

A. J. BATES.
SIDE FRAME FOR RAILWAY CARS.
APPLICATION FILED NOV. 8, 1912.

1,062,316.

Patented May 20, 1913.

3 SHEETS—SHEET 1.

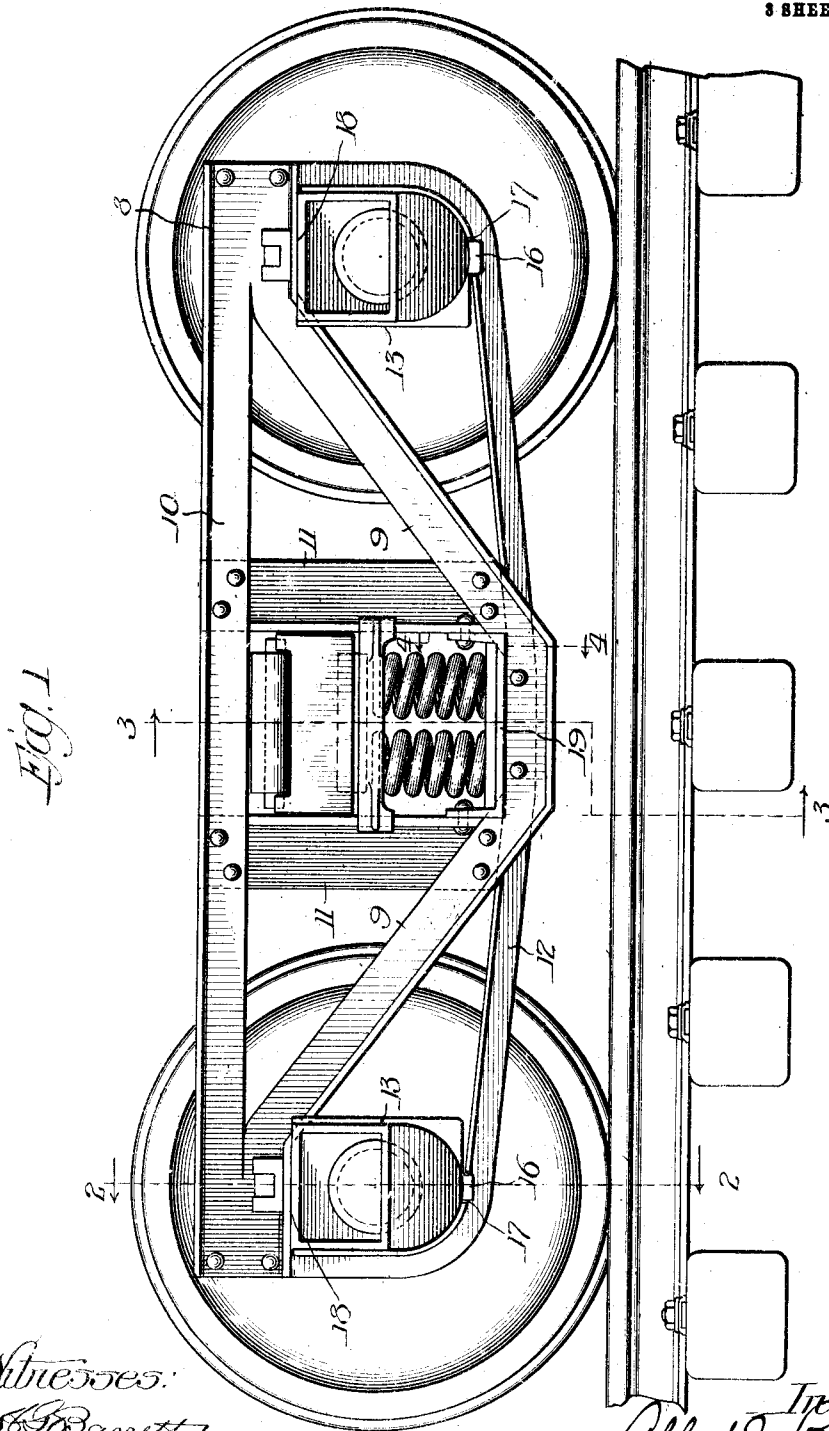


Fig. 1

Witnesses:
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Inventor:
Albert J. Bates
By Lincoln & Co. Attys

