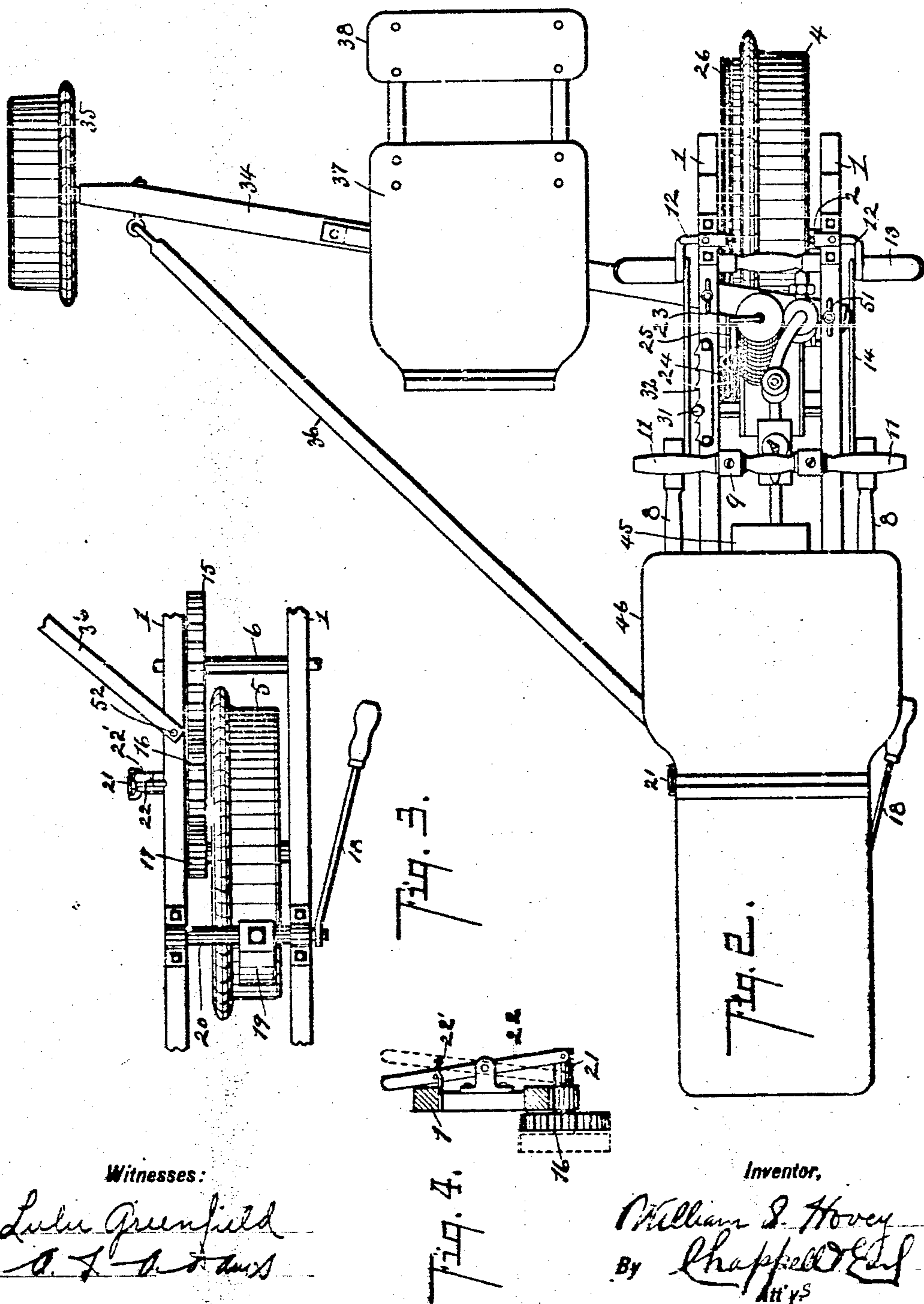
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3 SHEETS—SHEET 2.



