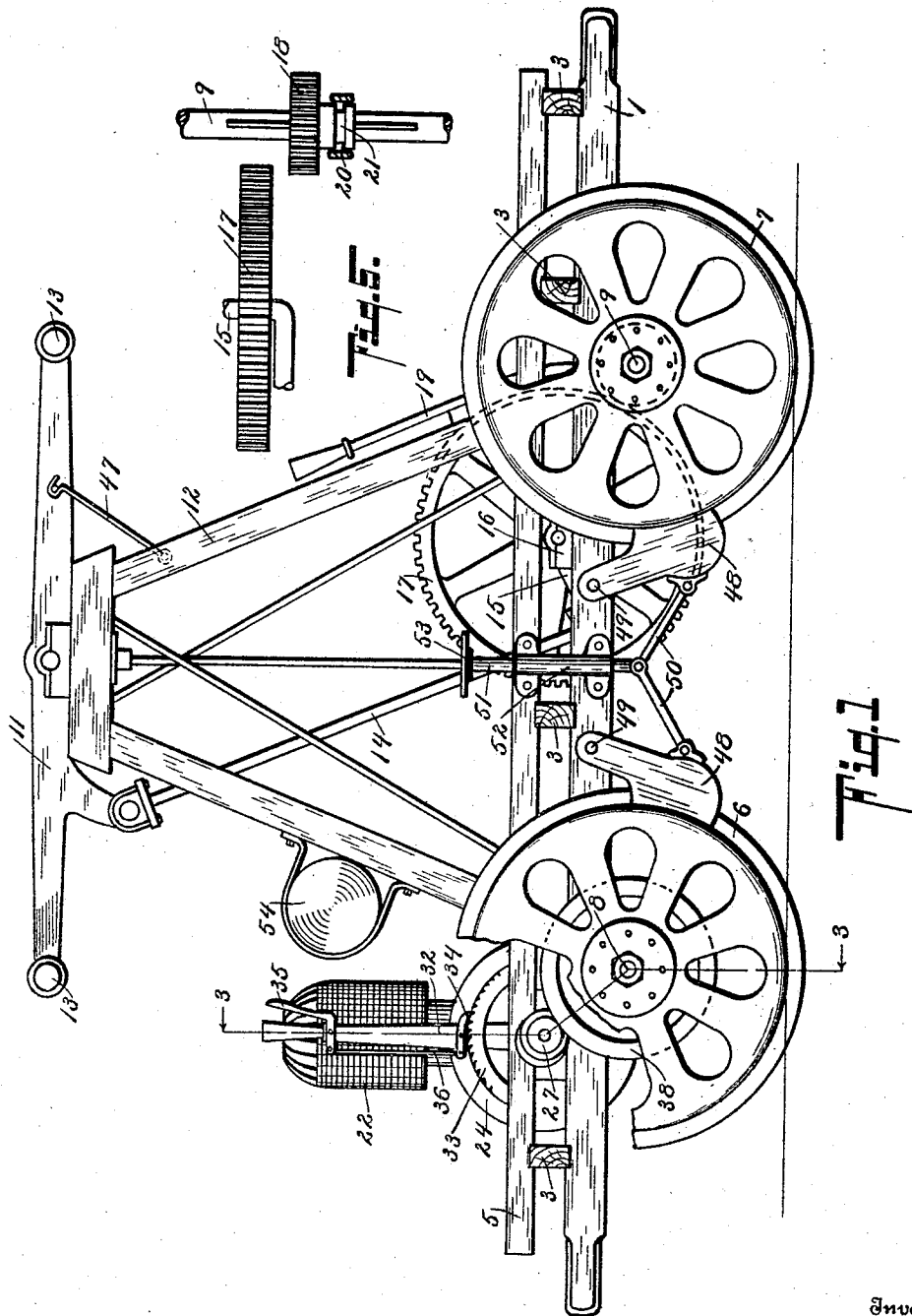


W. S. HOVEY & M. H. RIX.
RAILWAY MOTOR HAND CAR.
APPLICATION FILED MAR. 11, 1909.

944,557.

Patented Dec. 28, 1909.
4 SHEETS—SHEET 1.



