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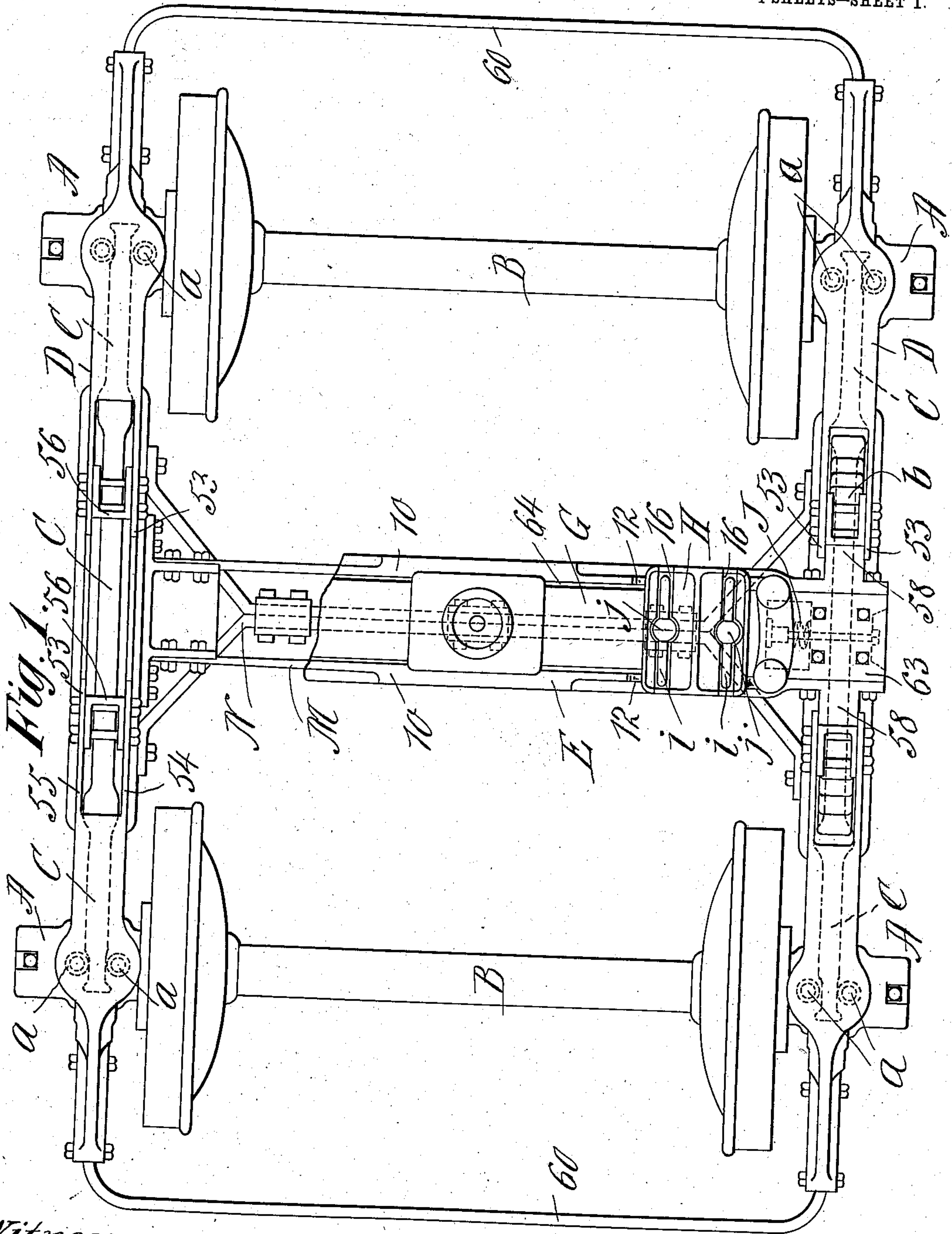
PATENTED MAR. 20, 1906.

S. A. BEMIS.

RAILWAY CAR TRUCK.

APPLICATION FILED OCT. 31, 1903. RENEWED DEC. 27, 1905.

4 SHEETS—SHEET 1.



Witnesses:
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A. V. Leary.

Inventor:
Sumner A. Bemis
By his Attorney,
Wm. S. Bellows.

