No. 689,417. Patented Dec. 24, 1901.

T. F. ROWLAND.

ELECTRIC TRUCK.

(Application filed May 29, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

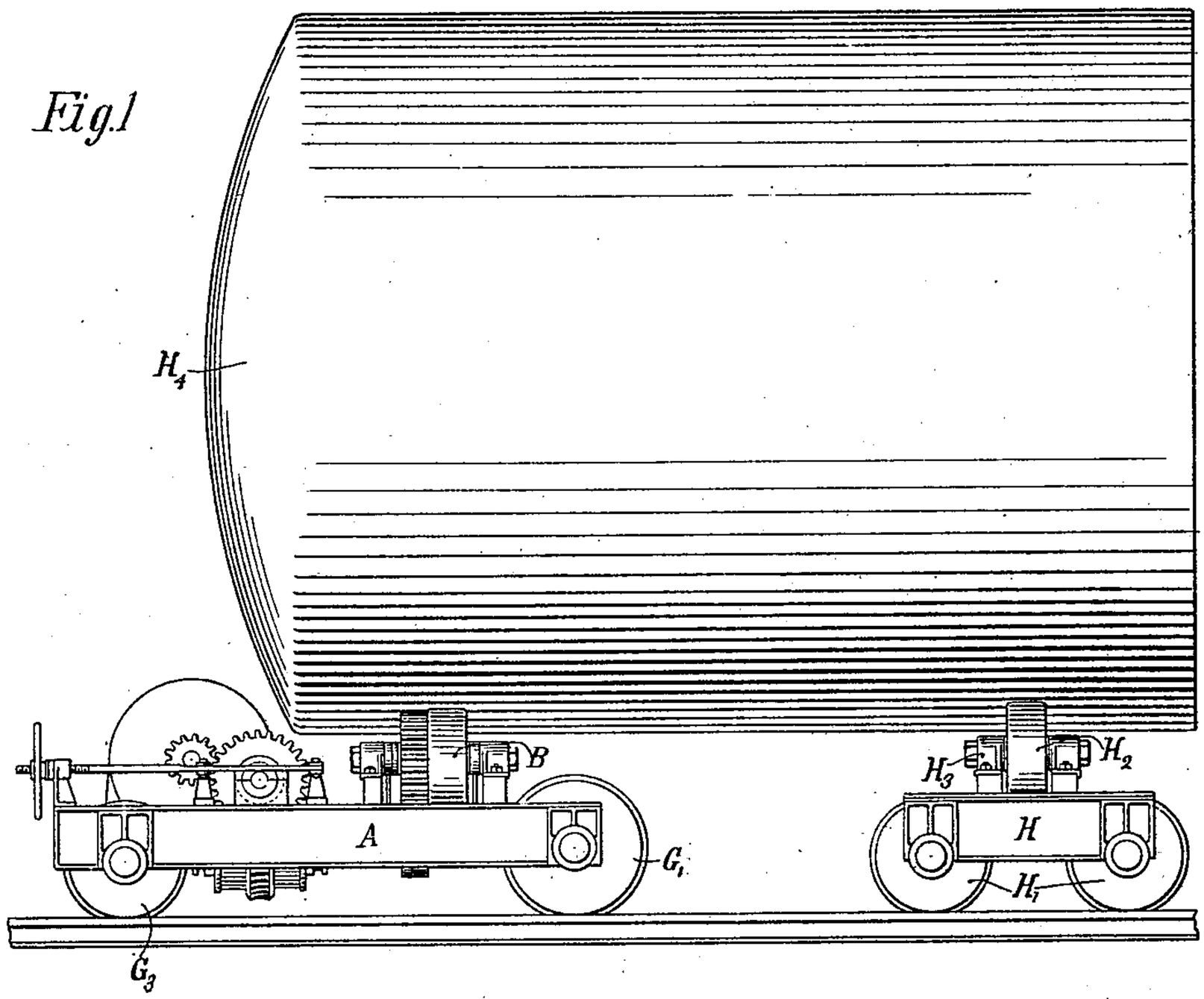
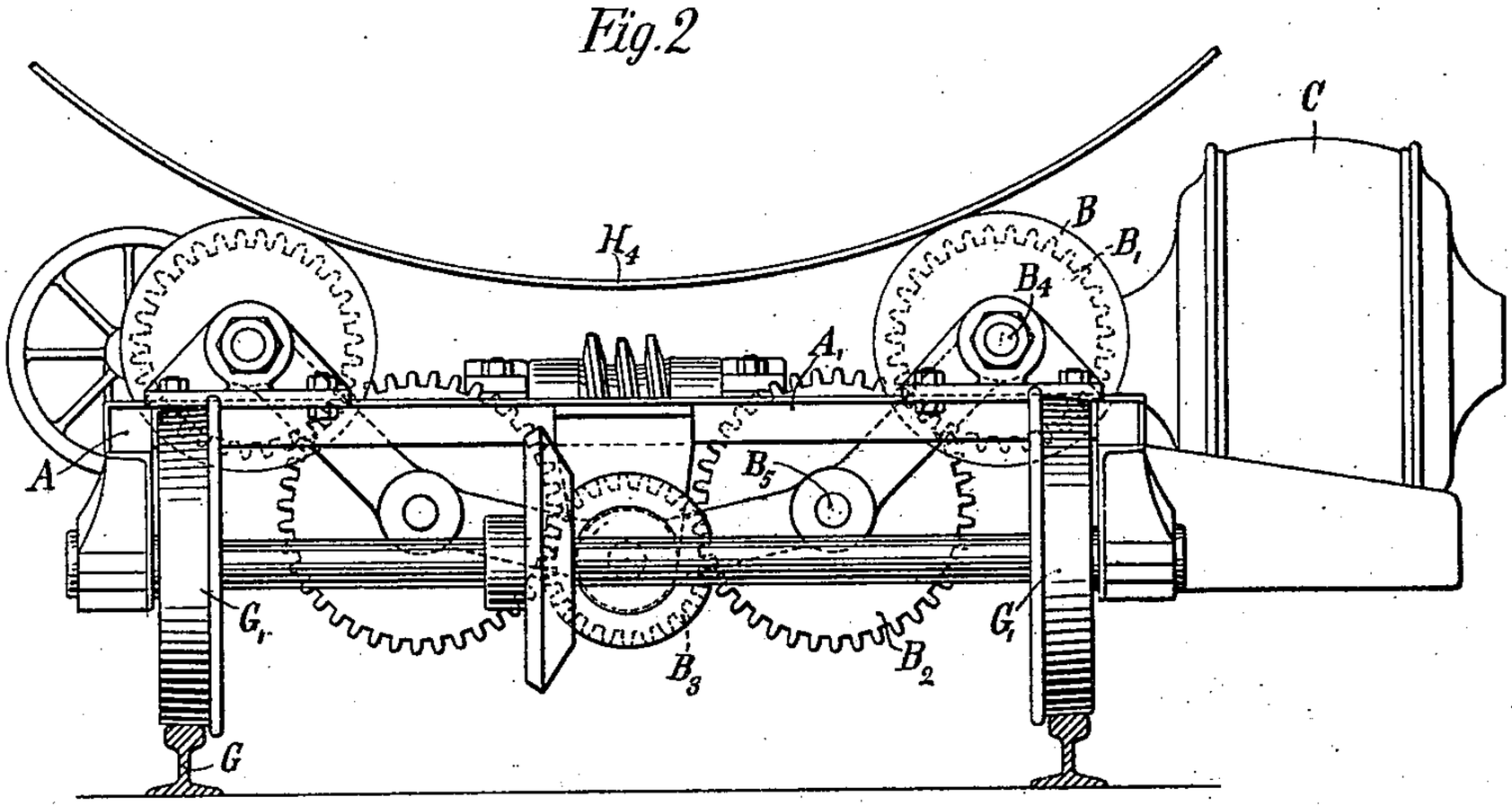


