

No. 741,982.

PATENTED OCT. 20, 1903.

A. SCHÜTZE.
ROLLING STOCK FOR TOY RAILWAYS

APPLICATION FILED OCT. 3, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

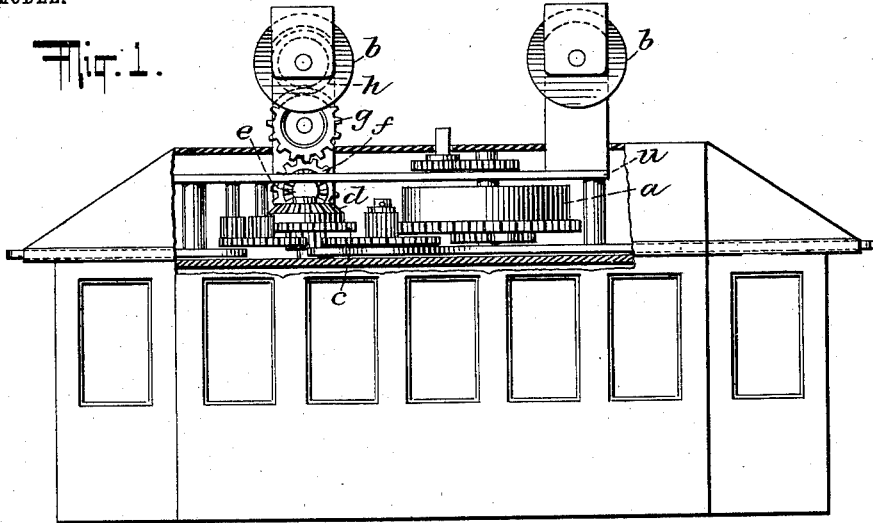
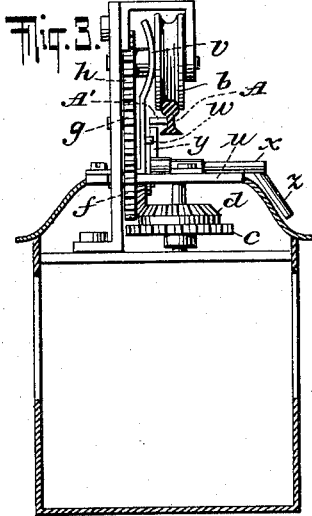
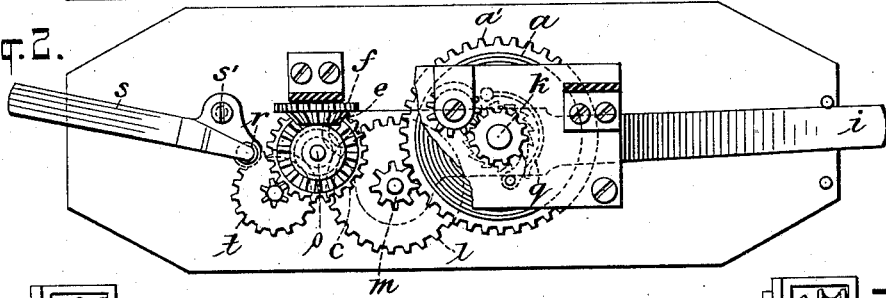


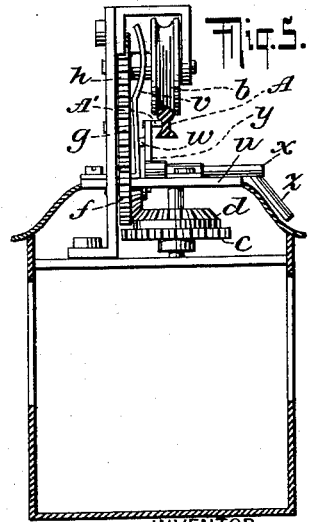
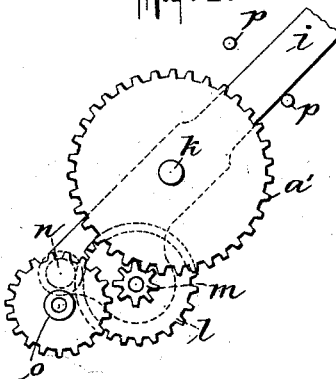
Fig. 2.



