No. 817,404. PATENTED APR. 10, 1906.

A. STUCKI.

CAR TRUCK BOLSTER.

APPLICATION FILED JUNE 9, 1905.

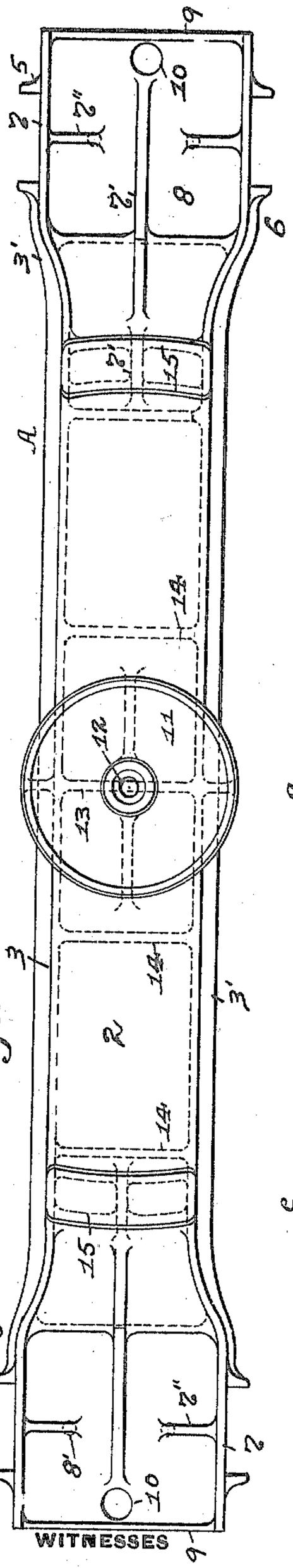

Fig. 1.

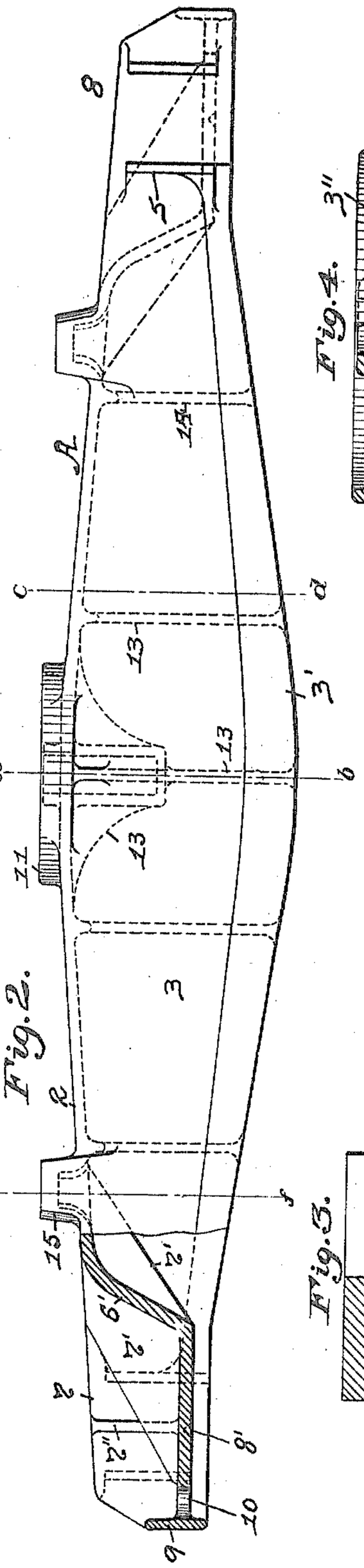

Fig. 2.

