H. M. PFLAGER.

CAR CONSTRUCTION.

APPLICATION FILED JAN. 5, 1918.

1,278,740.

Patented Sept. 10, 1918.

2 SHEETS—SHEET 1.

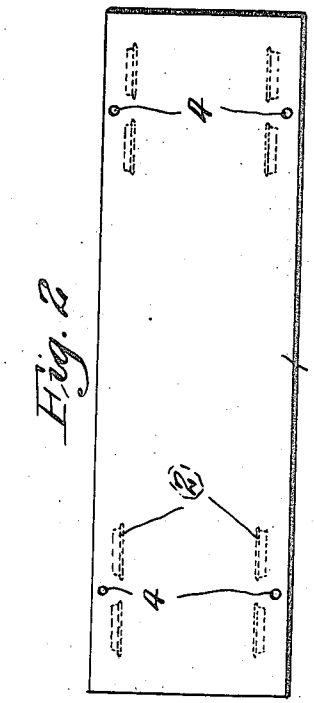


Fig. 2

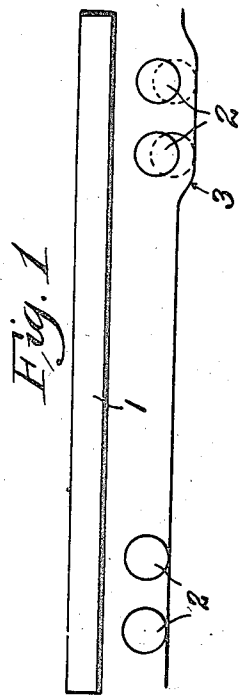


Fig. 1

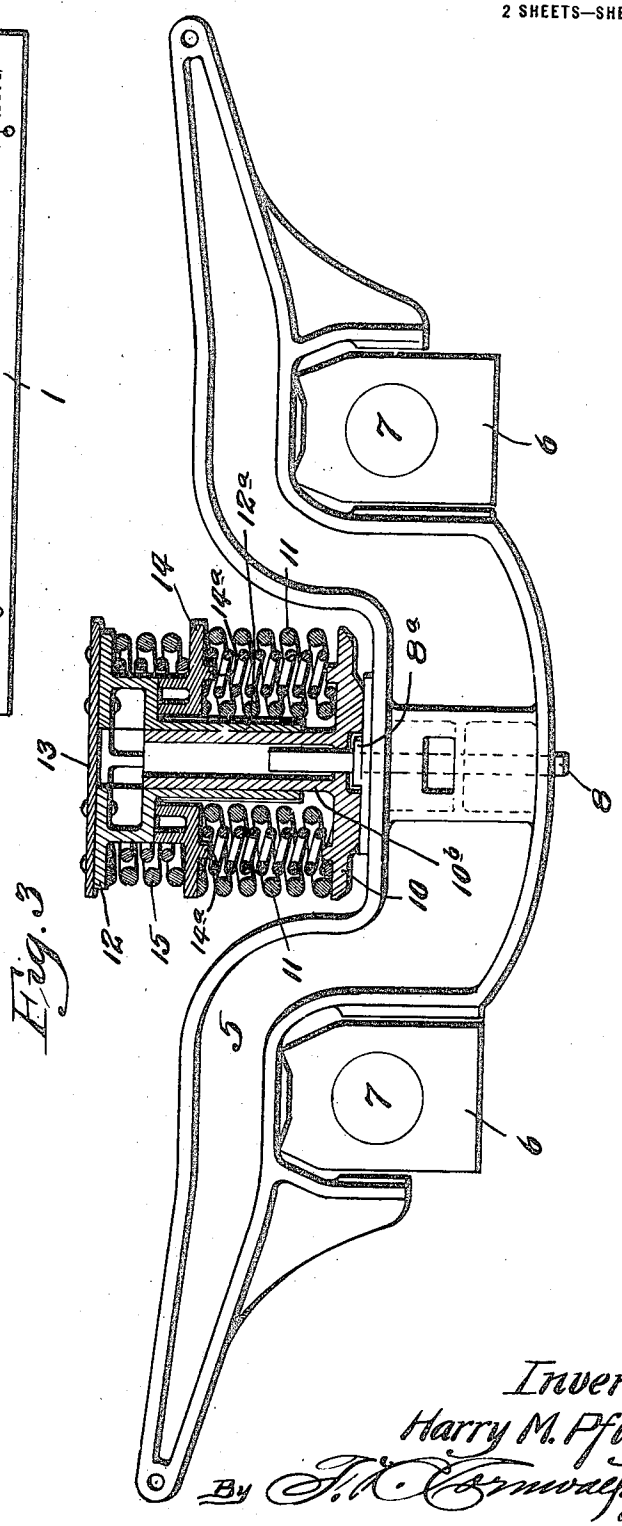


Fig. 3

Inventor

Harry M. Pflager

By T. L. Townsend, Atty.