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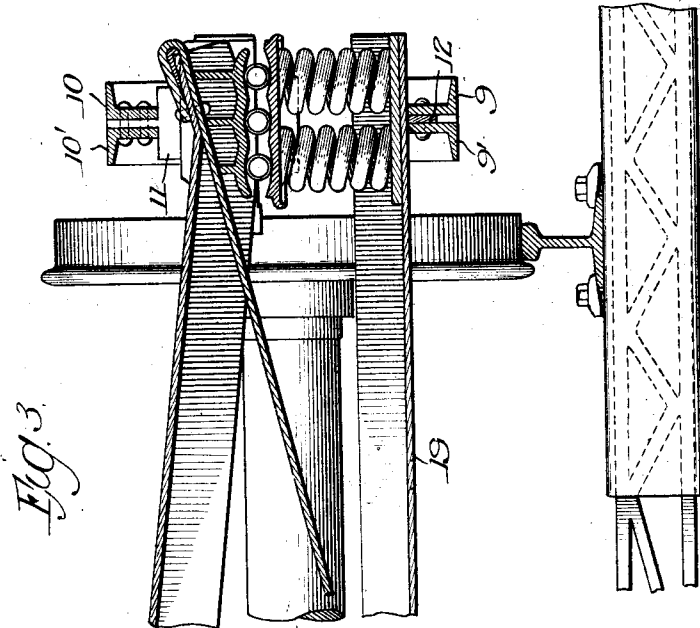


Fig. 3.

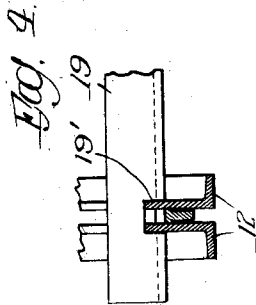


Fig. 4.

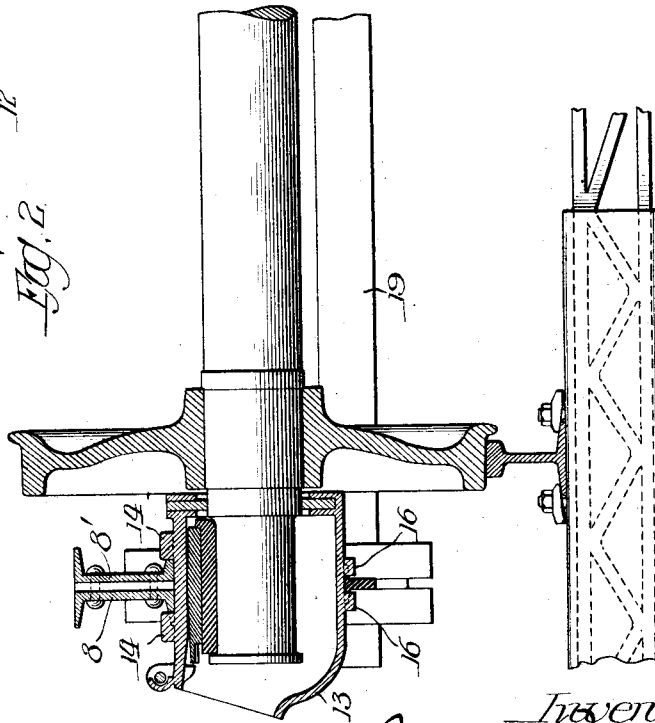


Fig. 2.

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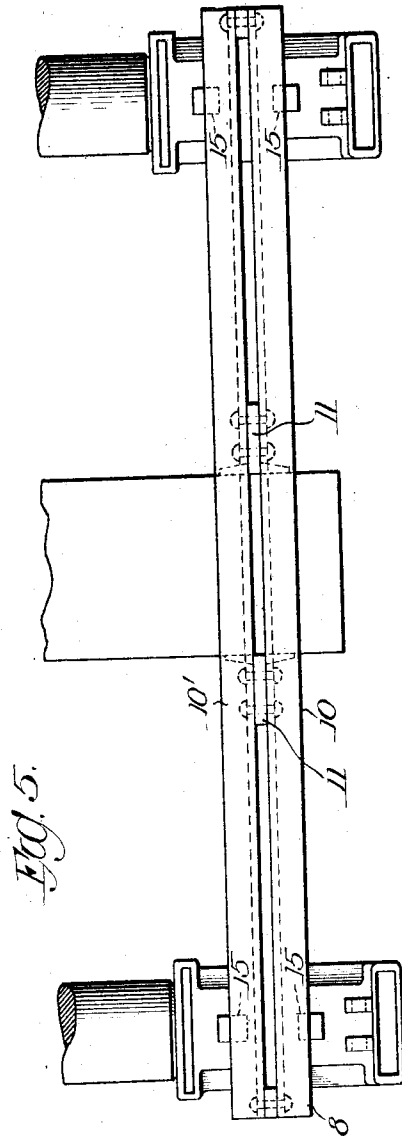


Fig. 5.

