No. 690,330. Patented Dec. 31, 1901.

I. A. TIMMIS.

BOGIE FOR RAILWAY ROLLING STOCK.

(Application filed Sept. 21, 1901.)

(No Model.) 4 Sheets—Sheet I.

Fig. 1

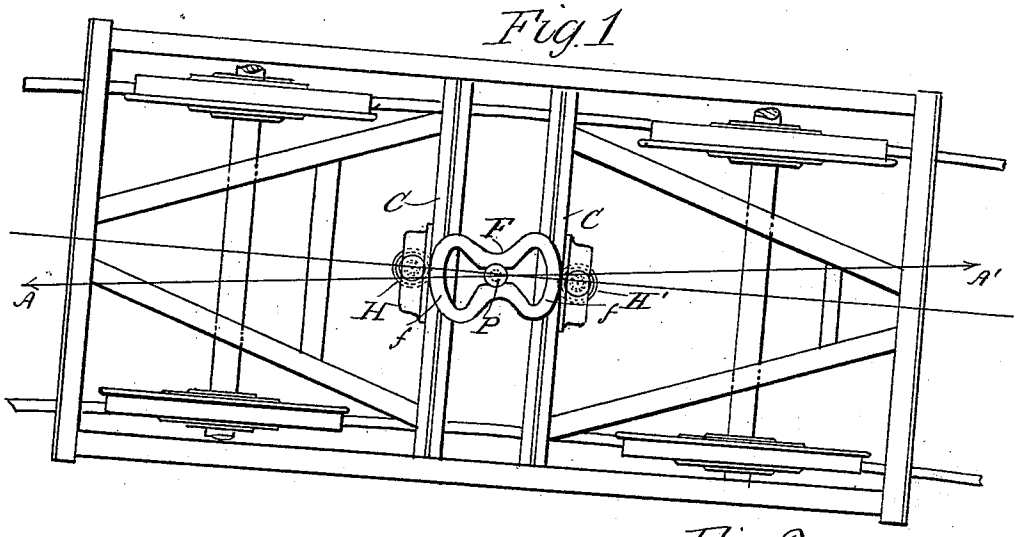


Fig. 2

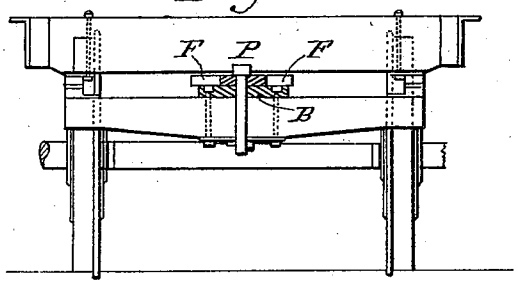


Fig. 3

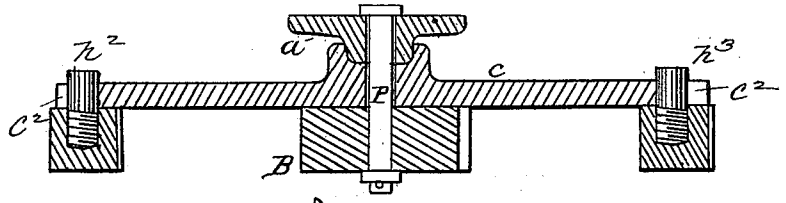
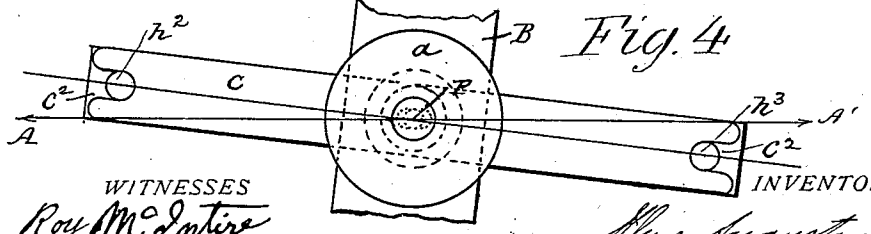