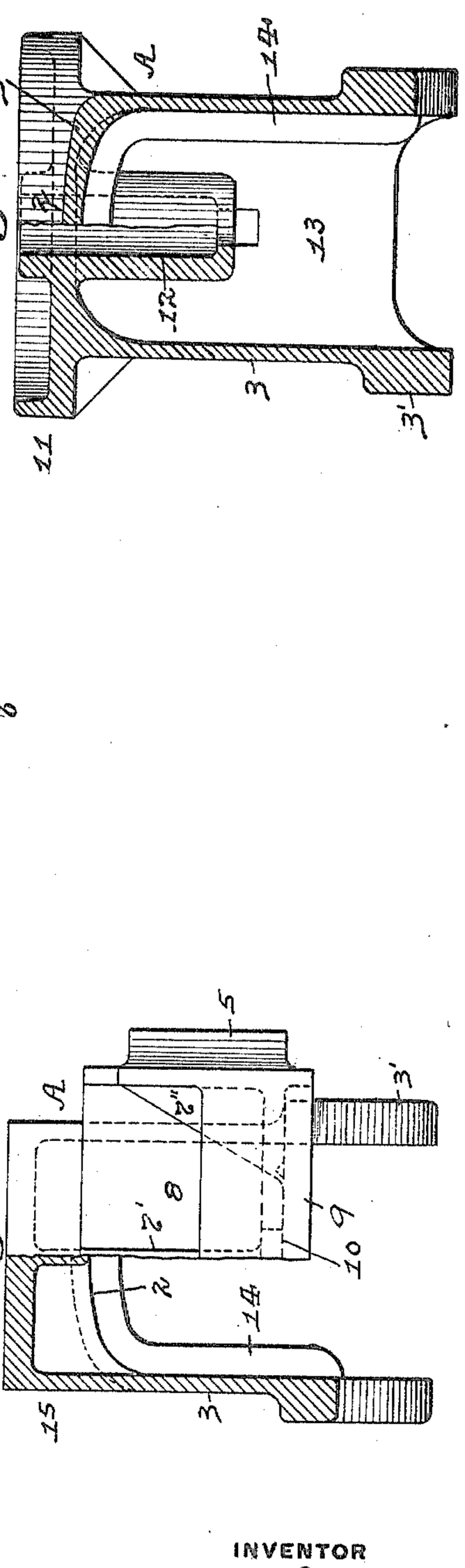

Fig. 4.

Fig. 3.

WITNESSES

Walter Famariss

R. F. Appelman

INVENTOR

Arnold Stucki,

By J. N. Cooke,

Attorney.

UNITED STATES PATENT OFFICE.

ARNOLD STUCKI, OF ALLEGHENY, PENNSYLVANIA.

CAR-TRUCK BOLSTER.

No. 817,404. Specification of Letters Patent. Patented April 10, 1906.

Application filed June 9, 1905. Serial No. 264,453.

To all whom it may concern:

Be it known that I, ARNOLD STUCKI, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Car-Truck Bolsters; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to car-truck bolsters, and has special reference to such bolsters which are made of cast metal.

The object of my invention is to provide a bolster which can be cast in an inexpensive way and which will not be subject to the usual defects in the material, as well as one which will have the material placed where it will do the most good, and thus combining maximum strength with minimum weight. This I accomplish by a novel arrangement of the different parts, a construction which will now be more fully described, thereby referring to the accompanying drawings, in which—

Figure 1 is a plan view of my improved bolster. Fig. 2 is a side elevation of the same, showing one spring-rest in section. Fig. 3 shows a half end view of the bolster on one side and a half cross-section on the line *e f* on the other side. Fig. 4 shows a half cross-section of the bolster at *a b* on one side and a like section at *c d* on the other side.

Like symbols of reference herein indicate like parts in each of the figures of the drawings.

Heretofore in the manufacture of cast-metal bolsters they have generally been formed of what is known as an "inverted-U" shape in cross-section, and such shape had the ends or edges of the sides thereof provided with enlargements, beads, or flanges on the inner faces of said sides, so that in casting a U shape it would require the employment of a special dry-sand core in connection with the cope and drag-mold parts of the flask, and such bolsters cast with these cores would be objectionable for reasons hereinafter named. In order to overcome all objections and difficulties in casting these bolsters by the use of dry-sand cores, I have provided another form or shape, known as an "inverted-bath-tub" or an "inverted-trough" shape, which consists of the top 2, sides 3, and the flanges 3′, projecting out from the outer faces of said sides.