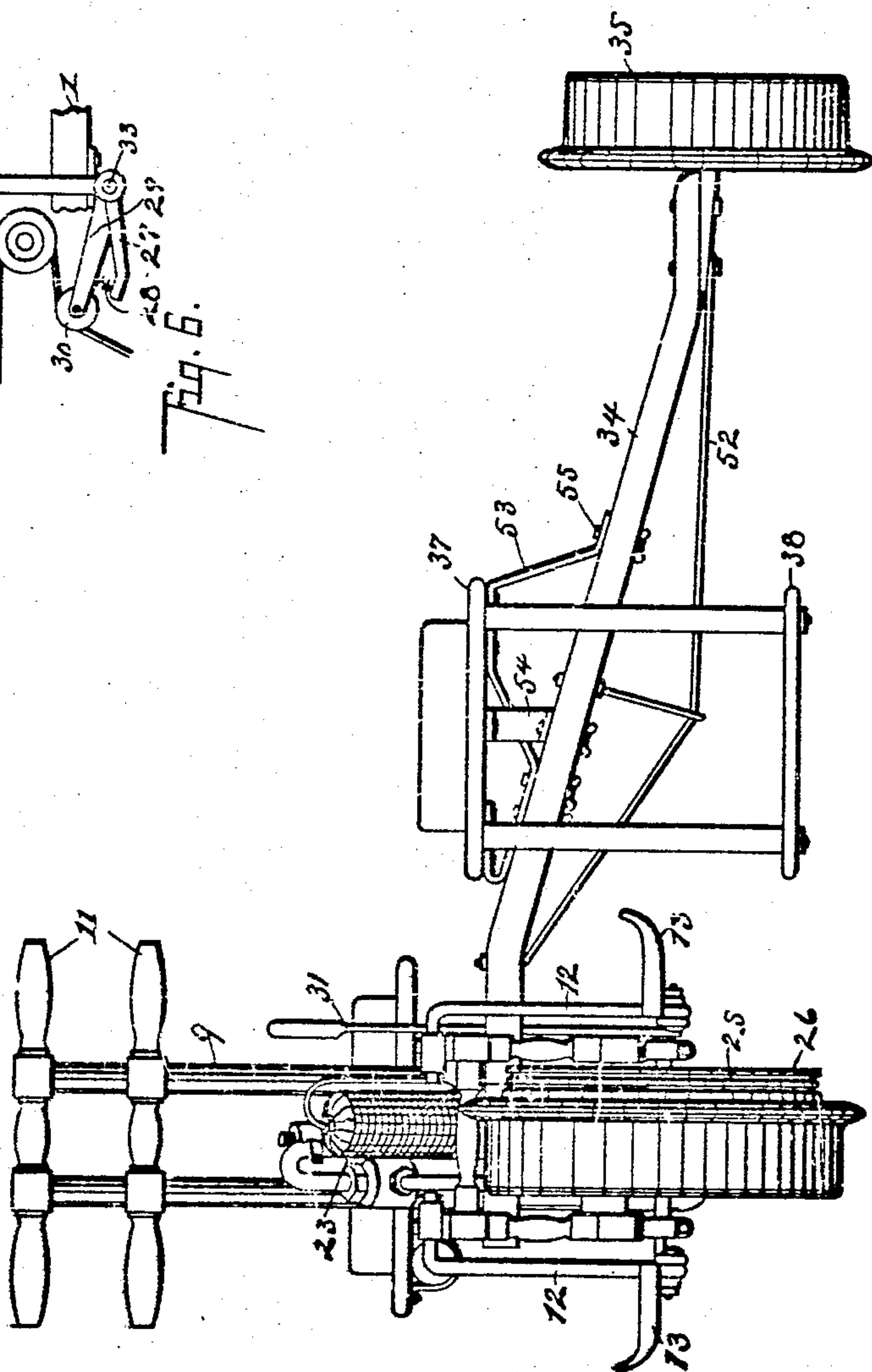
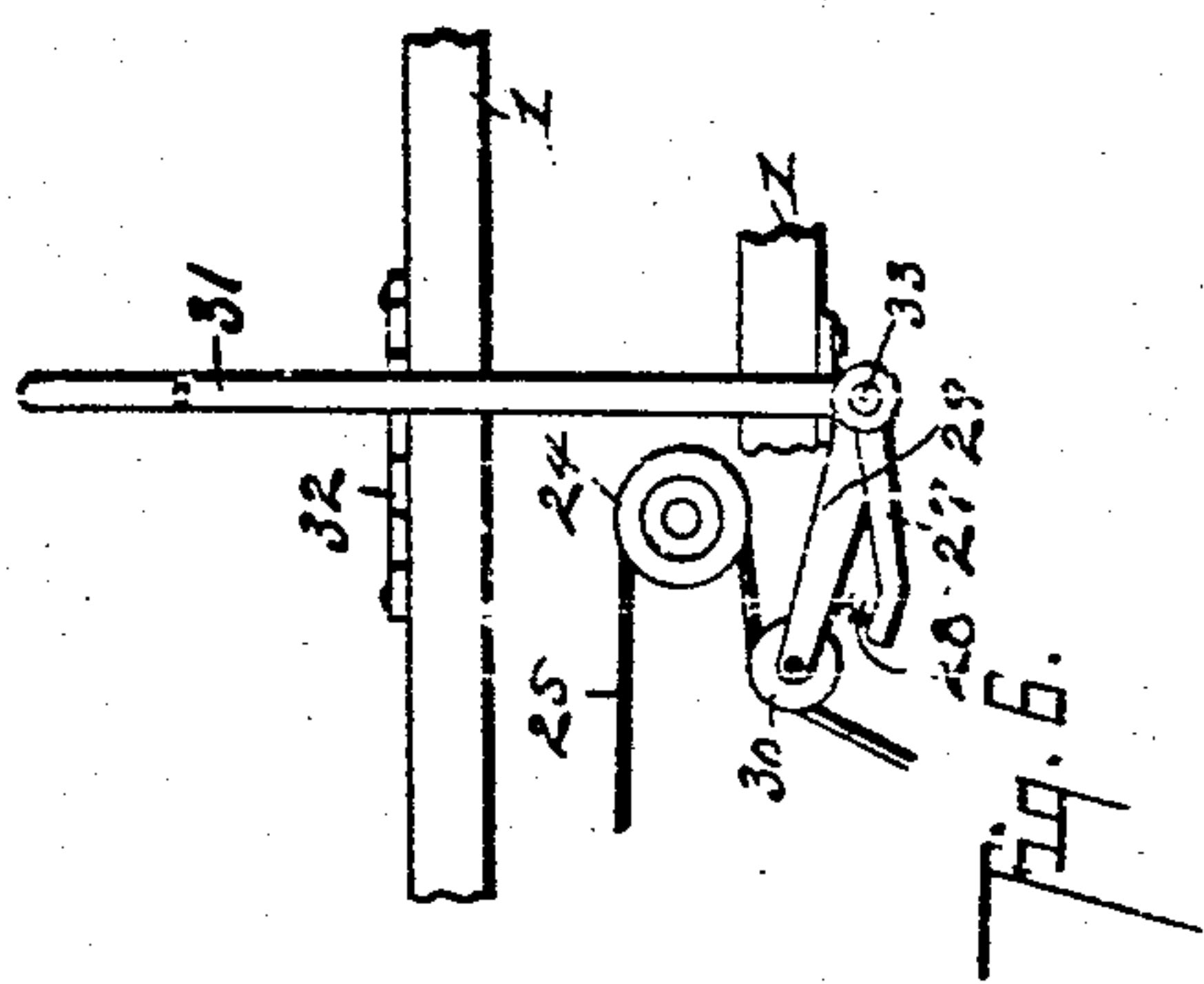
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3 SHEETS—SHEET 3.