Witnesses
Clara Ellen Braden
Gertrude Tallman

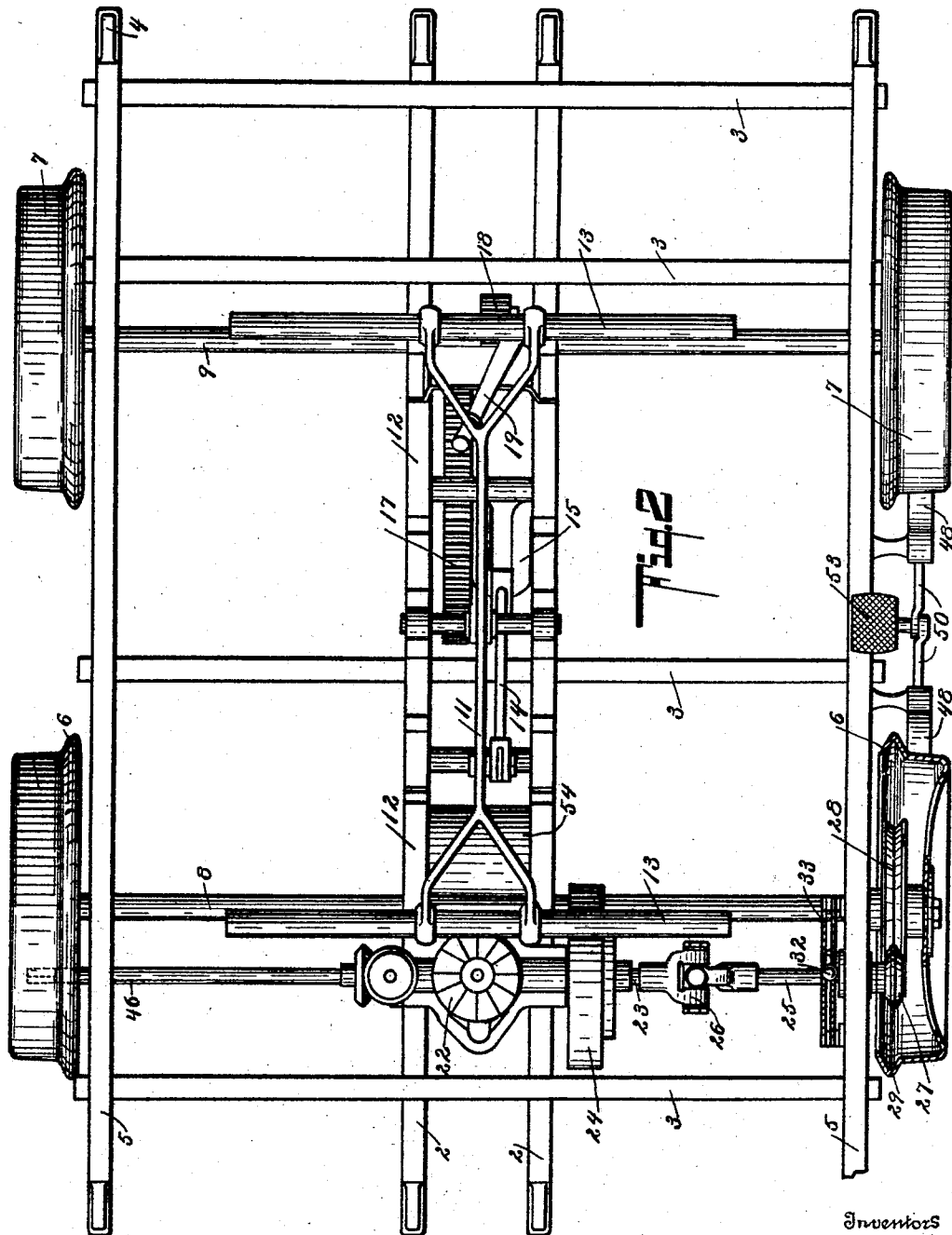
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