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Fig. 4.



INVENTOR

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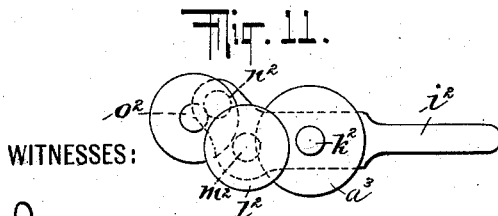
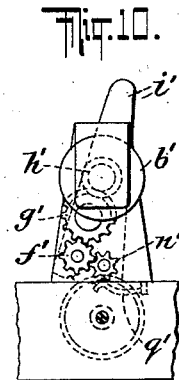
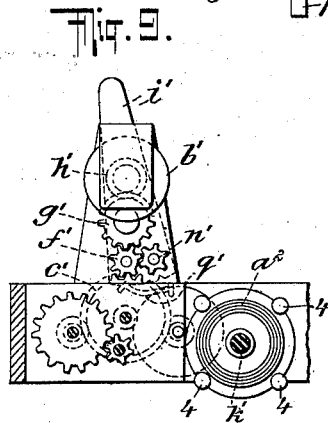
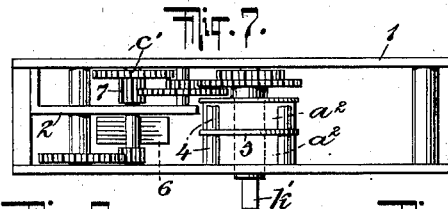
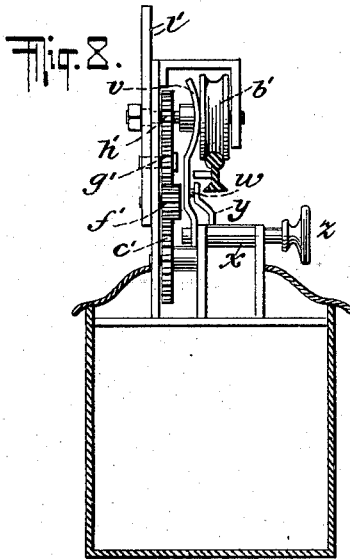
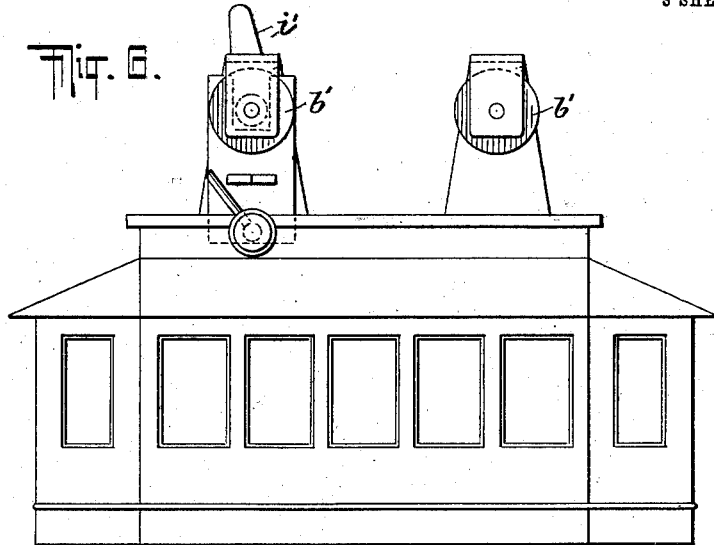
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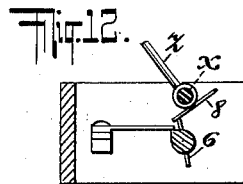
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3 SHEETS—SHEET 2.



