2 Sheets—Sheet 1.

G. VINCENT.
Car-Truck.

No. 212,771. **Patented Feb. 25, 1879.**

Fig. 1.

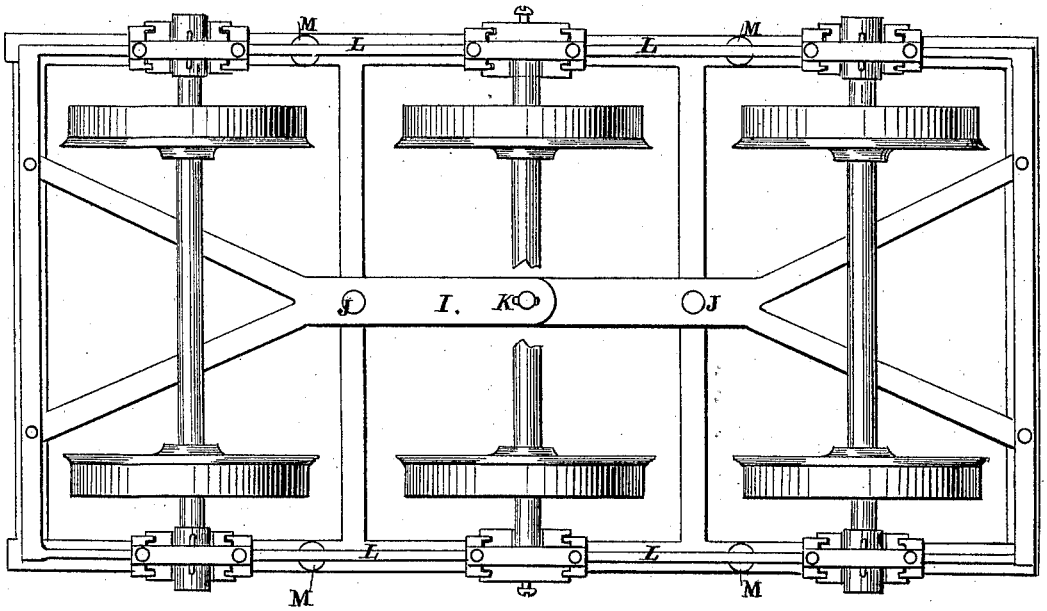
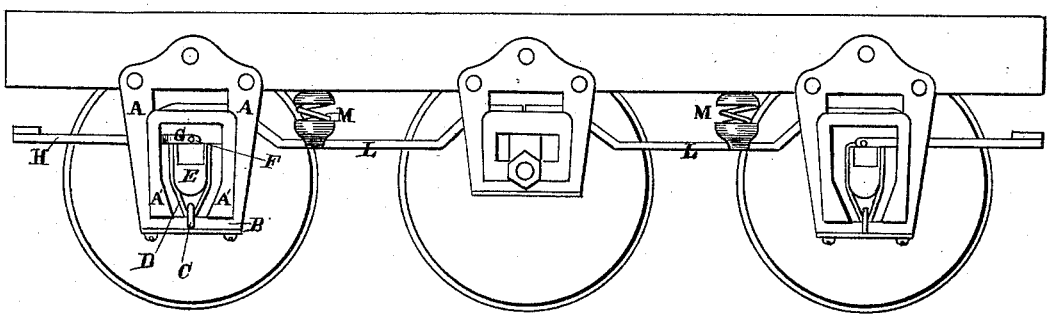


Fig. 2.



Witnesses
Geo. H. Strong.
Frank A. Brooks

Inventor
George Vincent

2 Sheets—Sheet 2.

G. VINCENT.

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Fig. 3.

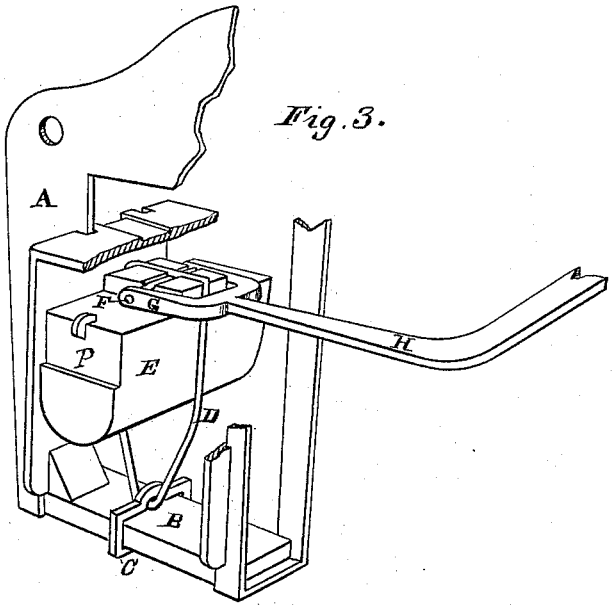


Fig. 4.

