(No Model.) 2 Sheets—Sheet 1.

W. PENNOCK.

TRUCK FOR RAILWAY CARS.

No. 574,074. Patented Dec. 29, 1896.

Fig. 1.

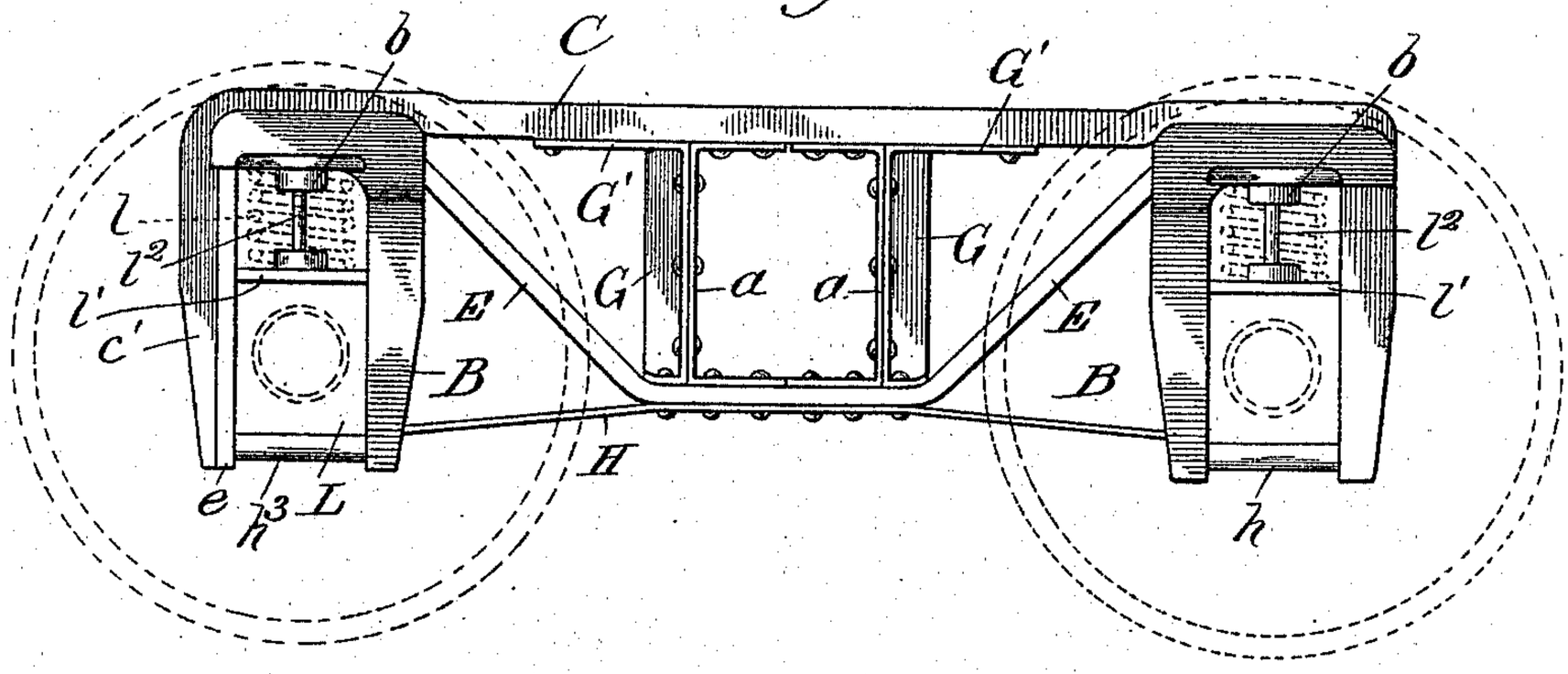


Fig. 2.