Witnesses:
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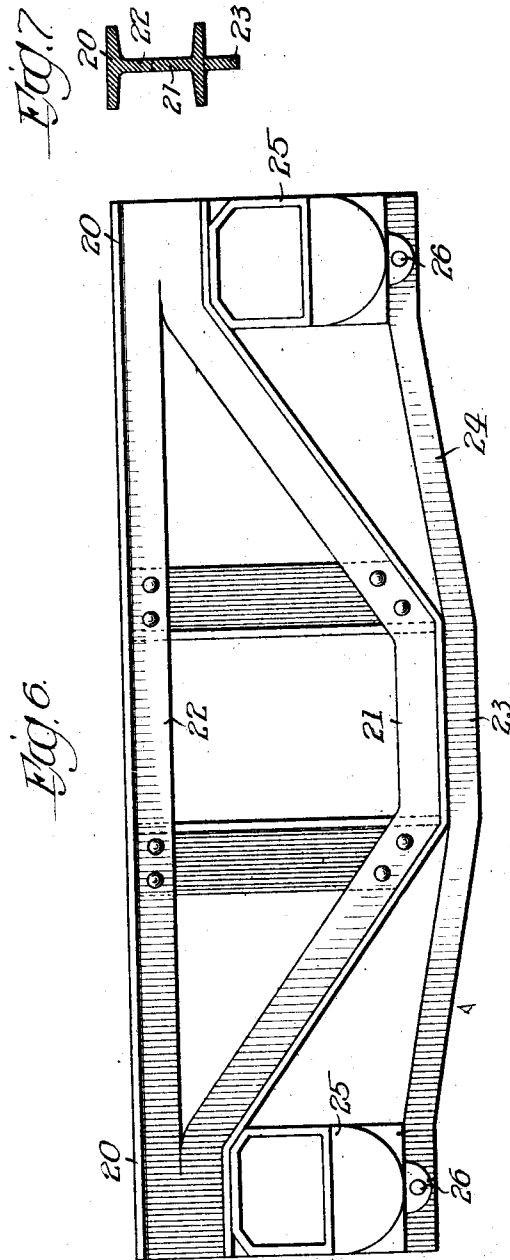


Fig. 6.

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UNITED STATES PATENT OFFICE.

ALBERT J. BATES, OF CHICAGO, ILLINOIS.

SIDE FRAME FOR RAILWAY-CARS.

1,062,316.

Specification of Letters Patent.

Patented May 20, 1913.

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To all whom it may concern:

Be it known that I, ALBERT J. BATES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Side Frames for Railway-Cars, as set forth in the annexed specification.

The primary object of this invention is to provide a side frame for railway cars which can be economically made out of commercial sections of rolled steel, which will be light in weight and composed of few parts, and which will possess the necessary strength for the purposes to which it is applied. And a further object of the invention is to mount and secure the journal boxes in the side frame in a novel manner without the use of bolts or similar fastening means and where- by unnecessary rigidity is avoided and a desirable flexibility provided.

With these and other objects in view, as will hereinafter appear, I have illustrated the invention in two embodiments in the accompanying drawings, referring to which—

Figure 1 is an elevation showing my improved side frame; Figs. 2 and 3 are sectional views on the lines 2—2 and 3—3, respectively, of Fig. 1; Fig. 4 is a detail sectional view on the line 4—4 of Fig. 1; Fig. 5 is a top plan view of the side frame shown in Fig. 1; Fig. 6 is an elevation illustrating another embodiment of the invention; and Fig. 7 is a transverse sectional view of the beam from which the compression and tension members are made in the embodiment of Fig. 6.

My improved side frame comprises a truss beam having a compression member and a tension member all in one integral part. In producing this truss beam I may employ a rolled steel beam of commercial section or I may roll a beam of suitable section.

In practice the beam is split longitudinally between its ends and at or about midway between its top and bottom and while the beam is suitably held one of the split portions is stretched to provide the tension member of the truss beam and the other member is simultaneously compressed longitudinally to provide the compression member of the truss beam. To enable this stretching operation the portion to be stretched or the whole beam is first properly heated.

