

No. 881,220.

PATENTED MAR. 10, 1908.

A. S. BLANCHARD & H. M. FOOTE.

TRUCK BOLSTER.

APPLICATION FILED NOV. 28, 1906.

2 SHEETS—SHEET 1.

Fig. 1

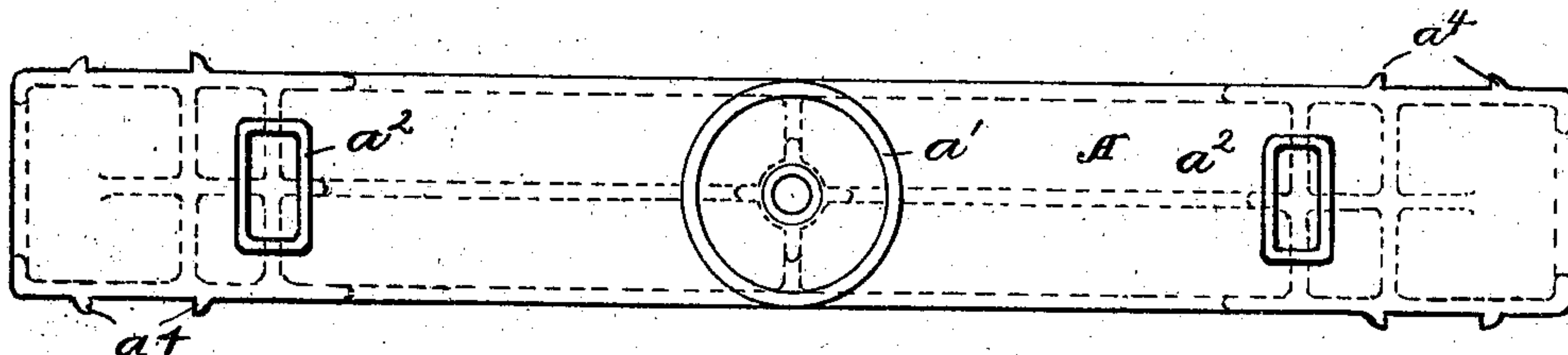


Fig. 2

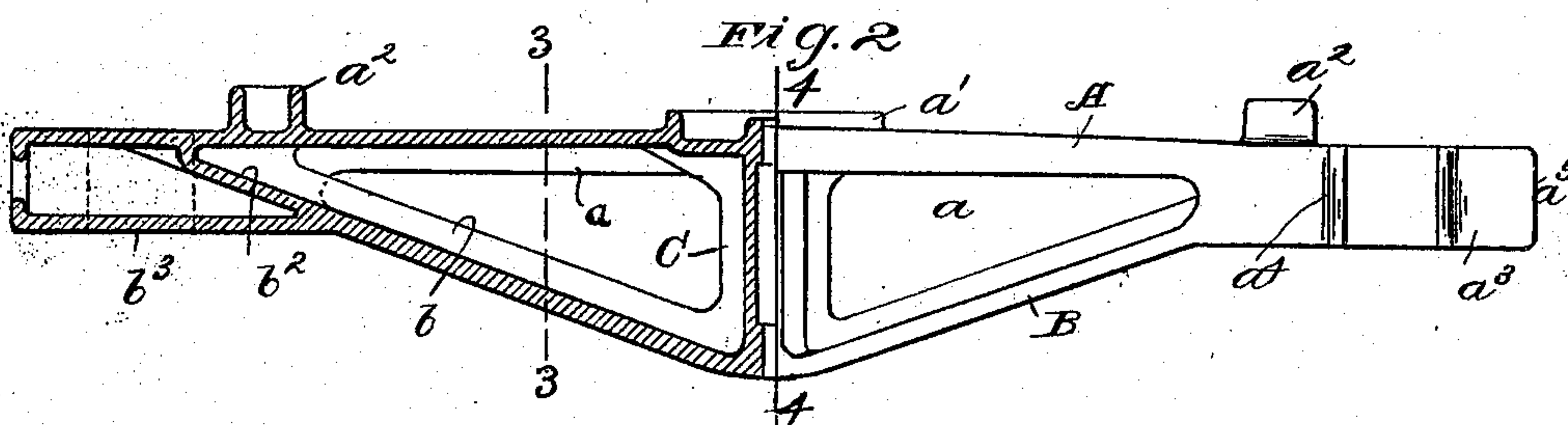


Fig. 3

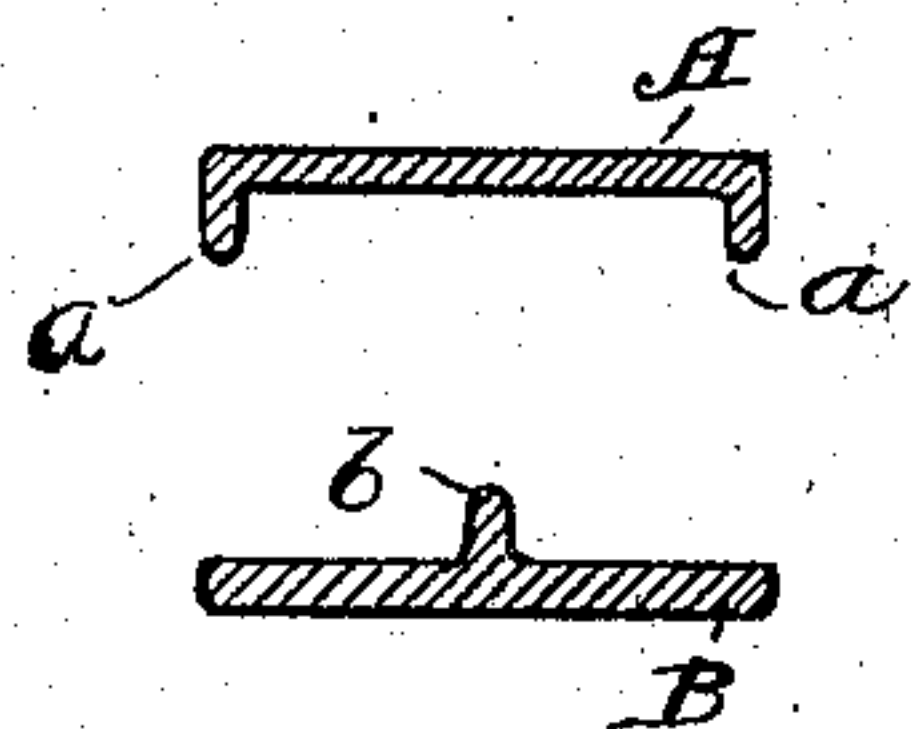
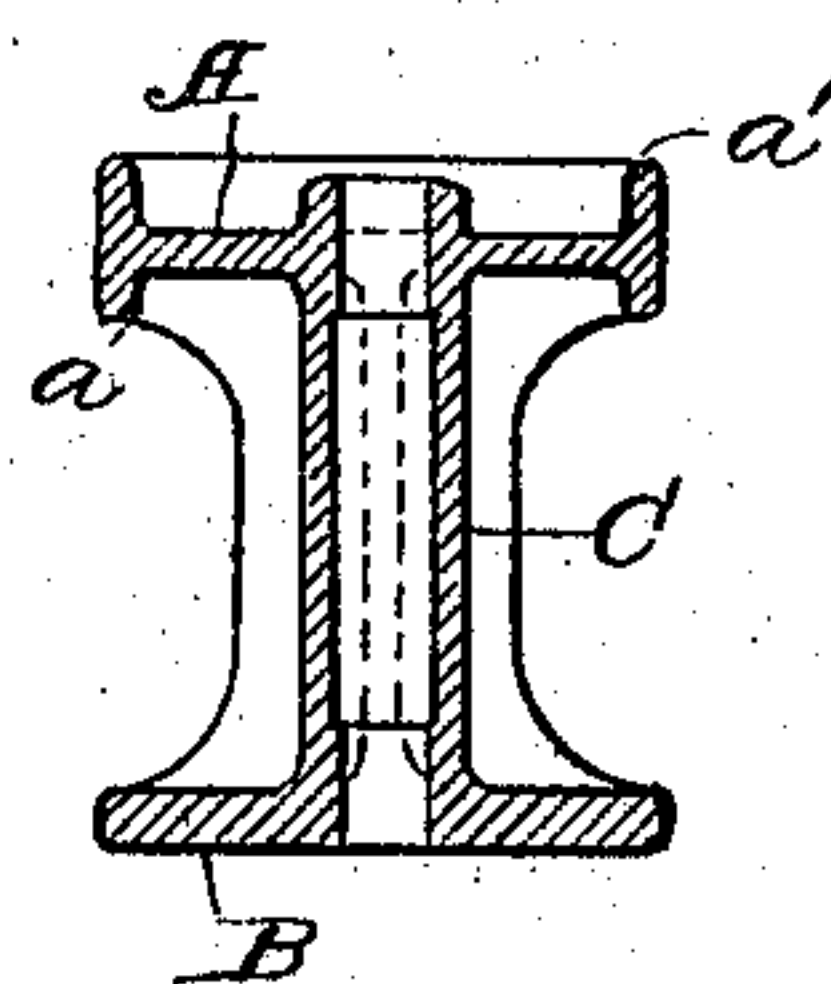


