No. 609,782. Patented Aug. 30, 1898.

G. J. CAPEWELL.

RAILWAY CAR TRUCK.

(Application filed Jan. 23, 1896. Renewed Jan. 5, 1898.)

(No Model.) 2 Sheets—Sheet 1.

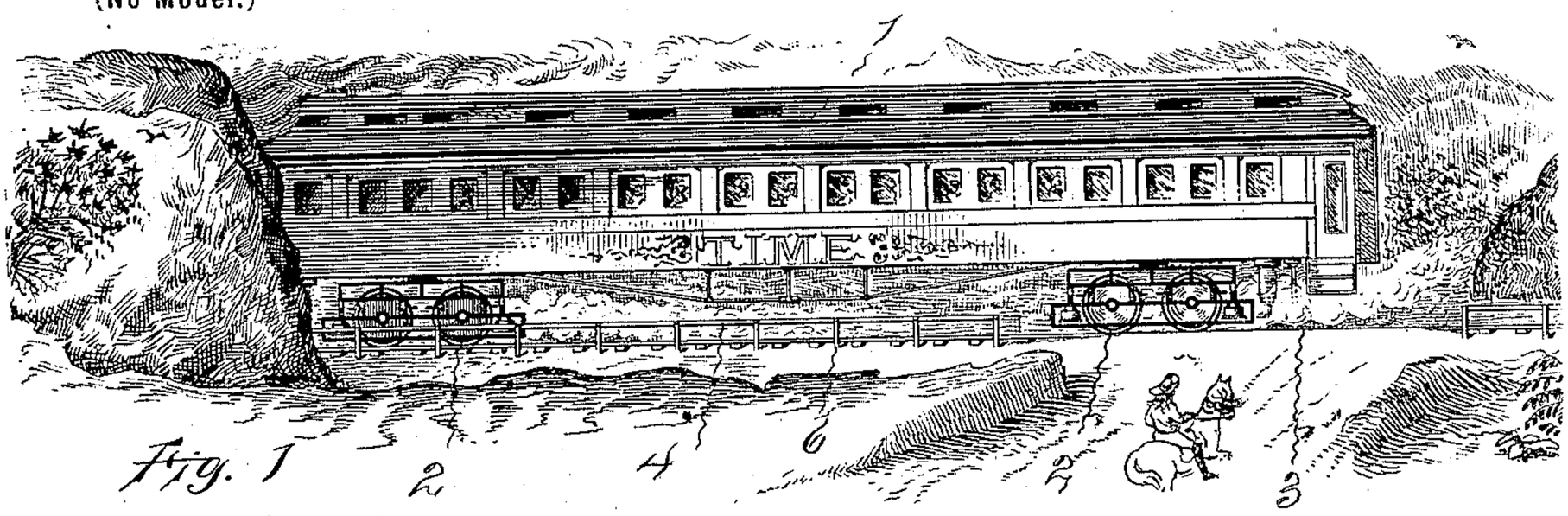


Fig. 1

