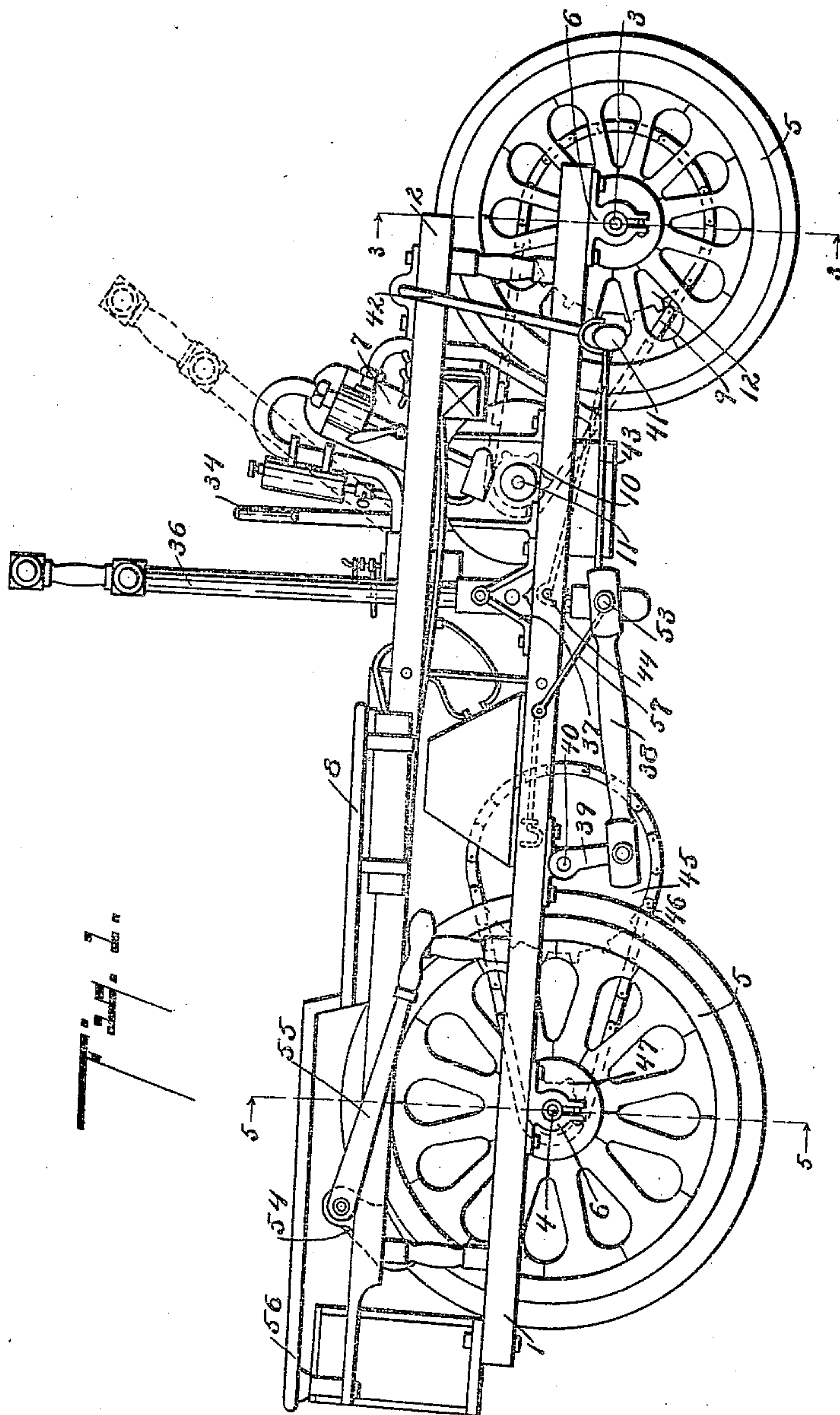


943,680.

W. S. HOVEY & C. B. STEBBINS.
MOTOR CAR.

APPLICATION FILED MAY 1, 1909.

Patented Dec. 21, 1909.
4 SHEETS—SHEET 1.



