(No Model.) 4 Sheets—Sheet 1.

# J. T. VAN GESTEL.

## DUMMY OR MOTOR ENGINE.

No. 410,049. Patented Aug. 27, 1889.

Fig. 1.

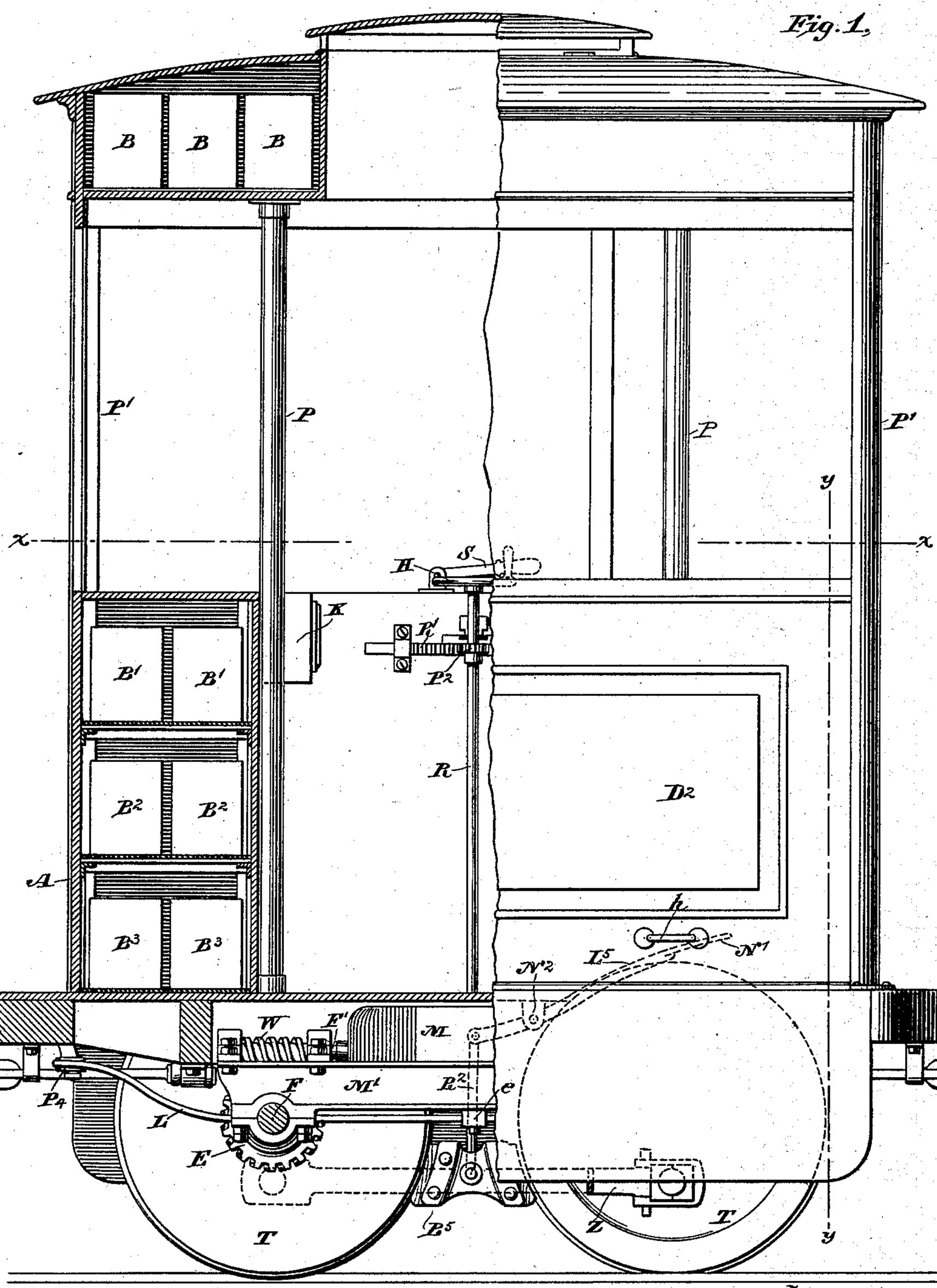