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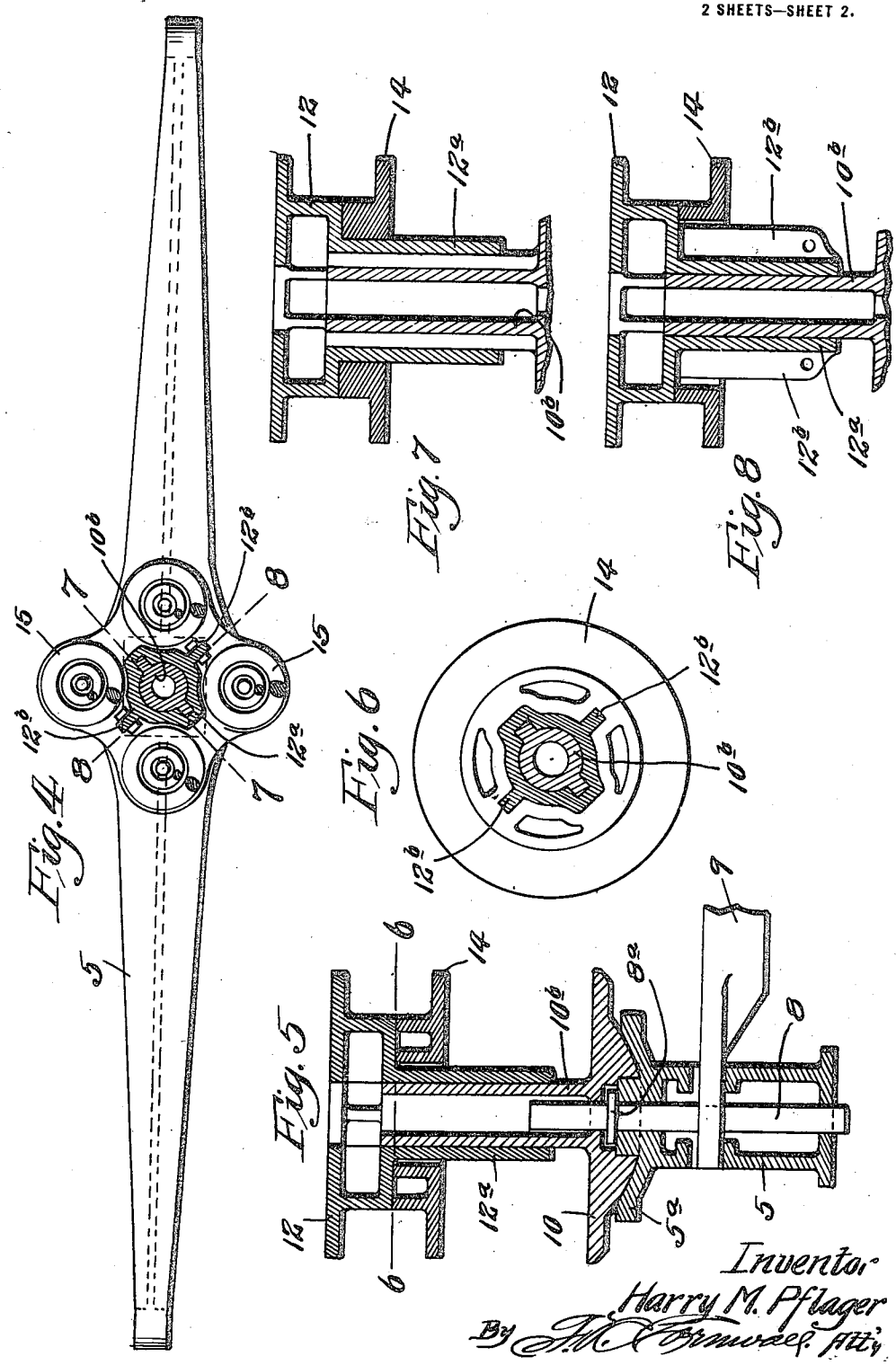
CAR CONSTRUCTION.

