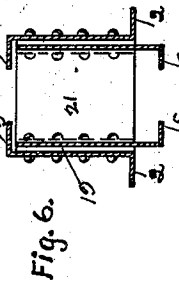
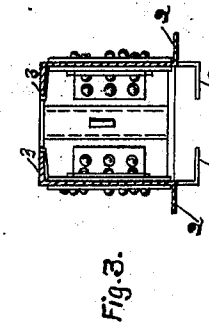
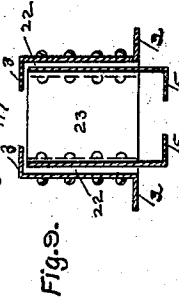
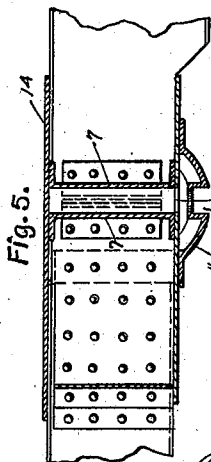
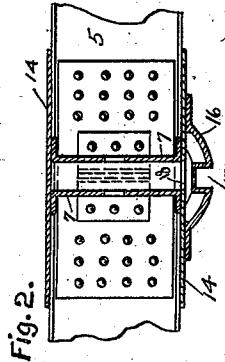
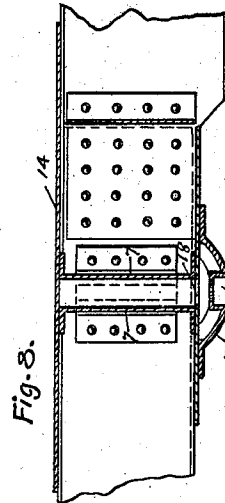
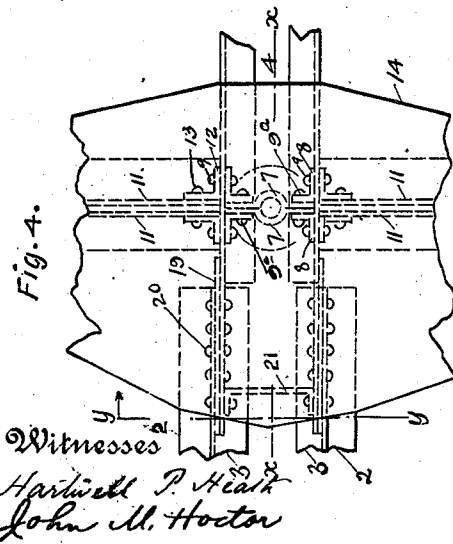
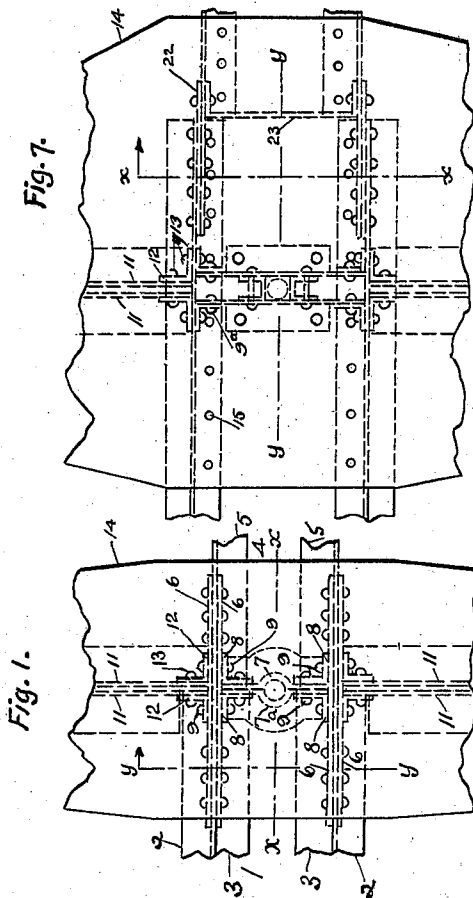


R. V. SAGE.

SILL AND BOLSTER CONNECTION FOR STEEL CARS.

(Application filed Jan. 25, 1902.)

(No Model.)



Inventor
By his Attorney, *Ralph V. Sage,*
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UNITED STATES PATENT OFFICE.

RALPH V. SAGE, OF JOHNSTOWN, PENNSYLVANIA.

SILL AND BOLSTER CONNECTION FOR STEEL CARS.

SPECIFICATION forming part of Letters Patent No. 698,058, dated April 22, 1902.

Application filed January 25, 1902. Serial No. 91,160. (No model.)

To all whom it may concern:

Be it known that I, RALPH V. SAGE, a citizen of the United States, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Sill and Bolster Connections for Steel Cars, of which the following is a specification.

This invention relates to sill and bolster connections for steel cars, and has for its object to provide improved connections which will possess advantages in point of simplicity, inexpensiveness, strength, facility of manufacture, effectiveness, and general efficiency.