The top 2 is inclined downwardly from the center toward the ends, and it is also curved in cross-section, while the sides 3 connect with said top 2 by the swelling 3″. The sides 3 have their lower flanges 3′ increased in thickness toward the center of the bolster, so as to obtain the necessary strength to carry the car and load as well, and the bending movement being the greatest in the center also calls for the greatest reinforcement at this point, while toward the ends these flanges are preferably made less in section. The reduction is shown in the depth; but it can just as well be made in the width, or both. At the end of the bolster these flanges are widened out considerably, as shown at 4, and finally connect with the guides 5.

At each end of the bolster A the top 2 is inclined downwardly and outwardly, as at 6, and from here the spring-seat 8 projects endwise, while it is further attached to the bolster end 6′ by the inclined side walls 7 and the central stiffening-ribs 7′, which extend through and on each side of the bolster end and are connected to the top 2. Indentures 8′ are also formed in the bottom of the spring-seat for engaging with projections on the spring-caps placed thereon. The spring-seat 8 is further stiffened by projecting the inclined side walls 7 below the bearing-surface of the springs and by adding the end plate 9, which projects above and below said surface, while drain-holes 10 are provided in said spring-seat, and cross-ribs 7″ are used in said seat to stiffen the inclined side walls 7 against the pounding occurring at this point.

The center plate 11 is formed integral with the top 2 of the bolster A, and extending downward from the same is the king-bolt pocket 12, which is stiffened by lateral and longitudinal brackets 13, and these brackets also support the center plate.

To brace the sides 3 with the top 2 in such way that small irregularities in the shrinkage are taken care of, a series of ribs 14 extend around the inside of the bolster A, and one of these ribs is preferably located close to the side bearings 15, which in this case are shown as cast integral with the bolster.

Heretofore the bolster constructions mostly used were not adapted for an easy flow of the metal in casting the bolster, which is to a great extent responsible for shrinkage, cracks, and integral strains in the material, and to overcome this all sharp corners in my improved bolster have been avoided, while the curving of the top 2 will assist materially in

this direction. At the same time care has been taken to arrange the metal in such a way that some portions of the bolster will retain their heat of casting a good while, and thereby keep the adjoining thinner portions hot long enough so that the air which is always present in the molten metal has a chance to escape. This will allow the metal to adjust itself materially, and all this has been accomplished by swelling the material in the top corners and by the bottom flanges. Such an arrangement is also beneficial in another way, inasmuch as large and commodious channels are obtained from the center to the end of the bolster, and vice versa, for the molten metal to flow through and to feed the thinner and far distant portions of the bolster. In this connection it is important to note that the "bottom feeders" (as reinforced flanges 3′ may be termed) extend far enough toward the ends so as to make connection with the inside bolster-guides 5, and in this way even the spring-seats are well provided with a sufficient supply of material no matter at which point the molten bath is poured from, while it is self-evident that the ribs 14 also greatly assist in distributing this metal besides being a yielding brace, as above mentioned.

The most important feature of my improved bolster is the fact that no cores are necessary to make it, and any one skilled in the art will see at a glance that it can be cast in ordinary molding-sand. Cores require a special sand, expensive core-boxes, and a great deal of time to dry the cores, as well as expensive ovens to do the drying, and last, but not least, it takes fuel to furnish the heat, so that all this is done away with in my improved bolster. Since it is therefore made possible to cast the bolster without a core, the quality of the casting is likewise greatly improved. It is a well-known fact that castings shrink considerably in cooling, while the core retains its original dimensions, so that a great deal of trouble has been experienced on account of the core tearing the metal while in a semiplastic form, especially in long castings, such as bolsters, and therefore in my improved bolster such core-cracks are impossible. To do away with the air-holes, shrinkage-cracks, and core-cracks, as above explained, will naturally increase the strength of the bolster without increasing its weight. Another improvement in this direction consists in the peculiar location of the principal material, as the bolster must not only be strong in a vertical position, but there are horizontal shocks coming upon it every time the train stops and starts, and the most economical construction, waiving all other considerations, would be an ellipse with the major axis in a vertical direction. For this reason (in addition to the one already mentioned) the top 2 is curved, and it will be noticed that the principal material is approximately located in the path of an ellipse, taking care that the vertical and horizontal spread of the bulk of the metal in cross-section will give the proportionate direction.