Fig. 4



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2 SHEETS—SHEET 2.

Fig. 5

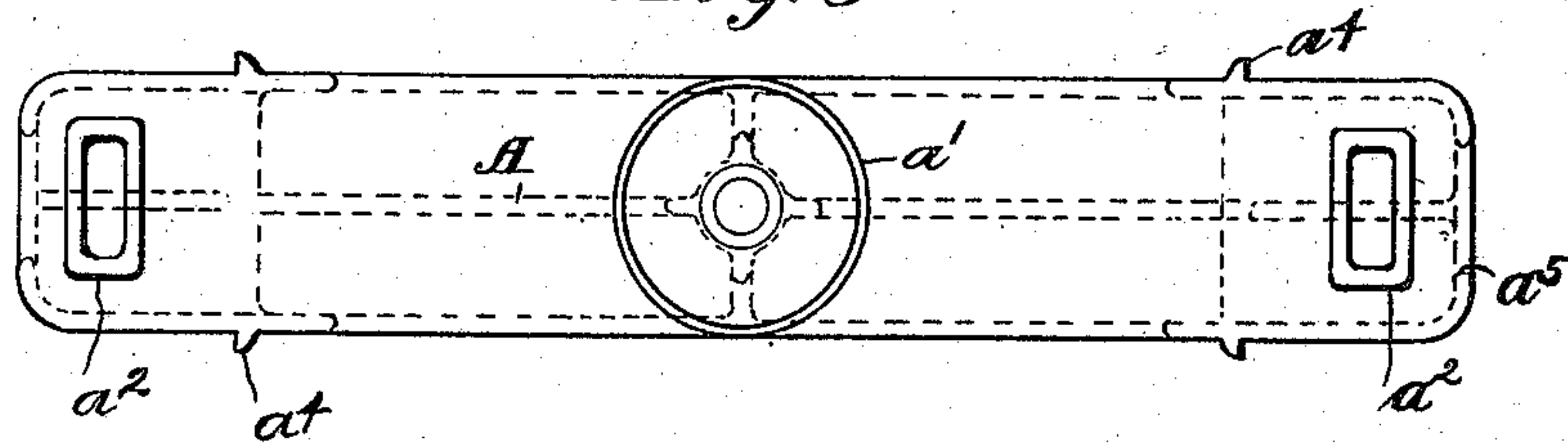


Fig. 6