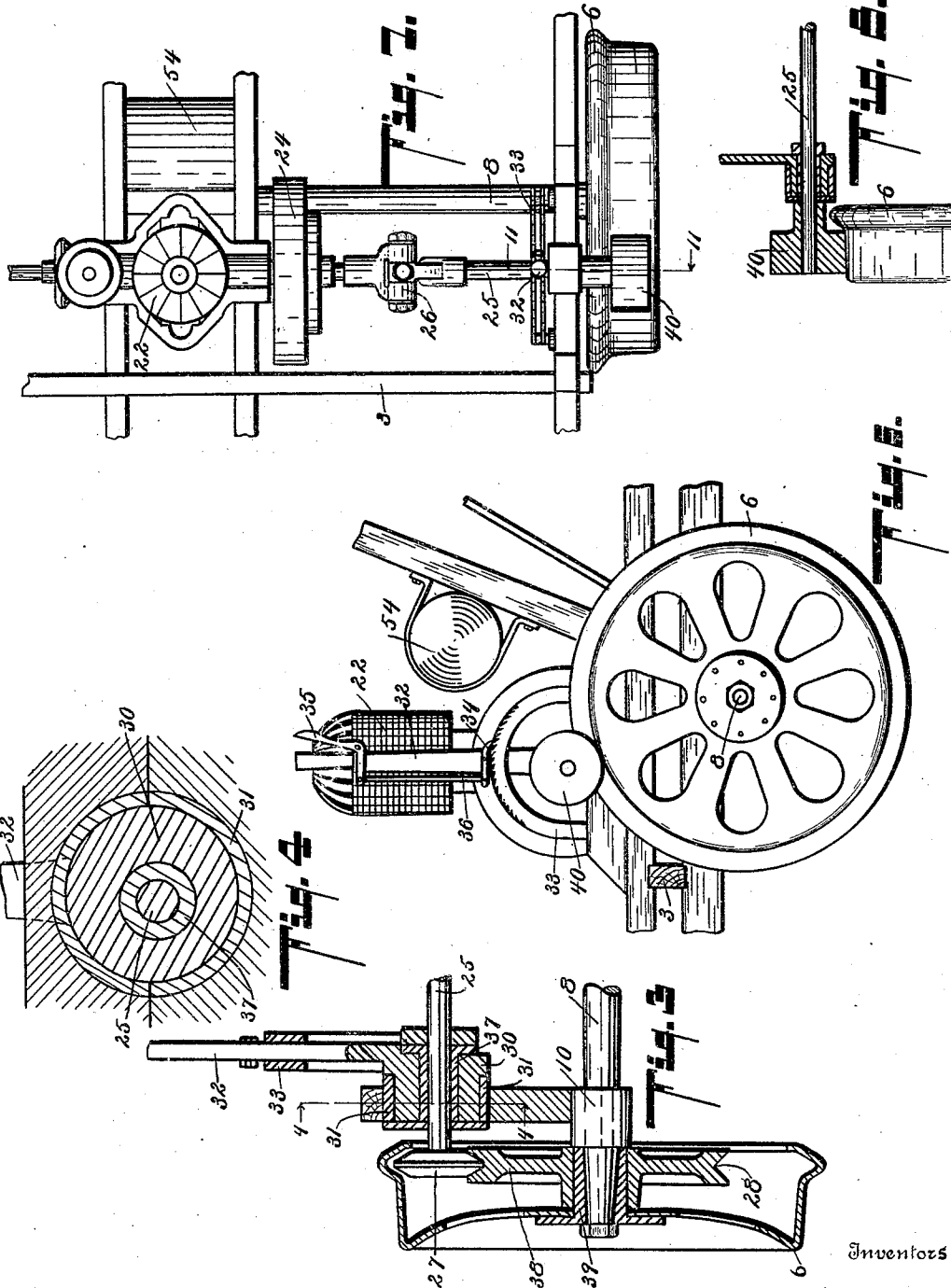
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4 SHEETS—SHEET 3.