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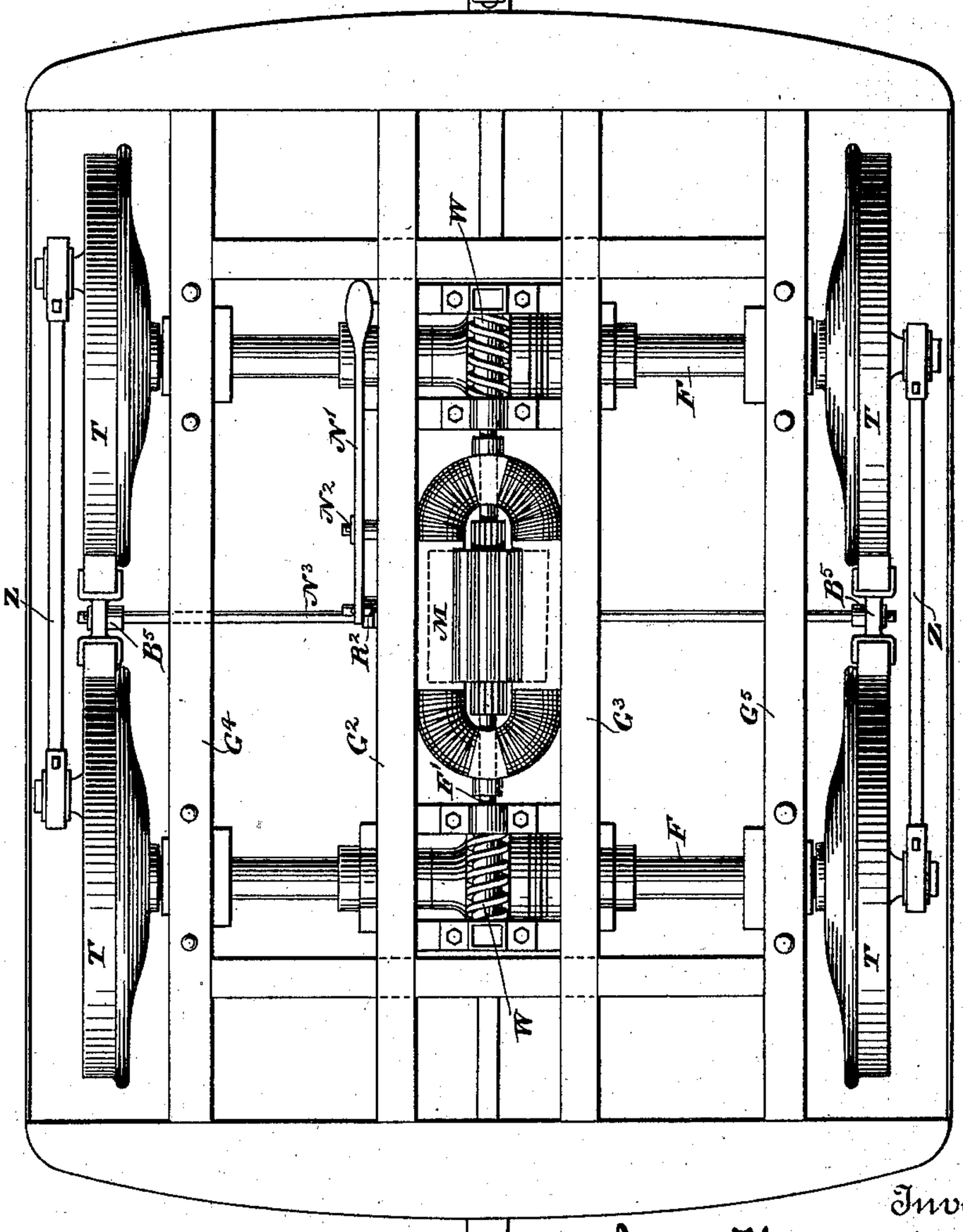
Fig. 2.

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## DUMMY OR MOTOR ENGINE.