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Witnesses
Gloria E. Braden
F. Gertrude Tallman

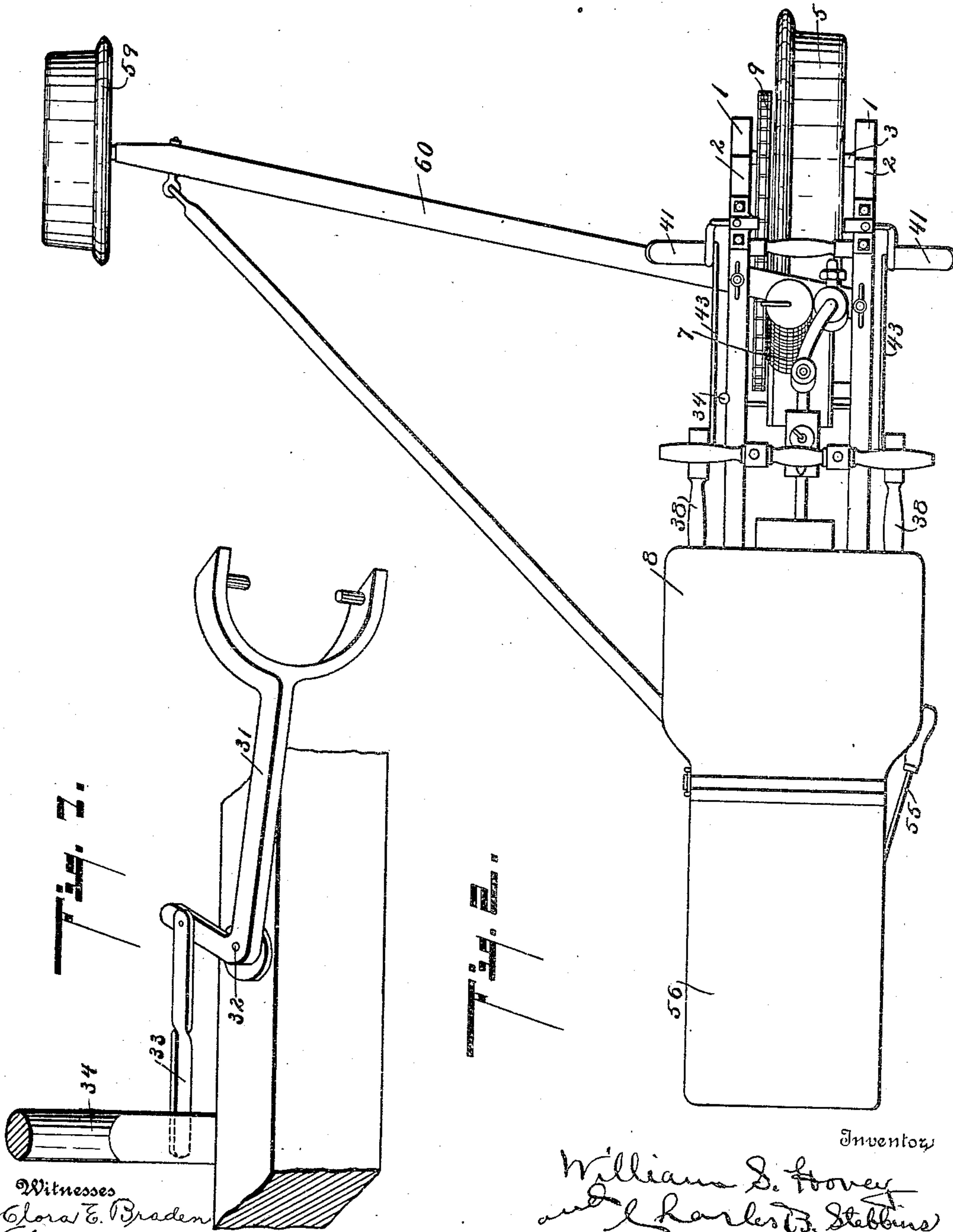
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