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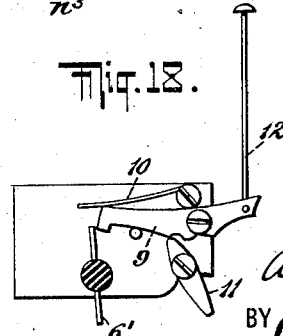
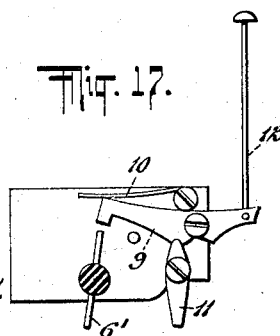
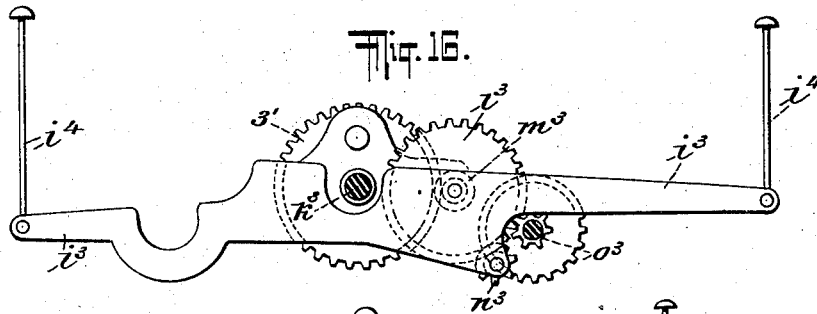
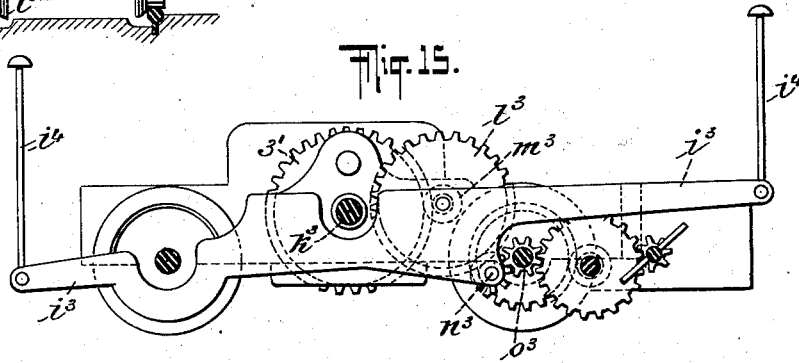
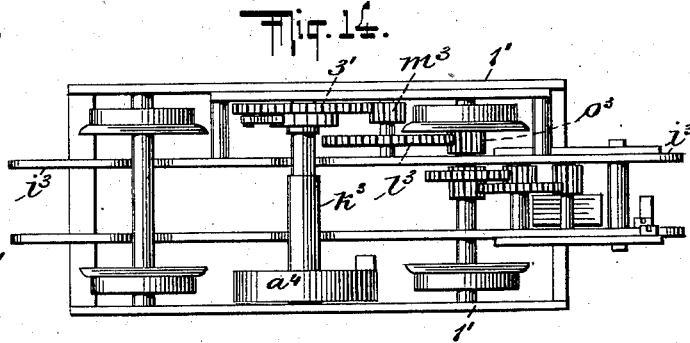
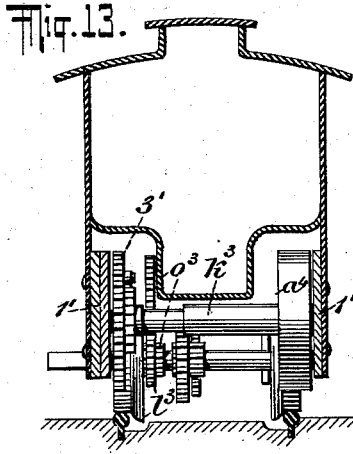
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3 SHEETS—SHEET 3.



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ROLLING-STOCK FOR TOY RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 741,982, dated October 20, 1903.