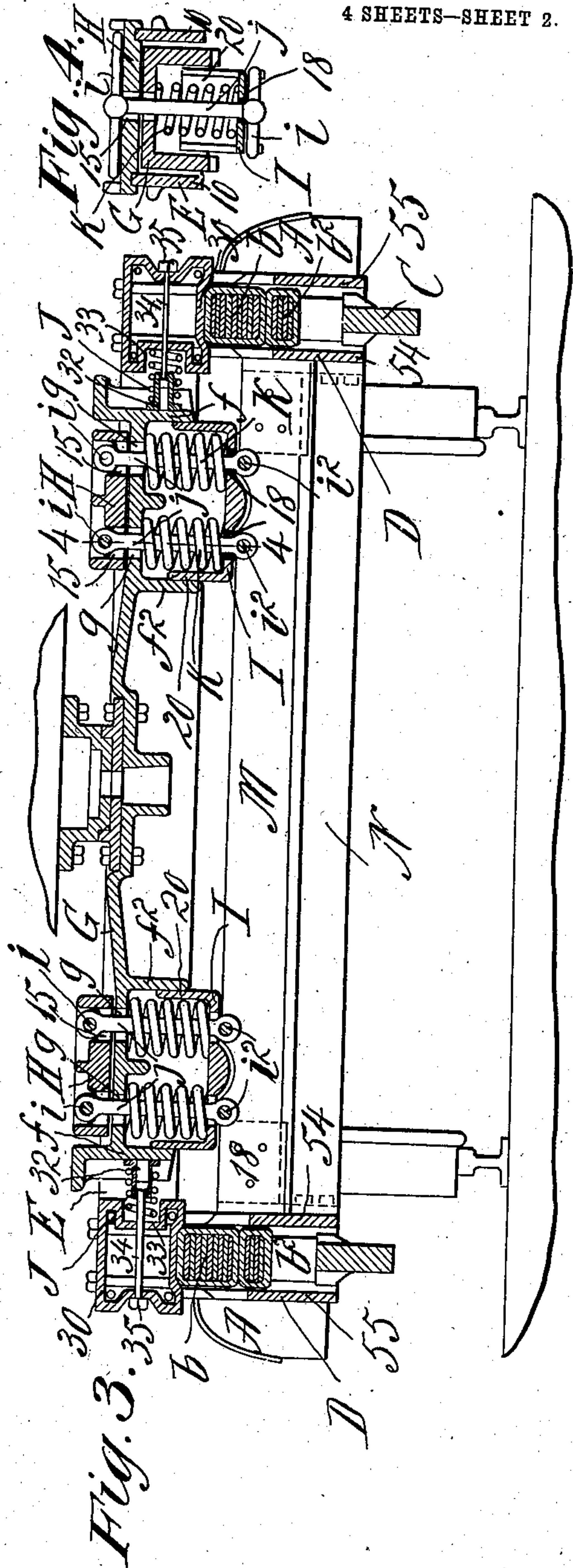
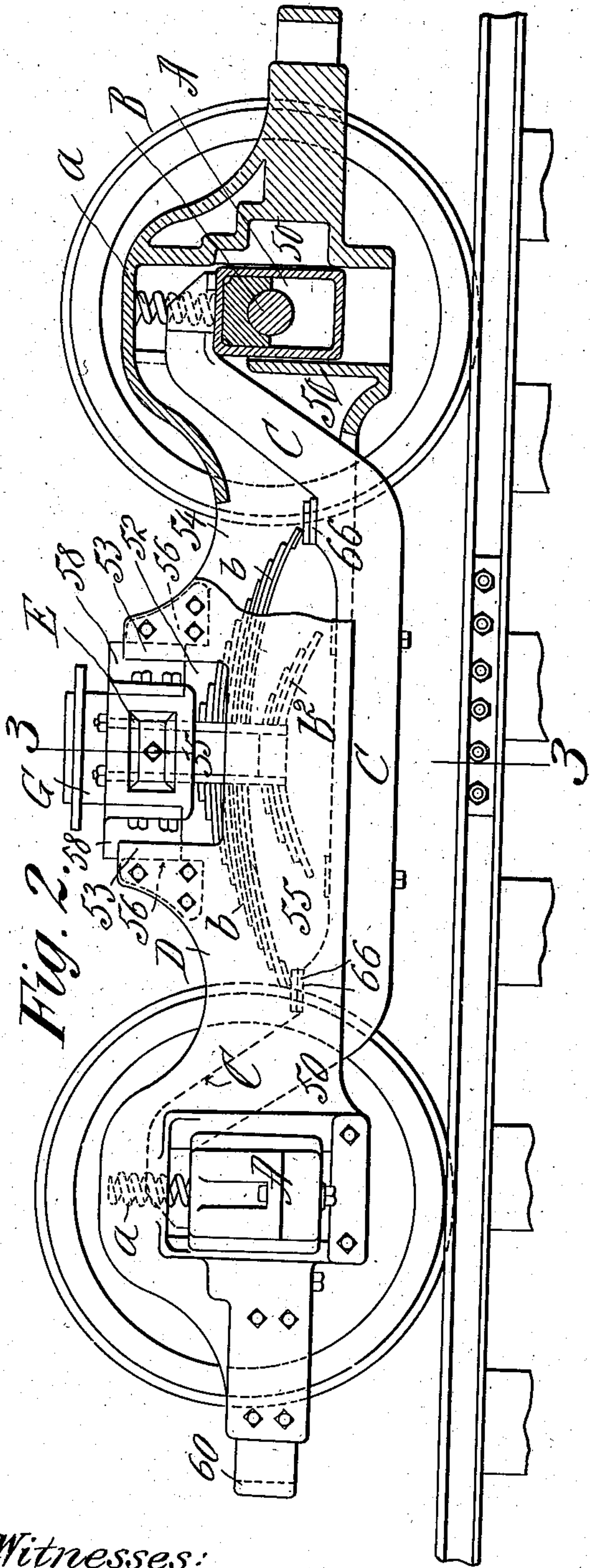
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4 SHEETS—SHEET 2.