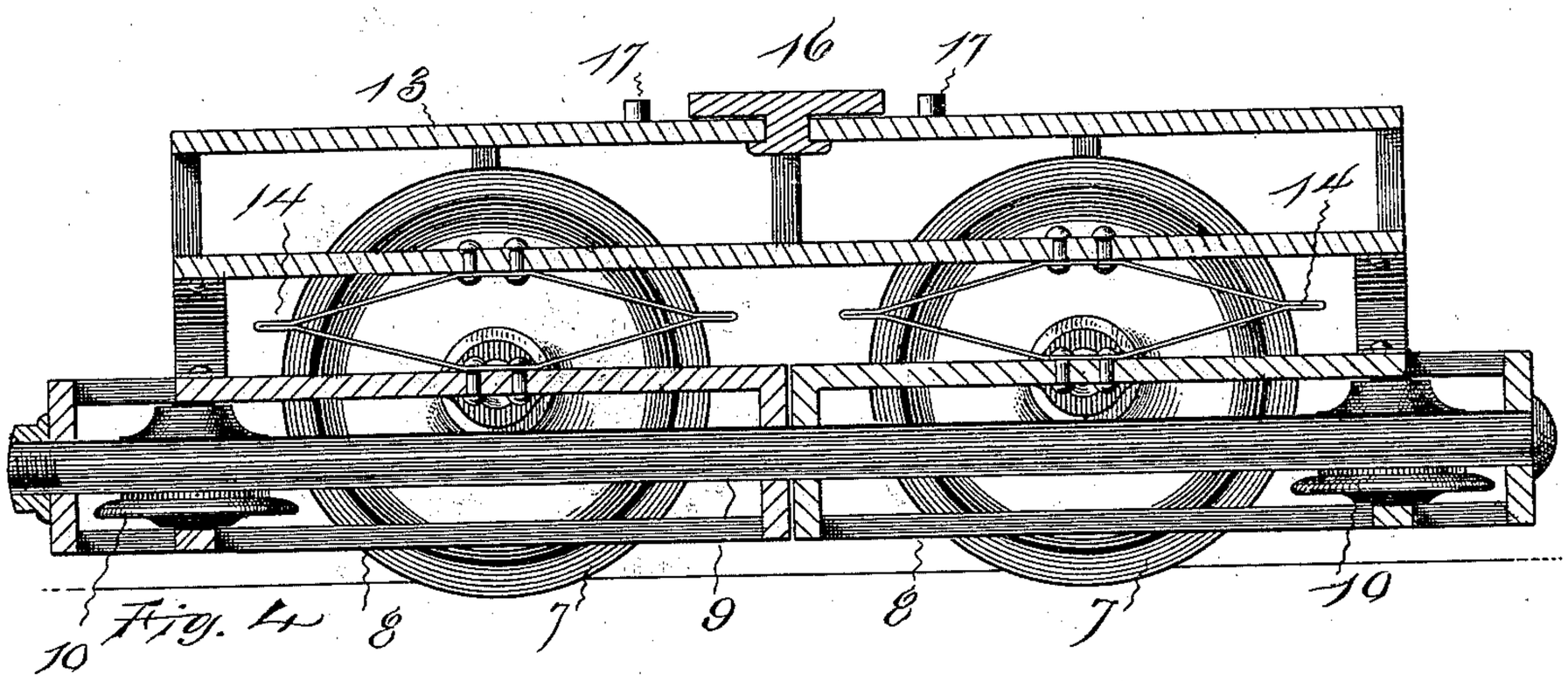


Fig. 4

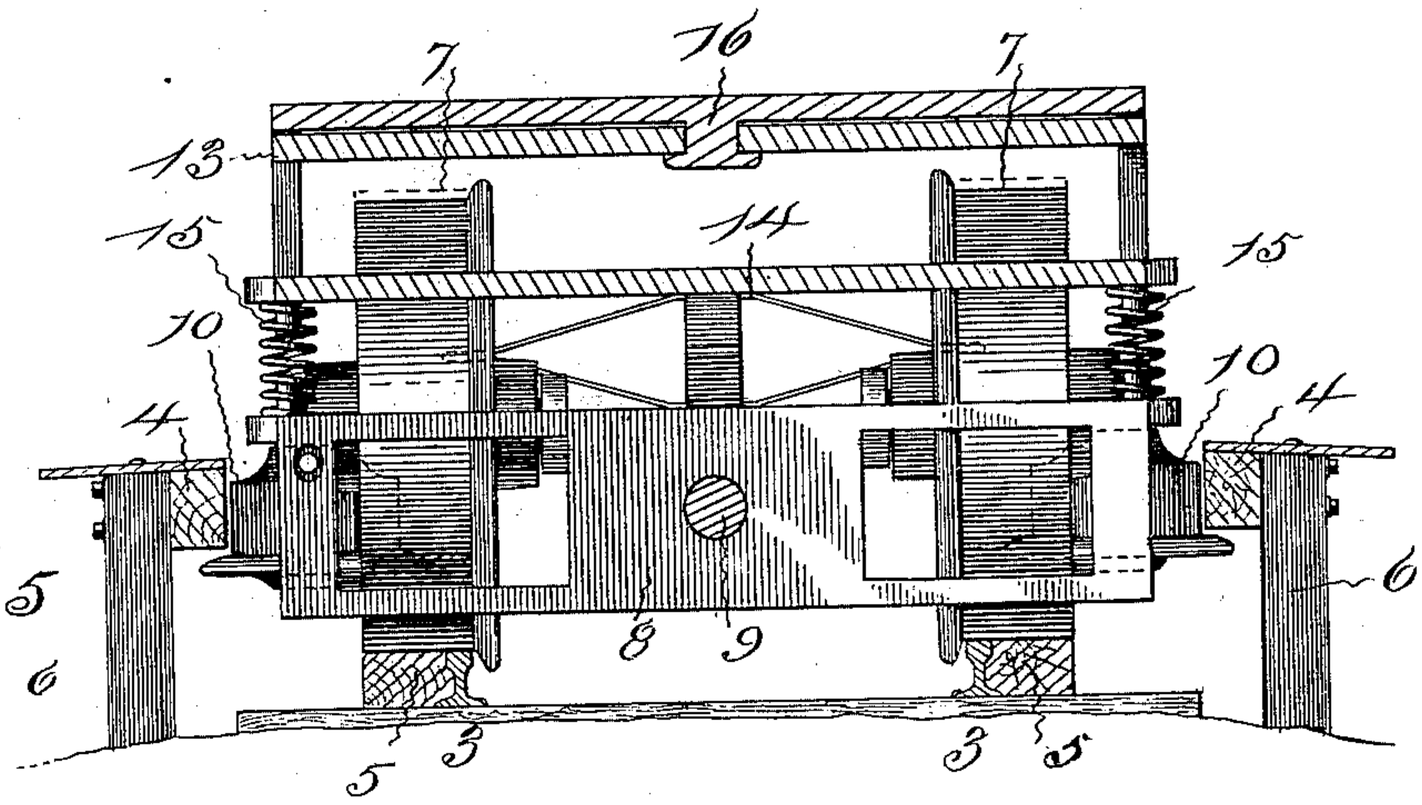


Fig. 5

Witnesses:

E. J. Hyde.

C. E. Buckland.

Inventor:

George J. Capewell, by

Harry P. Williams, atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 609,782. Patented Aug. 30, 1898.

G. J. CAPEWELL.

RAILWAY CAR TRUCK.

(Application filed Jan. 23, 1896. Renewed Jan. 5, 1898.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2