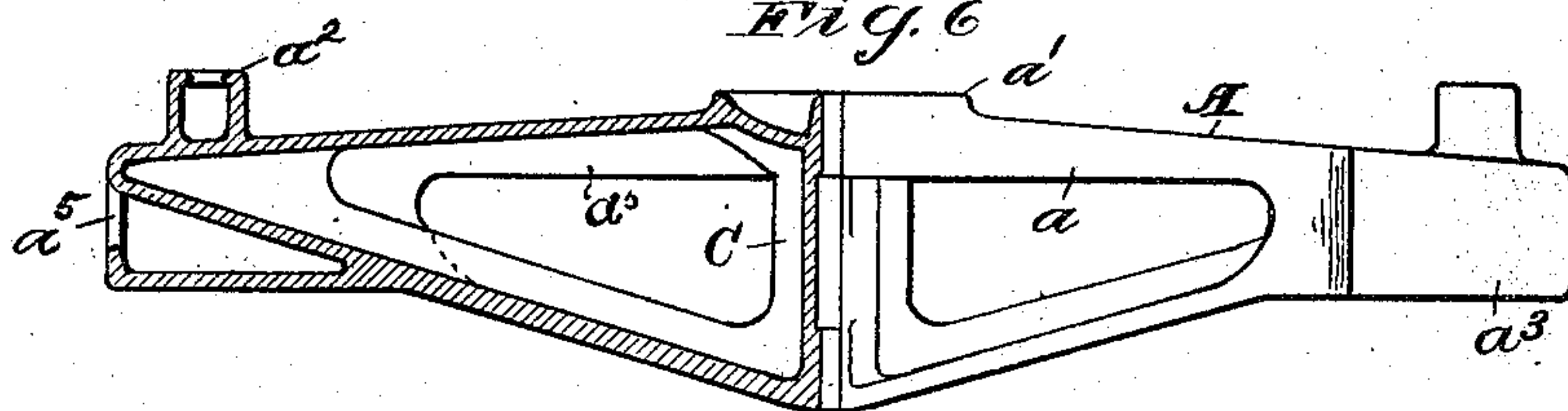


Fig. 7

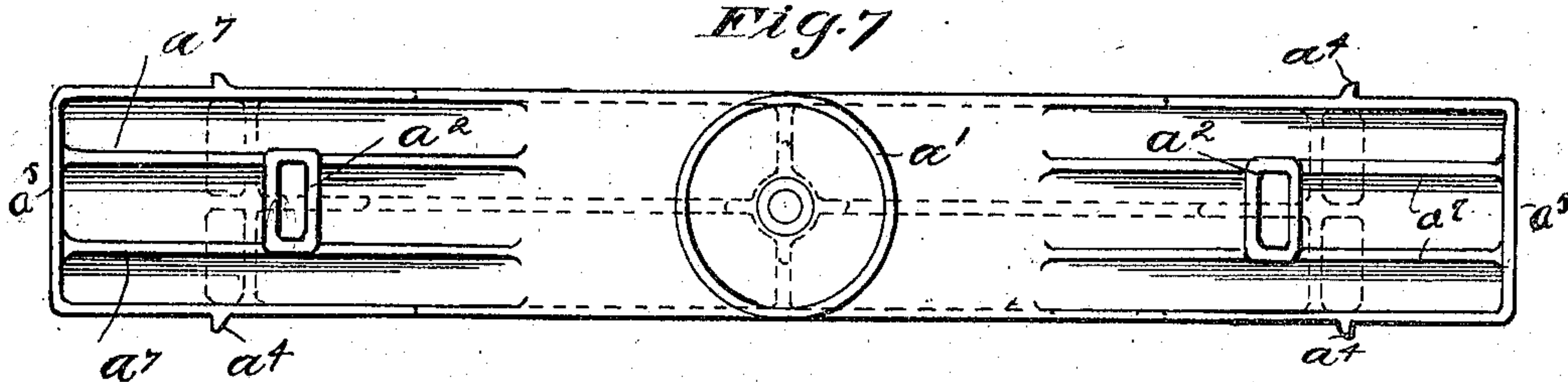
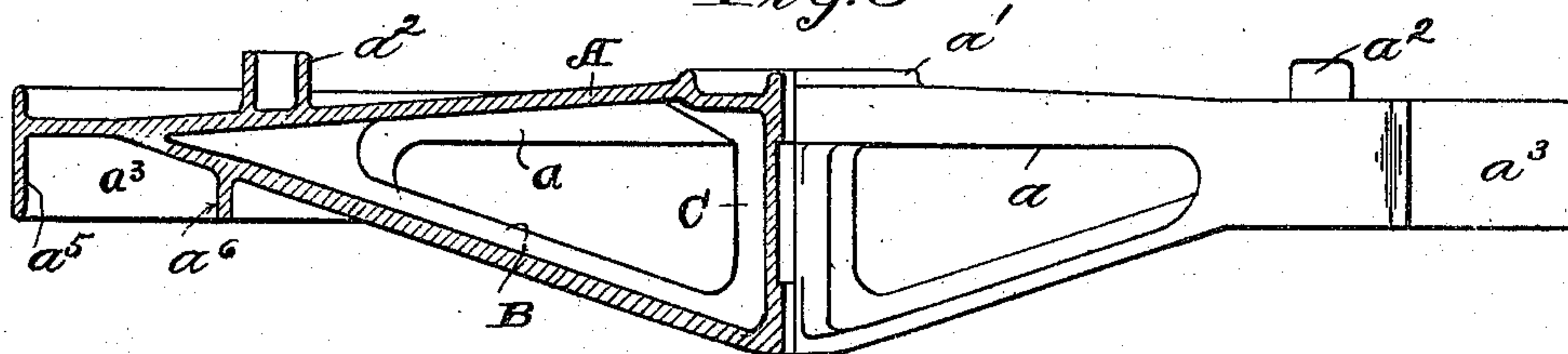