Witnesses:
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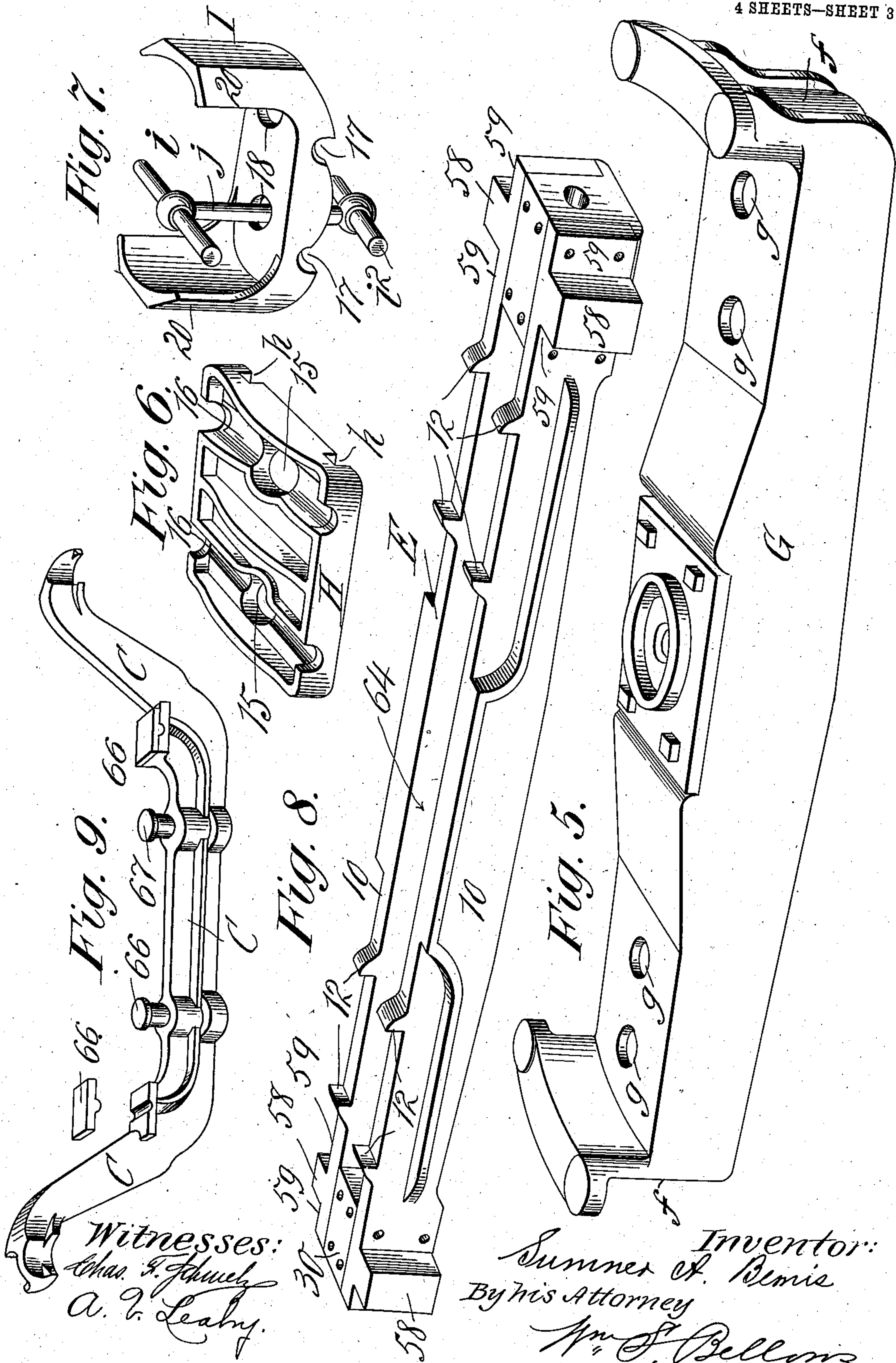
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