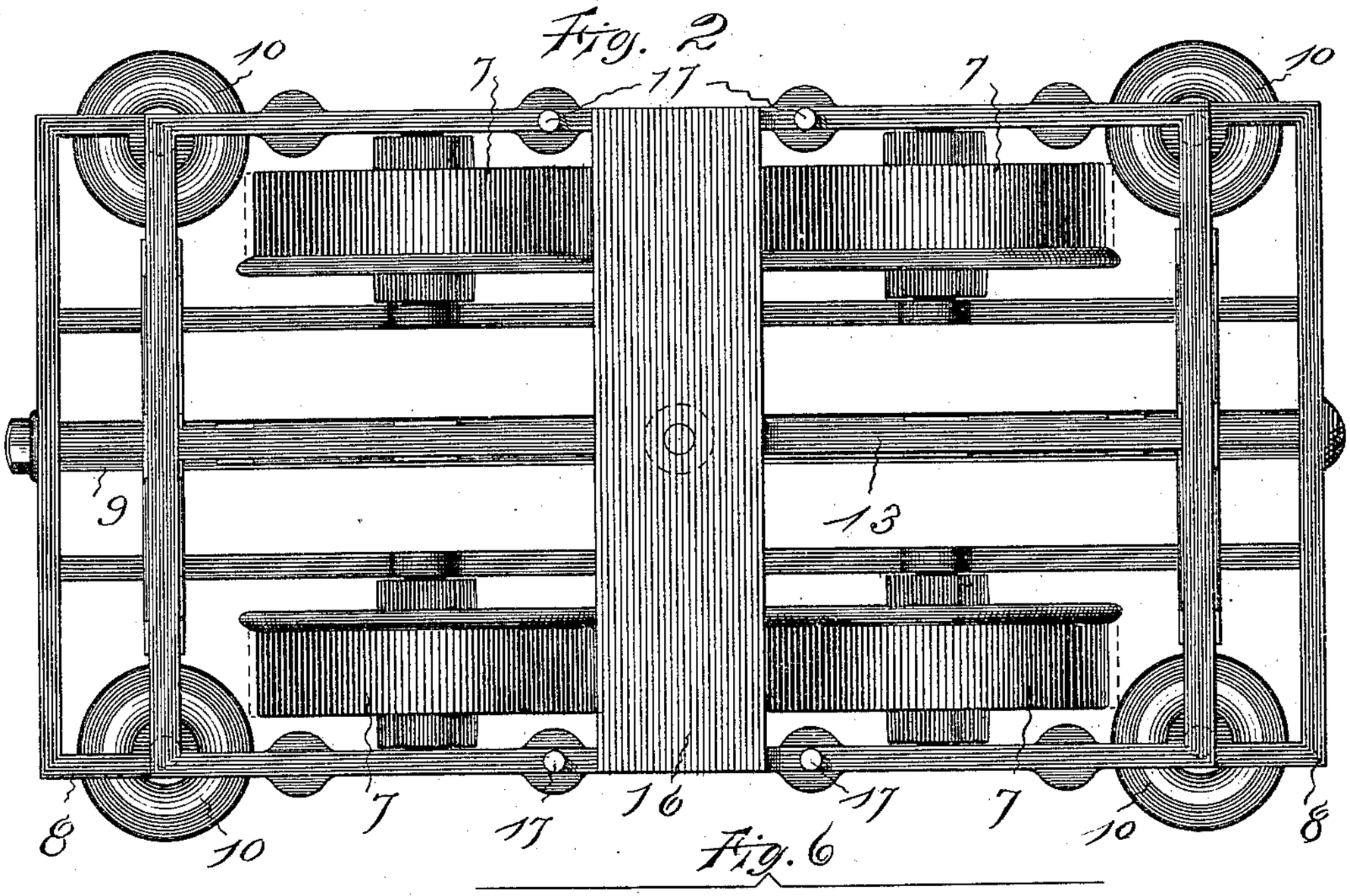
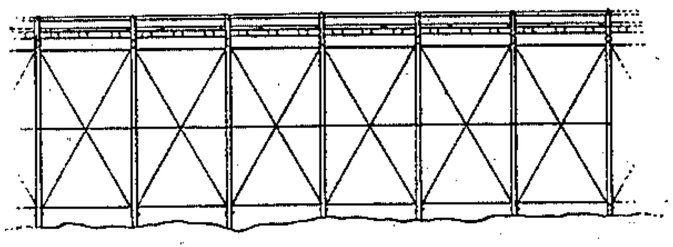
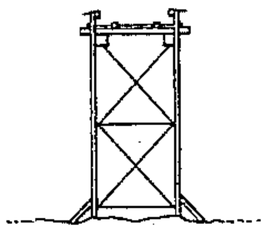