Witnesses
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Gertrude Tallman

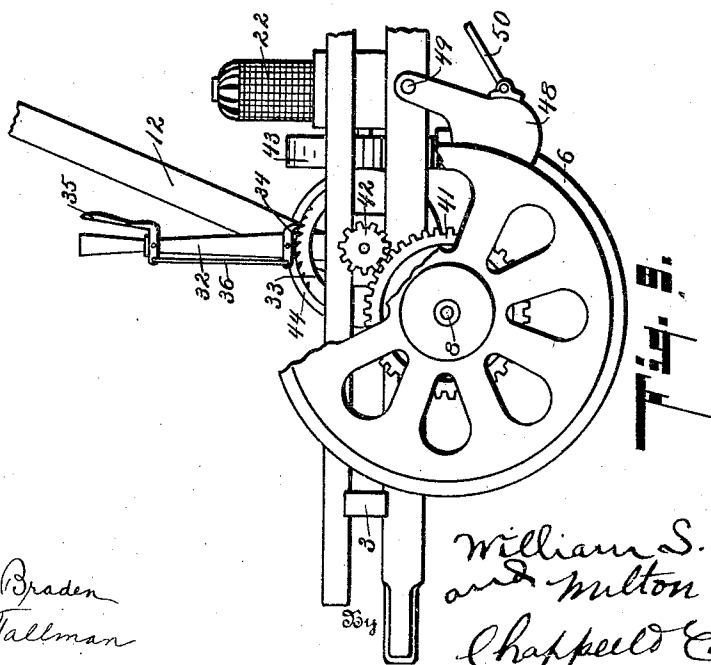
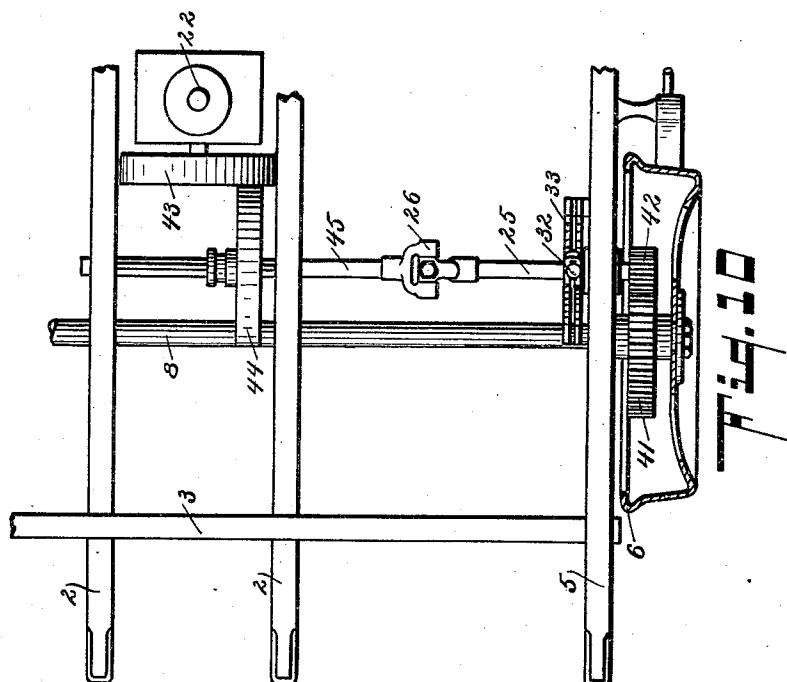
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4 SHEETS—SHEET 4.



Witnesses
Clara Edlyn Braden
Gertrude Tallman

Inventors
William S. Hovey
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UNITED STATES PATENT OFFICE.

WILLIAM S. HOVEY AND MILTON H. RIX, OF THREE RIVERS, MICHIGAN, ASSIGNORS
TO SHEFFIELD CAR COMPANY, OF THREE RIVERS, MICHIGAN.

RAILWAY MOTOR HAND-CAR.

944,557.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed March 11, 1909. Serial No. 482,786.

To all whom it may concern:

Be it known that we, WILLIAM S. HOVEY and MILTON H. RIX, citizens of the United States, residing at Three Rivers, Michigan, have invented certain new and useful Improvements in Railway Motor Hand-Cars, of which the following is a specification.

This invention relates to improvements in railway motor hand cars.

The objects of this invention are: First, to provide in a hand car an improved construction in which the engine is conveniently arranged and located and effectively connected to the traction wheels. Second, to provide an improved motor hand car which is very simple and economical in structure, and one in which the driving connections are so arranged that they are not likely to be injured or disarranged in the lifting of the car to and from the tracks under various conditions, such as occur in practical use in the manipulation of a car of this type. Third, to provide a construction of motor hand cars in which there is little or no modification of the standard hand car in installing the motor, the parts being so arranged that changes in mechanism are slight and the car is substantially unencumbered when the engine is out of commission and the car is being drawn by hand.

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

We accomplish the objects of our 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 features of our invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure 1 is a side elevation of a structure embodying the features of our invention, a portion of one of the traction wheels being broken away to show the relation of the parts. Fig. 2 is a plan view of the car with the deck removed. Fig. 3 is a detail vertical section, taken on a line corresponding to the broken line 3—3 of Fig. 1, showing details of the friction drive and means of controlling the same. Fig. 4 is an enlarged detail sectional view, taken on a line correspond-

ing to line 4—4 of Fig. 3, showing the means for throwing the engine driving mechanism into and out of gear. Fig. 5 is a detail of the driving gear connections for the walking-beam to the traction wheels, the same being adapted to be disconnected, and shown in the accompanying drawing with the connection broken. Fig. 6 is a detail side elevation of a modified form of the drive, the tread being made use of as the friction member of the traction wheel, and the driving member being arranged outside the wheel. Fig. 7 is a detail plan view of the structure appearing in Fig. 6. Fig. 8 is a detail, partially in section, taken on a line corresponding to line 11—11 of Fig. 7. Fig. 9 is a detail side elevation of a further modification, spur gears being used instead of the friction gears shown in the other figures. Fig. 10 is a detail plan view of the structure appearing in Fig. 9.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the body of our improved motor hand car preferably consists of the longitudinal sills 1—1 and 2—2, the sills 1 being the outer or side sills, and the sills 2 being the inner sills, arranged quite close together and forming the supports for the engine and the walking-beam driving mechanism. These sills are connected by cross pieces 3. The sills are provided at their ends with hand pieces 4, with which the car is lifted to and from the track. The car deck, which is not illustrated in any of the figures, excepting Fig. 1, is laid upon these cross sills, which are laid on top of the longitudinal sills. The platform is provided with side bars 5, which are arranged upon the cross pieces, as clearly appears from the drawing, thus making a light, but rigid, frame. This is a standard and common construction of hand car.