Witnesses:

Lulu Greenfield
A. J. A. Ande

Fig. 5.

Inventor,

William S. Hovey
By *Chappell Earl*
Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM S. HOVEY, OF THREE RIVERS, MICHIGAN, ASSIGNOR TO THE SHEFFIELD CAR COMPANY, OF THREE RIVERS, MICHIGAN.

RAILWAY MOTOR-VELOCIPEDE.

No. 876,058.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed February 23, 1907. Serial No. 358,950.

To all whom it may concern:

Be it known that I, WILLIAM S. HOVEY, a citizen of the United States, residing at the village of Three Rivers, county of St. Joseph, State of Michigan, have invented certain new and useful Improvements in Railway Motor-Velocipedes, of which the following is a specification.

This invention relates to improvements in railway motor velocipedes.

The main objects of this invention are, first, to provide an improved railway motor velocipede which is very compact and light in weight, and, at the same time, one possessing sufficient strength for the use required. Second, to provide an improved railway motor velocipede, in which the engine, which is of the explosion type, may be readily started. Third, to provide an improved railway motor velocipede which may be connected to be driven either manually or by the engine, and one which may be quickly adjusted for the use of either power. Fourth, to provide an improved railway motor velocipede in which the parts are effectively balanced and the engine located so as to be fully protected.