Fig. 6





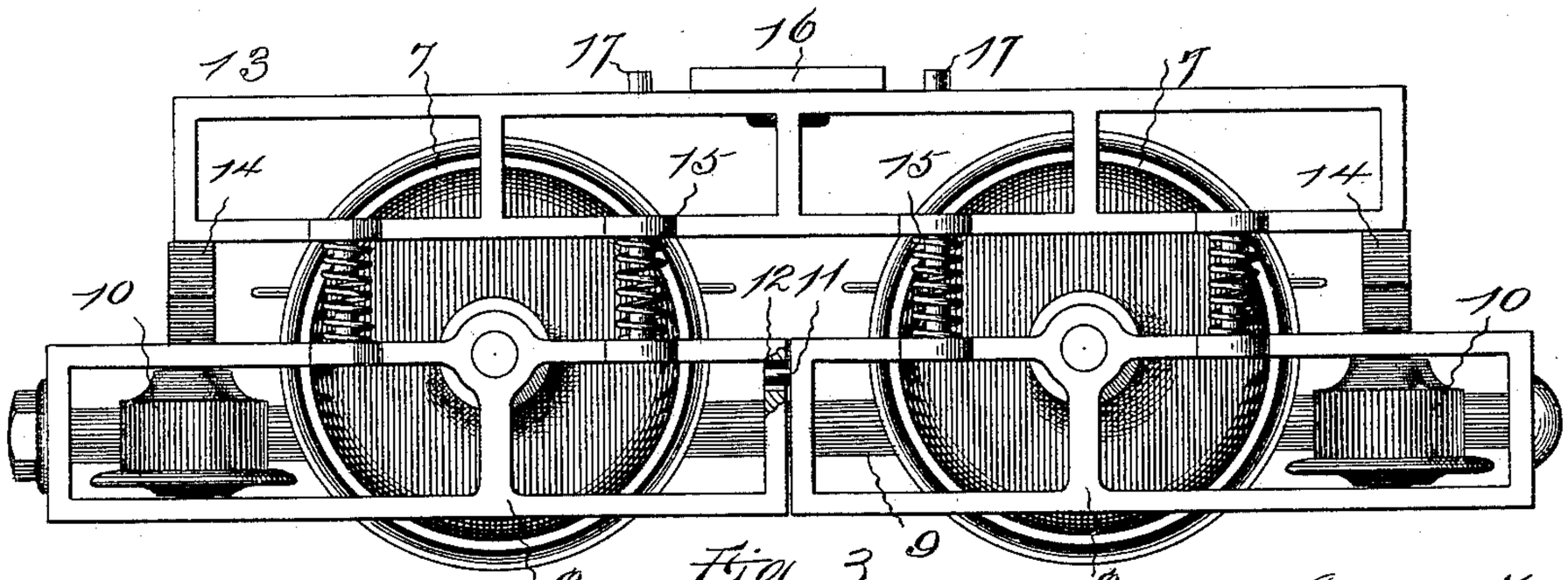


Fig. 3

Witnesses:

E. J. Hyde.

C. F. Burkland.

Inventor:

George J. Capewell, by

Harry P. Williams,

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE J. CAPEWELL, OF HARTFORD, CONNECTICUT.

RAILWAY-CAR TRUCK.

SPECIFICATION forming part of Letters Patent No. 609,782, dated August 30, 1898.

Application filed January 23, 1896. Renewed January 5, 1898. Serial No. 666,703. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. CAPEWELL, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Railway-Car Trucks, of which the following is a specification.

The invention relates to the class of railway-car trucks that are designed for high speeds and which can be utilized with tracks of common construction.

The object of the invention is to provide a comparatively simple and cheap truck that will be light, strong, and durable and of such construction that high speeds can be maintained with a minimum amount of friction on the track provided without danger that the wheels will leave the way, thus insuring safety at high velocities with the expenditure of an economical amount of energy.

The invention resides in a truck having independently-oscillating wheel-frames borne by the journals of the independent traction-wheels and provided with outward-bearing guiding-wheels and a truck-frame yieldingly connected with and borne by the wheel-frames and adapted to be pivotally connected with the bottom of a car, as more particularly hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a general view illustrating a section of a railway-line with a car provided with the improved trucks. Fig. 2 is an enlarged plan of one of the trucks. Fig. 3 is a side elevation of the same. Fig. 4 is a central longitudinal section, and Fig. 5 is a middle transverse section, of the truck, showing the traction-rails and the guiding-rails in section, while Fig. 6 illustrates a manner in which the way for this truck may be built.