Fig. 2



Witnesses:
Raphael Netter
Jessie B. Kay.

Thomas Fitch Rowland Inventor

by Frederick S. Duncan Atty

No. 689,417. Patented Dec. 24, 1901.

T. F. ROWLAND.

ELECTRIC TRUCK.

(Application filed May 29, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3

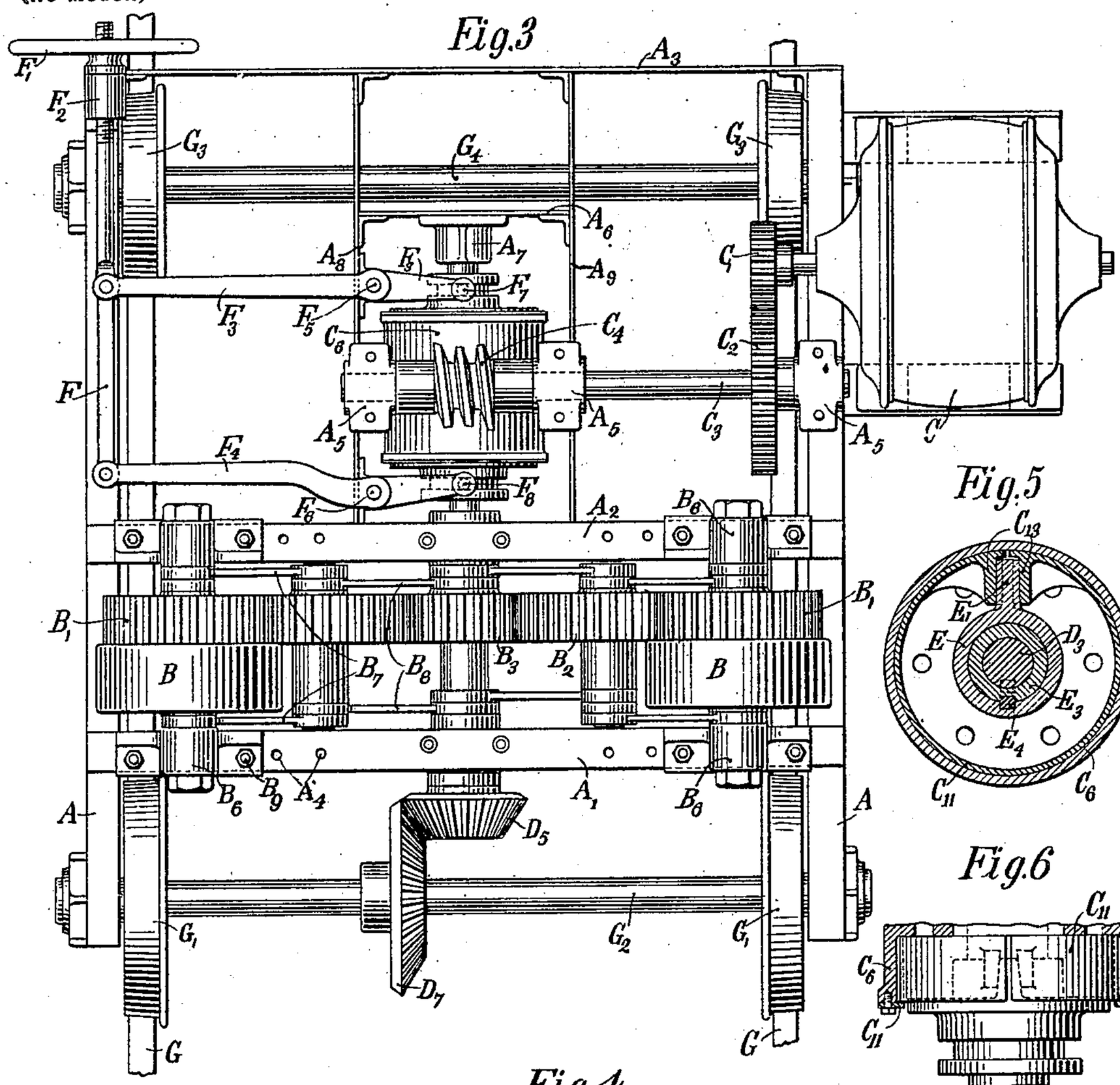
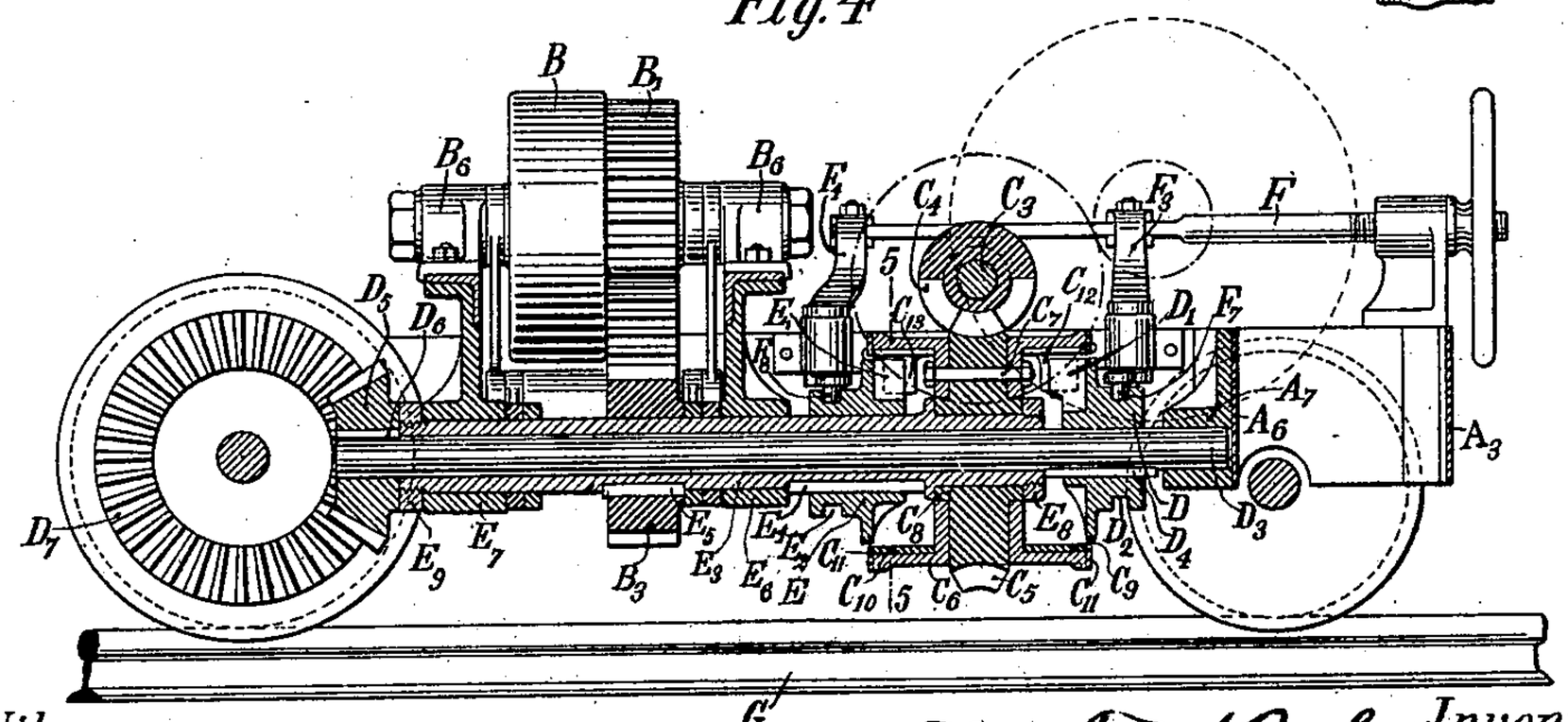