The traction wheels 6 and 7 are secured to the axles 8 and 9, respectively, suitable bearing, as 10, being provided on the one side of the outer longitudinal sills 1. The axle 9 is driven from the walking-beam 11. This walking-beam is mounted upon the gallow's frame 12, which is mounted upon the central

sills 2, to project up through the platform. The details of the connections of the gears, such as bolts, and the like are not here illustrated as the same will be readily understood. The gallows frame 12 carries the hand lever or walking beam 11, with handles 13 at each end, and connected by the connecting rod 14 to the crank shaft 15 mounted in suitable bearings, as 16, on the central pair of sills. This is a usual and standard construction.

On the crank shaft 15 is a gear 17. On the axle 9 is a pinion 18 which is adapted to be slipped into mesh with the gear 17. A shift lever 19 for the pinion 18 is arranged at one side of the gallows frame, (see Fig. 1), and is provided with forks 20 at its lower end to engage the groove 21 in the hub of the wheel 18, which is splined upon the axle, (see Fig. 5). By this means, the walking beam, or hand driving means, can be readily thrown into and out of gear.

The engine is arranged in front of the gallows frame, the engine being mounted on the central longitudinal sills 2 and arranged in an opening through the platform of the car. The crank shaft is provided with a suitable balance wheel 24, which also projects through the platform. In this arrangement of the parts, the engine does not project below the platform sufficiently to be likely to be damaged in the handling of the car. The engine shaft 23 is connected to the driving shaft 25 by a universal joint 26, which enables the throwing of the friction driving gear 27 into driving engagement with the friction gear 28 on the hub of one of the traction wheels 6, or into driving engagement with the flange or tread of the wheel.

The driving shaft 25 has a bearing in the eccentric block 30 which is adjustable in the support 31. A hand lever 32, which projects up through the platform is provided for adjusting the block 30. A latch 34, preferably in the form of a pawl, engages the notched segment 33 to lock the lever in place. The latch is controlled by a hand piece 35 on said lever, which is connected to the latch by the rod 36. The eccentric block 30 is preferably provided with a bushing 37 for the shaft, and is embraced by a bushing 31. The friction gear 38 is secured upon the hub 39 of the traction wheel, the periphery of the gear being preferably V-shaped or convex in cross section. By this arrangement, the friction gear can be thrown into engagement with the friction wheel on the hub, or an appropriate friction surface of the tread or flange and the car can be quickly reversed, at a different speed, however. This variation of speed, however, is not of great importance in a structure of this kind, which can be readily turned about. It is sometimes found very desir-

able to drive the car backward for a short distance without turning it around, especially where it is operated by one man or where a short trip in the reverse direction is to be made. By this arrangement, the car can be driven by the combined action of the engine and the walking-beam, or by either. The fuel tank 54 is supported on the front of the gallows frame. The engine is preferably an explosion engine. Our invention enables the application of an engine to bodies of hand cars of the usual standard construction without great expense, and without materially modifying the same.

In the modified construction shown in Figs. 6, 7 and 8, the friction wheel 40 is arranged to engage the exterior tread surface of the traction wheel 7.

In the modification illustrated in Figs. 9 and 10, toothed gears are provided instead of the friction gears. A spur gear 41 is secured to the hub of the traction wheel in place of the friction gear 38, and a spur gear 42 is substituted for the friction gear 27. The reverse in this construction is secured by providing the engine shaft with a friction driving wheel 43 with which the driving wheel 44 on the shaft 45 is arranged to engage. The gear 44 is arranged to slide on the shaft 45 and may be moved past the center of the gear 43, thus controlling and reversing the same. The shaft 25 is connected to the shaft 45 by means of a universal joint 26, the shaft 25 being here supported by an eccentric block the same as in the other structures, so that the pinion 42 may be thrown into and out of engagement with the gear 41.