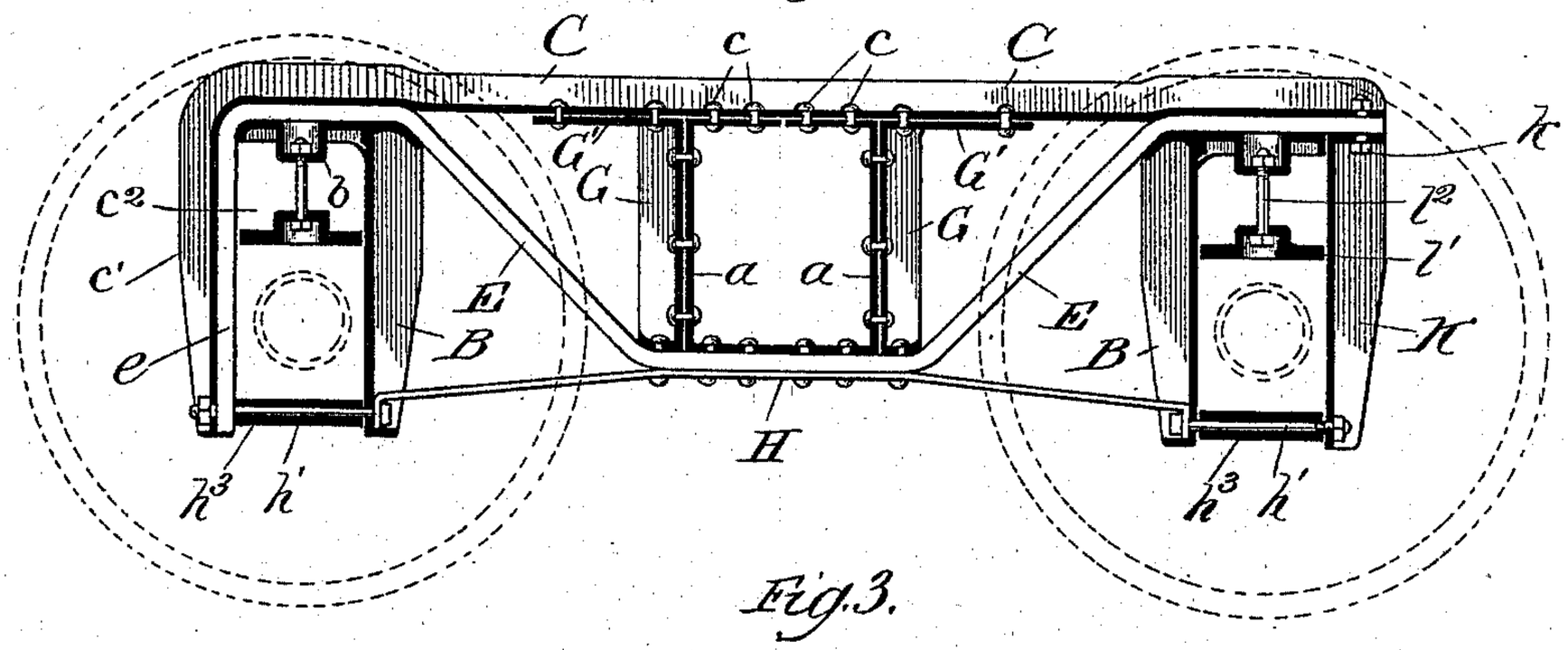
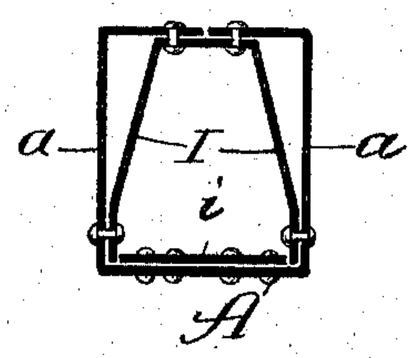


Fig. 3.



Witnesses:
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Luther S. Miller.