Fig. 8



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UNITED STATES PATENT OFFICE.

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TRUCK-BOLSTER.

No. 881,220.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed November 28, 1906. Serial No. 345,434.

To all whom it may concern:

Be it known that we, ARTHUR S. BLANCHARD and HARRY M. FOOTE, citizens of the United States, residents of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Truck-Bolsters, of which the following is a specification, the principle of the invention being herein explained, and the best mode in which we have contemplated applying that principle, so as to distinguish it from other inventions.

Our invention relates in general to the construction of cast metallic bolsters and has regard more particularly to the construction of an improved type of car truck bolster out of cast steel.

The object of such invention is the production of a bolster that will present the desirable qualities of strength and durability while, at the same time, requiring a minimum expenditure of material in its construction.

To the accomplishment of this object said invention, then, consists of the means hereinafter fully described and particularly set forth in the claims.

The annexed drawings and the following description set forth in detail certain means embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings: Figure 1 represents a plan view of one approved form of bolster embodying the principle of our invention; Fig. 2 is a view, partly in side elevation and partly in longitudinal cross-section, of the same; Fig. 3 is a vertical transverse cross-section of such bolster, taken on a plane passing through the line 3—3, Fig. 2; while Fig. 4 is a similar cross-section taken on the line 4—4, Fig. 2; Fig. 5 is a plan view, and Fig. 6 is a view partly in side elevation and partly in cross-section as before, of a second type of bolster embodying our improved principle of construction; while Figs. 7 and 8 are, respectively, a plan view and a view in side elevation and cross-section of yet a third type of bolster, which, likewise, embodies the improved features above referred to.

From an inspection of the foregoing figures, it will be noted that in all three of the illustrative forms of bolster thereby disclosed, there enters a top member A and a bottom member B separated at their middle points and directly united at their ends, a king post C (or queen post as it may be in certain cases more appropriately denominated), being interposed between said members at such middle points whereby a truss structure is formed. Such upper member A and lower member B are in the form of plates, the upper plate being materially lighter than the lower plate. Upper plate A then is further strengthened by being formed on its under face throughout its length with lateral flanges *a* whereby a substantially channel cross-section is presented, Fig. 3. It should be added that such flanges may be formed on the upper face with practically the same result so far as the strengthening effect is concerned, it being, however, a matter of convenience to have such flanges disposed downwardly, as shown Figs. 2, 6 and 8. Bottom plate B is similarly formed throughout its length on its upper face with a central rib *b* thereby giving to it a substantially inverted T cross-section Fig. 3.

From the construction as thus far set forth, it will be seen that a strict truss structure is formed by reason of the fact that the top and bottom members are directly united at their ends and the strut C interposed between their separated portions. It is immaterial whether or not upper plate A be preserved rectilinear throughout its length for, as indicated in Fig. 6, it may be desirable to slope it from the central point to conform with the demands of certain classes of service.

Upper plate A is provided with the usual center bearing *a'* situate directly above post C, and with side bearings *a''* near its ends. The point where bottom member B unites directly, as above specified, with top member A should be substantially at the points of support of the bolster in order that the truss structure attained in our bolster may be most advantageously utilized for withstanding the strains to which such bolster is subjected in service. The respective ends of the bolster are further provided with integral vertically disposed side plates *a'''* laterally in-

closing the same, which side plates bear vertical ribs a^4 forming guide-ways for the truck posts; of such ribs a^4 one or two may be provided as desired at each end.