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*Fig. 3.*

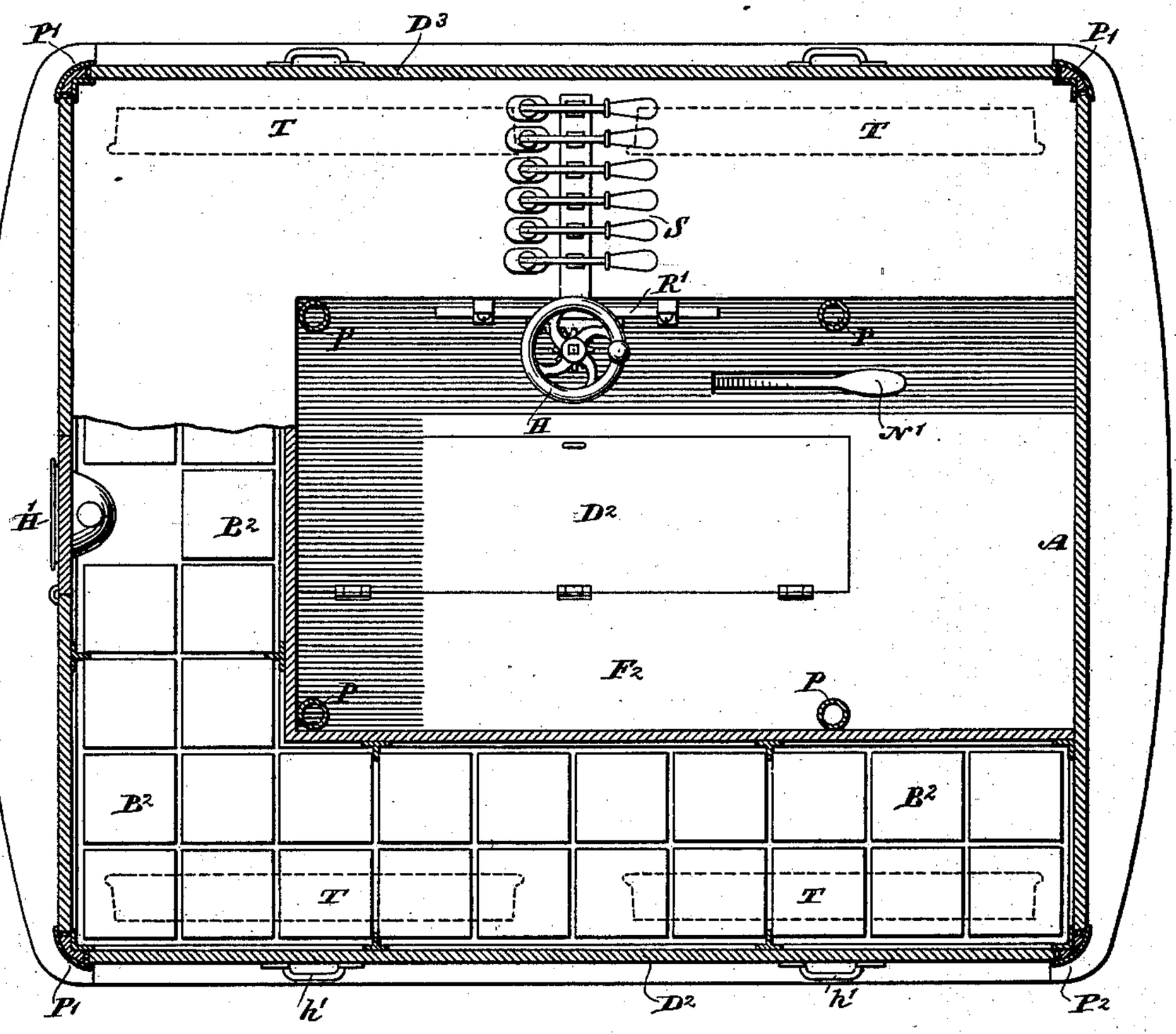
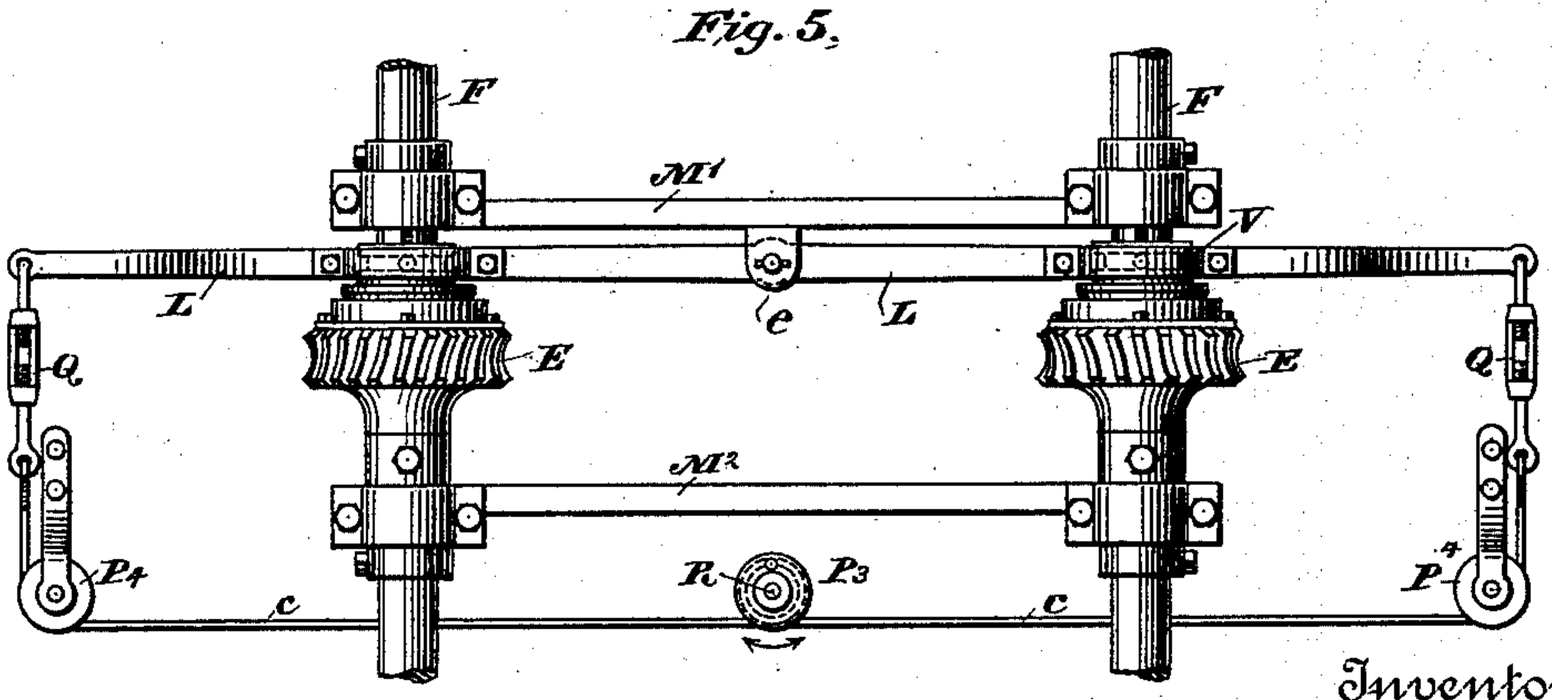