For convenience in cranking the engine, we preferably provide a cranking shaft 46 which can be engaged with a suitable crank through an opening in the web of the wheel opposite the wheel having the driving connection. The cranking shaft is, in effect, an extension of the engine shaft. The engine can also be started by throwing it into gear after the car has been started by hand. The walking-beam driving connections can be disengaged and the handle bar of the walking-beam then serves as a support for the person riding upon the car. A hook 47 is provided on the gallows frame for locking the walking-beam in a horizontal position. The brake shoes 48 are pivoted at 49 to one of the sills 1 and are connected by the links 50 to the rod 51 which is arranged to reciprocate in the bearing 52, the rod having a foot piece 53 on its upper end, so that, by stepping upon the same, the brake shoes are thrown into engagement. They are so pivoted that their weight tends to throw them out of engagement when the actuating rod is released.

While we have described the engine as in front of the gallows frame, it is clear that it

will be in the rear when the direction of travel is reversed.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In a structure of the class described, the combination with a hand-car provided with the usual gallows frame and hand lever; means for throwing the said hand lever mechanism into and out of gear and locking the lever when disengaged; an explosion engine arranged in front of said gallows frame, centrally of the hand-car and between the front wheels thereof; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged within the tread thereof having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means consisting of a lever and adjusting latch and segment for adjusting the said eccentric block to throw the engine into and out of gear or reverse the same, coacting as specified.

2. In a structure of the class described, the combination with a hand-car provided with the usual gallows frame and hand lever; means for throwing the said hand lever mechanism into and out of gear; an explosion engine arranged in front of said gallows frame, centrally of the hand car and between the front wheels thereof; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged within the tread thereof having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means consisting of a lever and adjusting latch and segment for adjusting the said eccentric block to throw the engine into and out of gear or reverse the same, coacting as specified.

3. In a structure of the class described, the combination with a hand-car provided with the usual gallows frame and hand lever; means for throwing the said hand lever mechanism into and out of gear; an explosion engine arranged in front of said gallows frame, centrally of the hand-car and between the front wheels thereof; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged within the tread thereof having a V-shaped friction surface on its periphery; a fric-

tion driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means consisting of a lever and adjusting latch and segment for adjusting the said eccentric block to throw the engine into and out of gear, coacting as specified.

4. In a structure of the class described, the combination with a hand-car provided with the usual gallows frame and hand lever; means for throwing the said hand lever mechanism into and out of gear; an explosion engine arranged in front of said gallows frame, centrally of the hand-car and between the front wheels thereof; a shaft containing a universal joint driven by said engine, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means consisting of a lever and adjusting latch and segment for adjusting the said eccentric block to throw the engine into and out of gear, coacting as specified.

5. In a structure of the class described, the combination with a hand-car provided with the usual gallows frame and hand lever; means for throwing the said hand lever mechanism into and out of gear and locking the lever when disengaged; an explosion engine arranged in front of said gallows frame, centrally of the hand-car and between the front wheels thereof; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged within the tread thereof having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjusting the said eccentric block to throw the engine into and out of gear or reverse the same, coacting as specified.

6. In a structure of the class described, the combination with a hand-car provided with the usual gallows frame and hand lever; means for throwing the said hand lever mechanism into and out of gear; an explosion engine arranged in front of said gallows frame, centrally of the hand car and between the front wheels thereof; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged within the tread thereof having a V-shaped friction gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and

means for adjusting the said eccentric block to throw the engine into and out of gear or reverse the same, coacting as specified.

7. In a structure of the class described, the
5 combination with a hand-car provided with the usual gallows frame and hand lever; means for throwing the said hand lever mechanism into and out of gear; an explosion engine arranged in front of said gal-
10 lows frame, centrally of the hand-car and between the front wheels thereof; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged
15 within the tread thereof having a V-shaped friction surface on its periphery; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjust-
20 ing the said eccentric block to throw the engine into and out of gear, coacting as specified.

8. In a structure of the class described, the
25 combination with a hand-car provided with the usual gallows frame and hand lever; means for throwing the said hand lever mechanism into and out of gear; an explosion engine arranged in front of said gal-
30 lows frame, centrally of the hand-car and between the front wheels thereof; a shaft containing a universal joint driven by said engine, the interior of said car wheel being provided with an internal V-shaped friction
35 gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjusting the said eccentric block to throw the engine into and out of gear, co-
40 acting as specified.

