

C. H. HALL.

Car Truck.

No. 49,400.

Patented Aug. 15, 1865.

Fig. 1.

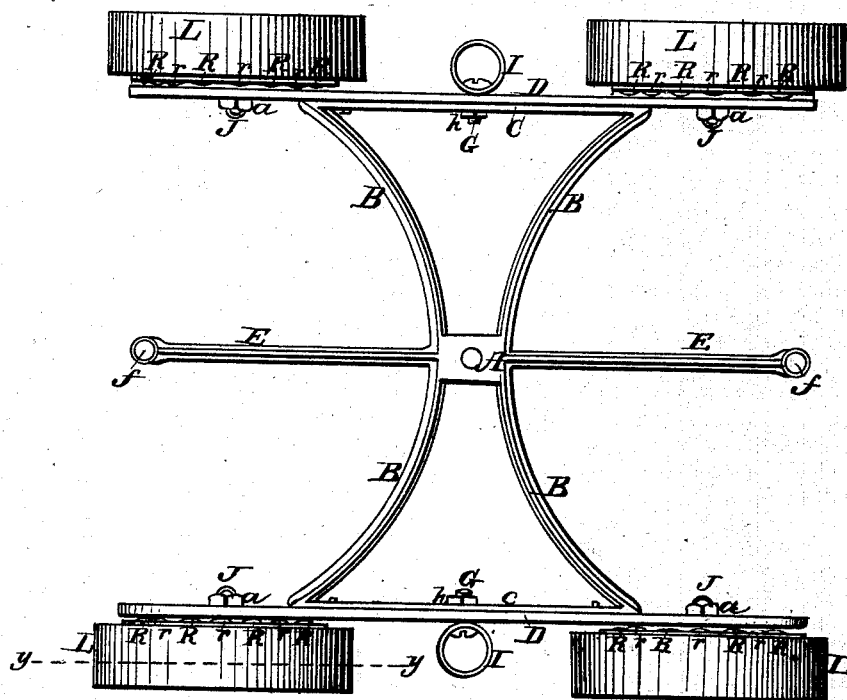


Fig. 3.

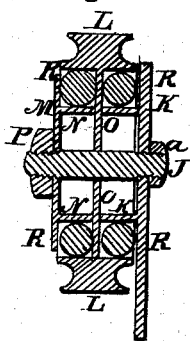


Fig. 2.

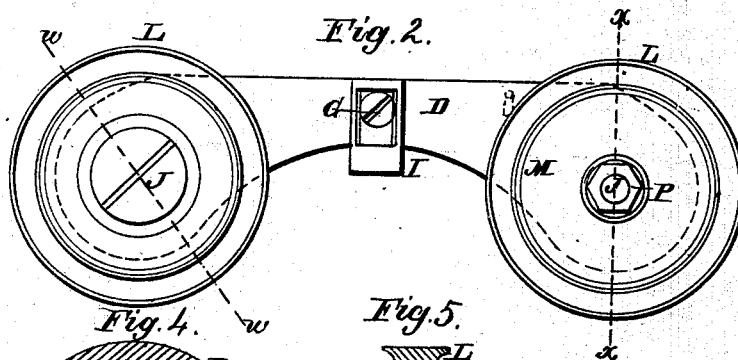


Fig. 4.

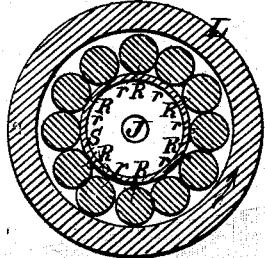
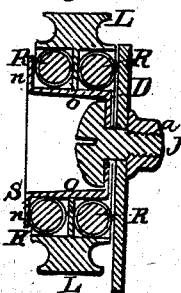


Fig. 5.



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UNITED STATES PATENT OFFICE.

C. H. HALL, OF NEW YORK, N. Y.

IMPROVED CAR-TRUCK.

Specification forming part of Letters Patent No. 49,400, dated August 15, 1865.

To all whom it may concern:

Be it known that I, C. H. HALL, of New York, in the county and State of New York, have invented a new and useful Improvement in Car-Trucks; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan. Fig. 2 is a side elevation. Fig. 3 is a transverse vertical section through one of the wheels in the line *xx* of Fig. 2. Fig. 4 is a vertical section through one of the wheels in the line *yy* of Fig. 1; and Fig. 5 is a transverse central section through one of the wheels in the line *ww* of Fig. 2.

Like parts are indicated by the same letters in all the drawings.