The spring-seat in my improved bolster has been made of an entirely independent structure from the bolster proper, so as to be able to raise and lower the spring-plate 8 at will and without disturbing the pattern of the bolster proper in the least. This is very important, inasmuch as the bolsters used by the different railroads are nearly standard throughout, with the exception of the height of the spring-seat from the center plate.

In raising and lowering the spring-plate 8 the height of the surrounding walls 7 does not need to be changed, as the downward-projecting flange can vary in height without losing its function of holding the spring in place, and besides that the indentures 8′ will replace the projections of the spring-caps and keep the springs from shifting, even if the flanges 7 and 9 were not present at all. The end walls 9 also form a flat surface for the stenciling the customary information thereon.

In all cases there is shown the preferred form of my improved bolster construction; but circumstances may make it necessary to alter one detail or the other—as, for instance, the top 2, instead of being tapered downwardly toward the end can be tapered upwardly or left horizontally without affecting the principle of the invention. It can also be left flat instead of being curved, looking at it in cross-section, and likewise the bottom flanges can be left straight instead of tapering upwardly. The center rib of the spring-seat can be stopped at the bolster end instead of projecting through it. In fact, this end has been made inclined, as shown, so as to lend stiffening to said rib in case it does not project through. The center plate and side bearings, or both, instead of being cast integral with the bolster can be made separately and fastened in the usual manner, and the reinforcement of the lower or bottom flanges can be made uniform in width and thickness instead of being tapered, as shown. Neither do I consider myself limited to the exact form of other details not affecting the principles of my invention. In fact, some of them are old and have been used before; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section.

2. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section and having the lower flanges thereof thickened up at their central portions.

3. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section, guides on the sides of said bolster and near the ends thereof and the inner one of said

guides being connected to the bottom flange of the bolster sides.

4. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section and having a series of continuous ribs extending around the interior face of said bolster.

5. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section and having its top corners swelled for the purpose specified.

6. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section and having its top curved crosswise for the purpose specified.

7. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section having its top curved crosswise, and the top corners of said curved top swelled for the purpose specified.

8. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section having its top curved crosswise, and the top corners swelled, said corners having a tapered inner face for the purpose specified.

9. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section and having a spring-seat cast integral at each end.

10. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section having a spring-seat cast integral at each end thereof and provided with drain-holes in the spring-plate thereof.

11. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section having a spring-seat cast integral at each end, and webs on said spring-seat.

12. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section having a spring-seat cast integral at each end, and webs connecting the sides of said spring-seat and the spring-plate.

13. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section having a spring-seat cast integral at each end, and a web connecting the inner end wall of said seat and the spring-plate.

14. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section and having a king-bolt pocket therein, and brackets on said bolster and connecting the said pocket to stiffen the said pocket.

15. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section and having a king-bolt pocket therein, and brackets extending from the sides of said pocket and connecting the inner face of the bolster to stiffen the said pocket.

16. A cast-metal car-truck bolster formed of an inverted-trough shape in cross-section and having a king-bolt pocket therein, and lateral and longitudinal brackets connecting the sides of said pocket with the inner face of the bolster to stiffen said pocket.

In testimony whereof I, the said ARNOLD STUCKI, have hereunto set my hand.

ARNOLD STUCKI.

Witnesses:
J. N. COOKE,
R. H. AXTHELM.