Application filed October 3, 1902. Serial No. 125,748. (No model.)

To all whom it may concern:

Be it known that I, AUGUST SCHÜTZE, a subject of the Emperor of Germany, and a resident of Rudolstadt, in the Principality of Schwarzburg-Rudolstadt, Empire of Germany, have invented certain new and useful Improvements in Rolling-Stock for Toy Railways, of which the following is a specification.

My invention relates to rolling-stock or cars for toy railways, and has for its object to provide as close an imitation as possible of the cars in actual use, the improvement residing particularly in the arrangement of the motor, in the means for reversing the car, for changing its speed, and for stopping it entirely.

In toy railway-cars as generally constructed the motor protrudes into the interior of the car in such a manner as to destroy the closeness of the imitation to a real car which the toy is supposed to present. This protruding of the motor also reduces the space available for the toy figures representing passengers.

The first part of my invention relates to an arrangement of the motor, which has for its object to leave the interior space of the car practically free. The improvement in the device for reversing the car resides in a very simple device for this purpose, only one wheel being required in addition to those which constitute the driving device. The speed may be altered without any complicated device, such as additional gears, and the stoppage of a car is, according to my present invention, obtained by arresting the motor and simultaneously applying a brake to one or more of the main or supporting wheels of the car.

My invention is applicable to suspended cars, as well as to surface cars, and is represented in various embodiments in the accompanying drawings, in which—

Figure 1 is a side elevation of a suspended car embodying my invention. Fig. 2 is a plan view thereof with parts broken away to better disclose the motor. Fig. 3 is an end elevation of the car and track, illustrating the arrangement of the stopping device. Fig. 4 is a detail plan view showing the reversing device upon an enlarged scale. Fig. 5 is a view corresponding to Fig. 3, but showing the

stopping device in a different position. Fig. 6 is a side elevation of a suspended car, showing another embodiment of my invention. Fig. 7 is a plan view of the car shown in Fig. 6, and particularly of the motor thereof. Fig. 8 is an end view of the said car. Figs. 9 and 10 are side elevations illustrating the reversing device of this car in two different positions. Fig. 11 shows another construction of the reversing device. Fig. 12 illustrates the connection of the stopping device with the fan which is connected with the motor. Fig. 13 is a cross-sectional elevation of a surface car constructed according to my invention. Fig. 14 is a plan view of the motor of such car. Figs. 15 and 16 illustrate the reversing device of such car in two different positions, and Figs. 17 and 18 show the stopping device in two positions.

As shown in Figs. 1 to 5, the motor is arranged between the ceiling and the roof of the car, so as to leave the interior of the car entirely unobstructed. The wheels of the motor are disposed horizontally—that is, they turn about vertical axes. *a* is the driving-spring of the motor, which preferably is very long and narrow, so that the motor may be comparatively low. Only one of the supporting or running wheels *b* need be driven by the motor, and, as shown in the drawings, this is done by means of a toothed wheel *h*, meshing into a similar wheel *g*, which also is in engagement with another wheel *f*. With the latter is rigidly connected a beveled pinion *e* in mesh with a beveled wheel *d*, which is rigid with a gear-wheel *c*, connected with the driving end of the spring through a suitable train of gearing.

In order that the car may be reversed, I have provided a lever *i*, (see Fig. 4,) which is mounted to turn upon the spindle *k* of the spring *a*. Upon this lever is carried a wheel *l*, with which is rigidly connected a pinion *m* in permanent engagement with the rotating gear *a'*, which is directly secured to the spring *a*. Upon the lever *i* is further secured a pinion *n*, which is permanently in engagement with the wheel *l*. Thus the wheel *n* always rotates in a predetermined direction and the wheel *l* always rotates in the opposite direction. According to the position of the lever

i (the movement of this lever being limited by stationary pins *p*) the wheel *o* is in driving engagement either with the wheel *l*, as shown in Fig. 4, or with the wheel *n*. It will be readily understood that the wheel *o* will accordingly rotate in one direction or the other, and with this wheel *o* is connected the gear *c*, so that shifting the lever *i* changes the direction in which the driven supporting-wheel *b* rotates, and thus reverses the car. In shifting the lever from one position to the other the wheel *l* or *n* is brought into engagement with the pinion *o* at about the same time that the companion wheel *n* or *l* moves out of engagement with the pinion *o*. This is done for the purpose of preventing the spring from suddenly running down, as it would if the wheel *a* was for any length of time allowed to remain out of driving connection with the wheel *b*. An accidental movement of the lever *i* may be prevented by means of a spring *g*.