Further objects, and objects relating to details of construction, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the feature of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which,

Figure 1 is a side elevation of my improved railway motor velocipede. Fig. 2 is a plan thereof. Fig. 3 is a detail plan showing the rear wheels and driving connections thereto, the seat and disk being removed. Fig. 4 is an enlarged detail vertical section showing the shifting or adjustable gear for the driving connection to the hand lever. Fig. 5 is a front elevation of my improved railway motor velocipede. Fig. 6 is an enlarged detail side elevation showing the structural details of the belt tightener, by which the engine is connected to the driving or traction wheels 4.

In the drawing, similar reference numerals refer to similar parts throughout the several views.

Referring to the drawing, the frame preferably consists of the top and bottom side rails 1 connected by suitable vertical and transversely-arranged cross-pieces.

The axles 2 and 3 for the traction wheels 4 and 5, respectively, are arranged in suitable bearings carried by the bottom side rails. Arranged across the frame in front of the rear traction wheel 5 is a crank shaft 6, which is provided with a crank arm 7, which crank arm is connected by the pitman 8 to the lower ends of the hand lever 9. This lever is pivoted or fulcrumed at 10.

The hand lever 9 is bifurcated and is provided with two pairs of handles 11 at its upper end; see Fig. 5. The upper portion of the lever is preferably made detachable, coupling sockets 9' being provided, so that it can be removed, if desired, to afford more convenient access to the engine by the operator when occupying the seat behind the hand lever.

The foot rests 13 are carried by suitable pivoted links 12. The foot rests are adapted to be connected to the pitman 8 by means of the links 14, so that the car may be driven entirely by the feet, or by the feet and hands of the operator. The links 14 are detachably connected to the pitman so that they may be hooked upon the pins 14', when it is desired to use the foot rests solely as rests, as is desirable when the car is driven by the engine.

The crank shaft 6 is connected to the axle 3 of the rear traction wheel 5 by a train of gears, preferably consisting of the gear 15, mounted on the crank shaft, and the gear 17 mounted on the axle, and the intermediate or connecting gear 16. The shaft 21 for the gear 16 is slidably-arranged in its bearings, so that the gear may be shifted into or out of mesh with the gears 15 and 17, to connect or disconnect the drive, as desired. The shaft 21 is preferably shifted by means of the lever 22, connected to the outer end thereof; see Fig. 4.

A spring catch 22' is provided for holding this lever in or out of its operative position. This affords a convenient arrangement, whereby the crank shaft may be readily connected or disconnected to the rear traction wheel 5. It is evident that this might be effected by a suitable clutch mechanism for some one of the gears of the train.

I preferably provide a brake shoe 19 for

the rear traction wheel, the shoe being mounted on the rock shaft 20, which is operated by the lever 18.

To the rear of the front traction wheel and just in advance of the hand lever 9 I arrange an engine 23. The engine is mounted on a suitable cross-piece and is arranged centrally between the side rails of the frame. On the crank shaft of the engine is a belt pulley 24, which I connect by the belt 25 to the belt rim 26 provided on the inside of the front traction wheel. This hand lever 9 is bifurcated, as stated, so that it straddles the engine when in its forward position, which enables the compact arrangement of the parts.

I provide a belt tightener for the belt 25, preferably consisting of the rock shaft 33, which is operated by the upwardly-projecting hand lever 31, a suitable rack 32 being provided for holding this lever in its adjusted position. On the rock shaft 33 is an arm 29, having a pulley 30 on its outer end adapted to engage the belt. The arm 29 is loosely mounted and is held yieldingly in position by the coiled spring 28, which is carried by the arm 29 fixed to the rock shaft. The spring 28 is thus located at the outer end of the arm 29, close to the pulley 30.

It is evident that the car may be driven through the hand levers and foot rests, or through either means, or by the engine.

In starting the engine, the gear 16 may be shifted into mesh and the car started through manipulation of the hand lever, or by means of the feet, or by pushing the car, as desired. By tightening the belt, the engine is cranked up to start the same, after which the gear 16 may be thrown out of mesh and the car driven entirely by the engine. The upper detachable portion of the hand lever may be removed, if desired, so that the operator has free access to the engine.

I preferably locate the gasoline tank 45 under the seat 46, the same being preferably suspended therefrom. The battery 47 is also arranged under the seat, the same being preferably supported on the bottom frame rails. The battery coil 48 is also located under the seat, the same being preferably suspended therefrom by the hangers 49.