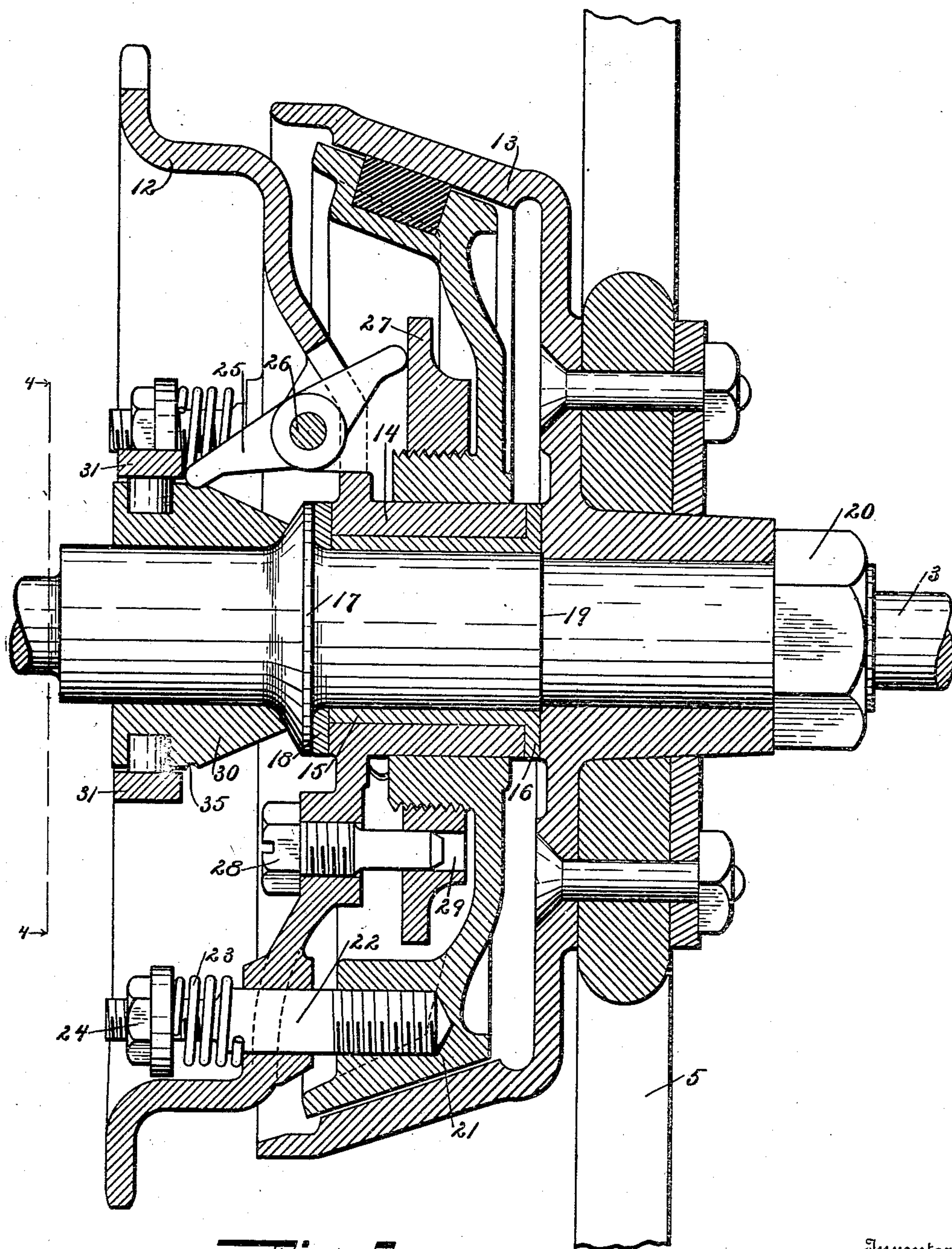


Fig. 3.