*Fig. 5.*

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# J. T. VAN GESTEL.

## DUMMY OR MOTOR ENGINE.

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Fig. 7.

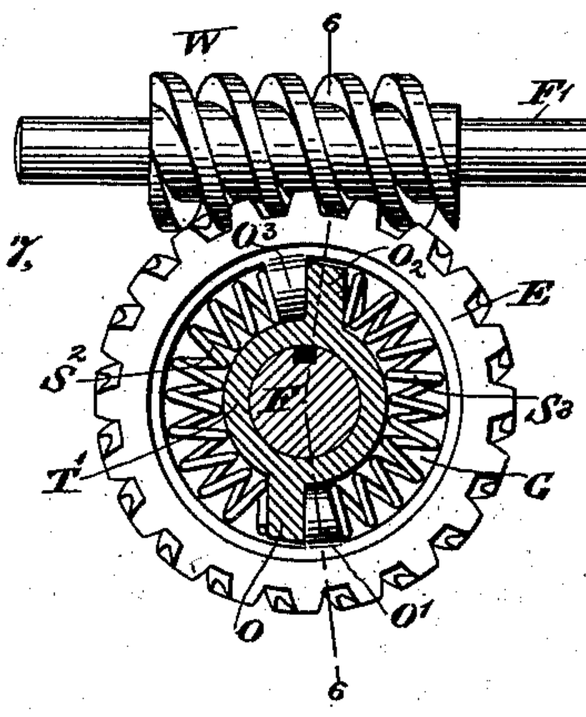



Fig. 6.

