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TRUCK SIDE FRAME.

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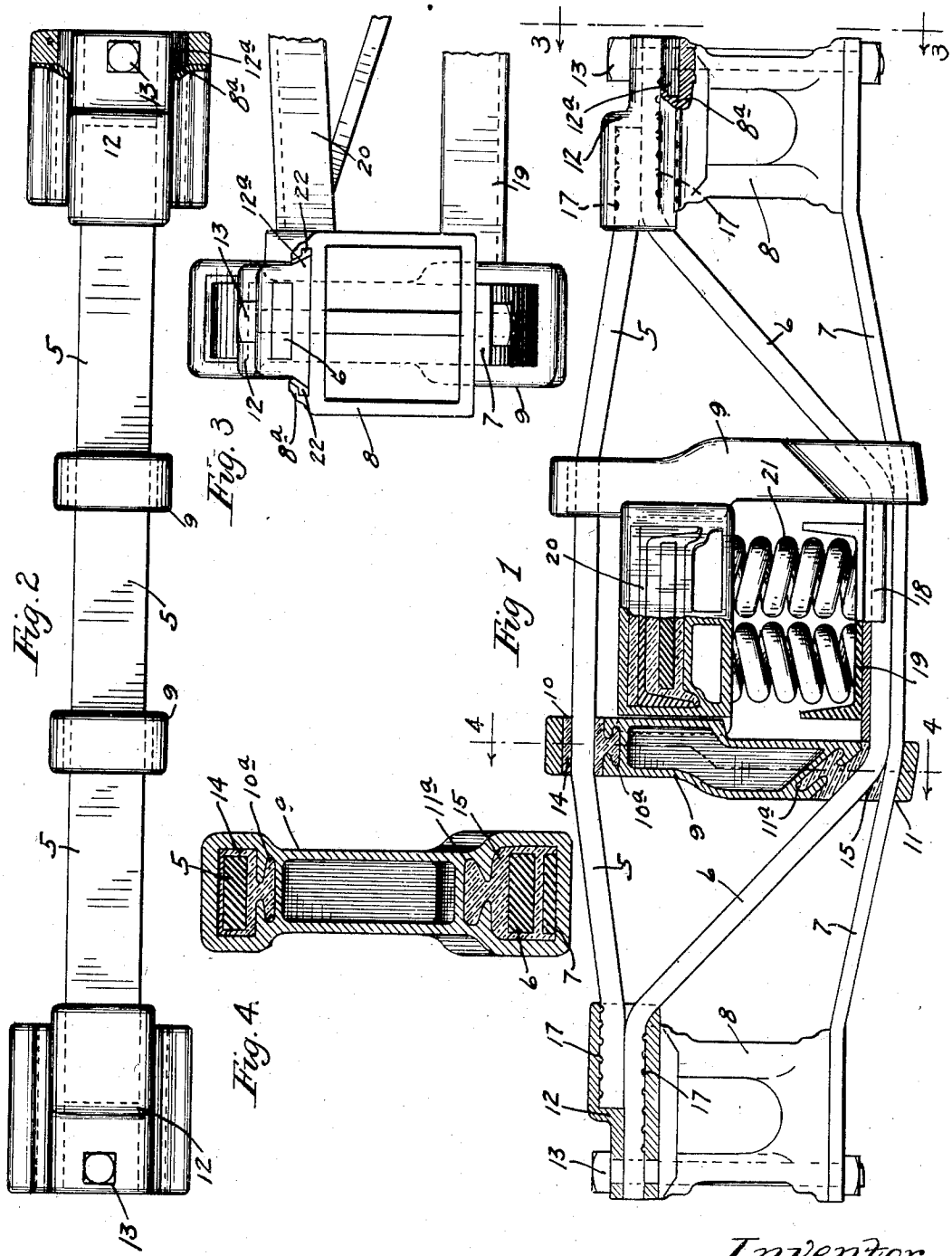


Fig. 1

Fig. 2

Fig. 3

Fig. 4

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To all whom it may concern:

Be it known that I, EDWIN C. WASHBURN, a citizen of the United States, residing at Englewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Truck Side Frames; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention provides an improved truck side frame and involves also an improved process of producing the same. Particularly, the invention relates to the production of truck side frames of the arch bar type and in which the tension and compression members are formed from rolled steel bars. Truck side frames of this type, even in the older frames, hitherto employed, have had many advantages over cast side frames, and, in fact, the latter type have not satisfactorily stood the tests of service. Moreover, cast side frames are much more expensive than side frames made from commercial rolled steel.

In producing my improved side frame, one of the main features has been the elimination of a large number of bolts, bolt holes, rivets and rivet holes. By the elimination of bolt holes in the intermediate portions of the upper and lower arch bars, or, in other words, in the compression and tension members, I have been able to obtain approximately a thirty per cent. increase in the strength of the same members in the use of bars of a given cross section.