Fig. 4



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Fig. 5

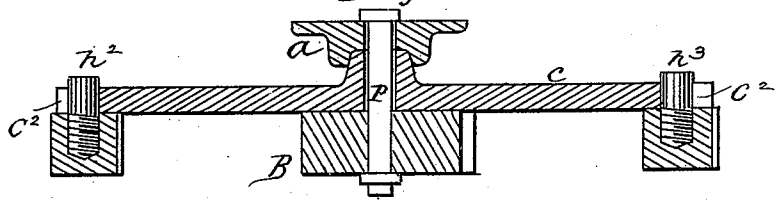


Fig. 6

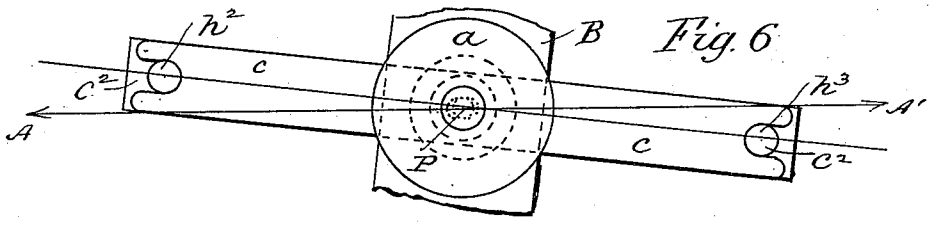
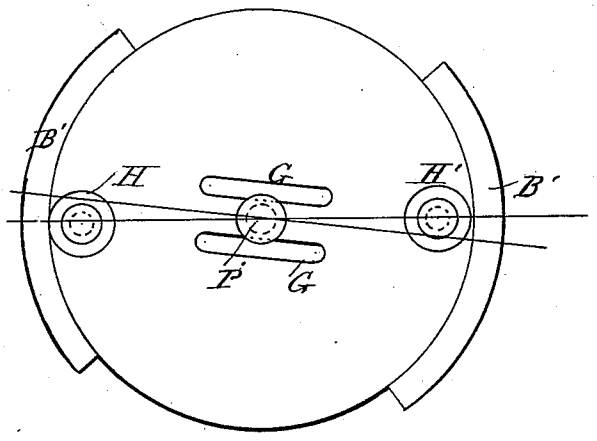


Fig. 7



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Fig. 8

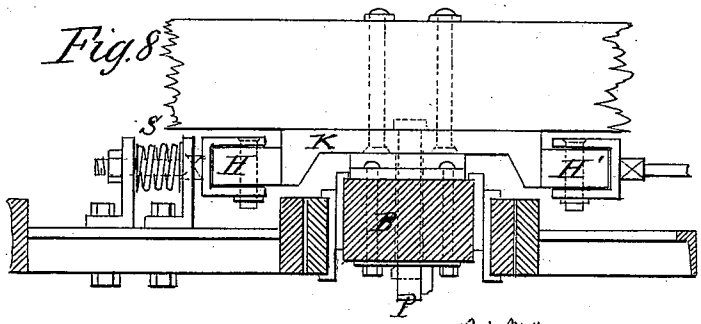


Fig. 9

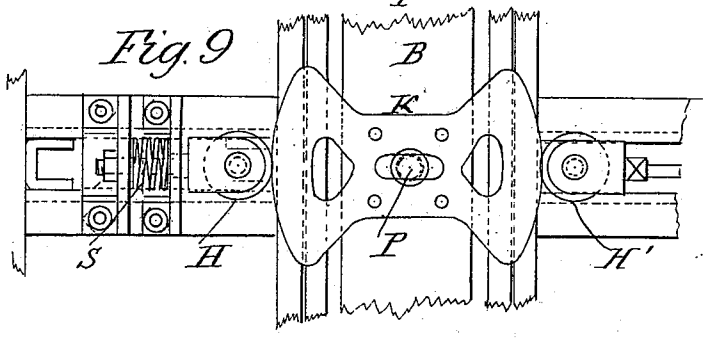


Fig. 10

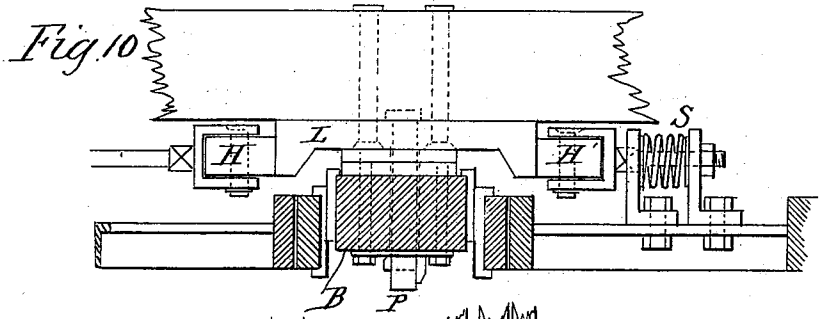
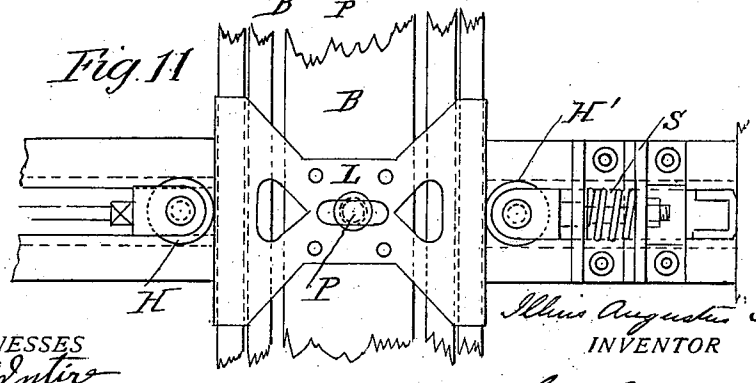