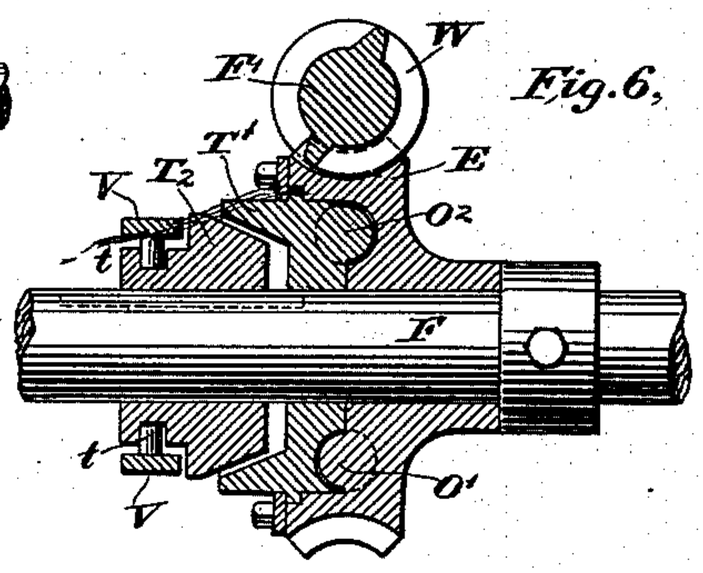
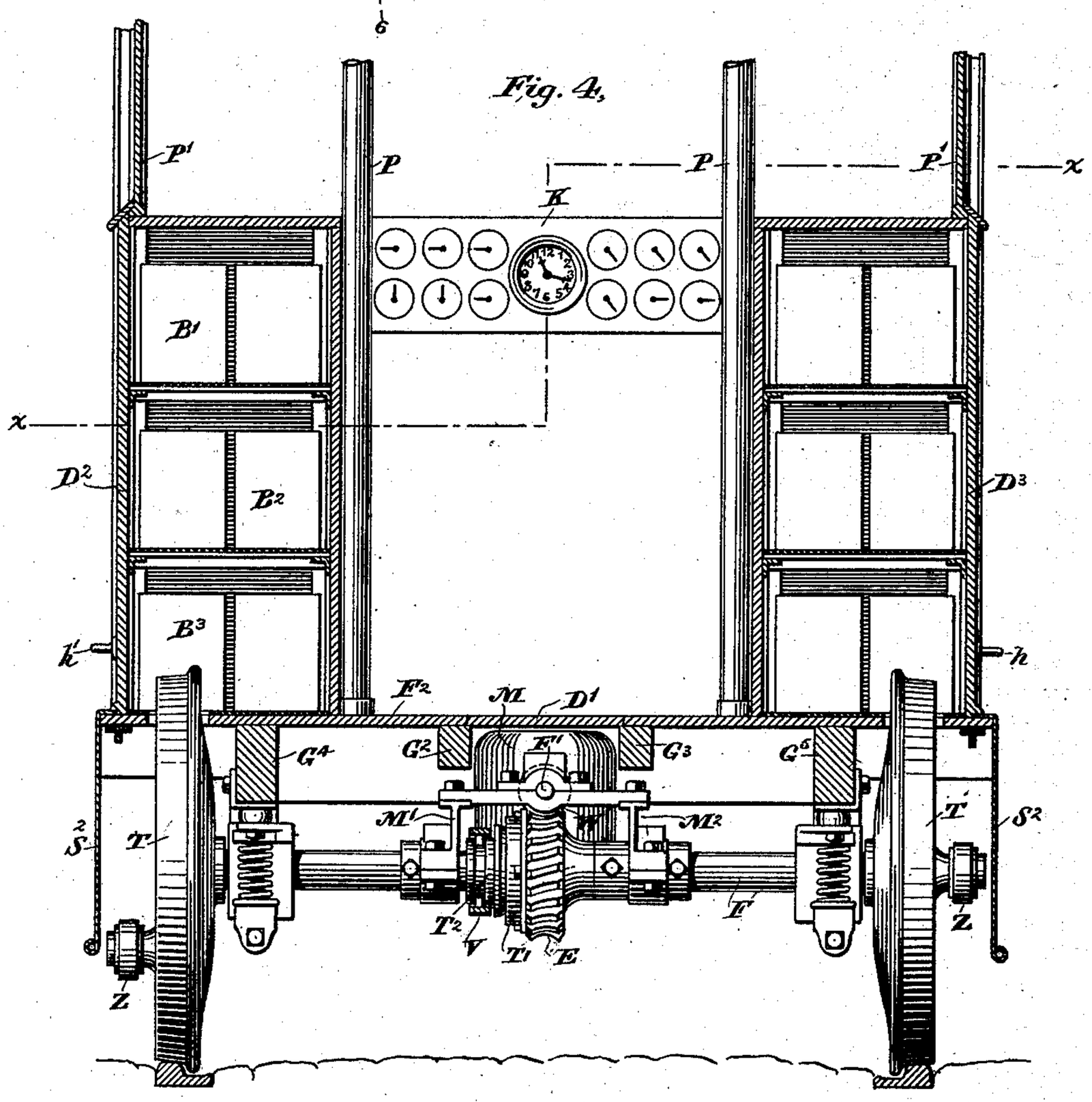