By arranging the parts as I have illustrated, the engine and driving mechanism is inclosed by the main frame, and is protected thereby.

The third wheel 35 is mounted on the other end of the bar 34, which is detachably connected to the main frame by means of the clips 50, the clips being provided with suitable winged nuts 51, so that the bars may be readily removed. The brace 36 for the bar 34 is detachably connected to the main frame by the pin or bolt 52; see Fig. 3. The bar 34 is provided with a truss-rod 52.

On the bar 34, I preferably mount a detachable seat 37, a suitable bracket 53 being

provided therefor. This bracket and also the brace 54 are detachably connected to the bar by means of the bolts 55. The seat 37 is provided with a suitable foot rest 38.

I have illustrated and described my improved motor railway velocipede in detail in the form preferred by me on account of the structural simplicity and economy, although I am aware that it is capable of considerable variation in structural details without departing from my invention, and I desire to be understood as claiming the same specifically, as illustrated, as well as broadly.

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

1. In a structure of the class described, the combination of the frame comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; a train of gears connecting said crank shaft to the axle of the rear traction wheel, one of the gears of which is adjustably mounted, so that it may be adjusted to connect or disconnect said gears; a bifurcated hand lever arranged between the said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat, the said hand lever being adapted to straddle said engine when in operation; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating lever for said tightener; a gasoline supply reservoir and battery for said engine located beneath said seat; and a third wheel detachably connected to said frame, for the purpose specified.

2. In a structure of the class described, the combination of the frame comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; a train of gears connecting said crank shaft to the axle of the rear traction wheel, one of the gears of which is adjustably mounted, so that it may be adjusted to connect or disconnect said gears; a bifurcated hand lever arranged between the said side rails of said frame; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said

hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat, said hand lever being adapted to straddle said engine in operation; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating lever for said tightener; a gasoline supply reservoir and battery for said engine located beneath said seat; and a third wheel detachably connected to said frame, for the purpose specified.

3. In a structure of the class described, the combination of the frame comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; a train of gears connecting said crank shaft to the axle of the rear traction wheel, one of the gears of which is adjustably mounted, so that it may be adjusted to connect or disconnect said gears; a bifurcated hand lever arranged between the said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat, the said hand lever being adapted to straddle said engine in operation; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating lever for said tightener; a gasoline supply reservoir and battery for said engine located beneath said seat; and a third wheel detachably connected to said frame, for the purpose specified.

4. In a structure of the class described, the combination of the frame, comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the traction wheel; a train of gears connecting said crank shaft to the axle of the rear traction wheel, one of the gears of which is adjustably mounted, so that it may be adjusted to connect or disconnect said gears; a bifurcated hand lever arranged between the said side rails of said frame; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in

front of the said seat, the said hand lever being adapted to straddle said engine in operation; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating lever for said tightener; a gasoline supply reservoir and battery for said engine located beneath said seat; and a third wheel detachably connected to said frame, for the purpose specified.

5. In a structure of the class described, the combination of the frame comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; a train of gears connecting said crank shaft to the axle of the rear traction wheel, one of the gears of which is adjustably mounted, so that it may be adjusted to connect or disconnect said gears; a hand lever arranged between the said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating lever for said tightener, and a third wheel detachably connected to said frame, for the purpose specified.

6. In a structure of the class described, the combination of the frame comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; a train of gears connecting said crank shaft to the axle of the rear traction wheel, one of the gears of which is adjustably mounted, so that it may be adjusted to connect or disconnect said gears; a hand lever arranged between the said side rails of said frame; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating

lever for said tightener, and a third wheel detachably connected to said frame, for the purpose specified.

7. In a structure of the class described, the combination of the frame, comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; a train of gears connecting said crank shaft to the axle of the rear traction wheel, one of the gears of which is adjustably mounted, so that it may be adjusted to connect or disconnect said gears; a hand lever arranged between the said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating lever for said tightener; and a third wheel detachably connected to said frame, for the purpose specified.

8. In a structure of the class described, the combination of the frame, comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; a train of gears connecting said crank shaft to the axle of the rear traction wheel, one of the gears of which is adjustably mounted, so that it may be adjusted to connect or disconnect said gears; a hand lever arranged between the said side rails of said frame; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating lever for said tightener; and a third wheel detachably connected to said frame, for the purpose specified.

