(No Model.)

E. LUCHS.

AUTOMATIC LINK MOTION FOR PRACTICAL TOYS.

No. 367,420. Patented Aug. 2, 1887.

Fig. 1

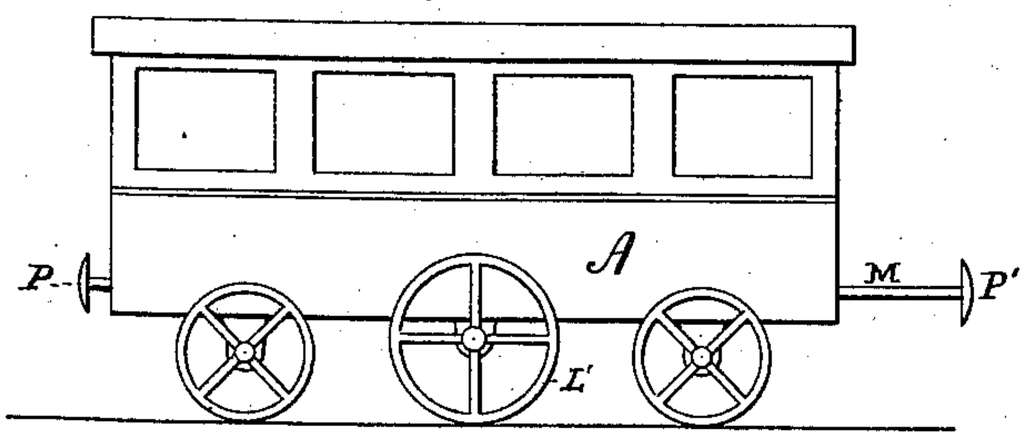


Fig. 2

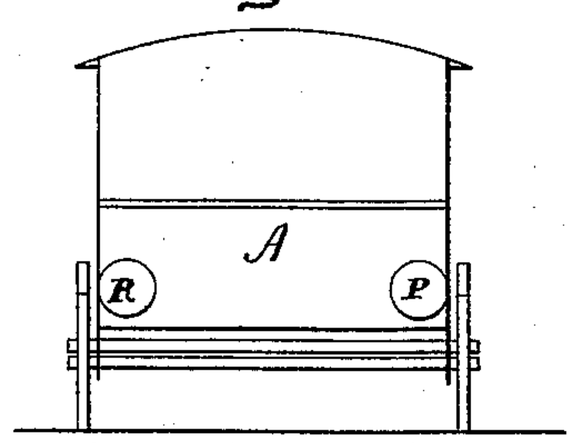


Fig. 3

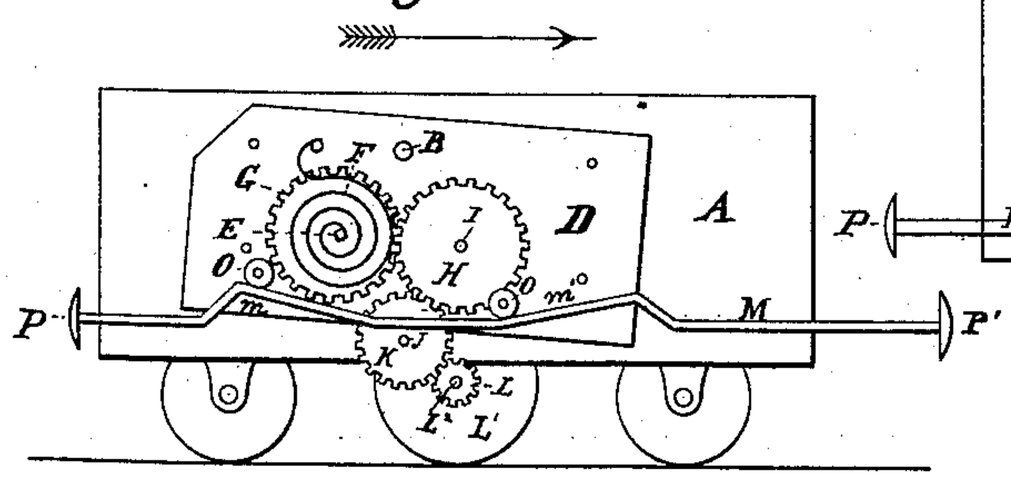


Fig. 4

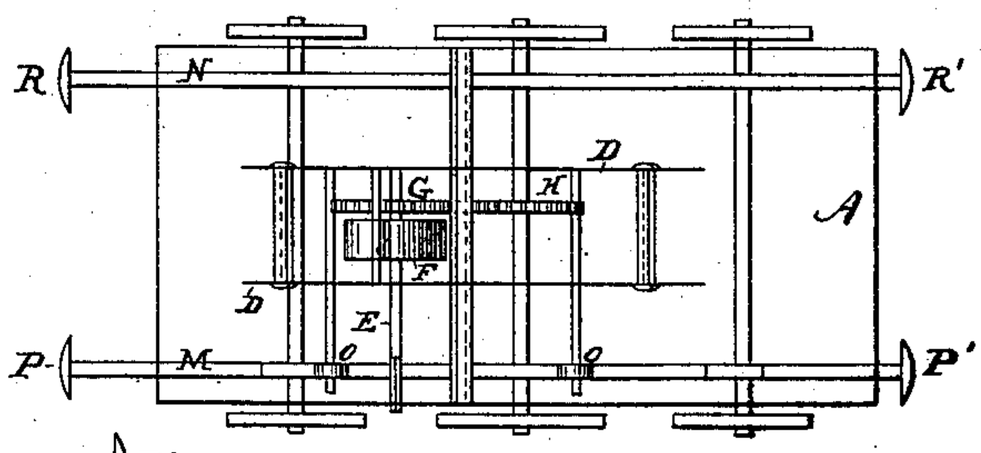


Fig. 5

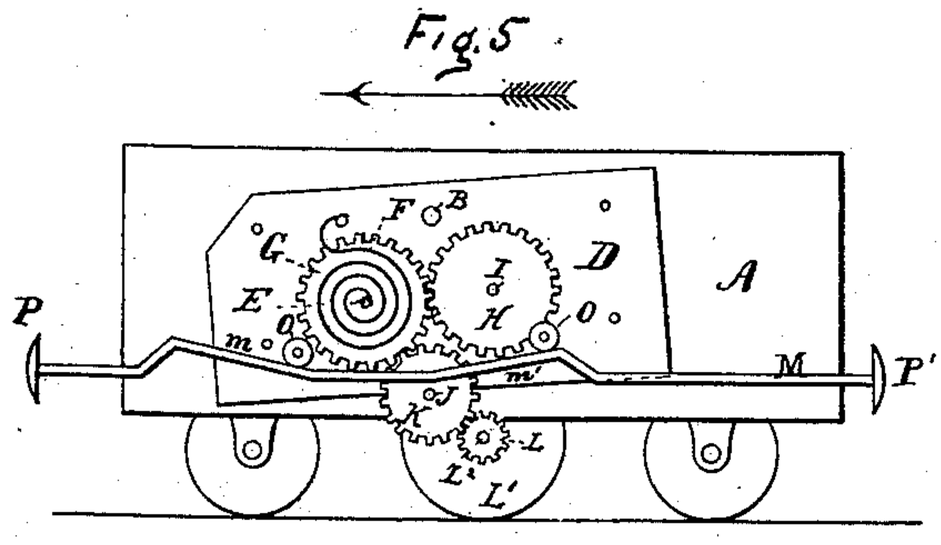
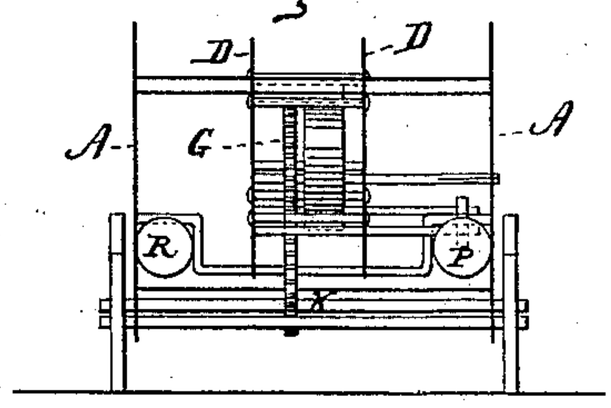


Fig. 6



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EDUARD LUCHS, OF NUREMBERG, BAVARIA, GERMANY.

AUTOMATIC LINK-MOTION FOR PRACTICAL TOYS.

SPECIFICATION forming part of Letters Patent No. 367,420, dated August 2, 1887.

Application filed January 11, 1887. Serial No. 224,004. (No model.)

To all whom it may concern:

Be it known that I, EDUARD LUCHS, of Nuremberg, Bavaria, Germany, have invented an Improvement in Automatic Link-Motions for Practicable Toys, of which the following is a specification.

My invention relates to mechanical toys; and it has for its object to provide a car or wagon which will be driven in one direction until it meets with some obstruction, when its motion will be automatically reversed, as will be more fully hereinafter set forth.