Fig. 4.

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# UNITED STATES PATENT OFFICE.

JEAN THEODORE VAN GESTEL, OF NEW YORK, N. Y.

## DUMMY OR MOTOR ENGINE.

SPECIFICATION forming part of Letters Patent No. 410,049, dated August 27, 1889.

Application filed September 12, 1888. Serial No. 285,174. (No model.)

*To all whom it may concern:*

Be it known that I, JEAN THEODORE VAN GESTEL, a subject of the King of the Netherlands, residing in New York, in the county of New York and State of New York, have made a new and useful Invention in Dummy or Motor Engines for Use with Tram-Cars or Analogous Vehicles, of which the following is a specification.

My invention relates particularly to motor traction-engines for the propulsion of which the motive power is stored or carried on board the car—such, for instance, as electricity. I have disclosed as a preferred form of motive power electrical storage-batteries, and to this end have so disposed them as to permit of their connection to an electric motor, also shown as a preferred form of motor.

It is obvious that any kind of stored energy might be utilized and the necessary connection substituted therefor, the substance of my invention being directed, first, to the disposition of the propelling-motor so that it may always run in one direction and by proper manipulation be made to drive the car or engine in either direction, as desired; second, to means for connecting the motor to the car-axles mechanically, no matter in which direction it is desired to run said car or motor, and in such manner as to prevent sudden shocks, which are damaging to the mechanism and disagreeable to passengers in attached cars; third, to details of construction hereinafter described, but particularly pointed out in the claims which follow this specification.

I am aware that it is broadly old to utilize stored energy on board of motor-engines, and also to so arrange a propelling-motor in connection with such stored energy as to cause the motor to run always in one direction; and I do not therefore claim such features, my invention being directed more particularly to improvements upon such arrangements and devices.

In another pending application for a patent filed of even date herewith, and bearing Serial No. 285,487, I have shown, described, and claimed the electrical connections existing between the motor and storage cells or batteries herein referred to, and I do not deem it necessary to speak further of this feature here, said application being directed to electrical peculiarities solely, while, as above noted, the present application is directed to mechanical details and arrangements equally applicable to other kinds of stored energy.

My invention will be fully understood by referring to the accompanying drawings, in which like letters, wherever used, represent like parts.

Figure 1 is a side elevation partly broken away, so as to show the interior mechanism and arrangement of my improved dummy engine or motor. Fig. 2 is a plan view of the lower works of the same, as seen with the motor-car floor removed, and having a tram-car attached, also shown in plan. Fig. 3 is a horizontal sectional view of the same on a plane through line $x\ x$, Fig. 1. Fig. 4 is a vertical cross-section on line $y\ y$, Fig. 1, as seen looking from right to left, the regulating or motor-controlling apparatus being removed; and Figs. 6 and 7 are detail detached views of the clutch mechanism and worm-gear; while Fig. 5 is a plan view of the same with its connecting-levers, cords, pulleys, &c.