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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

HARRY M. PFLAGER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO COMMONWEALTH STEEL COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

CAR CONSTRUCTION.

1,278,740. Specification of Letters Patent. Patented Sept. 10, 1918.

Application filed January 5, 1918. Serial No. 210,450.

To all whom it may concern:

Be it known that I, HARRY M. PFLAGER, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Car Construction, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which,—

Figure 1 is a conventional illustration in side elevation showing my improved car construction.

Fig. 2 is a top plan view of the same.

Fig. 3 is a side elevational view partly in section of one of the trucks used in my improved construction.

Fig. 4 is a top plan view partly in horizontal section of said truck.

Fig. 5 is a cross sectional view through certain of the parts at the center of the truck.

Fig. 6 is a sectional view on line 6—6 of Fig. 5.

Fig. 7 is a sectional view on line 7—7 of Fig. 4.

Fig. 8 is a sectional view on line 8—8 of Fig. 4.

This invention relates to a new and useful improvement in car construction of the type illustrated in Reissue Letters Patent No. 14,221 dated November 28, 1916, the original of which, Patent No. 1,147,430, was granted July 20, 1915. In the construction shown in the said original and reissue Letters Patent granted to me upon the dates before-mentioned, the weight of the car body including the load is supported at the four corners of the car.

My present invention has for its object to provide means for distributing the load of the car on the journals when unusual track conditions exist.

I prefer to provide this means in the form of a spring or springs, auxiliary to the main carrying springs, the auxiliary springs being capable of greater deflection and greater recoil travel than the main springs, so as not to affect the height of the drawbar from the track.

In the form of my invention illustrated in the accompanying drawings, the compensating springs are weaker than the load supporting springs, so that when the latter, which may be designated as the "major" springs, are under normal compression, the compensating spring or springs, which may be referred to as the "minor" spring or springs, are under compression, *i. e.* bottled up, the spring follower of the major springs being seated home against some solid part of the structure, this home-seating of said follower being maintained in normal operations. However, if the main supporting springs are released from compression and have a tendency to float free, the minor spring will have its energies released so as to take up in part the freedom of the major springs, and compress them to the extent that the minor spring assists in supporting the load.

In the drawings, I have heretofore referred to Figs. 1 and 2 as conventionally illustrating a car body in which 1 is the body of the car, 2 the wheels, and 3 the track having a depression 3^a over which the wheels at the righthand side of Fig. 1 are illustrated in full lines as floating over the depression, and in dotted lines as resting upon the track in the depression.

In Fig. 2, 4 indicates the pivotal point of the truck side frames, these being the points of reaction and showing that the car body is practically supported at its four corners.

Referring now to the details of construction of my present form of truck, 5 indicates the truck side frame, preferably in the form of a steel casting, in which the journal boxes 6 are arranged for the reception of the axles 7 on which the wheeels 2 are mounted. This truck side frame is recessed at its upper central portion and provided with a bearing plate 5^a concentric with the recessed portion located in the center of the truck side frame in which is arranged a king pin 8, said king pin passing through a tie bar 9 connecting the two side frames. This king pin 8 is provided with a shoulder or collar 8^a, as shown in Fig. 5, and extends upwardly therebeyond so as to provide a connection with the spring follower plate 10. This spring follower plate 10 has nipples 10^a disposed around its upper face for centering the major springs 11, the lowest surface of said follower plate 10 being convex so as to fit in the concave bearing member of the upper face of the truck side frame, thereby constituting a rocking

joint permitting a slight universal movement of the truck side frame. The spring follower 10 has an upwardly extending hollow stem 10^b which is received in a downwardly extending hollow stem 12^a of a casting 12, the latter being riveted or otherwise secured to the bolster top or bottom cover plate or flange, as the case may be, by suitable rivets, as shown in Fig. 3. The telescopically arranged stems 10^b and 12^a permit vertical movement of the respective parts with which they are identified, and in order to prevent excess rotary movement, one of these parts, as 12^a (see Fig. 6) may be provided with one or more keyways in which extend feathers or longitudinally disposed ribs on the part 10^b. 14 indicates a spring follower bearing against the underface of casting 13 and provided with nipples 14^a on its underface for coöperating with the springs 11 for the purpose of centering the latter. This follower plate 14 is free to move downwardly on the stem 12^a, and in order to prevent excess rotary movement of said follower 14, the same is provided with recesses for coöperating with feathers or longitudinally disposed lugs 14^b on the stem 12^b. 15 indicates the compensating spring or springs interposed between an outwardly extending flange at the upper edge of casting 12 and an outwardly extending flange at the lower edge of the spring follower 14.

