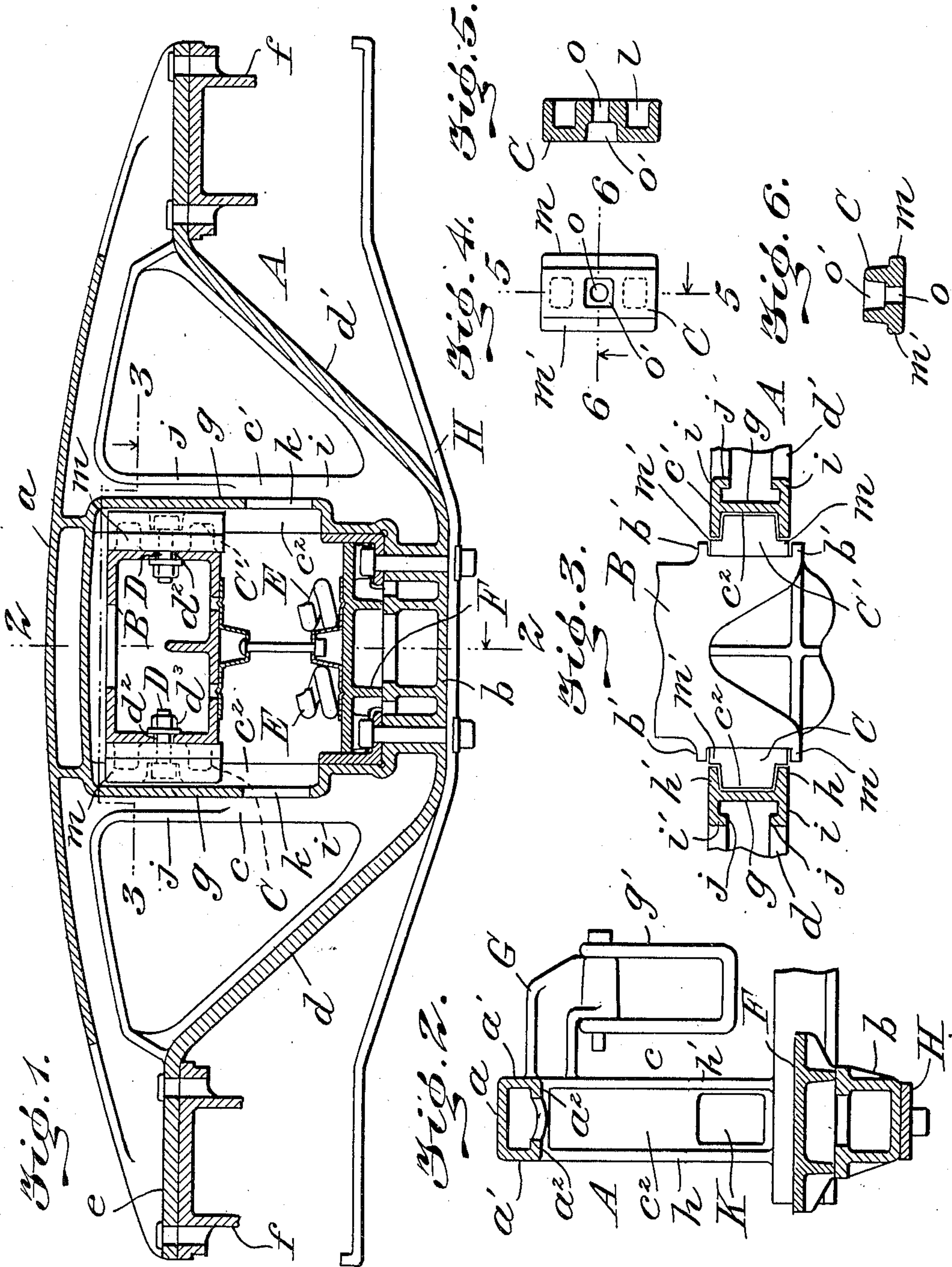


E. H. BENNERS.
CAR TRUCK.

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904,670.