In order that the tension member may be

stretched and elongated the required amount without exceeding the safe limit of elongation of the metal or appreciably diminishing its strength, I prefer to shorten the compression member by upsetting or compressing it longitudinally at the same time that the stretching action is performed upon the tension member. This compression may be conveniently effected by applying pressure endwise of the beam and at the ends thereof while the tension member is being elongated and while the beam is suitably held in place. I have found that by employing this method I can elongate and expand the tension member of a seven foot channel beam to a drop of twenty-five inches, the compression member being upset or shortened three inches during the operation. This upsetting and shortening of the compression member not only enables the elongation of the tension member to provide for the desired drop or expansion thereof but it enlarges the section of the compression member and thereby increases its strength and rigidity. The fabrication of my side frame in this manner will develop any imperfections that may exist in the metal so that they will be detected before the frame is placed in service.

In Figs. 1-5 a truss beam 8 is formed from a channel beam and the tension member 9 has been made by stretching a portion similar to the portion 10 which forms the compression member.

The truss beam may be made from a single rolled steel beam of sufficient section or, for convenience of manufacture, from two beams as shown in Figs. 1-5, the other beam 8' having a tension member 9' and a compression member 10'. These two beams are riveted or otherwise suitably fastened together to form a single truss beam. The stretching operation may be performed on the two beams simultaneously or separately as will be found most convenient. In this construction the compression member comprises corresponding parts of both beams and the tension member also comprises corresponding parts of both beams, and said parts operate conjointly to provide a single compression member and a single tension member. In making this form of truss beam I have found it convenient to employ two channel beams with their flat sides in juxtaposition. While the channel section has

many desirable advantages it will be understood that I do not restrict myself to this or any other particular shape but reserve the right to employ any shape of rolled steel beam suitable for the purpose.

Bolster guides 11 of suitable form are properly positioned with their ends located between the two parts of the compression member and between the two parts of the tension member and they are fastened to said members by rivets or are spot-welded thereto or otherwise suitably secured in place.

A bar 12, preferably of T-section, is secured at its ends to the truss beam, at the ends thereof, and to the tension member, at the bottom thereof, by rivets or other suitable means, to form a binder to hold the journal box in place. In Figs. 1-5 the bar 12 is secured between the adjacent ends of the beams 8, 8', and between the two tension members 9, 9', the flanges of the bar being preferably removed for this purpose. The bar is bent or formed to accommodate and secure the journal boxes 13 in the frame and this is accomplished in a desirable manner without the use of bolts, or other fastening means, by providing the box with suitably disposed lugs to engage with the flanges of the beams of which the frame is formed, as shown in Figs. 1, 2 and 5. To this end the journal box may be provided on its top with lugs 14 to engage recesses 15 in the flanges of the beams 8, 8', and with lugs 16 on its bottom to engage recesses 17 in the flanges of the bar 12. The beams 8, 8', extend beyond the tension members thereof sufficiently to form seats 18 for the journal boxes which are held in place by the bar 12 against the tension members. In assembling the parts the boxes are arranged against the seats 18 and the bar is then fastened in place. The lugs on the boxes engage the frame so that the boxes are securely held in place. This manner and means for securing the boxes in the side frame provides for a desirable degree of flexibility and avoids an undesirable rigidity of parts. In event of injury to the journal boxes or if it becomes necessary to change them for any reason the bar can be removed from the other parts of the frame by simply cutting the rivets or releasing any other fastening means that may be employed.

A tie plate 19 of channel section is employed to engage two side frames of a truck and this plate is cut away or recessed at 19' to receive the tension member, as shown in Figs. 1 to 4. By reason of this engagement it will not be necessary to fasten the tie plate to the side frames but I may rivet or otherwise secure it to the side frames if desired.

As hereinbefore mentioned a single beam may be employed instead of the double

beam construction heretofore described, and in Figs. 6 and 7 I have shown a single beam construction, the beam 20 being of I-section. The web of this beam is slit longitudinally, between its ends, and the tension member 21 is formed by stretching a part of the beam relatively to the part 22 which forms the compression member and which is retained in its original plane but is upset and shortened to enable the tension member to be sufficiently elongated without exceeding the limits of safety. In this construction I have also shown the beam provided with a flange 23 on its lower face which is sheared at or about its juncture with the beam from the ends of the beam inwardly and pulled away to form the bar 24. This bar remains integrally connected with the beam 20 at the depressed central portion of the tension member and it is employed to support the journal boxes 25 which are fastened thereto at 26 in any suitable manner and are also engaged with or fastened to the beam 20 as hereinbefore described or in any other suitable manner.