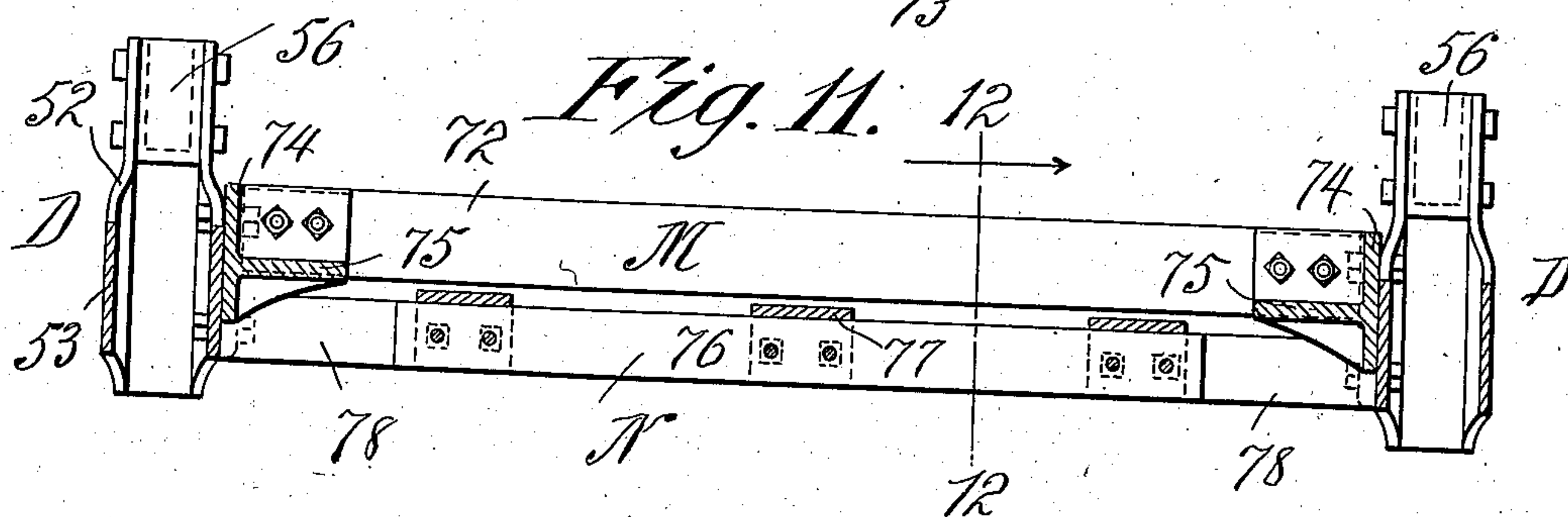
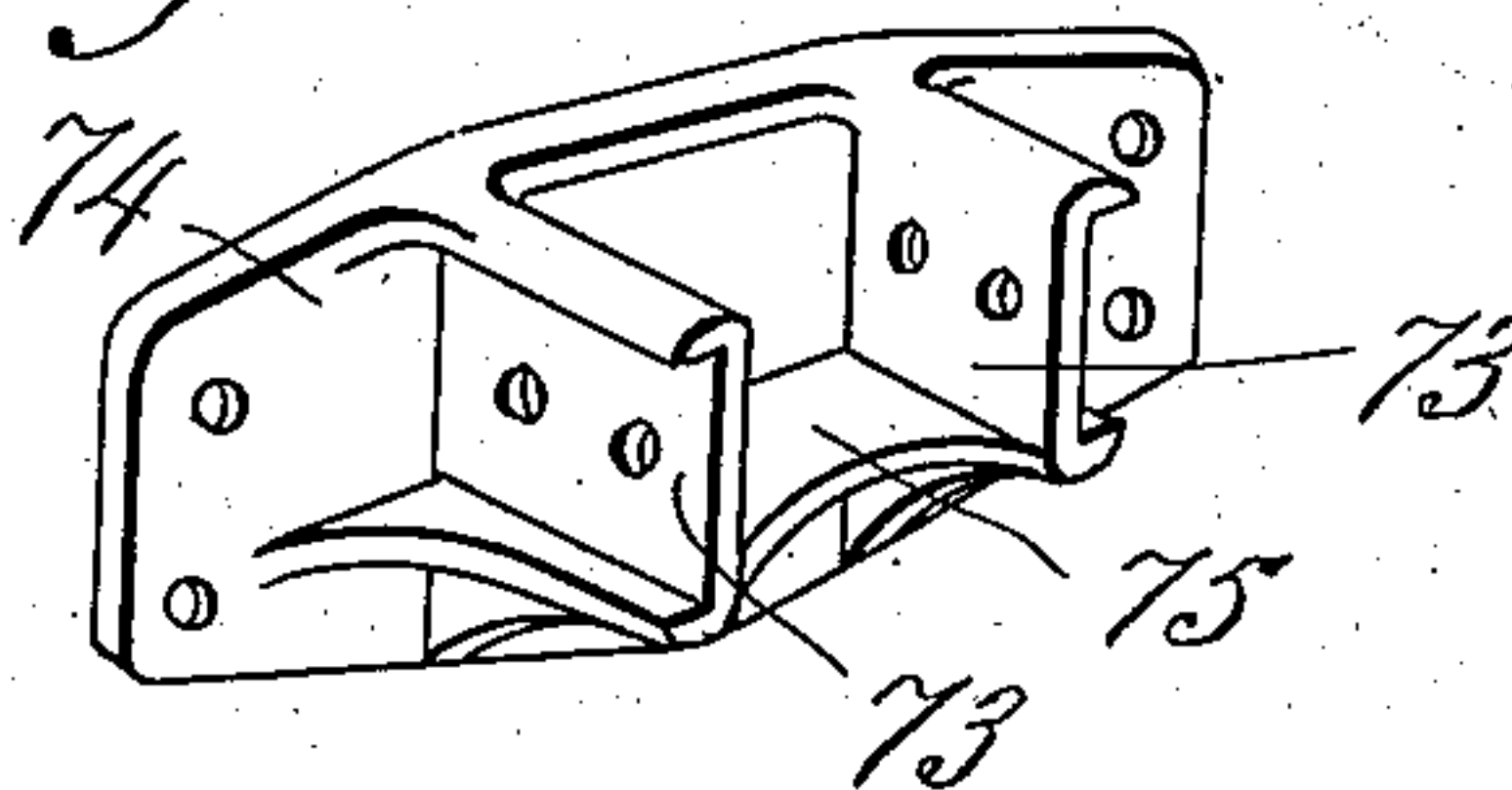
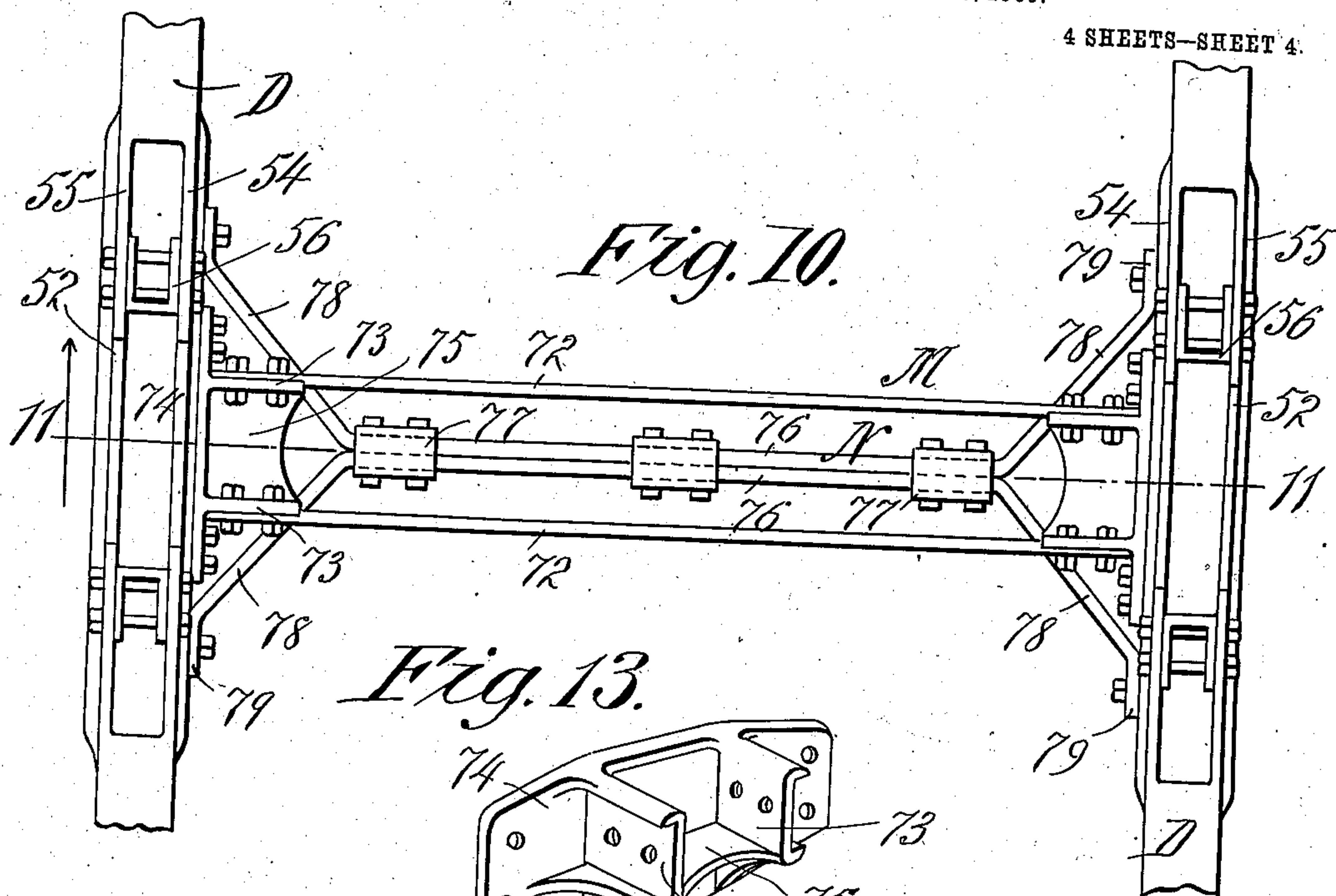
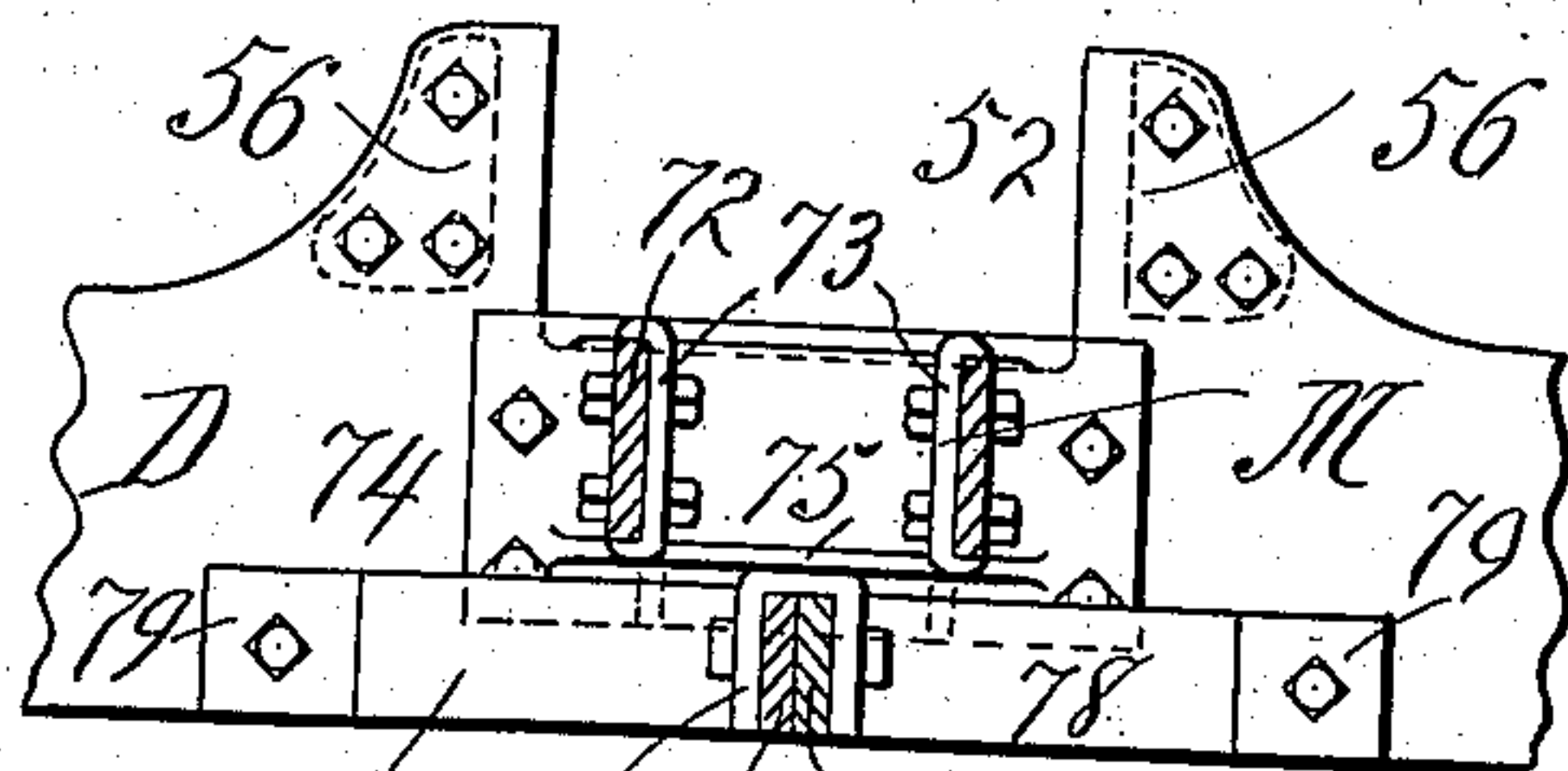