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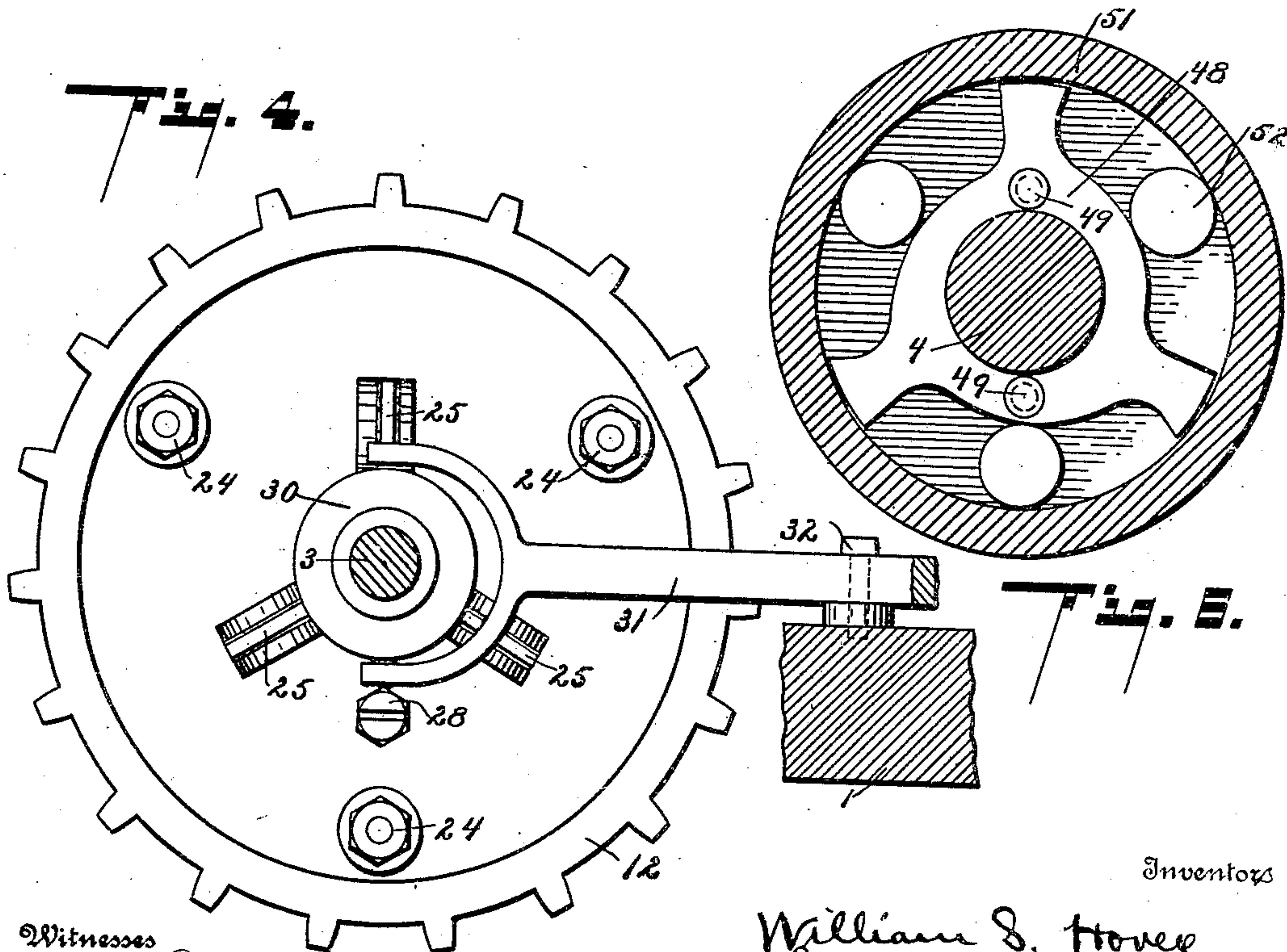
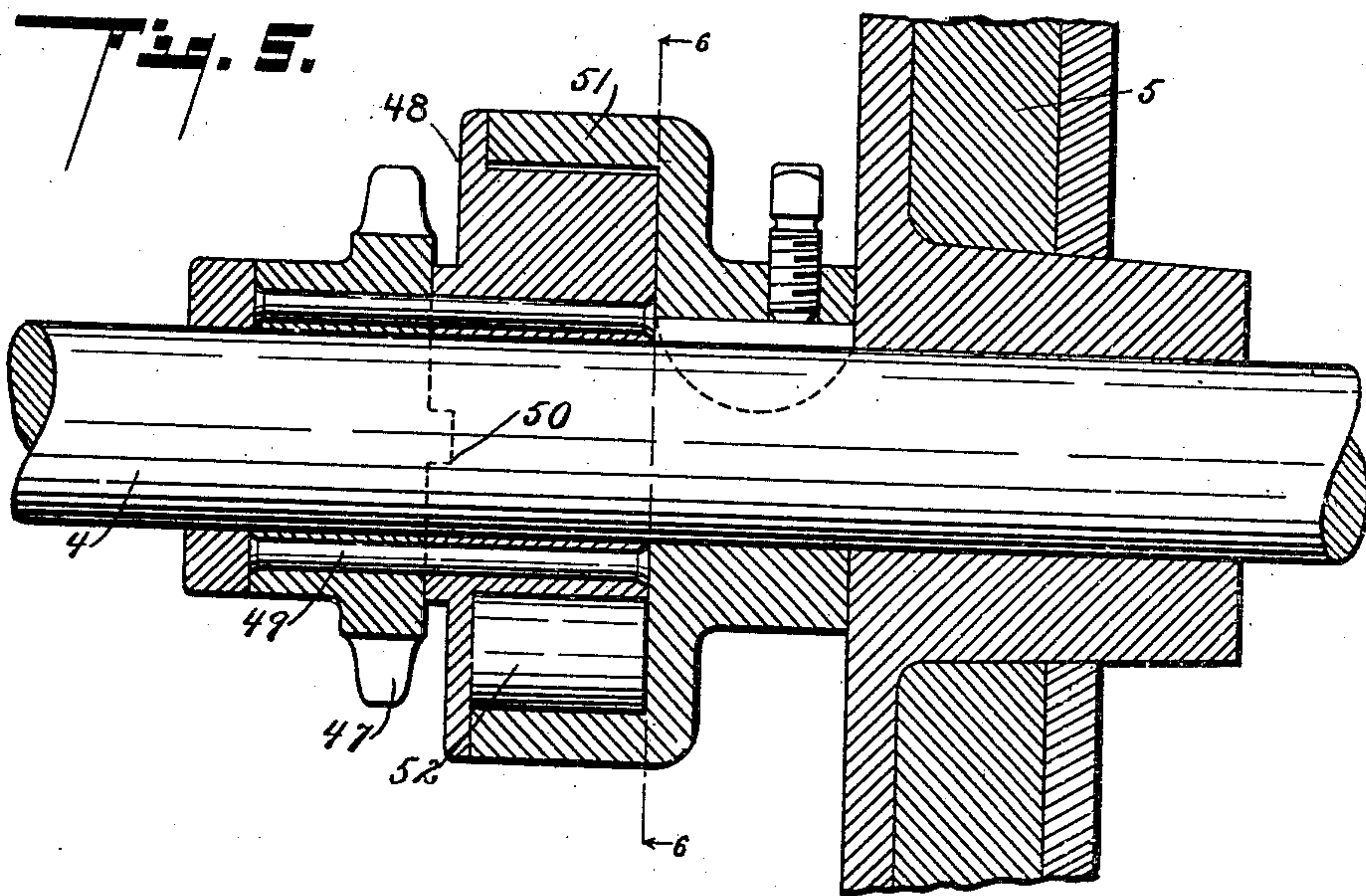
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UNITED STATES PATENT OFFICE.

