W. F. RICHARDS.

RAILWAY CAR BOLSTER.

APPLICATION FILED DEC. 26, 1911.

1,055,656.

Patented Mar. 11, 1913.

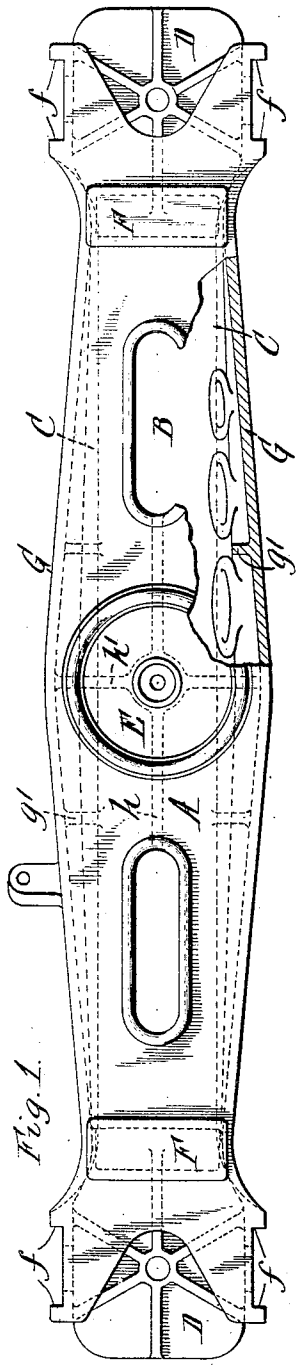

Fig. 1.

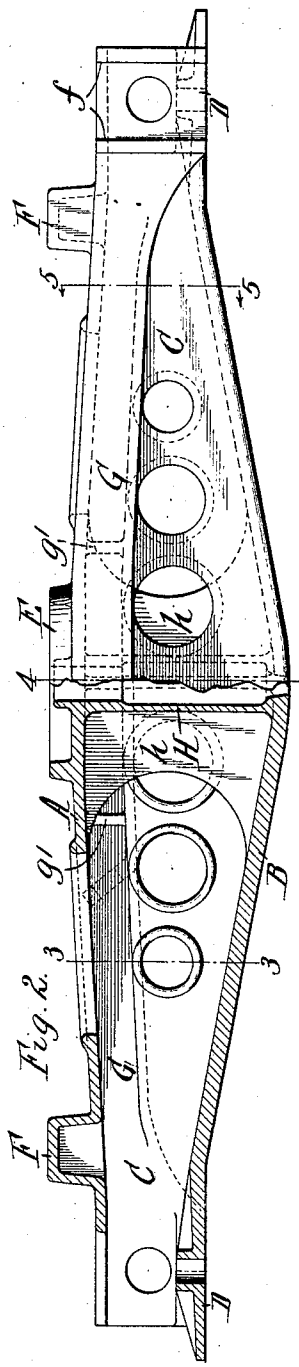

Fig. 2.

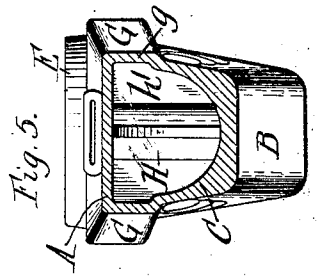

Fig. 5.

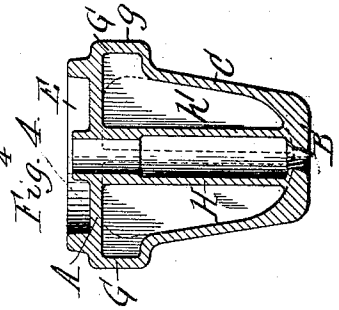

Fig. 4.

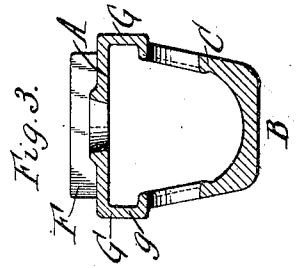

Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLARD F. RICHARDS, OF DEPEW, NEW YORK, ASSIGNOR TO GOULD COUPLER COMPANY, OF NEW YORK, N. Y.