Fig. 12.



Witnesses: 78 77 N 76
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UNITED STATES PATENT OFFICE.

SUMNER A. BEMIS, OF SPRINGFIELD, MASSACHUSETTS.

RAILWAY-CAR TRUCK.

No. 815,784.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed October 31, 1903. Renewed December 27, 1905. Serial No. 293,499.

To all whom it may concern:

Be it known that I, SUMNER A. BEMIS, a citizen of the United States of America, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Railway-Car Trucks, of which the following is a full, clear, and exact description.

10 This invention relates to improvements in railway-car trucks, more particularly those for electric street-railway cars; and the invention pertains to the general organization of the truck as a whole wherein is included a truck-frame, sustained, preferably spring-
15 supported, on the journal-boxes, and which is available for carrying equipments and fixtures in no way pertaining to the car or load—such, for instance, as an electric motor, and
20 the brake-shoes and brake-operating mechanism, an additional and independent journal-box support, longitudinal bars, herein termed “equalizing-bars,” spring-supporting a bolster or, as herein particularly shown, a
25 “compound bolster,” which sustains the car and its load; and the invention embodies in a truck the combination, with the car-wheel axles and journal-boxes and a truck-frame supported by said journal-boxes, of car-sup-
30 porting appliances independent of said truck-frame comprising longitudinally - ranging bars having, preferably, lowered intermediate portions, the extremities of said bars being supported by the journal-boxes, a car-supporting bolster and springs having sup-
35 ports upon said bars, and yieldingly sustaining the bolster thereabove.

The invention furthermore consists in subordinate combinations or arrangements of
40 parts and in the constructions of the various parts for particular manners of coöperation, one with another, all substantially as herein-after fully described, and set forth in the claims.

45 The accompanying drawings represent the present improvements in railway-car trucks, wherein—

Figure 1 is a plan view of the truck, showing a portion of the transom-bolster and the
50 swing-bolster broken away, disclosing the upper and lower truck-frame uniting and bracing transoms, which are understood as below the broken-away portions of the bolsters mentioned. Fig. 2 is a side elevation of the
55 truck with one end portion of the truck side frame and the adjacent journal-box broken

out and represented in central vertical longitudinal section. Fig. 3 is a vertical cross-section of the truck, as taken on the plane represented by the line 3 3, Fig. 2. Fig. 4 is
60 a partial vertical sectional view on the line 4 4, Fig. 3. Fig. 5 is a perspective view of the transom-bolster. Figs. 6 and 7 are perspective views of the upper and lower carrying-blocks, which sustain the swing-bolster in a
65 secondary manner from the transom-bolster. Fig. 8 is a perspective view of the transom-bolster. Fig. 9 is a perspective view of one of the equalizing-bars, of which in the truck there are two, ranging at the opposite
70 sides thereof, and which equalizing-bars pertain to the car-supporting arrangements independent of the truck-frame. The scales of the various views in Figs. 5 to 9 are variable,
75 the proper proportionate representation of these parts being apparent in the other figures. Fig. 10 is a plan view of intermediate portions of the oppositely-arranged truck-frame side members and the upper and lower
80 transversely-uniting rigidly-connected transoms. Fig. 11 is a cross-sectional view with some parts in elevation, as seen on the line 11 11, Fig. 10. Fig. 12 is a vertical section across the upper and lower transoms, as
85 taken on the line 12 12, Fig. 11, and showing the intermediate portion of one of the truck-frame side members in elevation beyond the plane of section. Fig. 13 is a perspective
90 view of a casting utilized in uniting the bars of the upper transom with the intermediate portion of the oppositely-located truck-frame side members.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A A represent the jour-
95 nal-boxes, supported in the usual manner on the ends of the car-wheel axles B, the forward and rear boxes at each side of the truck supporting the equalizing-bars C and the side
100 frames D, which are of hollow construction and accommodate therewithin such equalizing-bars, the side frames being, by the springs *a*, supported above the tops of the journal-boxes, such side frames D D sustain-
105 ing all of the parts pertaining to the truck-frame, while the equalizing-bars sustain, through the medium of the elliptic springs *b b*², the transom-bolster E, the same having only an up-and-down movement on its
110 springs and in turn sustaining the swing-bolster G, which is peculiarly supported on spiral springs suspended from the transom-

bolster, and has in addition to its cushioned up-and-down movement a proper degree of endwise spring-resisted movement crosswise of the truck.

5 Each of the oppositely-disposed longitudinally-ranging truck-frame side members D is constructed at the end portions thereof of yoke form, constituting pedestals 50 to embrace the journal-boxes A, and the intermediate portion of such side member has the upwardly-opening jaw 52, constituted by the separated upstanding projections 53 53, and each truck-frame side member comprises inwardly and outwardly disposed longitudinally-ranging sides or bars 54 and 55, separated especially at the portions between the journal-boxes to give space for occupancy therewithin of the equalizing-bars C, the end portions of which rest directly on the tops of the journal-boxes, while the middle portions thereof are lowered, as shown.