WILLIAM S. HOVEY AND CHARLES B. STEBBINS, OF THREE RIVERS, MICHIGAN, ASSIGNORS TO SHEFFIELD CAR COMPANY, OF THREE RIVERS, MICHIGAN.

MOTOR-CAR.

943,680.

Specification of Letters Patent.

Patented Dec. 21, 1909.

Application filed May 1, 1909. Serial No. 493,373.

To all whom it may concern:

Be it known that we, WILLIAM S. HOVEY and CHARLES B. STEBBINS, citizens of the United States, residing at the city of Three Rivers, county of St. Joseph, State of Michigan, have invented certain new and useful Improvements in Motor-Cars, of which the following is a specification.

This invention relates to improvements in motor cars.

Our present improvements are particularly applicable to railway motor cars of the class illustrated in Letters Patent No. 876,058, dated January 7, 1908, and are, in some respects, an improvement upon the structure there illustrated, although certain features of the present improvements are adapted for use in other relations.

The main objects of this invention are: First, to provide an improved motor car, which may be propelled or driven by motor and manual power combined or by either power, the parts being so arranged and connected that the movement of the car is not transmitted to the manual power means, allowing it to remain in any position desired when not in use in propelling the car. Second, to provide an improved motor car adapted to be propelled by motor or manually in which the parts are arranged so as to be very convenient when in use,—that is, they are all conveniently arranged for the operator. Third, to provide a structure of the class described adapted to be propelled by manual or motor power, which may be used in combination, and, at the same time, there is no danger of injury to the operator on account of the combination of the operating means. 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, the hand lever being shown in its forward position by dotted lines. Fig. 2 is a plan view thereof. Fig. 3 is an enlarged detail section, taken on a line corresponding to line 3—3 of Fig. 1, showing the clutch driving connection for the engine to one of the traction wheels. Fig. 4 is a detail section, taken on a line corresponding to line 4—4 of Fig. 3. Fig. 5 is an enlarged detail section, taken on a line corresponding to line 5—5 of Fig. 1, showing the ratchet clutch driving connections for the manual power mechanism to the rear wheels. Fig. 6 is a vertical section, taken on a line corresponding to line 6—6 of Fig. 5. Fig. 7 is a detail view, showing the connections for the clutch shifting lever to the clutch.

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 frame preferably consists of the bottom rails 1—1 and the top rails 2—2 connected by suitable cross pieces. The axles 3 and 4 of the traction wheels 5 are carried by suitable bearings 6, arranged on the bottom rails 1. The traction wheels are arranged between the rails of the frame at the front and rear thereof. The engine 7 is arranged at the rear of the front wheel, and in front of the operator's seat 8, the engine being preferably arranged within the frame, as illustrated. As the details of the engine form no part of this present invention, they are not described herein.