The speed changing device is so constructed as not to require any wheels in addition to those which constitute the driving device. The pinion *r*, which carries the fan-governor, (see Fig. 2,) is adapted to be engaged either with the gear *c* or with the gear *t*, which form part of the train of gearing and rotate at different speeds. For this purpose the pinion *r* is mounted in a forked lever *s*, pivoted at *s'*, and the arrangement is such that the pinion *r* will come in engagement with one of the said wheels *c* or *t* before it leaves the other. By thus shifting the pinion *r* the number of revolutions of the fan-governor is changed, and thus the speed is controlled.

The stopping device consists of a leaf-spring *v*, secured to the top of plate *u* and provided at its central portion with a projection *w*, having a recess. The free end of this spring is forked and lies adjacent to the driven supporting-wheel *b*. Normally the spring *v* is out of engagement with the wheel *b*, as shown in Fig. 5, being held in such position by a crank-arm *y*, which engages the projection *w* at the recess thereof and which is secured to a rock-shaft *x*. At those places where it is desired to stop the car the rail A is provided with a projection A', which lies in the path of the crank-arm *y*, so that when the car reaches the said point the crank-arm *y* will spring into the position indicated in Fig. 3, thus releasing the spring *v* and allowing it to come into frictional contact with the wheel *b*, as shown. This arrests the car.

When it is desired to again start the car, the crank-arm *y* is turned back to the original position by means of a handle *z* on the rock-shaft *x*.

Another construction of the suspended car is shown in Figs. 6 to 12. Here the wheels of the motor are journaled in a frame 1, having a partition or bridge 2, and the height of the motor is reduced as far as possible. For this purpose I employ a series of springs *a*² of comparatively small diameter and located

side by side instead of a single coil-spring. These springs are mounted upon a spindle *k'* and are held against too great expansion by studs 4, which are secured to a disk 5, which also separates the adjacent springs. These pins form a cage for the springs, and instead of this form of the cage I might employ a complete casing having a partition corresponding to the plate of disk 5. The bridge 2 is used for the purpose of reducing the length of the motor. The use of the bridge enables the governor-spindle thus to be located in front of and in line with the pinion 7 and the stopping device. The supporting-wheel *b'* is driven from the wheel *c'* by means of the train of gearing *f' g' h'*. The reversing device consists of a lever *i'*, which is carried by the same bracket in which the supporting-wheel *b'* is journaled, and this lever turns about the axis of the supporting-wheel and carries the three wheels *f'*, *g'*, and *n'*. In the position illustrated by Fig. 9 the wheel *n'* is idle and the supporting-wheel *b'* rotates clockwise, as indicated. The pinion *n'* is always in engagement with the wheel *f'*. By throwing the reversing-lever *i'* into the position illustrated by Fig. 10 the wheel *f'* is brought out of engagement with the driving-wheel *c'*, and at the same time the wheel *n'* is brought into engagement with the wheel *c'*, so that the supporting-wheel *b'* is caused to rotate in the opposite direction. In order to prevent any accidental movement of the reversing-lever *i'* or any movement of such lever which might be due to the strain caused by the rotation of the gearing, I provide a spring *q'*, adapted to engage notches of the reversing-lever.