Another object of the invention is to provide improved connections the parts of which may be easily and readily assembled and disassembled for purposes of inspection and to make repairs.

Another object of the invention is to provide improved connections the parts of which are merchantable shapes and easily and quickly procured.

In the drawings, Figure 1 is a plan view of part of the draft and center sills and body-bolster of a steel car embodying my improvements. Fig. 2 is a sectional view on the line *x x*, Fig. 1. Fig. 3 is a sectional view on the line *y y*, Fig. 1. Fig. 4 is a plan view of part of the draft and center sills and body-bolster of a steel car, showing a modification of my improvements. Fig. 5 is a sectional view on the line *x x*, Fig. 4. Fig. 6 is a sectional view on the line *y y*, Fig. 4. Fig. 7 is a plan view of part of the draft and center sills and body-bolster of a steel car, showing another modification of my improvements. Fig. 8 is a sectional view on the line *x x*, Fig. 7. Fig. 9 is a sectional view on the line *y y*, Fig. 7.

Corresponding parts in all the figures are designated by the same reference characters.

Referring to the drawings, 1 designates the draft-sills, which in the form shown consist of two parallel-spaced Z-shaped bars, the lower horizontal flanges 2 of which are turned outward and the upper horizontal flanges 3 of which are turned inward, and 4 designates the center sill, which in the form shown consists of two channel-irons having their flanges 5 turned toward each other. The channel-irons forming the center sill 4 are of greater depth than the Z-shaped bars forming the

draft-sills 1 and for a sufficient distance from each end to clear the truck (not shown) are cut away at the bottom to reduce the depth 55 to that of the draft-sills 1. The ends of the channel-irons forming the center sill 4 abut against the rear ends of the Z-shaped bars forming the draft-sills 1, and such ends are spliced together by means of plates 6, placed 60 on each side of the abutting ends of the Z-shaped bars and the channel-irons and riveted therethrough. The center diaphragm is formed of two rolled channel-irons 7, placed back to back and having their central portions 65 pressed out to take the king-pin, (not shown,) and is secured between the draft-sills and the center sill at the point of juncture, one of the channel-irons 7 being secured at its ends to the inside of the channels forming the center 70 sill 4 by means of angle-irons 8 and rivets 9, and the other channel-iron 7 being secured in like manner to the inside of the Z-shaped bars forming the draft-sills 1. The angle-irons 8 are also secured to the channel-irons 7 by rivets 9^a, passing through the webs of both channel-irons 7 and both angle-irons 8. The center diaphragm is provided with a slot 10 to take the king-pin. (Not shown.)

The body-bolster consists of two channel-irons 11, placed back to back and suitably tied together and having their inner ends abutting against the outside splicing-plate 6, opposite the point of juncture of the draft and center sills, to which they are secured by angle-irons 12 and rivets 9 and 13. The rivets 9, connecting the angle-irons 8 and 12 to the draft and center sills, pass through both angle-irons 8 and 12 and the splicing-plates 6 and the draft-sills and the center sill, respectively. 80

Arranged at the top and bottom, over the point of juncture of the draft and center sills and the body-bolster, are plates 14, which are suitably secured to the flanges of the draft-sills 1, the flanges of the center sill 4, the flanges of the channel-irons 11 of the body-bolster, and the flanges of the channel-irons 7 of the center diaphragm. A convenient means of securing the plates 14 is herein 100 shown and consists of rivets 15. A suitable casting 16, provided with a central opening 17 to receive the king-pin, (not shown,) which registers with a like opening 18 in the bot-

tom plate 14, is secured beneath said bottom plate 14.

This construction provides an exceedingly simple, inexpensive, and easily-made connection, which is at the same time very strong and rigid and is braced against vertical, longitudinal, and lateral strain. It is composed of few but strong parts, each peculiarly adapted in form and structure to resist vertical lateral longitudinal strain and requiring but few rivets. At the same time all the parts are easily accessible for inspection, and in case of injury the part or parts affected can be easily removed and quickly repaired or replaced without taking the whole apart.

Cars of modern construction, especially steel cars, are essentially very heavy and of very great carrying capacity, and much difficulty has been experienced in providing connections which will successfully resist the intense strains of the great weight of the load and car. This bearing and the connections, therefore, are formed of parts each calculated itself to resist great strain in any direction in which they may be applied and connected, so as to form a whole in which the parts mutually brace and reinforce each other in this respect.

A modified form of my invention is shown in Figs. 4, 5, and 6, in which the ends of the channel-irons forming the center sill 4 extend forward of the center bearing and are spliced to the ends of the Z-shaped bars forming the draft-sills 1 by means of a plate 19, interposed between the said ends and secured by rivets 20, passing through said channel-irons, said plates 19, and said Z-shaped bars, the upper flanges of the channel-irons of the center sill being cut back to permit the ends of the channel-irons to overlap the ends of the Z-shaped bars. A channel-iron 21 connects the parts near the forward end of the splice and is riveted to the channels, the plates, and Z-shaped bars. In this form of course the body-bolster and the center diaphragm are secured to the center sill only.