The engine is connected to the front wheels by means of the sprocket chain 9, the sprocket 10 on the crank shaft 11 of the engine and the sprocket 12 on the axle, the sprocket wheel 12 being connected to the traction wheel 1 by a suitable clutch mechanism, preferably that illustrated in detail

in Figs. 3 and 4. This clutch mechanism illustrated consists of a conical driven clutch member 13, which is connected to the wheel, it preferably being formed integrally with the hub of the wheel, as is illustrated. The hub 14 of the driving sprocket 12 is arranged within the driven clutch member 13, a suitable bushing 15 being provided, the bushing having a flange 16 to protect the end of the wheel hub.

The axle 3 is preferably provided with a flange 17. Between this flange and the end of the hub 14 we arrange a bearing washer 18. The axle 3 is shouldered at 19 to limit the movement of the wheel 5 thereon, a nut 20 being threaded on the axle to retain the wheel in place. This forms a convenient means of securing the parts in place.

The driving clutch member 21 is adjustably mounted on the hub of the driven wheel 12, it being slidably connected to the wheel 12 by means of the pins 22, which are arranged through suitable openings provided therefor in the wheel. On these pins are springs 23, which retract or draw the driving member of the clutch out of its engaging or driving position. The tension of these springs is regulated by the nuts 24, threaded upon the pins. The driving member is thrown into engaging position by means of the actuating levers 25, which are arranged on suitable pivots 26, carried by the driving wheel 12, so that their inner ends engage a ring like member 27, which is arranged on the hub of the driving clutch member, it being preferably threaded on the hub so that it may be adjusted. The member 27 is secured in its adjusted positions by means of the locking pin 28, carried by the driven member 12, the pin being adapted to engage suitable holes 29 provided therefor in the member 27. The levers 25 are actuated by means of the conical cam 30, which is slidably mounted upon the axle 3, to engage the ends of the levers, as clearly appears in Fig. 3. When this cam is shifted inwardly, the outer ends of the levers are raised, throwing their inner ends against the member 27 and forcing the driving clutch member into engagement with the driven clutch member. The clutch actuating cam 30 is shifted by means of the forked lever 31, which is connected to the lever 34 by the link 33, the lever 34 being within reach of the operator on the seat 8. See Figs. 1 and 7. The cam 30 has a groove 35 in which the ends of the levers 25 engage to retain the clutch in engagement. By this arrangement of the parts, we secure a clutch mechanism which is very powerful, and, at the same time, is compact so that it may be conveniently arranged within the small space permitted by the frame construction,

the clutch mechanism being substantially embraced within the flange of the traction wheel.

The hand lever 36 is pivoted at 37 in front of the operator's seat 8, so as to be conveniently manipulated from the seat. This general arrangement of the engine and lever is the same as that in the patent referred to. The lower end of the lever is connected by the pitman 38 to the arms 39 on the crank shaft 40.

The foot rests 41 are carried by the pivoted links 42. These foot rests are connected to the pitman 38, by links 43, so that the car may be propelled by the hands and feet of the operator, or by either, in connection with the engine, or independently thereof. The links are preferably detachably connected, pins 44 being provided for supporting the links when detached. See the dotted position of the links in Fig. 1.

The crank shaft is connected to the rear axle 4 in the structure illustrated by means of the sprocket wheels 45 on the crank shaft, the sprocket chain 46 and the sprocket wheel 47 on the axle. The sprocket wheel 47 is connected to the axle 4 by a ratchet clutch connection so that, while power may be imparted to propel the car through the manually operated mechanism, the movement of the car is not imparted to the manually operated mechanism so that, when the engine is in operation, the manually operated mechanism is not affected should the speed of the engine exceed that of the hand power mechanism. The advantage of this will be obvious, as the hand power means may be brought into use to assist the engine in grades or the like, and the manual mechanism is, in effect, disconnected at all times,—that is, the movement of the car is not transmitted thereto. This clutch mechanism preferably consists of a cam member 48 which is connected to the sprocket 47 by means of suitable jaws and the rivets 49—see Fig. 5—one of the jaws being indicated by dotted lines at 50. The cam member 48 has three cams thereon and is surrounded by a casing 51, which serves to retain the clutch rollers 52 and coacts with the cam to secure the clutch effect. The casing 51 is secured to the axle 4, the wheel being also secured thereto so that it is driven therethrough. The cams of the cam member 48 are so shaped that, when the member 48 is rotated forwardly, the rollers 52 are wedged by the cams against the casing 51 so that it is rotated thereby. When, however, the speed of the casing 51 exceeds that of the cam 48, the rollers are moved forwardly and disengaged. This forms a simple and effective ratchet mechanism which is very quiet in its operation, and, at the same time, is entirely effect-