Fig. 5

Fig. 6

Fig. 4



Witnesses:
Raphael Fetter
Jessie B. Kay.

Thomas Frick Rowland Inventor

by Frederick S. Lyon Atty

UNITED STATES PATENT OFFICE.

THOMAS FITCH ROWLAND, OF NEW YORK, N. Y.

ELECTRIC TRUCK.

SPECIFICATION forming part of Letters Patent No. 689,417, dated December 24, 1901.

Application filed May 29, 1901. Serial No. 62,353. (No model.)

To all whom it may concern:

Be it known that I, THOMAS FITCH ROWLAND, a citizen of the United States, residing in the borough of Manhattan, city of New York, county and State of New York, have invented a certain new and useful Improvement in Electric Trucks, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

My invention relates to improvements in electric trucks especially designed for use in connection with large metal cylinders, so that such cylinders can be suitably supported, moved longitudinally along a track, and also rotated about their axes while supported upon such trucks.

The exact scope of my invention will be definitely pointed out hereinafter.

My invention is of special use in connection with the manufacture of large welded cylinders where it is necessary to rotate the cylinder and also to move it longitudinally, so that it comes into proper position with relation to welding mechanism.

In the accompanying drawings, in which like reference characters designate similar parts in the various views, Figure 1 shows in side elevation one of my electric trucks supporting in conjunction with a trailer-truck a large plate-metal cylinder. Fig. 2 is a detail drawn on a larger scale, showing in end elevation my electric truck. Fig. 3 is a plan view of my truck. Fig. 4 is a sectional view taken along a central vertical plane parallel to the rails on which the truck is mounted. Figs. 5 and 6 are detail views showing the construction of clutch used in my truck.