5 The portion of the bolster extending beyond the point of junction of top plate A and bottom plate B comprises, then, a continuation of said united members inclosed about by the aforesaid lateral plates a^3 . To these
10 should be added the end plate a^5 , through which latter, however, an aperture extends in the two forms of the bolster illustrated in Figs. 1 and 5, respectively, for the purpose of coring the casting. In the forms of such
15 bolster illustrated in Figs. 1 and 5, bottom member B is divided near each extremity into an upper and lower portion b^2 b^3 , such upper portion having a cross-section substantially the same as that of the top plate, or being, in other words, materially lighter than
20 the major portion of bottom member B. The lower portion b^3 of bottom member B extends practically horizontally, or parallel with the continuation formed of the union of upper
25 portion b^2 with top member A extending beyond their point of junction. Such bottom portion of member B accordingly forms a sort of box at the end of the bolster, the bottom of which is designed to be utilized as a seat or
30 bearing for springs or devices whereby the bolster ends are supported upon the under parts of the assembled car truck:

The description thus far given applies with practically equal force to the first two types
35 of our bolster illustrated in Figs. 1 and 2, and Figs. 5 and 6, respectively; the only difference between these two types, it may be remarked, is that in the second the continuation of top and bottom members A B beyond
40 their point of junction or, in other words, the points of support of the bolster, has been omitted. The division of the extremities of the bottom member into an upper and a lower portion and the consequent formation
45 of boxes providing spring seats at the bolster ends is substantially the same in both. By the division of the lower member B into an upper and a lower portion as described, not only is a wasteful use of material avoided,
50 for a consideration of the stresses to which the parts are subjected indicates that the upper portion of such member need not be as heavy as the major portion or bottom member proper; but furthermore we avoid a serious
55 liability to breakage that would otherwise be present, for where such bottom member, being of heavier cross-section, is joined directly to the top member in the fashion contemplated by our invention, there is great
60 likelihood of a crack developing at the point of junction immediately after casting in the course of cooling.

The third illustrative type of bolster, that shown in Figs. 7 and 8, is in certain respects

the simpler of the three, since in it such division of the outer extremity of member B
65 into an upper and lower portion is not utilized for the purpose of forming a spring seat as in the two other types of bolsters. To secure, however, the beneficial results above
70 noted as being derived by having the bottom member B of substantially the same cross-section as top member A, where it unites with the latter, such bottom member is made to decrease in section as it approaches the
75 point of junction. No closed box being formed, it is not necessary to provide end plate a^3 with an aperture as before and in lieu of such closed box an open box structure is formed by the provision of the trans-
80 verse flange or web a^6 on the under side of bottom member B a short distance from its point of junction with upper member A. Such transverse flange a^6 may for our purpose be regarded in its relation to bottom
85 member B as being the equivalent of lower portion b^3 in the first described types of bolster; and the decrease in the section of the lower member may be begun at the point where the flange springs from such member.
90 Where, however, the flange is located nearer to the point of junction of the top and bottom members, the decrease in section of member B will not be limited to the space intervening between the flange and such point.
95 Additional transverse webs between flange a^6 and end plate a^5 may, if desired, be introduced, and a support for the spring bearing plate thus provided. This type of bolster, as illustrated, furthermore embodies
100 a downwardly sloping upper member as in the second type illustrated in Figs. 5 and 6. Lateral plates a^3 and end plates a^5 hence extend above as well as below the united continuation of top and bottom plates A B,
105 and, to further strengthen the end of the bolster, longitudinal ribs a^7 two as shown are provided on the upper face of the united continuation of top and bottom members A B, such ribs extending inwardly towards
110 the center of the bolster on top plate A also.

By the direct union of the top and bottom members and a consequent attainment of a strict truss construction much greater rigidity is secured to our bolster than where
115 such ends are not united directly but by means of transverse vertically disposed webs or plates. At the same time the desired box necessary to form a bearing for the springs of the car truck is provided by a
120 division of the material in the bottom member B of the bolster, which member must necessarily be made of heavier material throughout the major portion of its length, and which, if directly united to stop mem-
125 ber A, the latter being of lighter cross-section, would lead to the harmful results already noted. Hence not only is a saving of ma-

terial and consequent lightness attained by this feature of our construction, but an actual strength and a decrease in liability to breakage is simultaneously achieved.