Inventor:
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By Banning & Banning & Sheridan,
Attys.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

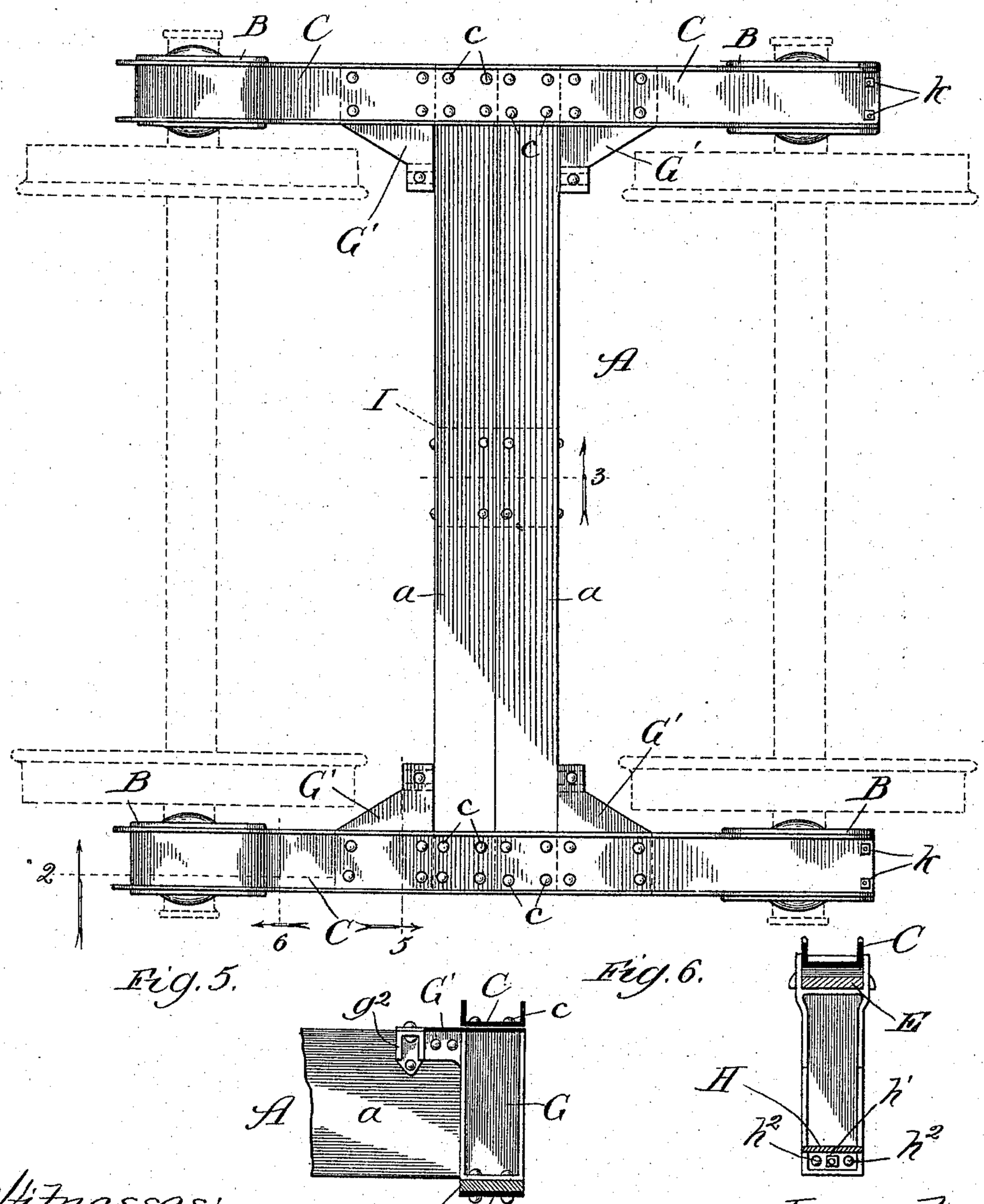

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLARD PENNOCK, OF MINERVA, OHIO.