Stated in general terms, my truck consists of a suitable body, upon which is mounted an electric motor or other driving mechanism, which by suitable clutches can actuate either the traction-wheels of the truck to drive the same along the track upon which it runs or which can drive suitable work-revolving or traverse rolls, upon which the cylindrical piece of work is supported.

As will be readily seen by reference to Figs. 1 and 2, the trailer-truck H has two pairs of supporting-wheels H′, revolubly mounted upon the frame of the truck, and also is provided with two work-supporting rolls H^2, which are loosely mounted upon the frame, so that they can readily revolve. The cylindrical piece of work H^1 is supported upon the rolls H^2 and upon the rolls B on my electric truck. The function of the trailer is to support one end of the work as the trailer moves along the track G in unison with the electric truck, and the freely-rotating work-supporting rolls H^2 allow the rotation of the work under the influence of the work-revolving or traversing rolls B of the electric truck. The trailer acts in conjunction with the electric truck, and, indeed, the trailer might be replaced by another electric truck similar to the one which will now be described.

The electric truck has a framework composed of two side members A and the transverse members A′, A^2, A^3, and A^6, the last member of which is supported by the short longitudinal members A^8 and A^9. The electric motor or other suitable motor or driving mechanism C is mounted on the framing-piece A so as to extend to one side of the truck. I prefer to employ an electric motor of the well-known two-phase type of common construction, which will not be described in detail here. The motor of course can be readily started, stopped, and reversed by suitable and well-known switches controlling the current supplied thereto, and any other driving means that might be employed would also be governed in a similar manner, so that it could be started, stopped, and reversed at will.

Upon the driving-axle of the motor is secured the gear C′, which meshes with the gear C^2 upon the shaft C^3, which is supported in suitable bearings A^5, secured to the framework of the truck. The worm C^4 is secured to the shaft C^3 and meshes with the worm-wheel C^5, secured to the clutch-drums C^6 by suitable bolts C^7, as shown in Fig. 4. The clutch-drums extend on either side of the worm and are provided with cylindrical flanges extending laterally, with which the split ring C^9 and C^{10} engage internally. These rings are held in place in engagement with the inner surface of the clutch-drums C^6 by the inwardly-projecting flanges C^{11}, which are bolted to the edges of the drums. (See Fig. 6.) The worm-wheel has a central hub C^8, which is loosely mounted upon the sleeve E^3 and is

held thereon by a suitable collar on the inner side of the sleeve and by the collar E^8, screwed upon the end of the same. This hollow sleeve E^3 is mounted in the bearings E^6 and E^7, secured to the transverse members A' and A^2 of the frame of the truck, and the collar E^9, screwed upon the end of this sleeve, prevents any longitudinal motion of the same.