9. In a structure of the class described, the
combination with a hand-car provided with the usual gallows frame and hand lever; means for throwing the said hand lever
45 mechanism into and out of gear and locking the lever when disengaged; an explosion engine arranged centrally of the hand car and between the front wheels thereof; a shaft containing a universal joint driven by said
50 engine; a friction gear wheel secured to the hub of said traction wheel and arranged within the tread thereof, having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the
55 flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjusting the said
60 eccentric block to throw the engine into and out of gear, or reverse the same, coacting as specified.

10. In a structure of the class described, the combination with a hand car provided
65 with the usual gallows frame and hand lever,

of means for throwing said hand lever mechanism into and out of gear; an explosion engine; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and
70 arranged within the tread thereof, having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the flange or tread thereof; a friction
75 driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjusting the said eccentric block to throw the engine into or out of gear or reverse the same, coacting as specified.

11. In a structure of the class described, the combination with a hand car provided with the usual gallows frame and hand lever, of means for throwing the said hand lever
85 mechanism into and out of gear; an explosion engine; a shaft containing a universal joint driven by said engine; a friction wheel gear arranged within the tread thereof having a V-shaped friction surface on its pe-
90 riphery; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjusting the said eccentric block to throw the engine into and out of gear, co-
95 acting as specified.

12. In a structure of the class described, the combination with a hand car provided with the usual gallows frame and hand lever, of means for throwing the said hand lever
100 mechanism into and out of gear; an explosion engine; a shaft containing a universal joint driven by said engine, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the
105 flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjusting the said eccentric block to throw the engine into
110 and out of gear, coacting as specified.

13. In a structure of the class described, the combination with a hand car, of an explosion engine; a shaft containing a univer-
115 sal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged within the tread thereof, having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-
120 shaped friction gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing said shaft and forming its bearing; and means for adjusting the said eccentric
125 block to throw the engine into or out of gear or reverse the same, coacting as specified.

14. In a structure of the class described, the combination with a hand car, of an en- 130

engine; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged within the tread thereof having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjusting the said eccentric block to throw the engine into and out of gear or reverse the same, coacting as specified.

15. In a structure of the class described, the combination with a hand car, of an engine; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged within the tread thereof, having a V-shaped friction surface on its periphery; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjusting the said eccentric block to throw the engine into and out of gear, coacting as specified.

16. In a structure of the class described, the combination with a hand car, of an engine; a shaft containing a universal joint driven by said engine, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; an eccentric block embracing the said shaft and forming its bearing; and means for adjusting the said eccentric block to throw the engine into and out of gear, coacting as specified.

17. In a structure of the class described, the combination with a hand car provided with the usual gallows frame and hand lever, of means for throwing the said hand lever mechanism into and out of gear and locking the lever when disengaged; an engine; a shaft containing a universal joint driven by said engine; a gear wheel secured to the hub of said traction wheel and arranged within the tread thereof, the interior of said car wheel being provided with an integral gear in the flange or tread thereof; a driving gear or pinion on said shaft; and means for adjusting the said shaft to throw the engine into and out of gear or reverse the same, coacting as specified.

18. In a structure of the class described, the combination with a hand car provided with the usual gallows frame and hand lever, of means for throwing the said hand lever mechanism into and out of gear; an engine; a shaft containing a universal joint driven by said engine; a gear wheel secured to the hub of said traction wheel and arranged within the tread thereof, the interior of said car wheel being provided with an internal gear

in the flange or tread thereof; a driving gear or pinion on said shaft; and means for adjusting the said shaft to throw the engine into and out of gear or reverse the same, coacting as specified.

19. In a structure of the class described, the combination with a hand car provided with the usual gallows frame and hand lever, of means for throwing the said hand lever mechanism into and out of gear; an engine; a shaft containing a universal joint driven by said engine, the interior of said car wheel being provided with an internal gear in the flange or tread thereof; a driving gear or pinion on said shaft; and means for adjusting the said shaft to throw the engine into and out of gear, coacting as specified.

20. In a structure of the class described, the combination with a hand car; an engine; a shaft containing a universal joint driven by said engine; a gear wheel secured to the hub of said traction wheel and arranged within the tread thereof, the interior of said car wheel being provided with an internal gear in the flange or tread thereof; a driving gear or pinion on said shaft; and means for adjusting the said shaft to throw the engine into or out of gear or to reverse the same, coacting as specified.

21. In a structure of the class described, the combination with a hand car; an engine; a shaft containing a universal joint driven by said engine; a gear wheel secured to the hub of said traction wheel and arranged within the tread thereof, the interior of said car wheel being provided with an internal gear in the flange or tread thereof; a driving gear or pinion on said shaft; and means for adjusting the said shaft to throw the engine into or out of gear or reverse the same, coacting as specified.