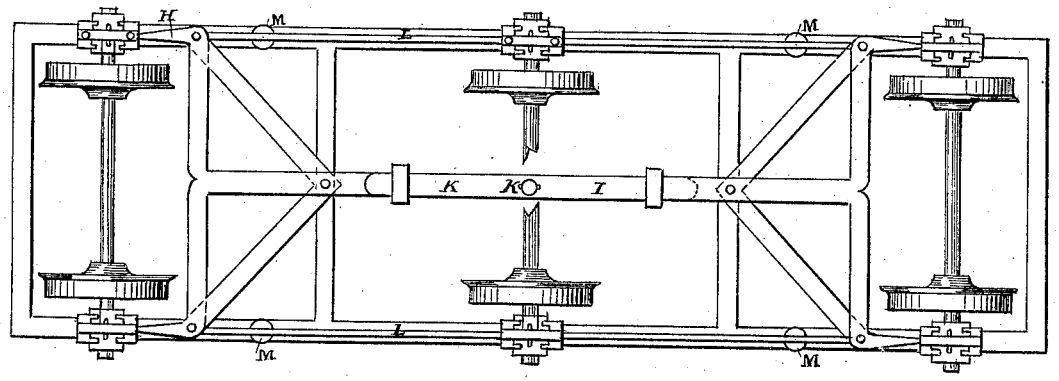
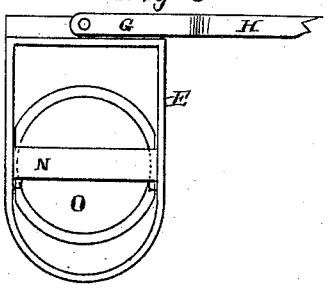
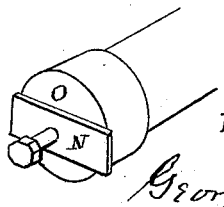


Fig. 5





Witnesses
Geo. H. Strong.
Frank A. Brooks

Inventor
George Vincent

UNITED STATES PATENT OFFICE.

GEORGE VINCENT, OF STOCKTON, CALIFORNIA.

IMPROVEMENT IN CAR-TRUCKS.

Specification forming part of Letters Patent No. **212,771**, dated February 25, 1879; application filed July 16, 1878.

To all whom it may concern:

Be it known that I, GEORGE VINCENT, of Stockton, county of San Joaquin and State of California, have invented an Improved Railway-Car Truck; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to certain improvements in car-trucks and in a means for causing them to adapt themselves to the varying curves of the railways over which they pass, and thus reduce the wear and friction which usually take place at these points, and in a more effectual manner than in any of my previous patents, upon which this is an improvement.

My present improvements in car-trucks, or the self-acting mechanism by which they accommodate themselves to the varying curvature of the road, consist in a novel method of hanging the boxes in which the journals of the axles are supported, and in a means of connecting the leading and trailing wheels of the truck so that they will conform to the curvature of the road and act upon each other independently of the central pair of wheels, but at the same time, in combination with the truck-frame, central pair of wheels, and the rail, form a perfect-acting flexible truck; and it also consists in certain details of construction, which will be more fully described by referring to the accompanying drawings, in which—

Figure 1 is a plan or bottom view. Fig. 2 is a side elevation. Fig. 3 is a view of the box and pedestal. Fig. 4 is a modification of my device. Fig. 5 is a view of the cap or thimble and bar.

In order to effect my object, the pedestal A has a skeleton box, A′, moving between its sides in guides, as shown, and this skeleton box has a stout bar, B, across the lower part. A loop or shackle, C, surrounds this bar, so that the shackle D may pass through it and have a free swiveling motion, the same as that by which the forward end of a truck for hauling goods is suspended from its front axle. The shackle D incloses the box E, passing across the top and resting upon the pin F, as shown. This pin passes through the two sides of the fork G of the arm H, and this arm is bent around, so as to connect the boxes at each end of the axle with the longitudinal central bar I, as shown. This bar is pivoted to the frame at a point, J, midway between the center and the end axle, and it also has a bolt, K, uniting it with the similar bar from the opposite end of the truck, a small slot allowing them sufficient motion upon each other. The bolt J is of sufficient length to allow a vertical movement of the bars to accommodate them to the action of the equalizing-levers L, upon which are mounted the springs M, and to adjust themselves and the outer or skeleton box to the irregularities of the road. This box moves in guides in the pedestal.