The spur-gear B^3 is keyed to the sleeve by the key E^5. There is also secured to the sleeve the traverse-clutch E, which is splined to it by the key E^4, so that this clutch may move longitudinally of the sleeve, but cannot rotate with respect to the same. This traverse-clutch by means of a wedge E', formed integrally therewith, engages the split ring C^{10}, and upon its being forced inward, so as to expand this ring by engaging with the shoulders C^{13} upon the ends of the same, this ring is made to expand so as to grip the clutch-drum C^6 firmly, and thereupon the sleeve E^3 and the spur-gear B^3 are driven by the motor C. The gear B^3 is connected through the intermediate gear B^2 upon the shaft B^5 with the gear B', mounted upon the shaft B^4, which is held in suitable bearings B^6, bolted to the transverse frame members A' and A^2, and since the gear B' is fast to the traverse-roll B on either side of the truck both of these traverse-rolls are driven whenever the motor C operates, and the traverse-clutch E is actuated at the same time. These traverse-rolls, as will be readily seen from Fig. 2, operate to rotate or traverse the cylindrical work mounted upon them, and since these rolls can be moved transversely of the truck and bolted to the transverse frame members A' and A^2 at various distances from the center of the truck these rolls are adapted to support work of varying diameters. The bearings B^6 for these rolls are held to the frame members by the bolts B^9, and these bolts may be inserted in any one of the holes A^4 in the frame members, as will be seen from Fig. 3. The shafts B^5, upon which the intermediate gears B^2 are mounted, are supported by the toggle-levers B^7 and B^8, which are both connected with this shaft and also with the sleeve E^3 and the shafts B^4 on either side of the truck. In this way it will be seen that at whatever distance from the center of the truck the shafts B^4 are adjusted the intermediate gears B^2 will always remain in engagement. On the other side of the clutch-drum is situated the traction-clutch D, which engages in a similar manner with the split ring C^9. This traction-clutch is splined to the central shaft D^3 by the key D^4, so that it has longitudinal movement thereon. This shaft D^3 is mounted in a suitable bearing A^7, attached to the frame member A^6, and since it rotates within the hollow sleeve E^3 the other end is sufficiently supported. The outer end of this shaft has splined to it the beveled gear D^5, which meshes with the corresponding gear D^7 upon the shaft G^2, to which the two traction-wheels G' are rigidly attached. So it will be readily seen that when the clutch D is in engagement the traction-wheels are revolved, provided, of course, that the motor is in operation at this time, and the whole truck is moved along the track G, upon which it is supported, carrying the work with it. The two clutches D and E are operated by the clutch-operating rod F, which is given a longitudinal motion by the wheel F', mounted in the bearing F^2, so that it may revolve therein, but so that it is prevented from moving longitudinally thereof. The hub of this wheel engages a suitable screw-thread cut upon the rod F, so that rotation of the wheel moves this rod longitudinally. The parts of the two clutch-levers F^3 and F^4 are rigidly attached to the small shafts F^5 and F^6, respectively, which revolve in suitable bearings attached to the frame member A^8. At the inner end of these levers the pins F^7 and F^8 are affixed, which engage annular grooves in the clutch members D and E, so that movement of the clutch-wheel F' moves both the clutch members D and E simultaneously in the same direction. These clutch members are so arranged also that when they are equidistant from the worm-gear C^5 both clutches are disengaged. If, however, the clutch-wheel is actuated, one of these clutches will be engaged, while the other is moved still farther out of engagement. Therefore if the motor is running and one of the clutches—for instance, the traverse-clutch E—is in engagement to drive, the traction-clutch will necessarily be out of engagement, so that there will be no movement of the truck along the track. This particular form of clutch which I have described has been found very efficient for this purpose. It engages and disengages readily, and, furthermore, the two clutch members grip strongly, so that a very great rotative effort is produced. These clutches furthermore are adapted to act as brakes when the motor is not running. For instance, if it is desired to hold the traverse-rolls so that they will not rotate the traverse-clutch can be thrown into operation while the motor is stopped. This will positively prevent any rotation of the work and secure the proper alinement of the same.

The operation of my truck is as follows: The cylindrical piece of work is mounted upon the truck and trailer, as shown in Fig. 1. When it is desired to move the work along the track upon which the trucks are mounted, the motor C is operated so that it rotates in the desired direction, and then the hand-wheel F' is rotated so that the traction-clutch D is thrown into engagement. The motor through its intermediate gearing thereupon drives the traction-wheels G', and the electric truck moves the work as far as it is desired along the track. The motor is then stopped, and if it is desired to hold the work in this position the traction-clutch is left in engagement, which effectively prevents any further movement of the work by blocking

the traction-wheels. If it is desired to rotate or traverse the work about its axis, the clutch-wheel F′ is so rotated that the traverse-clutch E is thrown into engagement, thereby disengaging the traction-clutch D, and then upon rotating the motor in the desired direction the work will be traversed to the extent desired, when either the stopping of the motor or the throwing out of the traverse-clutch will stop the further traverse of the work.

It will of course be seen that various modifications of my electric truck might be made by those skilled in this art. For example, the traverse-wheels B might be duplicated at either end of the truck, so that the electric truck will support the work by itself if made sufficiently long, and the trailer could then be dispensed with. These additional work-supporting rolls might either be positively actuated in the same manner as the traverse-rolls B or might be idle rolls, if desired. Other forms of clutches might be employed in this truck, and equivalent forms of gearing might be substituted for those shown. The exact means for actuating the clutches which are disclosed in the drawings might be replaced by other equivalent means without departing from the spirit of my invention.