The operation of the above described parts is at follows;

Assuming that the car body empty weighs thirty (30,000) thousand pounds, and that there are four groups of supporting springs 11 at each corner of the car, these supporting springs being the usual M. C. B. eight and one-half inch springs, and that each of which will be compressed approximately one-quarter of an inch under the conditions above mentioned. This load and extent of compression of these major springs will force the spring follower 14 up against the lower face of casting 12, thereby compressing and holding under compression the minor compensating springs 15. When the car is loaded, say to the extent of thirty thousand (30,000) pounds or more, the major springs 11 will be further compressed, say to the extent of about one-half of an inch each. The minor spring 15, however, cannot be further compressed regardless of the amount of lading in the car. Running over a straight even track, the usual inequalities therein will be absorbed by the major springs 11, but in the event that an abnormal depression in the track is reached and the major springs 11 reach or approach the point of exhaustion due to the lowered position of the truck wheels in said depression, the minor springs 15 will cause the spring follower 14 to follow down with the result that a portion of the weight will be transmitted to all the journals. To the extent that pressure is exerted on the journals by the compensating springs 15, the reaction on the car body is necessarily co-extensive and the car body is thus supported at this point in proportion to the reacting power of the stored-up energies in the compensating springs. The strength of the compensating springs relative to the load supporting springs in a sense depends upon the will of the designer, and while I prefer that the major supporting springs 11 shall coöperate with the spring follower 14 so as to cause the same to be seated against a solid portion of the car body or transom when the car is empty, it is obvious that the proportionate strength of the major and minor springs may be modified or changed as practice may require or the will of the designer select. In other words, the minor spring may be of such strength that it may assist in supporting the empty car, the spring follower 14 being seated when the car is loaded. This, however, is unimportant in the present instance.

It is obvious that minor changes in the size, form and details of the various parts of my improved car construction may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

What I claim is:

1. In car construction, a car underframe, truck side frames, each pivotally connected to the underframe, supporting journals, supporting springs, and compensating devices for distributing the load on the journals when the supporting springs are released or partially released from their load-carrying functions.

2. In car construction, a car underframe, truck side frames, each pivotally connected to the underframe, supporting journals, supporting springs, and compensating devices for coöperating between the journals and the car underframe, whereby said compensating devices assist in supporting the load when the supporting springs are released or partially released from compression.

3. In car construction, a car underframe, in combination with truck side frames having pivotal connection with said car underframe, supporting journals, supporting springs, and compensating springs normally under compression and whose stored-up energies are utilized to assist in supporting the load in the event that the supporting springs are wholly or partially released from compression.

4. In car construction, a truck side frame having pivotal relation with the car underframe, said truck side frame being provided with a bearing to receive a spring follower

whereby the said side frame may have a pivotal movement with respect to said underframe, a member secured to the underframe and having telescopic relation to said follower, and another spring follower normally held against said last mentioned member which is secured to the underframe, and springs arranged on each side of said last mentioned follower.

5. In car construction, a truck side frame having a bearing seat, a spring follower arranged in said seat so as to have a rocking relation thereto, a casting secured to the car underframe and having telescopic relation to said spring follower, a second spring follower arranged on said casting and having movement in one direction relative thereto, a compensating spring interposed between said last mentioned follower and said casting, and load supporting springs interposed between said two followers.

6. In car construction, a truck side frame having a concave seat, a spring follower having a convex bearing portion designed to coöperate with said seat, a king pin, a casting designed to be secured to the underframe and having telescopic relation to said spring follower, and a second spring follower designed to be seated against said casting, load-supporting springs bearing upon the underside of said last mentioned follower to hold it to its seat, and compensating springs interposed between said last mentioned follower and said casting and which are normally designed to be held in compression during the time that said spring follower is held to its seat.

7. In car construction, the combination of a truck side frame having a bearing seat arranged thereon, a spring follower coöperating with said bearing seat, a casting designed to be secured to the underframe of the car and having telescopic relation to said spring follower, said casting having a shoulder, a spring follower embracing said casting and designed to bear against said shoulder, load-supporting springs interposed between said two spring followers, and a compensating spring interposed between said casting and the uppermost of said followers, said compensating spring embracing the major portion of said casting and said spring follower with which it coöperates.

In testimony whereof I hereunto affix my signature this 27th day of December, 1917.

HARRY M. PFLAGER.