The invention, as preferably carried out, is illustrated in the accompanying drawings wherein like characters indicate like parts throughout the several views.

Referring to the drawings:

Figure 1 is a view partly in side elevation and partly in vertical section showing a truck side frame designed and made in accordance with my invention;

Fig. 2 is a plan view of the truck side frame, some parts being broken away;

Fig. 3 is a rear elevation of one of the truck side frames and showing also parts of the bolster and transom; and

Fig. 4 is a transverse section on the line 4—4 of Fig. 1.

The numeral 5 indicates the top arch bar or compression member and the numeral 6 the bottom arch bar or tension member of the side frame. The numeral 7 indicates the bottom or tie bar. The numeral 8 indicates journal boxes which may be of any suitable construction, but preferably formed on their tops with dove-tailed channels 8^a, for a purpose which will presently appear.

Truck bolsters 9 are cast structures formed in their upper ends with eyes 10, through which the top arch bar 5 is adapted to be passed with a large amount of clearance, and formed in their lower ends with eyes 11 through which the bottom arch bar 6 and tie bars 7 are adapted to be passed with a large amount of clearance. The eyes 10 and 11, for an important purpose which will presently appear, are formed with lock pockets 10^a and 11^a connected, respectively, to said pockets by contracted neck portions.

The numeral 12 indicates cast coupling heads within which the ends of the arch bars 5 and 6 are seated, as presently to be noted.

The ends of the tie bar 7 fit against the bottoms of the journal boxes 8, and the coupling heads 12 fit the tops of the said journal boxes and are formed with dove-tailed bases 12^a that fit the dove-tailed channels 8^a of said boxes, with clearance. The numeral 13 indicates nut-equipped bolts passed through perforations in the heads 12 in the ends of the lower arch bar 6, in flanges of the journal boxes, and in the ends of the tie bar 7, thereby rigidly tying the said parts together.

In the process of making this side frame, the arch bars 5 and 6 and tie bar 7, which have first been bent to proper form, are passed through the eyes in the bolster columns 9, and the said parts are held in their proper relative position shown in Fig. 1, and then molten metal is poured into the upper eyes 10 and lower eyes 11, so as to completely fill the same and the pockets thereof. In filling these eyes with the molten metal, proper molds for confining the metal may be used.

The molten metal thus poured in will not only fill all of the space between the bolster columns and bars, but will form a weld or semi-welded joint therewith which is much stronger than bolts or rivets, and obviously, does not weaken the said bars. Thus, as stated, elimination of bolt holes and rivet holes and the connections between the bars and bolster columns, a greatly increased strength with a given amount of metal is obtained, and moreover, all possibility of

joints becoming loose in service is eliminated. Obviously the function of the pockets 10^a and 11^a is to positively interlock the filling metal to the bolster columns. The molten metal poured into the upper eyes, as stated, is indicated by the numeral 14, and the molten metal poured into the lower eyes of said bolster columns is indicated by the numeral 15.

The union between the cast coupling heads 12 and the ends of the arch bars 5 and 6, is made by casting the said caps directly onto the ends of said bars. This, as is obvious, may be done by placing the ends of the said arch bars in proper molds, and then casting the metal against the ends thereof. To increase the rigidity of the connection between these cast coupling heads and bars 5 and 6, the latter may be roughened or slightly corrugated, as indicated at 17, in Fig. 1. The ends of the lower arch bar 6 are extended so that bolts 13 are passed therethrough, because said arch bars act in tension, but as the upper arch bar 5 acts in compression, the ends thereof may, and preferably are cut short or terminated inward of the said bolts and are simply shouldered against the interiors of the said heads.

After the dove-tailed bases of the coupling heads 12 are slid into the dove-tailed channels on the top of the journal boxes, the space between the same is preferably filled in with molten metal 22, as shown in Fig. 3, thereby permanently and rigidly uniting said heads to said boxes.

Truck side frames constructed on the plan above described, may be made cheaper than cast side frames, first, because they are light for a given strength, and second, because the rolled steel is cheaper per pound than cast steel, such as necessarily employed in cast side frames. The elimination of the greater part of the foundry work makes unnecessary a large foundry, big steel plants, etc. Moreover, the frame will never have to be entirely scrapped, because parts thereof can be replaced.

In Figs. 1 and 3, in addition to the truck side frame above described, several elements, are shown, to wit: saddle plates 18 placed on the bottom arch bar 6 between the bolster columns, cross transom 19 for connecting saddle plates on opposite sides of the truck, a truck bolster 20 working between the bolster columns, and bolster supporting springs 21 supporting the bolster from the ends of the transoms. So far as this invention is concerned, the truck bolster may be of any suitable construction, but in so far as it is shown, it is of a type disclosed and claimed in my companion application filed of even date herewith and entitled "Truck bolster."