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

1. A truck-frame, supporting-wheels and traction-wheels therefor adapted to engage a track, a motor mounted upon said frame, a clutch-drum actuated thereby, traction-gearing connected to a clutch member coacting with the said clutch-drum to actuate the traction-wheels supporting the truck, said clutch member, traverse-rolls to support the work, traverse-gearing, a clutch member coacting with said clutch-drum and connected with said traverse-gearing, and clutch-operating means for said clutch members to operate said clutches alternately.

2. A truck-frame, supporting-wheels and traction-wheels supporting said frame and adapted to engage a track, a motor, driving means therefor to actuate said motor in either direction, a clutch-drum, connecting means to actuate said drum from the said motor, traction-gearing to connect said drum and said traction-wheels, means to disconnect said gearing, traverse-rolls to support the work upon the truck, traverse-gearing to connect said traverse-rolls and said drum and means to disconnect the same.

3. A truck-frame, supporting-wheels and traction-wheels to support said frame and engaging a track, an electric motor mounted upon said truck, means whereby said motor may be driven in either direction, a clutch-drum having cylindrical flanges on either side to be engaged internally by split rings, traction-gearing to drive said traction-wheels and connected with a split-ring traction-clutch engaging said drum, said traction-clutch, traverse-rolls to support the work, traverse-gearing to drive the same and including a split-ring traverse-clutch to engage such drum, two clutch-levers connected to a clutch-rod and means whereby said clutch-levers actuate the two clutches alternately.

4. A truck-frame, supporting-wheels therefor, an electric motor mounted upon said truck, a clutch-drum actuated thereby, means to drive said electric motor in either direction, traverse-rolls to support the work carried by said truck, said rolls being adjustable laterally of the truck, traverse-gearing to drive said rolls in whatever position they may be adjusted, said gearing being connected to a clutch engaging said clutch-drum, and said clutch.

5. A truck-frame, supporting-wheels therefor adapted to engage a track, an electric motor mounted upon said truck, means to drive said motor in either direction, a clutch actuated thereby, traverse-rolls mounted upon said truck-frame, said rolls being adjustable laterally of the truck, a shaft centrally mounted upon said truck and connected with a coacting clutch member, said coacting clutch member, a gear mounted upon said shaft, gears fixed to said traverse-rolls and intermediate gears meshing with said gear upon said central shaft and the gears upon the traverse-rolls, toggle-joints supporting the shafts of said intermediate gears, so that such gears are always in engagement.

6. In a work-supporting mechanism, a trailer-truck mounted upon a suitable track, work-supporting rolls adjustable transversely of said trailer-truck, an electric truck comprising a suitable frame, supporting-wheels and traction-wheels supporting said frame, a motor mounted upon said frame, means to operate said motor in either direction, a double clutch member, a reducing-gear whereby said motor drives said double clutch member, traction-gearing connecting said traction-wheels and a traction-clutch, said traction-clutch to engage said double clutch member, traverse-rolls adjustable laterally of said truck-frame, traverse-gearing connecting said traverse-rolls and a traverse clutch in engagement with said double clutch member, said traverse-clutch, and means to alternately operate said traction-clutch and said traverse-clutch.

7. A truck-frame, supporting-wheels therefor adapted to engage a track, traverse-rolls mounted upon said truck-frame and adjustable transversely of said frame, a central driving-gear for said traverse-rolls, means to actuate said gear, gears fixed to said traverse-rolls, toggle-joints having their ends pivoted about the axis of said central gear and about the axes of said traverse-rolls respectively, intermediate gears mounted upon suitable shafts engaging said central gear and said gears fixed to said traverse-rolls, said shafts

constituting the central pivots of said toggle-joints so that said gearing is always in engagement for all positions of said traverse-rolls.

8. A truck-frame, supporting-wheels and traction-wheels supporting said frame and adapted to engage a track, means to operate said traction-wheels to move said frame along said track, traverse-rolls mounted on said frame and means ot operate said traverse-rolls.

9. A truck-frame, supporting-wheels supporting said frame and adapted to engage a track, traverse-rolls mounted upon said frame, a motor mounted on said frame and traverse-gearing to drive said rolls in either direction from said motor.

10. A truck-frame, supporting-wheels therefor to engage a track, a motor mounted upon said truck-frame, traverse-rolls to support the work carried by said truck said rolls being adjustable laterally of the truck and traverse-gearing to drive said rolls from said motor.

THOMAS FITCH ROWLAND.

Witnesses:

WARREN E. HILL,

CHARLES F. HATHAWAY.