T T T T are the truck-wheels of the motor-engine, upon the axles F F of which rests the frame-work which supports the floor and body on journal-boxes and springs in the usual manner. The upper frame-work for carrying the storage-batteries B′ $B^2$, &c., is composed of vertical iron pillars P P P P and curved iron corner-posts P′ P′ P′ P′, all bolted or otherwise firmly secured to the floor and to each other by frame-work and top cross-ties, as shown, said structure being preferably of iron and made in such manner as to be of minimum lightness and at the same time possess maximum strength sufficient to support or carry said batteries as disposed, one set being in the upper compartment beneath the roof, as clearly shown in Fig. 1. The batteries are conveniently arranged in tiers, as shown, around the outer edge of the motor-car, and securely housed in such manner as to leave an interior chamber of sufficient size for the engineer or attendant, said chamber being provided with a door D′ through the floor F′ for giving access to the motor M. The panel-doors $D^2$ $D^3$ in the sides of the motor-car are adapted to slide up and down, so

that the batteries can be readily set in place or removed, as desired.

All of that portion of the car between the top tier B and the tier B′ of the batteries is open or provided with glass sliding doors, affording a clear view in all directions for the attendant or engineer.

H′ is the head-light, which may be an electric light, and connected to the batteries in any preferred manner when batteries are used.

K is a time-indicator for showing how long any set of batteries has been in use. The details and connections of this time-indicator constitute a part of the separate application above referred to and need no description here.

M is the motor—in this instance an electric motor—and it is firmly secured by bolts or otherwise beneath the floor of the motor-car to a frame independent of the car-frame, consisting of two iron beams or girders M′ $M^2$, journaled on axles F F, as clearly shown in Figs. 1 and 4. The motor-shaft F′ is extended in each direction, having journal-bearings and right and left screws W W, as shown in Fig. 2. These screws gear, respectively, with right and left loose worm-wheels on the car-axles F F, in front and rear.

$T^2$ $T^2$ are two cone-shaped clutches adapted to slide freely on the axles F F, but connected thereto by splines, as shown.

L is a lever, pivoted at *e* to the girder M′, and loosely connected by the forked portions V V and pins *t t* to the sliding clutches in a well-known manner, so that as the lever L is vibrated in one direction or the other the desired axle is connected to the motor, thereby causing the car to advance or recede. To the ends of the lever L is attached a cord *c*, by adjustable screw-links Q Q, said cord passing around pulleys $P^3$ and $P^4$, attached to the floor-frame, and finally in reverse direction around an additional pulley $P^2$, connected to a vertical shaft R, extending upward to a position of easy access to the attendant. This shaft carries a hand-operating wheel H and a pinion $P^2$, which latter meshes in a rack R′, and serves to put the battery in or out of circuit, as desired. This cut-out feature, as well as the switches S and connections therefor, also constitute a part of the divisional application above referred to and need not be further referred to here.

In Fig. 7 I have shown my improved means for avoiding sudden shocks to the mechanism when the motor is suddenly connected to the car-axles. It consists of a loose cone-shaped sleeve T′, into which the clutch T slides when actuated, and has ears or lugs O $O^2$, connected to the ends of spiral springs $S^2$ $S^3$, curved about said sleeves, having their other ends connected to the loose-running worm-wheel E by lugs O′ $O^3$ on its interior.

B is a brake of well-known form adapted to act on all of the wheels T T by wedge action through the agency of shaft $N^3$, bell-crank lever $R^2$, foot-lever $L^5$, pivoted at $N^2$ to the floor-frame and pedal N′, in near proximity to the attendant.

S is a shield or guard around the trucks, which latter are connected operatively together by connecting-links Z Z, so that both shafts shall act together and give increased traction to the motor. By this arrangement, no matter which worm-gear is operatively connected, the entire set of wheels acts upon the rails.