Fig. 11



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Fig. 12

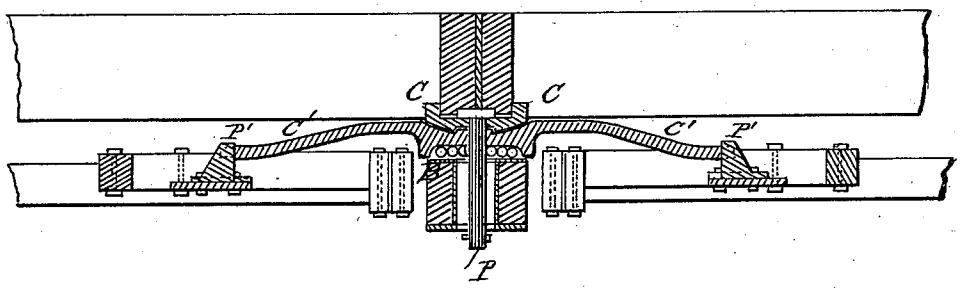
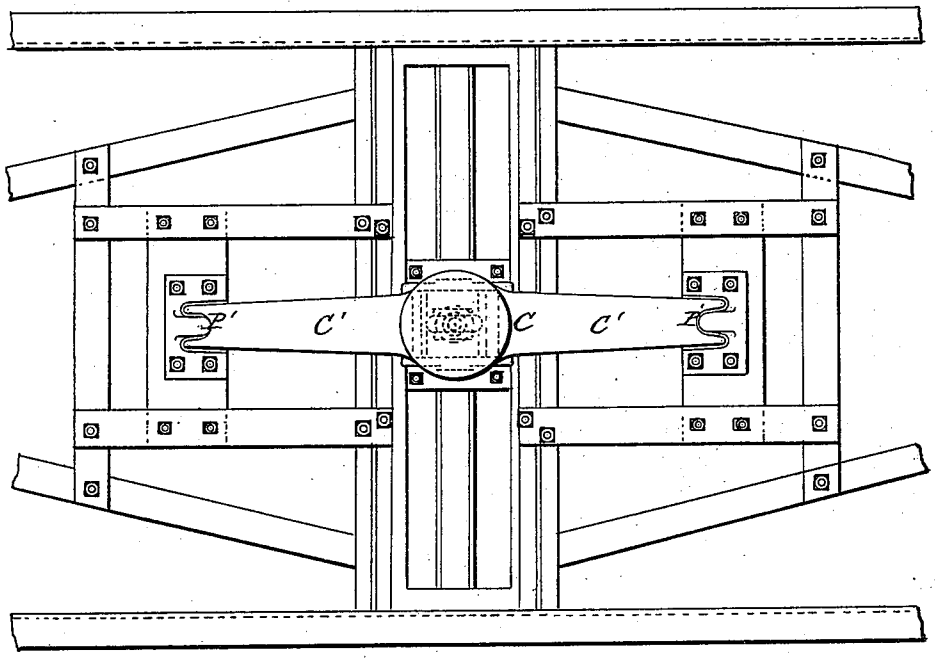


Fig. 13



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UNITED STATES PATENT OFFICE.

ILLIUS AUGUSTUS TIMMIS, OF LONDON, ENGLAND.

BOGIE FOR RAILWAY ROLLING-STOCK.

SPECIFICATION forming part of Letters Patent No. 690,330, dated December 31, 1901.

Application filed September 21, 1901. Serial No. 76,069. (No model.)