In the accompanying drawings, Figure 1 is a side view of the wagon; Fig. 2, an end view of the same. Fig. 3 is a side view, with one of the sides of the wagon removed to show the interior mechanism. Fig. 4 is a plan view of the device, the roof or cover being removed. Fig. 5 is a similar view to Fig. 3, the position of the mechanism being changed; and Fig. 6 is an end view, with the exterior case removed to show the interior mechanism.

A is the body of the wagon, which is supported on wheels, as usual, in this instance there being six. Pivoted on the rod B, attached to the frame A, is a case or box, D, containing the mechanism for propelling the wagon. This mechanism consists of a spindle, E, journaled between the walls of the case or box D and extending out through one of the sides of the wagon, and having a squared end for turning the said spindle with a key. Attached to the spindle E, and coiled around the same, is a spring, F, the opposite end of which is attached to the case or box D, or to one of the cross-bars of the case, which spring, when tightly coiled, serves to rotate the spindle E in the same manner as a spring in a clock mechanism. Secured on the spindle E is a cog-wheel, G, which meshes with the cog-wheel H, secured to a spindle, I, journaled in the walls of the case or box D.

Mounted on a stud, J, journaled in the walls of the body A of the wagon and below the case or box D, is a pinion, K, which meshes with the pinion L, secured to the axle L^2 of one pair of the wagon-wheels.

Guided in the front and rear walls of the wagon are the rods M N, the rod M being provided with the inclined or angled parts *m m'*. Above the angled parts *m m'* of rod M, and journaled in the case or box D, are the rollers O, which rest upon either of the angled parts *m m'* of rod M. Upon the ends of rods M N are secured the buffers P P' and R R', which serve to receive the shock of collision.

The operation of my device is as follows: The spring F being coiled tightly around the spindle E, causes said spindle to revolve, and with it the cog-wheel G, which causes cog-wheel H and pinions K and L to revolve, and with them the wheels L', thereby moving the wagon in the direction of the arrow in Fig. 3. When the wagon collides with some object by the striking of buffers P' R', the rod M is immediately pushed backward into the wagon and the angled part *m'*, striking the roller O and running under it, raises said roller, and with it the near end of case or box D, said case swinging on rod B, thereby disengaging cog-wheel H and pinion K, lowering the opposite end of case or box D, causing the cog-wheel G and pinion K to engage, thereby automatically reversing the motion of said wagon and causing it to run in the opposite direction, as indicated by the arrow in Fig. 5, until buffers P and R strike some solid object, repeating the operation, as above described, again reversing the motion of said wagon, sending it backward and forward alternately until the spring is run down or the playing has ceased.

The rod N is not essential to the operation of the above mechanism, and may be omitted therefrom.

Having now fully described my invention, what I claim is—

1. A mechanical toy provided with a driving mechanism carried by a pivoted case, and means, substantially as described, for changing the direction of motion of the toy by rotating said frame automatically, as set forth.

2. A mechanical toy carrying a driving mechanism carried by the pivoted case D, and means, as described, whereby the operation of the driving mechanism, and thereby the direction of motion of the toy, is reversed by the toy coming in contact with an obstruction through the intervention of a sliding rod, which acts against the driving mechanism, substantially as set forth.

3. In a mechanical toy, the sliding rod M, having inclined or angled parts *m m'*, com-

bined with the pivoted case D, carrying the propelling mechanism, against which case said rod acts to change the direction of motion of the propelling mechanism when moved inward, substantially as described.

4. In a mechanical toy, the combination of the pivoted case or box D, containing the propelling mechanism, said mechanism gearing with the driving-wheels of the toy, and rollers O, with the rod M, having inclined or angled parts *m m'*, against which case D the rod M acts when moved forward or backward to change the direction of motion of the propelling mechanism and thereby the motion of the toy, substantially as described.

5. In a mechanical toy, the pivoted case or box D, containing the propelling mechanism, consisting of the cog-wheels G and H and spring F, in combination with the pinion K, gearing with cog-wheel G or H, and journaled in the body A of the wagon, substantially as described.

6. In a mechanical toy, the pivoted case or box D, containing the propelling mechanism, the pinion K, gearing with the cog-wheel G or H, and the pinion L on the axle L^2, in combination with the sliding rod M, adapted to reverse the motion of the wagon when coming in contact with an obstruction, substantially as described.

The foregoing specification of my invention for an automatic link-motion for practicable toys signed by me this 7th day of December, 1886.

EDUARD LUCHS.

Witnesses:
ANDR. STICH,
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