9. In a structure of the class described, the combination of the frame comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle of the rear traction wheel; means for connecting or disconnecting said driving connections; a hand lever arranged between the

said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; a belt rim on the inner side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating lever for said tightener; and a third wheel detachably connected to said frame, for the purpose specified.

10. In a structure of the class described, the combination of the frame comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle of the rear traction wheel; means for connecting or disconnecting said driving connections; a hand lever arranged between the said side rails of said frame; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; an operating lever for said tightener; and a third wheel detachably connected to said frame, for the purpose specified.

11. In a structure of the class described, the combination of the frame comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle of the rear traction wheel; means for connecting or disconnecting said driving connections; a hand lever arranged between the said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; a belt rim on the inner side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an op-

erating lever for said tightener; and a third wheel detachably connected to said frame, for the purpose specified.

12. In a structure of the class described, the combination of the frame comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle of the rear traction wheel; means for connecting or disconnecting said driving connections; a hand lever arranged between the said side rails of said frame; a pitman connecting said hand lever to said crank shaft; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a tightener for said belt; an operating lever for said tightener; and a third wheel detachably connected to said frame, for the purpose specified.

13. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle for said rear traction wheel; means for connecting or disconnecting said driving connections; a bifurcated hand lever arranged between the said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat, said hand lever being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; and means for connecting or disconnecting said driving connections, for the purpose specified.

14. In a structure of the class described, the combination of the frame, comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle for said rear traction wheel; means for connecting or disconnecting said driving connections; a bifurcated hand lever arranged between the said side rails of said frame; a pitman connecting said hand lever

to said crank shaft; an operator's seat arranged at the rear of said hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; driving connections for said engine to the forward traction wheel; and means for connecting or disconnecting said driving connections, for the purpose specified.

15. In a structure of the class described, the combination of the frame, comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle for said rear traction wheel; means for connecting or disconnecting said driving connections; a bifurcated hand lever arranged between the said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat, said hand lever being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; and means for connecting or disconnecting said driving connections, for the purpose specified.

16. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle for said rear traction wheel; means for connecting or disconnecting said driving connections; a bifurcated hand lever arranged between the said side rails of said frame; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; driving connections for said engine to the forward traction wheel; and means for connecting or disconnecting said driving connections, for the purpose specified.

17. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely

of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle for said rear traction wheel; means for connecting or disconnecting said driving connections; a hand lever arranged between the said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat, said hand lever being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; and means for connecting or disconnecting said driving connections, for the purpose specified.

18. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle for said rear traction wheel; means for connecting or disconnecting said driving connections; a hand lever arranged between the said side rails of said frame; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; foot rests; supporting links for said foot rests; links whereby said foot rests may be detachably connected to said pitman; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; driving connections for said engine to the forward traction wheel; and means for connecting or disconnecting said driving connections, for the purpose specified.

19. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle for said rear traction wheel; means for connecting or disconnecting said driving connections; a hand lever arranged between the said side rails of said frame, the upper portion of said hand lever being detachable; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat, said hand lever

being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; and means for connecting said driving connections, for the purpose specified.

20. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a crank shaft arranged transversely of said frame in front of the rear traction wheel; driving connections for said crank shaft to the axle for said rear traction wheel; means for connecting or disconnecting said driving connections; a hand lever arranged between said side rails of said frame; a pitman connecting said hand lever to said crank shaft; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said seat; driving connections for said engine to the forward traction wheel; and means for connecting or disconnecting said driving connections, for the purpose specified.

21. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a bifurcated hand lever, the upper portion of which is detachable; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever, said hand lever being adapted to straddle said engine in operation; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; driving belt; a belt tightener for said driving belt; and an operating lever for said tightener, for the purpose specified.

22. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a hand lever, the upper portion of which is detachable; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a belt tightener for said driving belt; and an operating lever for said tightener, for the purpose specified.

23. In a structure of the class described, the combination of the frame, comprising

side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a bifurcated hand lever; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever, said hand lever being adapted to straddle said engine in operation; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a belt tightener for said driving belt; and an operating lever for said tightener, for the purpose specified.

24. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a hand lever; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a belt tightener for said driving belt; and an operating lever for said tightener, for the purpose specified.

25. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a bifurcated hand lever, the upper portion of which is detachable; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever, said hand lever being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; means for connecting or disconnecting said driving connections; a gasoline supply reservoir and battery for said engine located beneath said seat; and a third wheel detachably connected to said frame, for the purpose specified.

26. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a bifurcated hand lever, the upper portion of which is detachable; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the

front traction wheel and in front of the said hand lever, said hand lever being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; means for connecting or disconnecting said driving connections; and a third wheel detachably connected to said frame, for the purpose specified.

27. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a bifurcated hand lever, the upper portion of which is detachable; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever, said hand lever being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; means for connecting or disconnecting said driving connections; and a gasoline supply reservoir and battery for said engine located beneath said seat, for the purpose specified.

28. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a bifurcated hand lever, the upper portion of which is detachable; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever, said hand lever being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; and means for connecting or disconnecting said driving connections, for the purpose specified.

29. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a hand lever; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever; driving connections for said engine to the forward traction wheel; means for connecting or disconnecting said driving connections; a gasoline supply reservoir and battery for said engine located beneath said seat; and a third wheel detachably connected to said frame, for the purpose specified.

30. In a structure of the class described,

the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a hand lever; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever; driving connections for said engine to the forward traction wheel; means for connecting or disconnecting said driving connections; and a third wheel detachably connected to said frame, for the purpose specified.

31. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a hand lever; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever; said hand lever being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; means for connecting or disconnecting said driving connections; and a gasoline supply reservoir and battery for said engine located beneath said seat, for the purpose specified.

32. In a structure of the class described, the combination of the frame, comprising side rails connected by cross pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; a hand lever; driving connections for said hand lever to the rear axle; an operator's seat arranged at the rear of said hand lever; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said hand lever, said hand lever being adapted to straddle said engine in operation; driving connections for said engine to the forward traction wheel; and means for connecting or disconnecting said driving connections, for the purpose specified.

33. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; an operator's seat; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said operator's seat; a belt rim on the side of the said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a belt tightener for said driving belt; an operating lever for said tightener; a gasoline supply reservoir

and battery for said engine located beneath said seat; and a third wheel detachably connected to said frame, for the purpose specified.

34. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; an operator's seat; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of said operator's seat; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a belt tightener for said driving belt; an operating lever for said tightener; and a gasoline supply reservoir and battery for said engine located beneath said seat, for the purpose specified.

35. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; an operator's seat; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said operator's seat; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a belt tightener for said driving belt; an operating lever for said tightener; and a third wheel detachably connected to said frame, for the purpose specified.

36. In a structure of the class described, the combination of the frame, comprising side rails connected by cross-pieces; a pair of traction wheels arranged between the side rails of said frame at the front and rear ends thereof; an operator's seat; an engine arranged between the side rails of said frame at the rear of the front traction wheel and in front of the said operator's seat; a belt rim on the side of said forward traction wheel; a belt pulley on the crank shaft of said engine; a driving belt; a belt tightener for said driving belt; and an operating lever for said tightener, for the purpose specified.

37. In a structure of the class described, the combination of a frame comprising side rails connected by suitable cross-pieces; a pair of traction wheels arranged between said frame and side rails; a third carrying wheel connected to said side rails by a detachable bar; a seat mounted on said frame; and a seat mounted on said bar.

38. In a structure of the class described, the combination with a frame, of traction wheels and motor, a hand-power driving mechanism, and a foot-power driving mechanism, arranged and connected so that the car may be propelled either by the motor hand-power or foot-power, or any combination thereof, as desired.

39. In a structure of the class described, the combination of a frame; traction wheels; an engine; driving connections therefor to one of said traction wheels; a hand lever; 5 driving connections therefor to one of the traction wheels; and means for connecting or disconnecting said driving connections for said hand lever and engine.

40. In a structure of the class described, 10 the combination of a frame; traction wheels; an engine; driving connections for said engine to one of said traction wheels; a separable hand lever; driving connections therefor to one of said traction wheels pivotally- 15 supported foot rests; detachable connections therefor to said hand lever; and means for connecting or disconnecting said driving connections.

41. In a structure of the class described, the combination of a frame; traction wheels; 20 an engine; driving connections for said engine to one of said traction wheels; a hand lever; driving connections therefor to one of said traction wheels; pivotally-supported foot-rests; detachable connections there- 25 for to said hand lever; and means for connecting or disconnecting said driving connections.

In witness whereof, I have hereunto set my hand and seal in the presence of two wit- 30 nesses.

WILLIAM S. HOVEY. [L. s.]

Witnesses:

O. P. EDGETT,
E. J. GODSHALK.