TRUCK FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 574,074, dated December 29, 1896.

Application filed May 25, 1896. Serial No. 592,921. (No model.)

To all whom it may concern:

Be it known that I, WILLARD PENNOCK, a citizen of the United States, residing at Minerva, Ohio, have invented certain new and useful Improvements in Trucks for Railway-Cars, of which the following is a specification.

My invention relates particularly to trucks for freight-cars, and especially to that class of trucks which are formed entirely of metal.

The object of my invention is to provide a simple, economical, and efficient metallic railway-car truck; and the invention consists in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved truck; Fig. 2, a sectional elevation taken on the line 2 of Fig. 4, looking in the direction of the arrow; Fig. 3, a sectional elevation of a portion of a truck, taken on the line 3 of Fig. 4; Fig. 4, a plan view of my improved truck, looking at it from the top; Fig. 5, a sectional elevation of a portion of a truck, taken on line 5 of Fig. 4; and Fig. 6, a sectional elevation of a portion of a truck, taken on line 6 of Fig. 4.

In the art to which this invention relates it is the aim of manufacturers of car-trucks to make them, as far as practical, out of metal and to so distribute the metal and arrange the parts or members that the least amount of material will carry the maximum load and resist the greatest strains.

The principal object of my invention, therefore, is to design and produce a truck which will embody these requirements, that is, it will have a minimum amount of material so arranged as to resist the maximum strains, carry a maximum load, and formed of what I term "merchantable metal portions"—that is, metal which can be obtained at points of supply and used to replace worn-out or injured parts.

In illustrating and describing my improvements I have only illustrated and described them in connection with such portions of a railway car or truck as are necessary in order to disclose my invention and enable those skilled in the art to practice the same, leaving out of consideration old and well-known parts, such as are clearly understood by those skilled in the art.

In constructing a truck in accordance with my improvements I make a truck-bolster A of the desired size by taking two channel-beams *a* and arrange them side by side with their flanges extending toward each other and connected together, as hereinafter described, so that they act jointly to resist side or lateral strains. By this arrangement it will be seen that every ounce of the material is brought into effective use and that the web portions instead of the raw edges of the flange portions resist the vertical strains. These channel-beams are cut of a sufficient length, so as to allow the parts that support and hold the boxes in position to be attached to the same.

In order to provide the jaw mechanism for carrying the boxes, I make a main portion B, of pressed or cast steel, and which in cross-section is channel-shaped, with the web side inward and the flanges extending outwardly. This channel-shaped main portion is arranged so as to form the portion nearest to the transom or bolster, and in order to form the outer jaw or jaws and connect the parts together and with the bolster I provide a channel-beam C and secure the central portion of the same to the bolster by means of rivets *c*, as are clearly shown in Fig. 2. This channel-beam is made of the shape shown in Figs. 1 and 2—that is, with an upper horizontal portion that forms the compression member of the truck-truss, and which, as above stated, is secured to the bolster, and an outer right-angular portion *c'*, that is laid in the channel of the channel-jaw and bent downwardly at its end or ends, as shown in Figs. 1 and 2, so as to provide a space c^2, in which the axle-box and other parts may operate, as hereinafter described. I next provide the truck with an arch-bar E, which is passed under the outer ends of the bolster and brought up over the channel member of the jaw mechanism to the outside, where the end or ends may be bent down at a right angle to form the outer portion of the jaws, as shown at *e*. This arch bar is riveted firmly to the members of the truck-bolster and forms the tension member of the truck-truss. To more completely stiffen the structure and enable it to perform its work, I provide two vertical angle-pieces G, which are inserted vertically between the

compression and tension members of the truss and secured by means of rivets to both of such members and to the webs of the channel-beams that form the bolster, as shown in Fig. 2. These angle-plates act as pillars or struts to stiffen the structure, prevent bulging of the bolster portion, and give to the arch-bar or tension member a sharper angle, thereby enabling it to more quickly distribute strains or shocks. These pillars or struts are provided with lateral projections G′ at their upper ends, which are riveted to the channel-beams forming the truck-bolster, and which further have the brake-hangers g^2 formed thereon, so that they act as gusset-pieces as well as pillars or struts to stiffen the structure and transmit strain and load.