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WITNESSES

Chas. C. Abbott

V. E. Markmann

INVENTOR

Edwin H. Benners

BY

Griffin T. Bernhard

ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWIN H. BENNERS, OF ELIZABETH, NEW JERSEY.

CAR-TRUCK.

No. 904,670.

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To all whom it may concern:

Be it known that I, EDWIN H. BENNERS, a citizen of the United States, residing in Elizabeth, county of Union, and State of New Jersey, have invented certain new and useful Car-Trucks, of which the following is a specification.

This invention relates to car trucks, and, more particularly, to side frames and bolsters for such trucks.

For a number of years past much experiment has been resorted to by railway engineers with a view to perfecting railway trucks in so far as concerns their safety, durability, and strength, accompanied by reduction in weight, simplicity in construction, economy in manufacture, etc.; and many improvements have been made in these directions.

My new car truck embodies many advantages along the lines mentioned, particularly as regards its lightness, strength, simplicity in construction, and the ease and expedition with which the parts thereof may be assembled. It is of the same general form and contour of those heretofore used, but possesses salient novel features of construction not heretofore embodied in structures of this character, which novel features of construction include, among others: first, double-channeled column guides for guiding the bolster in its vertical movement; second, guide blocks adapted to be placed in their operative positions and fixedly secured to the bolster subsequent to the positioning of the bolster in the side frame, and, third, guide blocks of a particular shape whereby they are adapted to ride against the inner faces and the inner channels of the column guides.

In designing the new side frame of the car truck, special attention has been given to devising a structure which would permit of the use of standard bolsters without necessitating the use of openings in the side frame, between the column guides, which were narrower at their upper ends than at their bottoms, or narrower at the lower ends than at their upper ends. In contradistinction to the foregoing constructions of side frames, the present construction embodies column guides of a particular type with bolster openings between them and which openings are of the same width at their tops as at their bottoms. This construction permits the introduction of the bolster at any point

within the opening in the side frame, after which the bolster is secured against endwise and lateral movement, while permitting free vertical movement, by means of the hereinbefore mentioned guide blocks cooperating with the bolster and the column guides.

In the accompanying drawings, I have illustrated one practical embodiment of the invention, but the construction shown therein is to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 is a vertical section taken longitudinally through a side frame embodying the present invention, the bolster being shown in cross section, and the guide blocks in elevation. Fig. 2 is a vertical cross section through the side frame on the line 2—2 of Fig. 1 looking in the direction of the arrow, the bolster, the guide blocks and the bolster supporting springs being omitted. Fig. 3 is a horizontal section through the side frame on the line 3—3 of Fig. 2, showing the bolster and the guide blocks in plan. Fig. 4 is an elevation of one of the guide blocks disconnected from the side frame and the bolster. Figs. 5 and 6 are, respectively, a longitudinal section on the line 5—5, and a cross section on the line 6—6 through the guide block shown in Fig. 4.

The side frame, A, is similar in many particulars to the structure disclosed in my prior Letters Patent, No. 872,790, dated December 3, 1907, said side frame being cast in a single piece. The frame consists of a top member, *a*, a base, *b*, column guides, *c*, *c'*, and the inclined members, *d*, *d'*. Preferably, the top member, *a*, is curved throughout its length, and said top member is provided with depending side flanges, *a'*, and reentrant flanges, *a''*, as shown in Fig. 2, the top member being channeled in cross section. The base member, *b*, is preferably skeletonized, and said base member is connected with the top member by the column guides, *c*, *c'*, and the inclined members, *d*, *d'*. The end portions of said top member, *a*, are fashioned to provide seats, *e*, adapted to accommodate the journal boxes shown partly at *f*, *f*, in Fig. 1.

An important feature of my new side frame consists of the column guides, *c*, *c'*, each of which is, preferably, double-channeled, as shown in Fig. 3. Each column guide consists of a web, *g*, flanges, *h*, *h'*, extending in one direction from the web, and

other flanges, i, i' , extending in an opposite direction from the web, said flanges, i, i' , being provided with reëntrant flanges, j . The flanges, h, h' , extending from the web, g , of the column guide, provide a channel on the inner face of said column guide. The column guides, c, c' , are parallel with each other so as to produce in the side frame a bolster receiving opening which is uniform in width from top to bottom. The channels, c^2 , which are formed on the inner faces of the column guides, c, c' , are uniform in width and extend substantially from top to bottom of said column guides.