The nature of my invention consists, first, in attaching the front and rear wheels in pairs to bars *D*, pivoted to and arranged parallel with the sides of the frame, so that the said wheels may be free to move independently of each other, either vertically or progressively, to accommodate themselves to the irregularities, undulations, or windings of the track; second, in casting the iron frame *A B C E*, upon which the car rests, in one piece, as hereinafter described, so as to be not only cheap in construction, but also very stiff and durable; third, in constructing the truck-wheels with an annular groove each side of a central partition, *O*, for the reception of two sets of anti-friction balls, to receive the vertical pressure or the weight of the car, and also the lateral pressure of the wheels, said balls rolling in the grooves on an enlarged fixed axis or drum and against a washer on the outer side of the wheel and the expanded surface of the said bars *D D* on the opposite side; and, fourth, in making each alternate ball of the series of friction-balls a trifle smaller, so that when the smaller ball, placed between two larger ones, comes in contact with them, there will be no sliding friction on the points of contact, (the smaller ball moving freely in the opposite direction to the two larger ones, as shown by the arrows in Fig. 4,) whereas if all the balls were of the same diameter (as hitherto employed where a series of anti-friction rolls have been used) the surfaces of any two com-

ing in contact would move in opposite directions, and consequently produce a great amount of sliding friction.

To enable others skilled in the art to make and use my invention, I will now proceed to describe the construction and operation of the same.

The truck-frame I make of iron, cast in one piece, as shown in Fig. 1, consisting of two side pieces, *C C*, united by the curved ribs *B B*, *A* being the center, provided with a hole for the reception of the king-bolt, and *E E* two central arms, the ends of which are provided with sockets for the reception of rubber springs *ff*, on which the center of the body of the car is supported.

D D are the two bars or plates, of cast or malleable iron or other suitable metal, the shape of which is clearly shown in Figs. 1 and 2, being attached to the sides *C C* of the frame by means of strong bolts or pivots *G G*, or their equivalents, the inner ends of which are provided with screws and nuts *h*.

I I are cylindrical sockets for the reception of rubber springs to support the two sides of the car-body, said sockets being attached to the bars *D D* by means of the pivots *G G*, as shown in Figs. 1 and 2, so as to be susceptible of a slight vibration in case the said bars, in conforming to the irregularities or undulations of the track, move out of parallel with the bottom of the car.

L L L L are the four wheels of the truck, which are attached in pairs, one at the front and one at the rear of each of the bars *D D*, on fixed axles, so as to turn independently of each other. These fixed axles I construct either as represented in Figs. 3 or 5. In Fig. 5 the axle consists of a cylindrical cup, of cast iron or other suitable metal, permanently attached to the side of the bar *D* by means of the screw-bolt *J* and nut *a*, *n* being a flange, which answers the purpose of a washer to keep the wheel from coming off. In Fig. 3 one half of the hub consists of a hollow drum, *K*, cast upon the side of the bar *D* and extending nearly half-way through the wheel, or to the partition *O*, the other half of said drum being removable, and consisting of an external disk or washer, *M*, and hollow cylinder *N*. Through the center of the disk or washer *M* and partition *O* is

a round hole for the reception of the bolt J, by means of which and the nuts P and a the disk M and the wheel itself are prevented from coming off.

The wheels L L L L are made of cast-iron, with a smooth annular groove or rabbet each side of the central partition, O, as shown in Figs. 3, 4, and 5, for the reception of the hard metallic balls R and r, the relative size and arrangement of which I have already described. The rollers R are a trifle larger than the rollers r, as represented in Fig. 4, and for the object specified above. By thus substituting rolling friction for rubbing, both to support the weight and to resist all lateral pressure, I effect a very considerable saving of power required to draw the car, as well as the expense of lubrication.

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

1. Attaching the front and rear wheels in pairs to the bars D D, arranged parallel with and pivoted to the sides of the truck-frame, substantially as set forth, and for the purpose described.

2. The iron frame A B C E, on which the car rests, cast in a single piece, substantially as and for the purpose described.

3. A truck-wheel with an annular groove each side of the central partition, O, in combination with two sets of anti-friction balls, a fixed axle, and side washers, and the iron frame A B C E, substantially as and for the purpose described.

4. In a series of friction-balls, the arrangement alternately of larger and smaller balls when combined with a truck-frame, substantially as and for the purpose described.

5. The hollow axle S, provided with an outer flange, n, in combination with the bars D, truck-wheels, and anti-friction balls and truck-frame, substantially as and for the purpose described.

6. The removable part N of the axle and the washer M, cast in one piece, in combination with the truck-wheel L and anti-friction balls and truck-frame, substantially as and for the purpose described.

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