Another modified form of my invention is shown in Figs. 7, 8, and 9, in which the ends of the Z-shaped bars forming the draft-sills 1 are extended back beyond the center bearing and are spliced to the ends of the channel-irons forming the center sill 4, in rear of the center bearing, by means of a plate 22, interposed between said ends and riveted to both the Z-shaped bars and the channel-irons, the flanges of the channel-irons being cut back to permit the ends of the channel-irons to overlap the ends of the Z-shaped bars. A channel-iron 23 is interposed between the channel-irons of the center sill 4 at the rear ends of the Z-shaped bars and riveted to said channel-irons. In this form the body-bolster and center diaphragm are secured to the draft-sill only.

The operation and advantages of my invention will be readily understood and appreciated. In use the car-body rests upon the cen-

ter plate 14, the center sill 4, the draft-sills 1, and the body-bolster, and the floor-plates are secured thereto. The casting 16 rests upon the truck, and the draw-bar works between the draft-sills 1. The direct vertical strain of the weight and load is therefore upon the center sill 4, the draft-sills 1, and the body-bolster. Now one end of each of these parts is firmly and rigidly connected with the others above the truck, so that at that point the strain is supported directly by the track or ground. Each of these parts also resists such strain powerfully, on account of their form and their structure, which is preferably rolled steel. When in motion, the drawing longitudinal strain comes initially on the draft-sills 1 and is transmitted through the Z-shaped bars to the center sill 4, and by reason of the connection of all the parts also in some degree to the body-bolster and the whole car structure. In rounding curves the lateral strain is taken by the body-bolster and distributed through the connections to the center sill 4 and draft-sill 1 and to the car structure. Similarly the strains produced by the vibration of the car when running are taken up and distributed. The advantages of my invention are primarily the use entirely in the structure of merchantable shapes, except the casting 16. These shapes can be procured in the open market, require no special plant or machinery, and can be produced economically. They are, moreover, peculiarly adapted, on account of form and structure, to resist vertical, lateral, or longitudinal strains, the form of both, with web and flange, offering the greatest resistance for the amount of metal used. They can be easily assembled and disassembled, and the organization is such that the connection of the several parts is very rigid, and they support and brace each other, besides distributing the strain throughout the whole car structure.

I do not desire to be understood as limiting myself to the details of construction and arrangement as herein described and illustrated, as it is manifest that variations and modifications may be made in the features of construction and arrangement in the adaptation of the device to various conditions of use without departing from the spirit and scope of my invention and improvements. I therefore reserve the right to all such variation and modification as properly fall within the scope of my invention and the terms of the following claims.

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

1. In sill and bolster connections for steel cars, the combination of a center sill reduced in height at the ends to that of the draft-sill by cutting away the bottom for a sufficient distance to clear the truck, draft-sills abutting at their rear ends against the ends of the center sill, a center diaphragm secured between the draft and center sills at their junc-

ture, a body-bolster secured at its inner ends to said draft and center sills, and top and bottom connection-plates tying the whole together.

5 2. In a steel car, draft-sills composed of two Z-shaped bars having the upper horizontal flanges turned inward, and a center sill composed of two channels having their flanges turned toward each other and their bottoms cut away at the ends to reduce their height to that of the draft-sills, the ends of the draft and center sills being spliced above the trucks.

15 3. In a steel car, draft-sills composed of two Z-shaped bars having the upper horizontal flanges turned inward, a center sill composed of two channels having their flanges turned toward each other and their bottoms cut away at the ends to reduce their height to that of the draft-sills, the ends of the draft and center sills being spliced above the trucks, and a body-bolster having its inner ends secured to the draft and center sills on each side of their point of juncture.

20 4. In a steel car, draft-sills composed of two Z-shaped bars having their upper horizontal flanges turned inward, a center sill composed of two channels having their flanges turned toward each other and their bottoms cut away at the ends to reduce their height to that of

the draft-sills, the ends of the draft and center sills being spliced above the trucks, and a center diaphragm composed of two channel-irons back to back and pressed apart at the center to receive the king-pin and secured to the draft and center sills on each side of the point of juncture.

5. In a steel car, draft-sills composed of two Z-shaped bars having their upper horizontal flanges turned inward, a center sill composed of two channels having their flanges turned toward each other and their bottoms cut away at the ends to reduce their height to that of the draft-sills, the ends of the draft and center sills being spliced above the trucks, a body-bolster having its inner end secured to the draft and center sills on each side of their point of juncture, and a center diaphragm composed of two channel-irons back to back and pressed apart at the center to receive the king-pin and secured to the draft and center sills on each side of their point of juncture.

In testimony whereof I have signed my name in the presence of the subscribing witnesses.

RALPH V. SAGE.

Witnesses:

F. N. KNEAS,

FRED. E. MCQUEEN.