What I claim is:

1. A truck side frame having separately formed tension and compression members permanently united only by a housing in which is cast a secondary filler element, whereby the members are not weakened by bolt or rivet holes.

2. A truck side frame comprising separately formed tension and compression members and separately formed bolster columns having recesses therein permanently held together by cast elements cast into said recesses in the process of construction.

3. A truck side frame having separately formed tension and compression members, and separately formed bolster columns having openings and locking recesses communicating therewith, said members passing through said openings and permanently connected to said housing by a secondary or filler cast in place in said openings and recesses.

4. A truck side frame comprising separately formed tension and compression members, separately formed bolster columns having openings at their upper and lower ends through which the compression and tension members respectively pass, and filler castings cast in said openings to permanently secure said members and housings together.

5. The process of making truck side frames which consists in assembling the independently formed compression and tension elements thereof and then casting uniting filling elements between the portions to be united.

6. A truck side frame having separately formed tension and compression members and bolster columns formed independently thereof, said columns having eyes through which said tension and compression members are passed with clearance, and cast elements cast into said eyes permanently and rigidly connecting said tension and compression members to said columns.

7. A truck side frame having separately formed tension, compression and tie bars, of bolster columns formed independently of said bars and having eyes through which said bars are passed, and cast elements cast into said eyes and rigidly and permanently connecting said columns to said bars.

8. A truck side frame comprising tension and compression bars, bolster columns formed independently thereof and having eyes through which said bars are passed, cast elements cast into said eyes and rigidly and permanently uniting said columns to said bars, coupling heads cast onto the ends of said tension and compression bars and rigidly uniting the same, and journal boxes rigidly secured to said coupling heads.

9. A truck side frame comprising tension and compression bars, bolster columns formed independently thereof and having eyes through which said bars are passed,

cast elements cast into said eyes and rigidly and permanently uniting said columns to said bars, coupling heads cast onto the ends of said tension and compression bars and rigidly uniting the same, and journal boxes having interlocking engagement with said coupling heads.

10. A truck side frame having separately formed tension, compression and tie bars, of bolster columns formed independently of said bars and having eyes through which the said bars are passed with clearance, cast elements cast into said eyes and rigidly and permanently uniting said columns to said bars, coupling heads cast onto the ends of said tension and compression members, and rigidly and permanently uniting the same, journal boxes interposed between the ends of said bottom tie bar and the lower surfaces of said coupling heads and having interlocking engagement with the latter, and nut-equipped bolts passed through said coupling heads and the ends of said tie bar.

11. The process of making truck side frames which consists in first independently making tension and compression members and bolster columns, second, in assembling the same parts, and third, in rigidly and permanently uniting the same by a casting metal into said column and against said columns and bars.

12. A truck side frame having separately formed tension and compression members, coupling heads cast onto and rigidly and permanently connecting the ends of said tension and compression members, journal boxes having interlocking connection with said heads, and metal cast into the joints between said heads and journal boxes and rigidly uniting the same.

13. A truck side frame having tension and compression members and recessed columns permanently held together by metal cast into the recesses of said columns and against other members.

14. A side frame made up of independently formed interlocking elements permanently connected only by metal cast against the same.

15. A cast together side frame having its elements permanently secured together at their end and intermediate portions only by means of secondary or filler castings.

16. A side frame comprising independently formed upper and lower frame members having independently formed journal boxes disposed therebetween at their ends and united to the upper of said members by filler castings.

17. A side frame comprising independently formed side frame members and independently formed journal boxes disposed therebetween and rigidly secured thereto by filler casting.

18. A side frame comprising independently formed journal boxes having recesses in their upper ends, independently formed longitudinal side frame members, coupling heads uniting the ends of said members, said coupling heads being disposed in said recesses and rigidly united to said journal boxes by filler castings cast into said recesses of said boxes.

19. A truck side frame comprising independently formed compression, tension and brace members, independently formed bolster columns having openings at their upper ends through which the compression member passes, and openings at their lower ends through which the tension and brace members pass, and filler castings cast in said openings to permanently secure said members and the columns together.

20. The process of making a truck side frame which consists in providing independently formed compression and tension members passing the same through spaced openings in bolster column members and permanently securing the parts together by filler castings placed in the openings in the bolster column.

21. The method of making a truck side frame which consists in assembling independently formed compression, tension and tie bar members with independently formed journal boxes between the ends of said tie bar and the ends of the tension and compression members, uniting the ends of the tension and compression members by casting coupling heads thereon, disposing said coupling heads in recesses in said journal boxes and uniting said heads and journal boxes by filler castings cast in said recesses.

In testimony whereof I affix my signature.

EDWIN C. WASHBURN.