The spacing-blocks 56 are fitted and bolted within the upstanding portions 53 of the transversely opposite bars of each truck-frame side member, the faces of these blocks 56 toward the jaw-opening 52 being located longitudinally slightly toward the ends of the truck from the vertical edges at the front and rear boundaries of such jaw-opening, the inner faces of said blocks 56 receiving and resisting any thrust or shifting of the transom-bolster transversely of its own length and longitudinally of the truck, the transom-bolster having the vertical lugs or projections 58, which enter between the inner and outer bars of the truck-frame side member and have their vertical faces in planes transversely of the truck practically in contact with said transom-bolster thrust-blocks 56, and the end portions 59 outside and also next inside of the lugs or projections 58 play freely vertically relatively to the vertical margins of the jaw-opening 52 in each of the side members D.

45 The truck-frame, which as a whole is of a rectangular form, has the end extensions of the side members D thereof transversely united by the tie-bars 60 and also transversely united and braced by the upper and lower transoms M and N, both of which have their locations between the jaw-provided truck-frame side members D and their connections with the latter below the jaw-opening 52.

55 The transom-bolster may advantageously be in the form of a substantially constructed cross-beam composed of separated parallel side members 10 10 and intermediate end-uniting blocks 30, all confined by bolts as one structure, having the vertical upwardly and downwardly open space 64, extending crosswise of the truck and longitudinally of the transom-bolster for the greater portion of the length of the latter, such space accommodating the swing-bolster therewithin, which

swing-bolster is supported directly by the transom-bolster by means hereinafter pointed out, said transom-bolster receiving its support from the equalizing-bars at each side of the truck through the medium of the half-elliptic springs *b* and the supplemental half-elliptic springs *b*².

The elliptic springs *b* are shackled or engaged at the under portions of the extremities of the transom-bolster and have their locations within the space in the hollow truck-frame side members. The extremities of each principal half-elliptic spring *b* are supported on the rests 66, provided therefor upon the equalizing-bars, and the supplemental half-elliptic springs *b*² provided next under the principal half-elliptic springs *b* are normally arranged with their extremities free and clear slightly above the rests 67 therefor, provided on the equalizing-bars, such supplemental springs coming to bearing and assisting to sustain the weight of the car and its load when the latter becomes excessive.

The extremities of the equalizing-bars, as represented in Fig. 9 and by dotted lines in Fig. 1, are narrowed so as to be accommodated between the pairs of inner and outer springs *a a* at the tops of the journal-boxes and which support the truck-frame.

95 The swing-bolster has end walls *f* and is provided in both of its ends with perforations *g g* through its top wall, the portions of the bolster at which these perforations are provided being overlaid by the carrier-block H, the dimension of which fore and aft of the truck being greater than the width of the swing-bolster, so as to receive support at the notched portions *h h* thereof on the opposite parallel and separated members 10 10 of the transom-bolster E, the said members 10 10 having the upstanding edge lugs 12 12, as seen in Fig. 9, which serve as abutments for shifting or displacement of the upper carrier-block H relatively to the length of the transom-bolster, and of course it will be plain that the carrier-block may have no shifting movement transversely of the length of the transom-bolster by reason of the margins of the under notches *h h* engaging the upper edges of the transom-bolster members 10.

The upper carrier-block has perforations 15 in arrangement matching with those *g g* of the swing-bolster, and it has horizontal channels 16 16 from side to side thereof in lines intersecting the perforations 15, in which channels round horizontal bars *i* rest, the intermediate portions of which penetrate and are encircled by the ring-formed upper ends of vertical bars *j*, which depend down through the perforations in the upper carrier-block and in the swing-bolster, and have at their ring-formed lower ends horizontal bars *i*², similar to the upper ones *i*, and which sustain the lower carrier-block I, the same

having underneath grooves 17 17 for engagement over the horizontal bars i^2 , having the perforations 18 18 for the accommodation of the vertical bars j , and are provided with up-
 5 standing cheeks 20 20, which constitute guide members by their sidewise engagements with the depending webs $f f^2$ of the swing-bolster.

The comparatively massive spiral springs K rest on the lower carrier-block and sustain
 10 the swing-bolster for a vertical cushioned movement relatively to the transom-bolster E, by which the carrier-blocks and supporting-springs are primarily sustained.

Springs J are interposed between the ends
 15 of the swing-bolster and the hollow block members 30 at the ends of the transom-bolster, these springs, as shown in Fig. 3, being spiral springs encircling tubular hub-like fittings 32, projecting longitudinally from the
 20 ends of the swing-bolster and setting into depression seats 33 in the inner ends of the blocks 30, and bolts 34 are extended horizontally through the transom-bolster part 30, centrally within the springs and into the
 25 part 32, said bolts receiving nuts 35 at their outer ends screwed up against the ends of the part 30.

The aforementioned truck - frame side members may, according to the size of the
 30 truck and the preference of the constructor, be made in integral casting or forging or they may be sectionally made and built up, braced and trussed.

The connection of the upper transom M
 35 with the intermediate portion of the opposite truck-frame side member D D is as shown in Figs. 10 to 13, such upper transom consisting of paired and somewhat widely-separated bars 72, the ends of which are
 40 bolted to the channeled lug members 73, the vertical supporting-back 74 therefor being bolted to the inner bar of the side member D, and the said casting or forging is constructed with a strengthening and uniting web 75,
 45 formed integral with and extending between the channeled lug or bracket member 73.

The lower transom consists of paired bars
 76 76 of structural steel or other suitable metal, the intermediate portions of which are
 50 in facewise contact and held together by the clips 77, bolted thereto, and the extremities of the said bars 76 toward the inner sides of the truck-frame members D are outwardly divergent, as indicated at 78, and provided
 55 with terminal lugs 79, which are confined by bolts and contact against the inner faces of the truck-frame side members.

The supplemental elliptic springs b^2 will in the construction of many trucks be dispensed
 60 with.

In the railway-car truck organized as shown and hereinabove described, while of course all departments of the truck, the car,
 and its load are primarily supported by the
 65 journal-boxes, provided, as usual, at the out-

ward journal extremities of the axles for the car-wheels, it will be appreciated that the car-body and the passengers will ride on efficient and highly satisfactory spring-supported bolsters therefor, and will not affect
 70 or be in any unfavorable manner affected by the independent truck-frame, which comprises the side members D D, the end cross-ties, and the upper and lower transoms M and N, or be affected by the results of any
 75 actions, shaking, shifting, or vibration of the brake mechanism and the motor which are supported by the said independent truck-frame, which frame has, however, as apparent, in addition to the functions of brake
 80 mechanism and motor-supports also that of constraining and guiding in its vertical movements only, the transom-bolster.