In the web, g , of each column guide, at the lower part of said web, is provided a transverse opening, k , shown more clearly in Figs. 1 and 2, the purpose of which will hereinafter appear.

The bolster, B, may be of the standard construction, although any appropriate form of bolster may be used. The bolster shown in Figs. 1 and 2, is composed of a single casting which is provided with flanges or ribs, b' , but the widest part of the bolster, between the flanges, b' , is less than the width of the space between the column guides, c, c' , whereby the bolster may be introduced into the bolster opening of the side frame at any point in the height of said bolster opening.

In connection with the bolster, B, and the column guides of the side frame, I employ guide blocks, C, C', each block being constructed as shown in Figs. 4, 5, and 6 of the drawings. Each block consists of a single cast metal piece, which is preferably skeletonized, as at l , for lightness and simplicity, and said block is provided with flanges, m, m' , which project from the sides of the block, and extend lengthwise thereof. The block is provided, also, with a transverse bolt opening, o , one end of which is enlarged to produce a recess, o' , in that face of the block which is adapted to enter the guide channel, c^2 , of the column guide. The blocks, C, C', are adapted to be fitted against the respective sides of the bolster, each block occupying a position between the flanges or ribs, b' , of said bolster, and each block is secured firmly in position on the bolster by a transverse bolt, D, said bolster being provided with a bolt opening, d^2 , in each side thereof.

In assembling the parts composing the truck, the bolster is introduced into the space between the column guides at any suitable point, and, preferably, said bolster is lowered to a position opposite the opening, k , in the column guides. The guide blocks, C, C', are now placed in position against the respective sides of the bolster, between the flanges, b' , thereof, said blocks entering the channels, c^2 , of the column guides. The blocks and the bolster should occupy a position at the bottom of the column guides, and

each block is adjusted so that its bolt opening, o , will register with the bolt opening, d^2 , of the bolster, after which the bolt, D, is introduced through the opening, k , of the column guide, whereby the bolt is adapted to pass through the opening, o , of the guide block and the hole, d^2 , of the bolster. The nut, d^3 , and a suitable washer are applied to the outer end of the bolt, the head of said bolt being received in the recess, o' , of the guide block. The guide block is thus fastened securely to the bolster by a single bolt, the head of which is countersunk in the recess, o' , of said guide block, whereby the guide blocks are attached directly and fixedly to the bolster so as to move vertically therewith.

After the guide blocks shall have been attached to the bolster, the springs, E, are inserted below the bolster, said springs resting on the spring plank, F, the latter being of usual construction and supported on the base member, b .

The guide blocks, C, C', travel easily and freely in the channels, c^2 , of the guide columns, whereas the flanges, m, m' , of said guide blocks engage with the edges of the flanges, h, h' , of the columns, thereby securing a plurality of engaging faces between the guide blocks and the column guides. The guide blocks effectually preclude the bolster from endwise and sidewise movement between the guide columns, while permitting the bolster and the blocks to travel freely in a vertical direction between said columns. The guide blocks move easily in the channels of the columns so as to reduce the friction and wear on the parts, but as said blocks are secured fixedly in position on the bolster, they overcome any lost motion or grinding action between the bolster and the guide columns. Said guide blocks are adapted to be easily and quickly secured to the bolster by simply thrusting the bolts through the opening, k , of the column guides, and placing the bolts in position in the openings, o, d^2 , of the guide blocks and the bolster.

It will be noted that the guide blocks are positioned between the flanges or ribs, b' , of the bolster, thus relieving the strain on the bolts, D, under the end thrust which is imposed on the bolster.

The new construction of side frame and the guide blocks, C, C', enables a standard cast steel bolster to be used in the construction of the truck, it being necessary only to drill the bolt holes, d^2 , in the bolster at proper points between the ribs b' , whereby the guide blocks are adapted to be fastened to said bolster.