RAILWAY-CAR BOLSTER.

1,055,656. Specification of Letters Patent. Patented Mar. 11, 1913.

Application filed December 26, 1911. Serial No. 667,577.

To all whom it may concern:

Be it known that I, WILLARD F. RICHARDS, a citizen of the United States, residing at Depew, in the county of Erie and State of New York, have invented a new and useful Improvement in Railway-Car Bolsters, of which the following is a specification.

This invention relates to railway car bolsters and analogous supporting members, and more particularly to improvements in cast steel bolsters for car trucks.

On account of the very heavy rolling stock in common use on railroads at the present time, the truck bolsters are required to be very strong and rigid laterally, as well as vertically, in order to withstand the severe impact shocks occurring when coupling the cars, especially in switching service, as the bolsters have to overcome the inertia of the trucks.

The object of the invention is to produce a cast steel truck bolster which will have the strength and rigidity, both vertically and laterally, which are essential to long life and satisfactory results under the existing conditions of service, but which is, nevertheless, of the minimum weight and is constructed so that it can be molded with facility and is not liable to be cracked and checked by shrinkage strains, thus reducing the manufacturing losses and reducing the cost of production of the bolster. These results are attained primarily by making the bolster with a hollow or box-like body having a top or compression member, a bottom or tension member which is of inverted arch, or channel shape, and opposite side members or webs which connect the side flanges of the bottom member with the top member and are provided with outwardly bulged portions or lateral enlargements which extend lengthwise along the opposite edges of the top member of the bolster and form in effect opposite tension and compression channels for stiffening this member against lateral strains. Preferably these side channels diminish in depth or lateral width from the middle toward the ends of the bolster and are provided with suitable strengthening ribs, and the top and bottom members of the bolster are connected by a hollow central strut or post which is preferably strengthened by longitudinal and transverse vertical ribs.

In the accompanying drawings: Figure 1 is a plan view, partly in horizontal section, of a car truck bolster embodying the invention. Fig. 2 is a view thereof, partly in side elevation and partly in vertical section. Figs. 3, 4 and 5 are transverse sections thereof in lines 3—3, 4—4, and 5—5, respectively, Fig. 2.

Like reference characters refer to like parts in the several figures.

The bolster consists of a hollow or box-like steel casting having a top or compression member A, a bottom or tension member B, and opposite side members or webs C.

D represents the ends of the bolster which bear on the supporting springs and move vertically between the columns of the truck, and E and F represent, respectively, the center and side bearings of the bolster. The invention relates only to the construction of the body of the bolster, and the ends thereof and the side and center bearings may be of the usual or any suitable construction. The ends are, however, preferably of the hollow rectangular shape shown, having a ribbed bottom plate and side walls provided with vertical column guides *f*.

The opposite side members or webs C have outwardly bulged portions or lateral enlargements G which extend lengthwise along the opposite edges of the top member of the body of the bolster. These bulged portions are in the form of channels, arranged with their legs or flanges extending inwardly and with their upper and lower flanges, respectively, joining the top member A and the upper edges of the side members C of the bolster. Thus the bulged portions constitute, in effect, opposite channel chords for the top member which act in tension and compression to resist lateral strains, and, therefore, give this member great strength in a lateral or horizontal direction. The channels G are preferably deepest at the middle of the bolster and gradually diminish in depth toward the ends of the bolster, where their upright walls *g*, which are vertical, merge into the vertical side walls of the ends D of the bolster, and vertical ribs *g'* are preferably provided

which cross the side channels G between their ends and connect the top and side members A and C of the bolster, thus adding to the vertical strength of the bolster. The upper portion of the body of the bolster is widest at its middle and tapers toward the ends of the bolster.