To all whom it may concern:

Be it known that I, ILLIUS AUGUSTUS TIMMIS, a subject of the King of Great Britain, residing at London, in the county of Middlesex, England, have invented certain new and useful Improvements in Bogies for Railway Rolling-Stock; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to bogies for railway rolling-stock, and relates in particular to that class of bogies in which two short bogies are used to carry a long body of a passenger, freight, or other car or a locomotive or tender.

The reason why short bogies are used to carry long bodies is well known, and it is also well known that the buffer and draw gearing or coupling are fixed in the body or the body-underframe and not in its two bogies. As a consequence the bogies receive their impulse from and are stopped by the body which they carry, or they stop the body when the brakes are operated. It is further well known the hauling or pushing force (hereinafter called "hauling") is transmitted to the bogie through its center, as is shown at the present time in rolling-stock in which the bogie is connected to the body by a single center-pin, which acts as the pivot on which the bogie turns and serves also to prevent the bogie from becoming detached from the body.

It is evident that if a bogie is hauled from its center, which is practically equidistant from either the leading or trailing pair of wheels, (it may be a four or six wheeled bogie,) and if the leading pair of wheels receive only a slight side shock they and the trailing pair will owing to their equal leverage from the center oscillate or vibrate laterally. This occurs in practice constantly, and the results are that the vibratory motion is conveyed to and felt in the car-body, the action of the springs is interfered with, and the wear and tear on the wheels and other parts of the rolling-stock are very serious.

My invention has for its object to prevent or lessen this vibration and make the running of bogies smoother and easier by giving a lead to the point in the bogie where the hauling force is applied—*i. e.*, putting that point in front of the center or center-bearing on which the car-body rests.

My invention consists in the novel constructions, combinations, and arrangements of parts hereinafter described and claimed.

Referring to the accompanying drawings, Figure 1 is a plan view of a curved track, the underframe of a car-body, a four-wheeled bogie, and the connecting parts constructed according to my invention. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a vertical sectional view of a modification of my invention. Fig. 4 is a plan view of the modification shown in Fig. 3. Fig. 5 is a vertical sectional view of a modification slightly different in form from that shown in Figs. 3 and 4. Fig. 6 is a plan view of the modification shown in Fig. 5. Fig. 7 is a plan view of another modification. Fig. 8 is a side elevation of another modification with parts of the bogie-frame in section. Fig. 9 is a plan view of the modification shown in Fig. 8. Fig. 10 is a view similar to Fig. 8 of another modification, and Fig. 11 is a plan view of the modification shown in Fig. 10. Fig. 12 is a vertical sectional view of another modification, and Fig. 13 is a plan view of the same.

In Fig. 1 I have shown the bogie with its wheels and the ordinary underframing of the car-body; but I have not shown these parts in the other figures of the drawings, as the application of these modified forms of my invention will be readily understood after I have described the construction and operation of the devices shown in Figs. 1 and 2.

Referring first to Fig. 1, F is a frame which is to be attached to the car-body with its sides resting on the bolster B. (See Fig. 2.) The outer frame of the car-body rests on the ends of the bolster in the usual way. The frame F is kept in position laterally by the center-pin P and is formed with curved ends *f f*, which are parts of a circle described from the center of pin P and which bear against rollers H H′, which work on pins fastened in the cross-beams C and C′, respectively, of the bogie. The pin P secures the car-body from jumping off or getting away from the bogie. Fig. 2 shows the above gearing in cross-section through the center of the bogie, the ref-

erence-letters being the same as in Fig. 1. The frame F may, if desired, be made in several parts, and the two ends may be any suitable distance from the center. It is evident that with the above-described connection the bogie is free to rotate around its center under the car-body; but if the car-body is hauled in the direction of the arrow A′ the frame F presses against the roller H′, and thus a lead is given to the bogie ahead of its center, and the leading pair of wheels will be kept to their work and run smoothly. If the car-body is hauled in the other direction—*i. e.*, of the arrow A—the frame F presses against the roller H.

By another arrangement (see Figs. 3, 4, 5, and 6) the frame which corresponds to the frame F in Figs. 1 and 2 is made in two parts, a top piece *a* being fixed to the car-body—that is, to the underframe of said car-body—and being socketed in a central socket in a flat bar *c*, which is attached to the bolster, as in Figs. 3 and 4, or the bar *c* may be socketed in the piece *a*, as shown in Figs. 5 and 6. In this form the bar *c* is formed with a slot *c′*, through which the pin P passes, the slot allowing the bar to move longitudinally, but preventing it from moving laterally. The ends of the bar *c* are slotted at c^2 c^2, and these slots receive pins h^2 h^3, which correspond in position and function to the rollers H H′. (Shown in Figs. 1 and 2.) It is thus evident that if the car-body is pulled in the direction of the arrow A′ the center piece *a* and its component part *c* press against the pin h^3 or if the car is pulled in the opposite direction press against the pin h^2. Thus *c* is always in the center line of the bogie, but turns in or on *a*.