It will be seen by this construction and my method of swinging the boxes in the shackles D that the adjustment to any curve is easily made, and the pressure required to overcome the friction of the moving parts will be reduced to a minimum. The end of the axle enters its box and has a thrust-bearing, N, which receives all end-thrust, and thus relieves the shoulder at the inner end of the box of all wear.

A babbitted cap, O, fits over the end of the axle, and is flattened at the sides, so as to drop into the box, and it is prevented by its shape from turning. The thrust-bearing N lies outside this cap, as shown, and a sliding plate, P, drops in at the outer end and retains the parts in place. A set-screw, R, may pass through the plate P, and by it any wear of the cap can be taken up and compensated. The whole action is very simple, easy to get at and keep in repair, and its movement is prompt even in the shortest curves. In the present case, where equalizing-bars are used, it will be manifest that the whole mechanism is supported at four points—that is, upon the springs M; but when desired the equalizing-bars may be dispensed with, and the frame supported upon six equidistant spiral springs. The leading and trailing wheels may thus be brought nearer together and the wheel-base correspondingly diminished. This arrangement is not applicable to bogy-trucks, but only to six-wheeled cars.

In the present case I have shown my mechanism upon what is called a "six-wheeled

bogy-truck," such as are employed to support each end of railway-cars of the usual American patterns; and it will be seen that in this form of truck, where the space is so filled up and the wheels so near together, the curved arms H, which unite the boxes at each end of an axle, must pass around outside the leading and trailing wheels; but in cars of considerable length, where only six wheels are employed, and these wheels widely separated, the arms H may pass inside these outer pairs of wheels, and this will simplify the construction very materially, as shown in Fig. 4. This manner of constructing the boxes insures their moving in exact unison with the axles; and the axis of the box and the axle will always be coincident with the opening through which the axle enters. I am therefore enabled to make this opening a perfect fit to the axle, which will be dust-tight.

It will be seen that upon entering a curve, however slight, the action of the rail upon the flange of the wheel will press the end of the journal against the stationary babbitted cap O, and this will be received by the thrust-bearing N. The friction caused by the weight of the car will be reduced to a minimum by the peculiar manner of hanging the boxes by the shackles before described, and this thrust moves the box, thus acting upon the arms H and I, so as to bring the axles of the leading and trailing wheels into the position of radii of the curve. The friction is so slight upon these moving parts that the mechanism will readily answer to the slightest curve, and I am enabled to overcome the objectionable wear of the shoulders of the axles and the boxes which will take place in any less perfect and delicately-moving device.

The action of the truck or car when it enters a curve will thus depend upon the leading and trailing wheels, the truck or car frame, the central pair of wheels, which act in unison with the frame, and the track itself. In other words, the central pair of wheels supported by the truck-frame act as a fulcrum by their resistance against the rail upon entering a curve, and this allows the curve to act upon the leading-wheels, which, by their connection with the trailing-wheels, act upon them also, and thus all the wheel-axles will become radii of the curve, whatever may be its degree.

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

1. The journal-boxes E, provided with the thrust-bearing N, and suspended within the skeleton exterior boxes A′ by the shackles or stirrups C D, so as to receive the axle and support the car from it while allowing changes in the position of the axle, substantially as herein described.

2. The journal-boxes E, with their supporting-links G D, as shown, in combination with the pin F of the arms G and the arms H and I, substantially as and for the purpose herein described.

3. In a truck-frame, the journal-boxes E, freely suspended by the shackle or stirrups, as shown, and receiving the ends of the axles, in combination with the arms H and I, uniting the leading and trailing wheels, and the central pair of wheels with their stationary boxes, substantially as herein described.

4. The cap or thimble O, fitted within the box E, and inclosing the end of the axle, as shown, in combination with the thrust-bearing N and the stirrups or shackles in which the box is supported, substantially as herein described.

5. The cap or thimble O, fitted within the box E, supported by stirrups, as shown, said cap being fitted over the end of the axle, and having the thrust-bearing N, in combination with the plate P, substantially as and for the purpose herein described.

In witness whereof I hereunto set my hand.

GEORGE VINCENT.

Witnesses.
GEO. H. STRONG,
FRANK A. BROOKS.