The bottom or tension member B of the bolster is in the form of a channel, arranged with its legs or flanges projecting upwardly and joining the side members C of the bolster, which diverge slightly in an upward direction. This facilitates the drawing of the bolster from the mold and also makes the bolster narrower at its lower portion than at its upper portion, which is desirable. The bottom or tension member inclines upwardly from the middle toward the ends D of the bolster, thus making the bolster deepest at its middle, as usual.

H represents a hollow strut or post which connects the top and bottom members of the bolster at its middle portion and is adapted to receive the king pin of the truck. This strut preferably has vertical strengthening ribs h and h' extending from the top to the bottom members of the bolster, the former extending longitudinally of the bolster and the latter transversely and joining the hollow post to the opposite side members C of the bolster.

In the preferred form of the bolster, shown in the drawings, the top or compression member A is curved or bowed upwardly and is provided with openings in its neutral axis to reduce the weight of the bolster; the upper portions of the sides C are bowed or curved outwardly and are also provided with openings; and the channel tension member B has a bottom face which is substantially flat transversely, and an upper face which is curved or of substantially inverted arc shape. These are not, however, essential features of the bolster.

While by constructing the bolster as described, both the top and bottom members A and B thereof are in the form of channels acting respectively in compression and in tension in a vertical direction, and the top member A furthermore has the form of a horizontally placed beam with channel tension and compression chords G at opposite sides; it will be observed that the bolster has no projecting thin flanges or ribs. This is a great advantage from a foundry standpoint, since in molding cast steel bodies it is very difficult to make such flanges or ribs uniformly of equal thickness and strength throughout their length and prevent them from being cracked and checked by shrinkage strains.

The described bolster is exceedingly strong and rigid and has been shown by actual tests to have substantially equal strength and rigidity laterally and vertically.

I claim as my invention:

1. A hollow cast metal bolster provided at opposite sides thereof with laterally projecting channel shaped portions which extend lengthwise of the bolster adjacent to the top thereof with the channel flanges extending inwardly, substantially as set forth.

2. A hollow cast metal bolster comprising top, bottom and side members, said side members being provided with laterally projecting channel shaped portions which extend lengthwise of the bolster with their upper flanges joining said top member, substantially as set forth.

3. A hollow cast metal bolster having a channel shaped bottom member, and a top member provided at opposite sides of the bolster with channel shaped portions the flanges of which channel-shaped portions extend inwardly, substantially as set forth.

4. A hollow cast metal bolster having a channel shaped bottom member, side members which extend upwardly from the opposite sides of said bottom member, and channel shaped portions which extend lengthwise of the bolster at opposite sides thereof and the flanges of which connect said top member to the upper portions of said side members, substantially as set forth.

5. A hollow cast metal bolster having a channel shaped bottom member, side members which extend upwardly from the opposite sides of said bottom member, and channel shaped portions which extend lengthwise of the bolster at opposite sides thereof and the flanges of which connect said top member to the upper portions of said side members, said channel-shaped portions diminishing in depth from the middle toward the end portions of the bolster, substantially as set forth.

6. A hollow cast metal bolster comprising top, bottom and side members, said side members being provided with laterally projecting channel shaped portions which extend lengthwise of the bolster with their upper flanges joining said top member, and vertical ribs which cross said channel shaped portions and connect the top and side members of the bolster, substantially as set forth.

7. A hollow cast metal bolster having a channel shaped bottom member, side members which extend upwardly from the opposite sides of said bottom member, channel shaped portions which extend lengthwise of the bolster at opposite sides thereof and connect said top member to the upper portions of said side members, and a strut which connects the middle portions of said top and bottom members, substantially as set forth.

8. A hollow cast metal bolster provided at opposite sides thereof with laterally projecting channel shaped portions which extend lengthwise of the bolster adjacent to the top thereof and diminish in depth from the middle toward the end portions of the bolster, substantially as set forth.

Witness my hand this 20th day of December, 1911.

WILLARD F. RICHARDS.

Witnesses:
DONALD C. DAERS,
ALLEN B. BREMMER.