Another arrangement is shown in Fig. 7, whereby the hauling-pins (with rollers on by preference) are fixed to the carriage-underframe, and the curved plates or bars B′ B′ are fixed to the bogie. The pin P may be attached to the bogie, and the pieces G G holding it laterally attached to the carriage-frame, or P may be attached to the carriage-frame and G G to the bogie, as shown in the drawings.

It is evident that there are many ways of putting this invention into practical work, and it is also evident that though the several examples above described, and illustrated in the drawings, differ from each other and through the side pressure on the wheels in rounding a curve is not the same in any two of them, yet the principle or main idea is the same—viz., to give a lead to the leading wheels.

The point of propulsion may be part of a pin or roller, as in Figs. 1 to 6, in the center line of the bogie, or it may be any part of a curved bar against which a pin or roller presses, as in Fig. 7, or the point of propulsion on a bogie may be pulled from a point on the carriage-frame. For instance, any fixed point on the bogie at either end may be pulled or hauled, or (see Fig. 7) the rollers H H′ may be pulled or hauled by two rods or cords or chains fixed to the car body or frame, H H′ being at the apex of a triangle the two equal sides of which are the rods or chains. Again, the pin P may be part of or secured to the bolster of the bogie or that of the carriage-body, with suitable side bearings to prevent lateral play. Where the frame F or its equivalent rests on the bolster, I may put roller-bearings, and these may be fitted either in the frame or in the bolster.

The arrangement I prefer is shown in Fig. 12, where the casting C on the carriage-frame swivels (with or without rollers) on C′. The arms of C′ extend "fore and aft" along the center of the bogie and push the bogie, as shown at the points P′ and P′.

Instead of forming the end of the frame F in the shape of a curve which is part of a circle struck from the center of the bogie, I may make it a curve with a larger radius, as shown in the frame K, Fig. 9, or I may make it a straight line at right angles to the center line of the body, as shown in the frame *l* in Fig. 11. In these two latter places it is necessary to introduce a spring either behind the frame or behind the pin. A spring S is shown in the drawings. It is obvious that if the outer line of the frame is struck as described, when a bogie follows a curve in the rails and is returning to a straight road the springs help the bogie in its return, and, further than this, they assist the bogie lead in preventing any lateral vibration. The face of the frame may be made concave instead of convex. Springs may be fitted in any of the arrangements.

When the brakes are applied and the bogie stops, the car-pressure is obviously in the same direction to that when the bogie is hauled forward.

Having described my invention, I claim—

1. The combination with a bogie and a car-body of a center-pin pivotally securing the two together at the center of the bogie and means for giving a lead to the leading wheels of the bogie beyond the pivotal point, substantially as described.

2. The combination of a car-body, a bogie, a pivotal connection between the body and center of the bogie arranged and adapted to prevent vertical and lateral displacement of the connected parts and means whereby the hauling draft on the car-body communicates a lead to the foremost pair of bogie-wheels at a point beyond said connection, substantially as described.

3. The combination with a bogie and a car-body pivotally attached together by a center-pin and nesting bearing-surfaces, of bearing-points on the bogie and car-body outside the pivotal point and bearing-surfaces, substantially as described.

4. The combination with a bogie and a car-body secured together at a central point, a frame carried by one of said parts and extending in front and to the rear of said central point, of a center-pin passing through said frame and bearings at each end of said frame,

the bearings being carried by the other of said parts substantially as described.

5. The combination of a car-body and a bogie to which said body is pivotally attached of a frame arranged at the pivotal point and having curved ends and roller-bearings against which said curved ends bear, substantially as described.

6. The combination with a bogie and a car-body, of a frame attached to one and a bearing attached to the other and a center-pin passing through a slot in said frame, whereby lengthwise play is allowed between the car-body and bogie and lateral play prevented, substantially as described.

7. The combination with a car-body and a bogie pivotally attached together of a frame arranged at the pivotal point and attached to one of said parts and spring-bearings attached to the other of said parts, said frame and bearings being so arranged that a lead is given to the bogie beyond its pivotal point, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ILLIUS AUGUSTUS TIMMIS.

Witnesses:
WALTER E. ROCHE,
RICHARD VENES.