22. In a structure of the class described, the combination with a hand car provided with the usual gallows frame and hand lever, of means for throwing the said lever mechanism into and out of gear and locking the lever when disengaged; an engine; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of a traction wheel and arranged within the tread thereof having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; and means for shifting the said shaft laterally to throw the friction gear wheel out of or into contact with the said friction surfaces to throw the engine into or out of gear or reverse the car, coacting as specified.

23. In a structure of the class described, the combination with a hand car provided with the usual gallows frame and hand lever, of means for throwing the said hand

lever mechanism into and out of gear and locking the lever when disengaged; a shaft containing a universal joint driven by said engine; a gear wheel secured to the hub of
 5 said traction wheel and arranged within the tread thereof, the interior of said car wheel being provided with an internal gear in the flange or tread thereof; a driving gear or pinion on said shaft; and means for shifting
 10 the said shaft laterally to throw the engine into or out of gear or reverse the car, coacting as specified.

24. In a structure of the class described, the combination with a hand car provided
 15 with the usual gallows frame and hand lever, of means for throwing the said hand lever mechanism into and out of gear and locking the lever when disengaged; an engine; a shaft containing a universal joint
 20 driven by said engine; a gear wheel secured to the hub of a traction wheel and arranged within the tread thereof, the interior of said car wheel being provided with an internal gear in the flange or tread thereof; a driving
 25 gear or pinion on said shaft; and means for shifting the said shaft laterally to throw the engine into or out of gear or to reverse the car, coacting as specified.

25. In a structure of the class described,
 30 the combination with a hand car, of a hand propelling means; an engine; a shaft containing a universal joint driven by said engine; a friction gear wheel secured to the hub of said traction wheel and arranged
 35 within the tread thereof, having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-shaped friction gear formed in the flange or tread thereof; a friction
 40 driving gear or pinion on said shaft; and means for shifting the said shaft laterally to throw the friction gear wheel out of or into contact with the said friction surfaces to throw the engine into or out of gear or
 45 reverse the car, coacting as specified.

26. In a structure of the class described, the combination with a hand car, of an engine; a shaft containing a universal joint
 50 driven by said engine; a friction gear wheel secured to the hub of a traction wheel and arranged within the tread thereof, having a V-shaped friction surface on its periphery, the interior of said car wheel being provided with an internal V-shaped friction
 55 gear formed in the flange or tread thereof; a friction driving gear or pinion on said shaft; and means for shifting the said shaft laterally to throw the friction gear wheel out of or into contact with the said friction
 60 surfaces to throw the engine into or out of gear or reverse the car, coacting as specified.

27. In a structure of the class described, the combination with a hand car, of a hand propelling means; an engine; a shaft containing a universal joint driven by said engine; a gear wheel secured to the hub of
 65 one of the traction wheels and arranged within the tread thereof, the interior of said car wheel being provided with an internal gear in the flange or tread thereof; a driving gear or pinion on said shaft; and means
 70 for shifting the said shaft laterally to throw the engine into or out of gear or reverse the car, coacting as specified.

28. In a structure of the class described,
 75 the combination with the traction wheels, of a car body; a gallows frame; a walking beam; driving connections for said walking beam to said traction wheels, said driving connections being adapted to be connected
 80 or disconnected; means for locking said walking beam when said driving connections therefor to the traction wheels are disconnected; an engine; and driving connections therefor to said traction wheels adapted
 85 to be connected or disconnected.

29. In a structure of the class described, the combination with a traction wheel having a flange, of an engine; a V-shaped friction surface in the flange of said traction
 90 wheel; and a V-shaped driving gear adapted to be thrown into and out of engagement with said friction surface of said traction wheel.

30. In a structure of the class described,
 95 the combination with a traction wheel having a flange, of an engine; a friction surface in the flange of said traction wheel; and a driving gear adapted to be thrown into and out of engagement with said friction surface
 100 of said traction wheel.

31. In a structure of the class described, the combination with a traction wheel having a flange, of an engine; a V-shaped friction surface in the flange of said traction
 105 wheel; and a V-shaped driving gear adapted to engage said friction surface of said traction wheel.

32. In a structure of the class described, the combination with a traction wheel having a flange, of an engine; a friction surface in the flange of said traction wheel; and a driving gear adapted to engage said friction surface of said traction wheel.
 110

In witness whereof, we have hereunto set
 our hands and seals in the presence of two witnesses.

WILLIAM S. HOVEY. [L. S.]
 MILTON H. RIX. [L. S.]

Witnesses:

O. R. BAIRD,
 D. C. MIX.