To further stiffen the structure, I provide a lower tie-piece H, which is formed of bar metal, rectangular in cross-section, and riveted to the tension member of the truss and bolster and secured to the inner edge by means of bolts and rivets h' h^2. The bolt h' is used to tie the lower portions of both jaws of the truck together, while the thimble h^3 regulates the space in which the axle-box is positioned.

To further strengthen the truck-bolster at the central portion and enable it to more readily withstand the vertical strain and load, I provide a strut portion I of sufficient width—generally between ten and twelve inches—and which is formed of metal bar substantially inverted-V shaped. This strut is inserted in the central portion of the bolster and has its upper portion riveted to the inner upper portion of the bolster, which in a measure acts as a compression member, and the lower extending arms secured by means of rivets to the lower portion of the bolster, as is clearly shown in Fig. 3, while between the free ends of the lower extending arms is inserted a metal plate i, arranged to practically contact the same. This arrangement is such that the strains or shocks incident to the movement of the car in carrying loads is transmitted from the center plate of the bolster through the lower extending arms of this strut to the lower or tension portion of the bolster, thus preventing the bolster from bulging or buckling at the side portions thereof, while the lower portions i regulate the space and prevent the buckling of the lower portion of the bolster, at the same time assisting in preventing movement of the parts which might act to shear the rivets or displace the members.

In Figs. 1 and 2 and to the right of such figures I have have shown the outer jaw as formed in a removable section. The compression and tension members that form the truck-truss end at the end of the channel or main portion of the jaw, and the outer removable jaw is formed of a channel-piece K, which is bolted to the ends of the members of the truck-truss by means of the bolts k and to the lower end of the main jaw by means of the bolt and thimble k', so that when such portions are removed the outer jaw may be taken off and the wheel-axle and box removed therefrom.

Inserted between the axle-box L and the lower inner surface of the main jaw is a helically-coiled spring l, such as is usually used in car-trucks, and to position the same I provide the inner upper surface of the main jaw with a boss b, to which is loosely connected a spring-plate l' by means of the headed bolt l^2, particularly shown in Fig. 2. This construction enables the spring and plate to be held in position when the axle and box are removed therefrom.

The principal advantages of my improved truck are that the bolster practically forms an open and combined transom and bolster which enables the user to inspect all the parts of the truck and brake mechanism with the facility of the ordinary diamond truck now in use, that the parts are made and arranged in such manner that the truck-bolster more efficiently absorbs the side shocks, owing to the fact that the flanges of the channel-beams which form such bolster, are extended toward each other, so as to act jointly in resisting side or lateral shocks, getting the benefit of the joint width of the flanges, while the web portions, instead of raw edges, act to support the vertical load and resist vertical strains by being arranged in the manner shown and described. Further, the parts of members are formed of merchantable commercial iron, which may be made in large quantities and kept stored conveniently, so that it can be applied when desired.

While I have described my invention with more or less minuteness as regards details and in certain precise forms, I do not desire to be limited thereto unduly any more than is pointed out in the claims. On the contrary, I contemplate all proper changes in form, construction, and arrangement, the omission of immaterial parts, and the substitution of equivalents, as circumstances may suggest or render expedient.

I claim—

1. In a car-truck, the combination of two metal channel-beams forming the bolster portion, arranged with their flanges extending toward each other to resist side or lateral strains, metal bars connecting the flanges of the end portion of the channel-beams, a main and internal strut arranged at the central portion of the bolster and extending down diagonally to the lower portion of the bolster so as to transmit vertical strains from the upper portion of the bolster to the lower portion thereof and prevent bulging or buckling of the bolster sides, substantially as described.