My invention is capable of embodiment in side frames of various forms with such changes and alterations as may be desirable to suit different conditions. It provides a rolled steel side frame of simple and light but strong and substantial construction which can be easily made at comparatively low cost.

As hereinbefore indicated, I do not wish to be understood as confining the invention to the particular embodiments chosen for illustration herein, nor to the exact construction and arrangement and adaptation of parts shown and described, but I reserve the right to make any changes and alterations that fairly fall within the spirit and scope of the invention.

The compression member may be provided with a camber, if desired, and the shape and configuration of the tension member may be varied as required to suit different conditions. In some instances it may be desirable to extend the tension member down farther than is indicated in the drawings to provide a deeper opening in the side frame, and in such cases I prefer to provide initially a beam somewhat longer than is required, and contract the compression member lengthwise, thereby increasing the drop of the tension member without unduly stretching the metal.

I claim:

1. A side frame for railway cars comprising an upset and shortened compression member and an elongated tension member integrally connected at their ends.

2. A side frame for railway cars comprising an upset and shortened compression member and an elongated tension member formed from a rolled steel beam, the ends of

the tension member being integrally connected with the ends of the compression member intermediate of the ends of the beam.

5 3. A side frame for railway cars comprising a compression member and a tension member formed from a rolled steel beam, the ends of the tension member being integrally connected with the ends of the compression member intermediate of the ends
10 of the beam, said compression member comprising a part of the beam upset and shortened and retained in its original plane and said tension member comprising a part of
15 the beam corresponding to said compression member part but stretched to form the tension member.

4. A side frame for railway cars comprising a compression member and a tension
20 member formed from a rolled steel beam, said beam being slit longitudinally between its ends to form an upper and a lower part, the lower part being stretched to form the tension member and the upper part being
25 contracted lengthwise to form the compression member.

5. An integral side frame for railway cars comprising an upset compression member and an elongated stretched tension member.

30 6. In a side frame for railway cars, the combination of a truss beam having a flange and comprising a compression member and a tension member, a binder having a flange, said binder being secured at its ends to the
35 truss beam and at its middle to the tension member and the flange on said binder being recessed, and a journal box arranged between the beam and binder and having lugs to engage the flange on the beam and the
40 recess in said binder.

7. In a side frame for railway cars, a truss beam consisting of two channel beams secured together and having corresponding compression and tension members, and a bar
45 secured at its ends between the ends of the channel beams and at its middle between the tension members.

8. The combination of a pair of side frames for railway cars comprising inclined
50 tension members, and a tie plate of channel section having recesses at its corners to receive and engage the inclined portions of said tension members.

9. A side frame for railway cars, comprising a rolled steel beam divided longitudinally between its ends, the portion of the beam above the division being upset and shortened but retained in its original plane to form the compression member of the
55 frame and the portion beneath the division being separated from the upper portion

intermediate its ends to form the tension member of the frame.

10. A side frame for railway cars, comprising a rolled steel beam slitted between
65 its ends, that portion of the beam on one side of the slit being stretched away from its original position to form the tension member of the frame and the portion of the beam on the other side of the slit being upset and shortened longitudinally to form
70 the compression member of said frame.

11. A side frame for railway cars, comprising a rolled steel beam provided with a longitudinal slit between its ends, that portion of the beam above the slit being upset and shortened longitudinally and enlarged in cross section but retained in its original plane to form the compression member of the frame and the other portion of the beam
80 beneath the slit being stretched longitudinally and pulled away from the compression member to form the tension member of the frame.

12. A side frame for railway cars comprising an upset and shortened compression member and an elongated tension member formed from a rolled steel beam, the ends of the tension member being integrally connected with the ends of the compression
85 member intermediate of the ends of the beam, and bolster guides secured at their ends to the compression member and the tension member.

13. A side frame for railway cars comprising a compression member and a tension
95 member formed from a rolled steel beam, said beam being slit longitudinally between its ends to form an upper and a lower part, the lower part being elongated and stretched to form the tension member and the upper part being contracted lengthwise to form the compression member, and bolster guides secured at their ends to the compression member and the tension member.
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14. A side frame for railway cars comprising a compression member and a tension member formed from two rolled steel beams and suitably secured together, each of said beams being slit longitudinally between its
110 ends to form an upper and a lower part, said lower part being elongated and stretched to form the tension member and said upper part being contracted lengthwise to form the compression member, and bolster guides secured at their ends between and to the two parts of the compression and tension members.
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Witnesses:

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