Fig. 11 illustrates another construction of the reversing device, in which the lever *i*² is mounted to turn on the spindle *k*² of the driving-spring, the said lever carrying a pinion *m*² in engagement with the driving-pinion *a*³, a toothed wheel *l*², which is rigid with the pinion *m*², and another pinion *n*², permanently in engagement with the gearing-wheel *l*². According to the position of the reversing-wheel *i*² the pinion *o*² is engaged either with the pinion *n*² or *l*². The stopping device is the same as hereinbefore described, except that a slightly-different form has been given to the handle *z*. When it is desired to obtain a quick stop, the rock-shaft *x* may be made with an arm or lever 8, adapted to project into the path of the fan-governor 6 and to arrest the same. (See Fig. 12.)

Figs. 13 to 18 illustrate the application of my invention to a surface car. The frame *l'* of the car is so constructed that the entire mechanism is received at the lower part of the frame and is covered by the seats. For this purpose the driving-spring *a*⁴ is located at one side and the wheel *b*⁴, with its ratchet, is located on the other side. The small wheels and other parts are covered by the floor of the car and by the platform. That part of the frame which goes under the platform is

made relatively narrow, so as to allow room for the steps. By this arrangement I am enabled to leave the central portion of the car unobstructed, so as to form a passage or aisle therein. The reversing device is the same in principle and operation as described with reference to the suspended car and comprises a reversing-lever v^3 , mounted to turn about the spindle k^3 of the driving-spring and provided at the ends with operating-rods i^4 , which lead to the platform and may be operated from such point. Upon this reversing lever is journaled the wheel l^3 , which forms part of the driving-gear and with which is rigidly connected a pinion m^3 . On the lever v^3 is further journaled a pinion n^3 in permanent engagement with the gear-wheel l^3 . According as either the wheel l^3 or the pinion n^3 engages the pinion o^3 the car will be propelled in one direction or the other. The stopping device, as illustrated by Figs. 17 and 18, consists of a lever 9, which a spring 10 presses toward the fan-governor $6'$, so as to stop the motor when in the position illustrated by Fig. 18. When it is desired to start the car, an operating-rod 12, which leads to the platform, is depressed so as to spring the lever 9 into the position shown in Fig. 17. At the same time a locking-lever 11 will automatically, either by its weight or under the influence of a spring, take the position shown in Fig. 17, in which such lever locks the lever 9 in its inactive position, so that the motor may propel the car. At points where it is desired to stop the car a projection from the track may engage the locking-lever 11 and cause it to spring back to the position shown in Fig. 18, so as to arrest the motor.

I claim as my invention—

1. In a car the combination with a motor proper and a device for transmitting motion to one of the supporting-wheels of the car, of a reversing device which forms the connection between the motor proper and the said transmission device, said reversing device comprising a lever, two intermeshing wheels carried by said lever and in permanent driv-

ing connection with the motor proper, one or the other of said wheels, according to the position of the reversing-wheel, being arranged for driving engagement with the transmission device, the said wheel being so arranged that one of the wheels if carried by the reversing-lever will not come out of mesh until the other wheel shall have come into mesh.

2. In a car the combination of a motor with a governor and a speed-controlling lever carrying said governor, said governor being in driving engagement, according to the position of the lever, with different wheels of the motor, which wheels have different speeds.

3. In a car the combination with the frame and the supporting-wheels, of a brake arranged to engage the supporting-wheels, and an operating-arm which, in one position, holds the brake away from the wheel, and in the other position, allows the brake to press against the wheel.

4. In a car the combination with a motor and a fan-governor connected therewith of an arresting device comprising a rock-shaft having two flat surfaces, a spring engaging one or the other of said surfaces to hold the rock-shaft steady, and a two-armed lever carried by said rock-shaft and arranged to engage the fan-governor.

5. In a car the combination with a motor and a fan-governor connected therewith, of a stop-lever arranged to project into the path of the fan-governor, means for throwing the stop-lever away from the governor, and a locking member arranged to hold the stop-lever out of action, said locking member projecting from the car so that it may be operated by engagement with a projection from the track.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

AUGUST SCHÜTZE.

Witnesses:

F. WALLEISER,
ROBERT THLINGHAMMER.