2. In a car-truck, the combination of two channel-beams forming a bolster or transom portion, jaw mechanism for holding the axle-boxes, the main portion formed of a metal member channel-shaped in cross-section, a

metal channel-beam passed across the upper portion of and secured to the end of the bolster and to the metal channel member of the jaw mechanism to form the compression member of the truck-truss, an arch-bar secured to the lower portion of the truck-bolster and brought up diagonally to connect with the channel-beam forming the compression member of the truck-truss and with the jaw mechanism, a metal tie bar or rod secured to the arch-bar, the main portion of the bolster and the lower portion of the jaw mechanism to prevent longitudinal displacement, substantially as described.

3. In a car-truck, the combination of two channel-beams forming a bolster or transom portion, jaw mechanism for holding the axle-boxes, the main portion formed of a metal member channel-shaped in cross-section, a metal channel-beam passed across the upper portion of and secured to the end of the bolster and to the metal channel member of the jaw mechanism to form the compression member of the truck-truss, an arch-bar secured to the lower portion of the truck-bolster and its upper ends arranged in the channel portion of the main member of the jaw mechanism between the compression member and the jaw, and a metal tie bar or rod secured to the main portion of the bolster and the lower portion of the jaw mechanism to prevent longitudinal displacement, substantially as described.

4. In a car-truck, the combination of two channel-beams forming the bolster portion, jaw mechanism made in at least two parts, the main inner portion of such jaw mechanism formed of a metal member channel-shaped in cross-section, a metal beam forming the compression member of the truck-truss secured to the end of the upper portion of the bolster arranged in the channel portion of the jaw mechanism and having at least one of its free ends bent at right angles thereto to form the outer portion of the jaw mechanism, a metal arch-bar forming the tension member of the truck-truss passed under and secured to the lower portion of the bolster and brought up and around the upper portion of the jaw mechanism between the compression member and the jaw mechanism and having its outer end or ends bent at right angles thereto and downwardly to form a portion of the outer-jaw mechanism, a metal tie-bar connecting the lower portion of the jaw mechanism and the truck-truss together to prevent longitudinal displacement, and bolt mechanism securing the lower portion of the jaws together to provide the operating space for and hold the axle-box, substantially as described.

5. In a car-truck, the combination of two channel-beams forming the bolster or transom portion, jaw mechanism for holding the axle-box, the main portion formed of a metal member channel-shaped in cross-section, a metal bar passed across the upper portion of and secured to the end of the bolster and to the channel portion of the jaw mechanism to form the compression member of the truck-truss, an arch-bar secured to the lower portion of the truck-bolster and its upper ends arranged in the channel portion of the jaw mechanism between the compression member of the jaw, a metal tie-bar secured to the lower portion of the bolster and the lower portion of the jaw mechanism to prevent longitudinal displacement, and a combined vertical metal strut and gusset-piece inserted between the upper and lower members of the truck-truss and provided with a lateral projecting piece connecting the truss members with the bolster-beams, to act as gusset-pieces, substantially as described.

6. In a car-truck, the combination of two metal channel-beams arranged to form the bolster portion with their flanges extending toward each other in a horizontal plane to jointly resist side or lateral strains and compression and their web portions arranged to resist vertical strain or compression, metal members forming the jaw portion for holding the axle-boxes in operative position, a metal beam passed across the upper portion of and secured to the end of the bolster and the jaw mechanism and forming the compression member of the truck-truss, a metallic bar forming the arch-bar secured to the lower portion of the truck-bolster and with its ends brought up and secured to the jaw mechanism and compression member of the truck-truss to form the tension member of the truck-truss, and angle-bars arranged vertically between and secured to the compression and tension members of the truck-truss and to the web portions of the channel-beams forming the bolster to stiffen the structure and distribute the load, substantially as described.

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Witnesses:
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