ive for the purpose. The car may be, as stated, driven through the hand mechanism and foot mechanism, or through either means, or by the engine or through any combination thereof, and, as previously remarked, should the speed of the engine exceed that of the manually operated mechanism, the manually operated mechanism is, in effect, disconnected so that the movement of the engine is not imparted thereto. This avoids any possibility of danger to the operator through the employment of the engine and the manually operated means together. The manual operating mechanism can therefore be brought into use as desired in starting the car or in assisting the engine or for short runs where it is not desired to start the engine or in case the engine becomes inoperative through accident or lack of fuel.

Means are preferably provided for securing the hand lever in a fixed position when it is not desired to use the same, consisting of a hook 57 carried by one of the side rails to engage the bearing 53 on the lever.

The brake shoe 54 is operated through the hand lever 55.

The oil reservoir, battery, and other parts are conveniently arranged under the seat 8 and the deck 56, but, as this arrangement does not form a part of this present invention, we have not illustrated the same in detail herein.

The third wheel 59 which is carried by the bar 60, is preferably made detachable as is described in the patent referred to.

We have illustrated and described our improved motor car in detail in the form which we have found practical. We are aware, however, that it is capable of considerable variation in structural detail without departing from our invention, but as these modifications will be readily understood by those skilled in this art, we have not attempted to illustrate or describe the same herein.

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

1. The combination with the frame, of wheels; an engine; driving connections for said engine to said wheels comprising a clutch, means for shifting said clutch; a hand power driving mechanism comprising a hand lever; a foot power driving mechanism comprising foot rests; driving connections for said hand and foot mechanisms to one of said wheels comprising a ratchet mechanism whereby power may be delivered by said hand and foot power mechanism, or either of them, to propel the car in connection with or independently of said engine and movement of the wheel independently

of said hand lever or foot rest is permitted; means for disconnecting said foot rests from the said driving connections; and means for securing said hand lever in a fixed position.

2. The combination with the frame, of wheels; an engine; driving connections for said engine to said wheels comprising a clutch, means for shifting said clutch; a hand power driving mechanism comprising a hand lever, a foot power driving mechanism comprising foot rests; driving connections for said hand and foot power mechanisms to one of said wheels comprising a ratchet mechanism whereby power may be delivered by said hand and foot power mechanism, or either of them, to propel the car in connection with or independently of said engine and movement of the wheel independently of said hand lever or foot rest is permitted; and means for disconnecting said foot rests from the said driving connections.

3. The combination with the frame, of wheels; an engine; driving connections for said engine to said wheels comprising a clutch, means for shifting said clutch; a hand power driving mechanism comprising a hand lever; a foot power driving mechanism comprising foot rests; driving connections for said hand and foot power mechanisms to one of said wheels comprising a ratchet mechanism whereby power may be delivered by said hand and foot power mechanism, or either of them, to propel the car in connection with or independently of said engine and movement of the wheel independently of said hand lever or foot rest is permitted; and means for securing said hand lever in a fixed position.

4. The combination with the frame, of wheels; an engine; driving connections for said engine to said wheels comprising a clutch, means for shifting said clutch; a hand power driving mechanism comprising a hand lever; a foot power driving mechanism comprising foot rests; and driving connections for said hand and foot power mechanisms to one of said wheels comprising a ratchet mechanism whereby power may be delivered by said hand and foot power mechanism, or either of them, to propel the car in connection with or independently of said engine and movement of the wheel independently of said hand lever or foot rest is permitted.

5. The combination with the frame, of wheels; an engine; driving connections for said engine to said wheels comprising a friction clutch; means for shifting said clutch; a hand power driving mechanism comprising a hand lever; a foot power driving mechanism comprising foot rests; and driving connections for said hand and foot power mechanisms to one of said wheels

comprising a roller clutch mechanism whereby power may be delivered by said hand and foot power mechanism, or either of them, to propel the car in connection with or independently of said engine and movement of the wheel independently of said hand lever or foot rest is permitted.