In the views, 1 indicates a vestibule-car of ordinary type; 2, the trucks of the car; 3, the traction-rails, and 4 the guiding-rails of the way provided for these trucks. The traction-rails 3 may be built by placing stringers 5 on the ties along the outside of the usual metallic rails to provide the desired wide tread-surface for the wheels of the improved truck, but at the same time leave the rails so that rolling-stock of the ordinary form can use the track. These traction-rails, however, may be made of single timbers of such width that it will be unnecessary to use a stiff metallic rail. These traction-rails may be laid level with the ground; but preferably they will be raised on a trestle or elevated structure, as shown in Fig. 6, so as to avoid grade-crossings and also provide a structure which can be easily kept free from ice and snow.

Set with suitable firmness in the earth or supported by the road-bed along each side of the traction-rails are posts 6, which are connected together at a higher level than the traction-rails by the guiding-rails 4, that are preferably timber stringers bolted or otherwise firmly secured to the posts. These posts are so located and the guiding-rails are so connected with them that a guiding-way is formed parallel with the traction-way for the entire length of the road, except where a grade-crossing is necessary, as shown in Fig. 1, or it is desirable to omit the guideway at a station to facilitate passing across the way. At the crossing or station the guiding-rails may be omitted for a short distance to permit the passage from one side to the other.

Any number of pairs of traction-wheels 7 may be provided for the truck. These traction-wheels have a wide tread, and are preferably flanged, as is common, so that the wheels will be sure to remain on the tracks at the grade-crossings and stations where the guiding-rails are omitted. The traction-wheels are independent of each other, so that in rounding curves there will be no undue friction of the wheels on one side, and the short journals of the traction-wheels support the wheel-frames 8.

In the form of truck shown there are two wheel-frames 8, each of which is supported by the journals of the independent wheels. These two frames are connected together and held so that they may oscillate transversely independent of each other by a central rod or bolt 9, which is provided with suitable heads for holding the frames together properly. Each of these wheel-frames preferably supports a pair of guiding-wheels 10, that usually have wide peripheries and a common flange. These guiding-wheels are so arranged and located that when the traction-wheels are on the traction-rails the guiding-wheels will almost be in contact with the inner surfaces

of the outer elevated guiding-rails, with the flanges of the guiding-wheels extending beneath the guiding-rails. A pin 11 or other part is preferably arranged on one frame to project into an opening or slot 12 in the other frame, so as to limit the amount of independent oscillation of the two wheel-frames.

A truck-frame 13 is located above the wheel-frames 8 and connected thereto by leaf-springs 14 and spiral springs 15. Any desired number and arrangement of these springs may be used, and they form an elastic connection between the wheel-frames and the truck-frame, which yields in different directions and up and down to allow for the varying relations of the car-body with the truck. The truck-frame preferably has a lower section, to which the springs are connected, and an upper section, to which is pivotally connected, by a suitable form of king or pivot bolt, a plate 16, that is adapted to be secured to the bottom of the car. Pins or other devices 17 may be provided to limit the amount of oscillation between the truck and this plate.

With this construction a light, strong, and durable truck can be formed of steel. The truck can have any number of pairs of traction-wheels, each pair having independent journals and supporting independent wheel-frames, that in turn support through the medium of the springs the truck-frame, that is pivotally connected with a plate or frame that is to be secured to the bottom of the car.

As the wheel-frames for each pair of wheels are allowed an independent transverse oscillation and are not rigidly connected with the truck-frame, each wheel always remains on the track and sustains its proper share of the load. This also insures that all jar resulting from unevenness of the traction-rails is taken up by the yielding of the springs as the wheel-frames transversely oscillate in riding over the unevenness, and thus the pound is not transmitted to the car itself. Of course these springs yield and assume different positions without affecting the rigid wheel-frames, as the relative position between the car-body and the truck changes under varying weights and dispositions of the load. This construction of the truck-frame and the independent wheel-frames relieves the car from a great amount of jar and pound, thus permitting high rates of speed and at the same time increasing the comfort of the passengers.