Moreover, by the substantially channel cross-section of top member A and the substantially inverted T-cross-section given bottom member B by the provision of central web *b* on the plate forming such bottom member, the thickness of the metal entering into such members, respectively, may be kept down without a consequent reduction in the ability of such members to sustain the load to which they are respectively subjected.

Having thus described our invention in detail, that which we particularly point out and distinctly claim is:—

1. A cast metallic bolster comprising a top member and a bottom member separated at their middle points and prolonged so as to unite directly at their ends, and a post interposed between said members at such middle points, whereby a truss structure is formed.

2. A cast metallic bolster comprising a top plate and a bottom plate separated at their middle points and prolonged so as to unite directly near the ends of the bolster, and a hollow post interposed between said plates at such middle points and serving as a strut, whereby a truss structure is formed.

3. A cast metallic bolster comprising a top plate and a bottom plate separated at their middle points and prolonged so as to unite directly near the ends of the bolster and substantially at the points of support of the latter, and a hollow post interposed between said plates at such middle points and serving as a strut, whereby a truss structure is formed.

4. A cast metallic bolster comprising a top member of substantially channel cross-section throughout its length and a bottom member of substantially inverted T cross-section throughout its length, said members being separated at their middle points and prolonged so as to unite directly at their ends, and a post interposed between said members at such middle points and serving as a strut, whereby a truss structure is formed.

5. A cast metallic bolster comprising a top plate of substantially channel cross-section throughout its length, and a bottom plate of substantially inverted T cross-section throughout its length, said plates being separated at their middle points and prolonged so as to unite directly near the ends of the bolster, and a hollow post interposed between said plates at such middle points and serving as a strut, whereby a truss structure is formed.

6. A cast metallic bolster comprising a top plate formed on its under face throughout its length with lateral flanges and a

bottom plate formed on its upper face throughout its length with a central rib, said plates being separated at their middle points and prolonged so as to unite directly near the ends of the bolster substantially at the points of support of the latter, and a hollow post interposed between said plates at such middle points and serving as a strut, whereby a truss structure is formed.

7. A cast metallic bolster comprising a top member and a bottom member separated at their middle points and prolonged so as to unite directly at their ends, a hollow post interposed between said members at such middle points and serving as a strut, whereby a truss structure is formed, and vertical side plates joining the edges of said top and bottom members near the ends of said bolster.

8. A cast metallic bolster comprising a top member and a bottom member separated at their middle points and directly united at their ends, a post interposed between said members at such middle points and serving as a strut, whereby a truss structure is formed, and vertical side plates joining the edges of said top and bottom member near the ends of said bolster, said bottom member being divided near each extremity into an upper and a lower portion, such lower portion joining the lower edges of said side-plates.

9. A cast metallic bolster comprising a top member and a bottom member separated at their middle points and directly united at their ends, said top member being materially lighter than said bottom member, a post interposed between said members at such middle points and serving as a strut whereby a truss structure is formed, and vertical side plates joining the edges of said top and bottom member near the ends of said bolster, said bottom member being divided near each extremity into an upper and a lower portion, such lower portion joining the lower edges of said side-plates.

10. A cast metallic bolster comprising a top plate and a bottom plate separated at their middle points and directly united near the ends of the bolster, a hollow post interposed between said top and bottom plates at such middle points and serving as a strut, whereby a truss structure is formed, and vertical side-plates joining the sides of said top and bottom members near the ends of said bolster, said bottom member being divided near each extremity into an upper and a lower portion, such upper portion being materially lighter than the bottom plate proper and such lower portion joining the lower edges of said side-plates.

11. A cast metallic bolster comprising a top plate and a bottom plate separated at their middle points and directly united near the ends of the bolster, said top plate being

materially lighter than said bottom plate, a hollow post interposed between said top and bottom plates at such middle points and serving as a strut, whereby a truss structure is formed, and vertical side-plates joining the sides of said top and bottom members near the ends of said bolster, said bottom plate being divided near each extremity into an upper and a lower portion, such upper portion being of substantially the same cross-section as said top plate and such lower portion joining the edges of said side-plates.