Having thus described my invention, what I claim, and desire to secure by Letters Pat-
 85 ent, is—

1. In a truck, in combination with the car-wheel axles and journal-boxes, and a truck-frame supported on said journal-boxes, and car-supporting appliances independent of
 90 said truck-frame, comprising longitudinally-ranging bars, the extremities of which are supported by the journal-boxes, a car-supporting bolster, and springs yieldingly sustaining said bolster, above said bars, said
 95 bolster-sustaining springs being primarily supported by said bars.

2. In a truck, in combination, the car-wheel axles and journal-boxes, and a truck-frame supported on said journal-boxes; and
 100 car-supporting appliances independent of said truck-frame, comprising longitudinally-ranging bars, the extremities of which are supported by the journal-boxes, a car-supporting bolster, and springs yieldingly sus-
 105 taining said bolster, above said bars, said bolster-sustaining springs being primarily supported by said bars, and said bolster having a vertically-guided engagement with the truck-frame.
 110

3. In a truck, the combination with the car-wheel axles, and their journal-boxes, and a truck-frame supported on said journal-boxes, of car-supporting appliances independent of said truck-frame, comprising longitu-
 115 dinally-ranging bars the extremities of which are supported by the journal-boxes, a transversely - arranged transom - bolster, and springs sustained by said bars and yieldingly supporting the transom-bolster, and a swing-
 120 bolster, sustained by the transom-bolster, and arranged for a movement endwise of itself, relatively to the transom-bolster.

4. In a railway-car truck, in combination, the car-wheel axles and their journal-boxes,
 125 and a truck-frame, comprising opposite side members, and transverse uniting means, end portions of said side members being of yoke or jaw form embracing the journal-boxes, and opposite inwardly and outwardly dis-
 130

posed pairs of spiral springs, resting on the tops of the journal-boxes and supporting said yoke-formed side frames; and car-supporting appliances, independent of the truck-frame, comprising longitudinally-ranging bars, having lowered intermediate portions, the extremities of which are supported on the journal-boxes between the pairs of truck-frame-supporting springs, a car-supporting bolster and springs yieldingly sustaining said bolster above said bars, said bolster - sustaining springs being supported by said intermediate lowered portions of the bars.

5. In a railway-car truck, in combination, the car-wheel axles and their journal-boxes, and a truck-frame, comprising opposite hollow longitudinally - ranging side members, and transverse uniting means, end portions of said side members being of yoke form embracing the journal-boxes, and opposite inwardly and outwardly disposed pairs of spiral springs resting on the tops of the journal-boxes and supporting said yoke-formed side frames; and car-supporting appliances, independent of the truck-frame, comprising longitudinally-ranging bars, having lowered intermediate portions and the extremities thereof being located within said hollow side members, supported on the journal-boxes between the pairs of truck-frame-supporting springs, a car-supporting bolster, and springs yieldingly sustaining said bolster, above said bars, said bolster - sustaining springs being supported by said intermediate lowered portions of the bars.

6. In a railway-car truck, in combination, the car-wheel axles and their journal-boxes, and a truck-frame, comprising opposite side members, and transverse uniting means, end portions of said side members being of yoke form embracing and receiving support from the journal-boxes and the middle portions of each truck-frame side member being constructed with a vertical bolster-guide; and car-supporting appliances, independent of the truck-frame, comprising longitudinally-ranging bars, having lowered intermediate portions, the extremities of which are supported on the journal-boxes between the pairs of truck-frame-supporting springs, a centrally and transversely arranged car-supporting bolster, the extremities of which have vertically-guided engagements in said truck-frame-bolster guides, and springs yieldingly sustaining said bolster, above said bars, said bolster-sustaining springs being supported by said intermediate lowered portions of the bars.

7. In a railway-car truck, in combination the car-wheel axles and their journal-boxes, and a truck-frame comprising opposite side members, and transverse uniting means, end portions of said side members being of yoke form embracing the journal-boxes, and the middle portions of said side members having

upwardly - opening jaws, and opposite inwardly and outwardly disposed pairs of spiral springs, resting on the tops of the journal-boxes and supporting said yoke-formed side frames; and car-supporting appliances, independent of the truck-frame, comprising longitudinally-ranging bars, having lowered intermediate portions, the extremities of which are supported on the journal-boxes between the pairs of truck-frame-supporting springs, a centrally and transversely arranged bolster, the extremities of which engage in said jaws, and springs on said intermediate lowered portions of said bars, and yieldingly supporting the jaw-engaged bolster.

8. In a truck, the combination with the car-wheel axles, and their journal-boxes, and a truck-frame supported on said journal-boxes, of car-supporting appliances independent of said truck-frame, comprising longitudinally-ranging bars, the extremities of which are supported by the journal-boxes, a transversely-arranged transom-bolster, and springs sustained by said bars and yieldingly supporting the transom-bolster, and a swing-bolster spring sustained by and capable of a vertically-yielding movement relatively to the transom-bolster.

9. In a truck, the combination with the car-wheel axles, and their journal-boxes, and a truck-frame supported on said journal-boxes, of car-supporting appliances independent of said truck-frame, comprising longitudinally-ranging bars, the extremities of which are supported by the journal-boxes, a transversely-arranged transom-bolster, and springs sustained by said bars and yieldingly supporting the transom-bolster, and a swing-bolster spring sustained by, and capable of a vertically-yielding movement relatively to, the transom-bolster, and also arranged for a movement endwise of itself relatively to the transom-bolster.

10. A railway-car truck having a transom-bolster across its middle portion, comprising parallel separated side members, and end pieces between and uniting the extremities of said side members, and a swing-bolster located in the space between said side members and having its ends adjacent but separated from said uniting end pieces, spring-sustained by the transom-bolster and supporting the swing-bolster for vertically-yielding movements, and springs between the ends of the swing-bolster and said transom-bolster end pieces.

11. A railway-car truck having the transom-bolster comprising parallel separated side members, and end pieces between and uniting the extremities thereof, saddle-blocks supported upon end portions of the transom-bolster, and depending bars having supporting engagements with said carrier-blocks depending therebelow within the space between the transom-bolster side members and ar-

5 ranged for swinging movements relatively to the carrier-block, and sustaining from their lower portions swing-bolster-supporting springs, and a swing-bolster disposed in the space between the transom-bolster side mem-
bers and resting on said springs.