When the traction-wheels are supported on independent journals in rounding curves, they can run their relative rates of rotation without necessitating any slip, as occurs with pairs of wheels on the same axle that are required to travel different distances, and the wheels are so arranged and formed that the flanges are not supposed to run against the traction-rails, for the elevated side guiding-rails insure the remaining on the traction-rails of the traction-wheels. The flanges are preferably provided for the traction-wheels, so as to insure that the wheels do not leave the rails where the side guiding-rails are omitted or cut away, as at the grade-crossings referred to or at station-platforms. The openings at these places, however, are of a less distance than the distance between the trucks, and at these points the flanges of the traction-wheels are supposed to be sufficient to keep the traction-wheels on the traction-rails even when running at high speeds. The side guiding-wheels project outward sufficiently to engage with the elevated side guiding-rails in case there is a slight deflection of the car; but they are supposed to normally run just a little off from the guiding-rails. These guiding-wheels are preferably provided with flanges that project under the guiding-rails, so that the truck cannot jump up and leave the track.

As the treads of the traction-wheels are very wide and run on wide-tread traction-rails, and as the jar and pound of the car are considerably relieved, and as the traction-wheels cannot lift from the traction-rails on account of the guiding-wheels, the traction-wheels can be provided with a comparatively soft tire or rim, which will eliminate the noises incident to high speeds and also more satisfactorily insure the comfort of the passengers. It is preferred to build the way of this construction on a slightly-elevated structure, which can easily be kept free from ice and snow and also insure that animals cannot wander upon the track, thus reducing the danger of accidents, and of course with an elevated structure it would not be necessary to leave open any part of the guiding-way, except possibly at the stations.

With a truck constructed as herein described and with a way built according to this plan for such a truck high velocities with safety can be maintained without any discomfort to the passengers and with little practical danger of serious accidents.

I claim as my invention—

1. In a truck, in combination, traction-wheels, wheel-frames supported by the traction-wheels, each wheel-frame having an independent oscillation transversely of the truck on an axis extending longitudinally of the truck, a truck-frame adapted to be connected with a car-body, and yielding connections between the wheel-frames and the truck-frame, substantially as specified.

2. In a truck, in combination, traction-wheels, wheel-frames supported by the traction-wheels and having an independent transverse oscillation, guiding-wheels borne by the wheel-frames, a truck-frame adapted to be connected with a car-body, and yielding connections between the wheel-frames and the truck-frame, substantially as specified.

3. In a truck, in combination, traction-wheels having independent journals, wheel-frames having bearings for the wheel-journals, each wheel-frame having an independent oscillation transversely of the truck on

an axis extending longitudinally of the truck, a truck-frame adapted to be connected with a car-body, and yielding connections between the wheel-frames and the truck-frame, substantially as specified.

4. In a truck, in combination, traction-wheels having wide treads with narrow flanges and independent journals, wheel-frames having bearings for the wheel-journals and having an independent oscillation, a truck-frame adapted to be connected with a car-body, and yielding connections between the wheel-frames and the truck-frame, substantially as specified.

5. In a truck, in combination, traction-wheels having independent wheel-frames supported by the traction-wheels and held by a longitudinal pivot so as to permit of separate transverse oscillation, a truck-frame adapted to be pivotally connected with a plate secured to a car-body, and yielding connections between the wheel-frames and the truck-frame, substantially as specified.

6. In a truck, in combination, traction-wheels having independent journals, independent wheel-frames supported by the traction-wheels and held together by a longitudinal pivot so as to permit of separate transverse oscillation, a pair of outward-bearing guiding-wheels borne by each independent wheel-frame, a truck-frame adapted to be pivotally connected with a plate secured to a car-body, and spiral and leaf springs connecting the wheel-frames and the truck-frame, substantially as specified.

7. In combination, a railway-car having trucks provided with traction-wheels, wheel-frames supported by the traction-wheels and bearing guiding-wheels, a truck-frame, springs connecting the wheel-frames with the truck-frame, a traction-rail consisting of parallel inside metallic rails and outside stringers lying against the metallic rails, and a guide-way consisting of stringers supported above and outside of the traction-rails in position for engagement with the guiding-wheels, substantially as specified.

GEORGE J. CAPEWELL.

Witnesses:
HARRY R. WILLIAMS,
E. J. HYDE.