6. The combination with the frame, of wheels; an engine; driving connections for said engine to said wheels comprising a clutch; means for shifting said clutch; a hand power driving mechanism comprising a hand lever; a foot power driving mechanism comprising foot rests; and driving connections for said hand and foot power mechanisms to one of said wheels comprising a roller clutch mechanism whereby power may be delivered by said hand and foot power mechanism, or either of them, to propel the car in connection with or independently of said engine and movement of the wheel independently of said hand lever or foot rest is permitted.

7. The combination with the frame, of wheels; an engine; driving connections for said engine to said wheels comprising a clutch; means for shifting said clutch; a hand power driving mechanism comprising a hand lever; driving connections for said hand power mechanism to one of said wheels comprising a ratchet mechanism whereby power may be delivered by said hand mechanism to propel the car in connection with or independently of said engine and movement of the wheel independently of said hand lever is permitted; and means for securing said hand lever in a fixed position.

8. The combination with the frame, of wheels, an engine; driving connections for said engine to said wheels comprising a clutch; means for shifting said clutch; a hand power driving mechanism comprising a hand lever; and driving connections for said hand power mechanism to one of said wheels comprising a ratchet mechanism whereby power may be delivered by said hand mechanism to propel the car in connection with or independently of said engine and movement of the wheel independently of said hand lever is permitted.

9. The combination with the frame, of wheels; an engine; driving connections for said engine to said wheels comprising a friction clutch; means for shifting said clutch; a hand power driving mechanism comprising a hand lever; and driving connections for said hand power mechanism to one of said wheels comprising a roller clutch mechanism whereby power may be delivered by said hand power mechanism to propel the car in connection with or independently of said engine and movement of the wheel independently of said hand lever is permitted.

10. The combination with the frame, of wheels; an engine; driving connections for said engine to said wheels comprising a clutch; means for shifting said clutch; a hand power driving mechanism comprising a hand lever; and driving connections for said hand power mechanism to one of said wheels comprising a roller clutch mechanism whereby power may be delivered by said hand mechanism to propel the car in connection with or independently of said engine and movement of the wheel independently of said hand lever is permitted.

11. The combination with a frame, of wheels; an engine; driving connections therefor to one of said wheels comprising a clutch; a hand lever; pivotally-supported foot rests; detachable connections therefor to said hand lever; driving connections for said hand lever to one of said wheels, comprising a ratchet clutch mechanism whereby power may be delivered by the said hand lever and foot rests, or either of them, to propel the car in connection with or independently of said engine, and movement of the wheel independently of said hand lever and foot rests is permitted; and means for securing said hand lever in a fixed position.

12. The combination with a frame, of wheels; an engine; driving connections therefor to one of said wheels comprising a clutch; a hand lever; pivotally-supported foot rests; detachable connections therefor to said hand lever; and driving connections for said hand lever to one of said wheels, comprising a ratchet clutch mechanism whereby power may be delivered by the said hand lever and foot rests, or either of them, to propel the car in connection with or independently of said engine, and movement of the wheel independently of said hand lever and foot rests is permitted.

13. The combination with a frame, of wheels; an engine; driving connections therefor to one of said wheels comprising a clutch; a hand lever; pivotally-supported foot rests; connections therefor to said hand lever; driving connections for said hand lever to one of said wheels, comprising a ratchet clutch mechanism whereby power may be delivered by the said hand lever and foot rests, or either of them, to propel the car in connection with or independently of said engine, and movement of the wheel independently of said hand lever and foot rests is permitted; and means for securing said hand lever in a fixed position.

14. The combination with a frame, of wheels; an engine; driving connections therefor to one of said wheels comprising a clutch; a hand lever; pivotally-supported foot rests; connections therefor to said hand lever; and driving connections for said hand

lever to one of said wheels, comprising a ratchet clutch mechanism whereby power may be delivered by the said hand lever and foot rests, or either of them, to propel the
5 car in connection with or independently of said engine, and movement of the wheel independently of said hand lever and foot rests is permitted.

15. The combination with the frame, of
10 an engine; a traction wheel; an axle therefor; driving connections for said engine to said traction wheel comprising a driven clutch member connected to said traction wheel; a driving wheel mounted on said

axle; a driving clutch member arranged on 15 the hub of said driving wheel adjustably connected thereto; and means for shifting said driving clutch member into its driving position.

In witness whereof, we have hereunto set 20 our hands and seals in the presence of two witnesses.

WILLIAM S. HOVEY. [L. S.]
CHARLES B. STEBBINS. [L. S.]

Witnesses:

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