The operation of the apparatus is as follows: The batteries B B′ $B^2$ $B^3$, &c., having been put in place, as shown, and the sliding or panel doors closed through the agency of handles *h h*, the necessary connections having been made to join the power to the motor, the attendant turns the hand-wheel in the proper direction to connect the motor operatively with the axle F. This tilts lever L, so that the desired cone-clutch T is brought in frictional contact with the loose female cone-clutch T′, which normally rotates so long as the motive power is connected through the motor. This action causes the part T′ to put the springs $S^2$ $S^3$ under compression until the lugs O and O′ come into or approach actual contact, depending in a measure upon the elasticity and strength of the springs, but at all events taking up or preventing the sudden shock which would otherwise take place were the rotating motor suddenly connected to the axles at rest. Motion is thus imparted to the axles through the proper clutch and links Z Z, no matter which clutch be connected. The clutch-governing rod and hand-wheel act also to control the flow of current into the motor through the agency of the rack and pinion R′ $P^2$, which is fully described in the application referred to, it being understood that by obvious mechanical equivalents this hand-actuated governing or regulating rod and wheel might control any motive power—as compressed steam, air, or the like. To reverse the direction of the motor-car the hand-wheel is simply reversed, when the lever L is caused, through the agency of the cord *c*, pulleys P P P, and connecting-links Q, as before, to connect the other clutch and worm-wheel to the remaining axle. When the hand-wheel stands at a definite position, such that the lever L is held parallel to the girder M′, both clutches are disconnected and the motor runs free if the motive power be left on; but ordinarily in this position the motive power will be turned off, so that the motor and the car will be stationary.

I will now enumerate some of the advantages which result from the use of my improved form of motor-car over existing means of propelling tram-cars and analogous vehicles, and particularly where electricity is used as the motive power. First, it co centrates the weight over the trucks, and they are so connected together as to get a maximum amount of traction and to utilize that traction to a great advantage; second, by placing the motive power on board an independent

motor-car I remove the passengers from all danger incident to the peculiar motive power used, and dispose of this power to the best advantage; third, I provide simple and efficient means of connecting the motor to all of the axles of the motor-car and place it under easy control of the attendant; fourth, I connect the propelling-motor to an independent frame on the car-axles and connect it directly to both axles through the agency of simple clutch-and-link connections, so that the whole construction is arranged to arrive at maximum beneficial results.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination of a motor rigidly secured to a frame carried by trucks with loose worm-gears on the axles of the trucks, and clutch mechanism for connecting the motor-shaft to either of said axles, substantially as described.

2. A motor located on a rigid frame secured to the truck of a car, in combination with one right and one left worm-gear running normally loose, each on its own shaft, and clutch mechanism for connecting either of said loose gears to the motor-shaft, as desired, whereby the car may be run in either direction at the will of the attendant without reversing the direction of the motor, substantially as described.

3. In a mechanically-propelled vehicle, the combination of the following elements: a motor rigidly connected to a frame carried by two pairs of truck-wheels connected together by links, two loose worm-gears, one on each axle, a double clutch, one for each worm-gear, and a cord and pulleys and a series of connecting-levers with a hand-operating lever or wheel located in convenient proximity to an attendant on the motor car or vehicle, substantially as described.

4. In a mechanically-impelled vehicle, the combination of the following elements: two pairs of truck-wheels connected together by links Z Z, the axles of which trucks carry a motor on a frame independent of the car-body frame, two loose worm-gears, one on each shaft, two screws on the motor-shaft, one adapted for each loose gear, a pair of clutches, one for each gear and shaft, a lever for connecting said clutches to either of said loose gears, as desired, and a series of levers, pulleys, and cords for controlling said clutches, substantially as described.

5. In a motor car or engine, the combination of a motor fixed rigidly to a frame carried directly by the axles of the truck-wheels, a pair of loose worm-gears, one right and one left, located one on each axle, two worms or screws located one on each end of the motor-shaft and meshing with the loose gears respectively, two spring-clutch attachments, one affixed to each loose gear, two sliding-clutch attachments splined on the car-axles, a pivoted lever fixed at its middle and connected at or near its ends to the sliding-clutch attachments, a cord, pulleys, and levers with a hand-wheel located in close proximity to the attendant on the car, the whole being so arranged that the motor always running in the same direction may be caused to run the motor-car in either direction, as desired, substantially as described.

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Witnesses:
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