12. A cast steel bolster comprising a top plate of substantially inverted channel cross-section throughout its length, a bottom plate of substantially inverted T form throughout its length, said plates being separated at their middle points and united near the ends of the bolster and substantially at the points of support of the latter, and said top plate being materially lighter than said bottom plate, a hollow post interposed between said top and bottom plates at such middle points and serving as a strut, whereby a truss structure is formed, and vertical side-plates joining the sides of said top and bottom members near the ends of said bolster, said bottom member being divided near each extremity into an upper and a lower portion, such upper portion being of substantially the same cross-section as said top plate and such lower portion joining the lower edges of said side-plates.

13. A cast metallic bolster comprising a top member and a bottom member separated at their middle points and prolonged so as to directly unite near the ends of the bolster, said united members extending as one member from their point of junction to the corresponding extremity of the bolster, and a hollow post interposed between said member at such middle points and serving as a strut, whereby a truss structure is formed.

14. A cast metallic bolster comprising a top plate and a bottom plate separated at their middle points and prolonged so as to directly unite near the ends of the bolster and substantially at the points of support of the latter, said united plates extending as one plate from their point of junction to the corresponding extremity of the bolster, vertical side plates joining the edges of said top and bottom plates at their point of junction, and a hollow post interposed between said members at such middle points and serving as a strut, whereby a truss structure is formed.

15. A cast metallic bolster comprising a top plate of substantially channel cross-section throughout its length, a bottom plate of substantially inverted T cross-section throughout its length, said plates being separated at their middle points and united near the ends of said bolster and substantially at the points of support of the latter, said united plates continuing as one plate from their

point of junction to the corresponding extremity of the bolster, vertical side plates joining the edges of said top and bottom plates near the ends of said bolster, and extending above as well as below the united continuation of said plates, and a hollow post interposed between said members at such middle points and serving as a strut, whereby a truss structure is formed.

16. A cast steel bolster comprising a top plate of substantially inverted channel cross-section throughout its length, a bottom plate of substantially inverted T cross-section throughout its length, said plates being separated at their middle points and united near the ends of said bolster and substantially at the points of support of the latter, said united plates continuing as one plate from their point of junction to the corresponding extremity of the bolster, vertical side plates joining the edges of said top and bottom plates near the ends of said bolster and extending above as well as below the united continuation of said plates, a vertical end plate joining said side plates, longitudinal ribs on the upper face of such united continuation intermediate of said lateral plates and extending some distance on said top plate, and a hollow post interposed between said members at such middle points and serving as a strut, whereby a truss structure is formed.

17. A cast steel bolster comprising a top plate of substantially inverted channel cross-section throughout its length, a bottom plate of substantially inverted T cross-section throughout its length, said plates being separated at their middle points and directly united near the ends of said bolster and substantially at the points of support of the latter, said united plates continuing as one plate from their point of junction to the corresponding extremity of the bolster, vertical side-plates joining the edges of said top and bottom plates near the ends of said bolster and extending above as well as below the united continuation of said plates, a vertical end plate joining said side-plates, a transverse web on the under-side of said bottom plate parallel with said end plate, longitudinal ribs on the upper face of such united continuation of said top and bottom plates and extending some distance on said top plate, and a hollow post interposed between said members at such middle points and serving as a strut, whereby a truss structure is formed.

18. A cast metallic bolster comprising a top member and a bottom member separated at their middle points and united near the ends of the bolster, said top member being materially lighter than said bottom member, said bottom member, however, decreasing in cross-section to substantially that of said

upper member as it approaches the point of
its junction therewith, and said united mem-
bers extending as one member from their
point of junction to the corresponding ex-
5 tremity of the bolster, and a hollow post in-
terposed between said members at such mid-
dle points and serving as a strut, whereby a
truss structure is formed.

Signed by us, this 24th day of November,
1906.

ARTHUR S. BLANCHARD
HARRY M. FOOTE.

Attested by—

D. T. DAVIES,
JNO. F. OBERLIN.