The double-channeled construction of the column guides, c, c' , adds materially to the strength of the side frame, while reducing the weight. As shown in Fig. 3, each column guide is provided with two channels,

one channel, c^2 , being on the inner face of the column guide, and the other channel on the outer face thereof. The channel guides are substantially I-shaped in cross section, and the maximum strength is thus secured with a minimum amount of metal, said construction providing a channel on the inner face of the column guide, which channel is adapted to cooperate with the bolster guiding means.

In Fig. 2, the side frame is shown as having a bracket, G, cast integral with the top member, or with the top member and one column guide. This bracket extends from the inner surface of the side frame, and it accommodates a link, g' , from which is suspended the brake beam, as is usual in this art.

H designates a brace bar, consisting, preferably, of strap metal which is bolted to the bottom members, the end portions of said strap being extended for engagement with the journal boxes, f .

Having thus fully described the invention, what I claim as new, and desire to secure by Letters Patent is:

1. In a car truck, a side frame provided with two column guides, each of which column guides has two channels, and a guide in one of the channels of each column guide.

2. In a car truck, a side frame provided with two column guides, each column guide being provided with two channels and having substantially the same cross section as an I-beam, and a guide in one of the channels in each column guide.

3. In a car truck, a side frame provided with column guides having transverse openings near their lower ends, whereby a bolster and guide blocks may be separately inserted in the lower part of the space between the column guides and the guide blocks secured to the bolster by locking means introduced through said openings in the column guides.

4. In a car truck, a side frame provided with two double-channeled column guides, each provided near its lower end with a transverse opening, whereby a bolster and guide blocks may be separately inserted in the lower part of the space between the column guides and the guide blocks secured to the bolster by locking means introduced through said openings in the column guides.

5. In a car truck, a side frame provided with two column guides each of which has a channel on its inner face, a bolster, and guide blocks fixedly secured to said bolster and cooperating with the channels in the column guides, whereby the bolster is prevented from endwise and lateral movement, but is capable of free vertical movement.

6. In a car truck, a side frame provided with two double-channeled column guides, a bolster, and guide blocks fixedly secured to

said bolster and cooperating with the channels in the inner faces of said column guides.

7. In a car truck, a side frame having a column guide provided with a web and flanges, whereby a channel is formed between said web and flanges, a bolster and a guide block adapted to be secured to said bolster, said guide block having a projecting member adapted to be fitted in and guided by said channel and provided, also, with flanges adapted to ride on the flanges of the column guide.

8. In a car truck, a side frame provided with a column guide, the inner face of which has a channel, a bolster, a guide-block, and means for directly and fixedly securing the guide block to said bolster, said guide block being fitted to slide in said channel of the column guide.

9. In a car truck, a side frame provided with column guides, each column guide having a channel, a bolster, guide blocks arranged to slide in the channels of the respective column guides, said bolster and the guide blocks being adapted to be individually inserted in the opening between said column guides, and means for securing the guide blocks in fixed positions on said bolster after said guide blocks have been placed in position.

10. In a car truck, a side frame provided with column guides, a bolster, guide blocks cooperating with said column guides, the said bolster and guide blocks being adapted to be individually inserted in the opening between the guide columns, and bolts for securing the guide blocks to the bolster, and openings in the lower ends of the guide posts through which said bolts may be inserted for securing said guide blocks to the bolster.

11. In a car truck, a side frame provided with a column guide having a channel on the inner face thereof, a bolster, a guide-block fitted to said bolster and in said channel, and a bolt for securing the guide-block fixedly to said bolster.

12. In a car truck, a side frame provided with column guides each having a channel on its inner face, a bolster provided with ribs on its side edges, the width of the bolster across the ribs thereof being less than the width of the space between the column guides, and guide-blocks positioned between the ribs of the bolster and secured fixedly to said bolster, each guide-block being arranged to move in the channel of one column guide.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN H. BENNERS.

Witnesses:

JAS. H. GRIFFIN,
H. I. BERNHARD.