10 12. In a railway-car truck, the combination with the journal-box-supported equalizing-bars, and a journal-box-supported truck-frame independent thereof, of a transom-bolster comprising parallel separated side members spring-supported by and above said equalizing-bars, and guided for vertical move-
15 ment by and relatively to said independent truck-frame, and a car-supporting swing-bolster located in the space between said side members and spring-supported by the transom-bolster.

20 13. In a railway-car truck, the combination with the journal-box-supported equalizing-bars, and a journal-box-supported truck-frame independent thereof, of a transom-bolster comprising parallel separated side members, and end pieces between and unit-
25 ing the extremities of said side members, spring-supported by and above said equalizing-bars, and guided for vertical movement by and relatively to said independent truck-frame, and a swing-bolster located in the
30 space between said side members and having its ends adjacent but separated from said uniting end pieces, spring-sustained by the transom-bolster and supporting the swing-bolster for vertically-yielding movements,
35 and springs between the ends of the swing-bolster and said transom-bolster end pieces.

40 14. In a railway-car truck having the transom-bolster comprising parallel separated side members, and end pieces between and uniting the extremities thereof, saddle-blocks supported upon end portions of the transom-bolster, and depending bars having support-
45 ing engagements with said carrier-blocks depending therebelow within the space between the transom-bolster side members and arranged for swinging movements relatively to the saddle-blocks, and having carrier-blocks at their lower portions with spiral springs vertically mounted on said carrier-blocks,
50 and a swing-bolster, disposed in the space between the transom-bolster side members and resting on said carrier-block-supported springs.

55 15. In a railway-car truck, a journal-box-supported truck-frame, having at the middle portions of its side members upwardly-opening jaws, combined with a transom-bolster having the end portions thereof engaged within said jaws and guided thereat for ver-
60 tical movements, and supporting means for said transom-bolster, independent of said truck-frame.

16. In a railway-car truck, a journal-box-supported truck-frame, having at the middle

portions of its side members upwardly-open- 65 ing jaws, combined with a transom-bolster having the end portions thereof engaged within said jaws and guided thereat for ver-
tical movements, and restrained by such en- 70 gagements against movements in the line of its own length relatively to said truck-frame, and supporting means for said transom-bolster, independent of said truck-frame comprising springs on which the end por-
tions of the bolster rest. 75

17. In a railway-car truck, the combina-
tion with the truck-frame side members hav-
ing the upwardly-opening jaw, the opposite
vertical edges of which have inwardly-open- 80 ing vertical ways, of the transom-bolster having its extremities located within said jaw-opening, and having the oppositely-arranged projections 58 58 engaging in said ways, and spring-supporting means for the transom-bolster. 85

18. In a railway-car truck, the truck-frame, sustained by the journal-boxes and constructed with oppositely-ranging side bars having a space therebetween combined with the equalizing-bars C independent of the truck-frame, springs above and sustained by the equalizing-bars, the transom-bolster sus-
tained by said springs and having engage- 90 ments for vertically-guided movements with the truck-frame side members, said equalizing-bars and bolster-supporting springs hav-
ing their locations in the space between the parallel separated bars of the truck-frame side members. 95

19. In a truck, a journal-box-supported 100 truck-frame having hollow side members, the equalizing-bars independently supported by the journal-boxes, and supporting above their middle portions, bolster-supporting springs, which springs and said equalizing-
bars are arranged within the truck-frame side 105 members, the transom-bolster resting on said springs and constructed with an aperture opening vertically therethrough, the swing-bolster located in said aperture, and in sus-
pension for endwise swinging movement rela- 110 tively to and spring-sustained by the transom-bolster.

20. In a railway-car truck, in combination, the journal-boxes, the longitudinally-ranging 115 equalizing-bars supported thereby, the truck-frame independently supported by the journal-boxes, the transom-bolster, spring-supported by the equalizing-bars, guided at their end portions vertically by and relatively to the independent truck-frame, and said bolster comprising opposite side members having sad-
dle-blocks supported thereon inside of the 120 truck-frame side members, depending bars supported for swinging movements relatively to the saddle-block, a lower carrier-block sus-
tained by said bars and supporting one or 125 more springs, and a swing-bolster disposed

within the separated members of said transverse support and having the end portion thereof supported by said springs.

21. In a railway-car truck, in combination, 5 the journal-boxes, the longitudinally-ranging equalizing-bars supported thereby, the truck-frame independently supported by the journal-boxes, the transom-bolster, spring-supported by the equalizing-bars, guided at their 10 end portions vertically by and relatively to the independent truck-frame, and said bolster comprising opposite side members having saddle-blocks supported thereon inside of the truck-frame side members, depending bars 15 supported for swinging movements relatively to the saddle-blocks and sustaining lower carrier-blocks having bolster-springs, a swing-bolster located between the separated members of said transverse support resting on the 20 bolster-springs, and springs between the end walls of the transverse support and the ends of the swing-bolster.

22. In a railway-car truck, in combination, the journal-boxes, the longitudinally-ranging 25 equalizing-bars supported thereby, the truck-frame independently supported by the journal-boxes, the transom-bolster, spring-supported by the equalizing-bars, guided at their end portions vertically by and relatively to 30 the independent truck-frame, and said bolster comprising opposite side members having saddle-blocks supported thereon inside of the truck-frame side members, and extending across from one to the other, of the opposite 35 transom-bolster members, and each saddle-block having a vertical hole therethrough and a horizontal channel intersecting the

hole, a vertical bar depending through the hole in each saddle-block and having a horizontal cross-bar at its upper end lying in said 40 channel and having a horizontal bar at its lower end, of lower carrier-blocks having vertical holes therethrough and supported on the lower horizontal members of said depending bar, bolster-springs mounted on said 45 lower carrying-blocks and the swing-bolster resting on said springs.

23. In a railway-car truck, in combination, the journal-box-supported equalizing-bars, the independent journal-box-supported 50 truck-frame, the transom-bolster, spring-supported by and above the equalizing-bars and having guiding engagements with said truck-frame, the saddle-blocks mounted on the transom-bolster having the depending bars hav- 55 ing swing-supported engagements with the saddle-blocks, and depending therebelow, the carrying-blocks supported by and at lower portions of, said depending bars having up- 60 standing members 20 20, springs supported upon and extending above the carrying-blocks, and the swing-bolster supported on said springs and having depending separated walls $f f^2$ with which the carrying-block up- 65 standing members 20 20 have guiding engagements.

Signed by me, at Springfield, Massachusetts, in presence of two subscribing witnesses.

SUMNER A. BEMIS.

Witnesses:

A. V. LEAHY,
WM. S. BELLOWS.