

No. 736,739.

PATENTED AUG. 18, 1903.

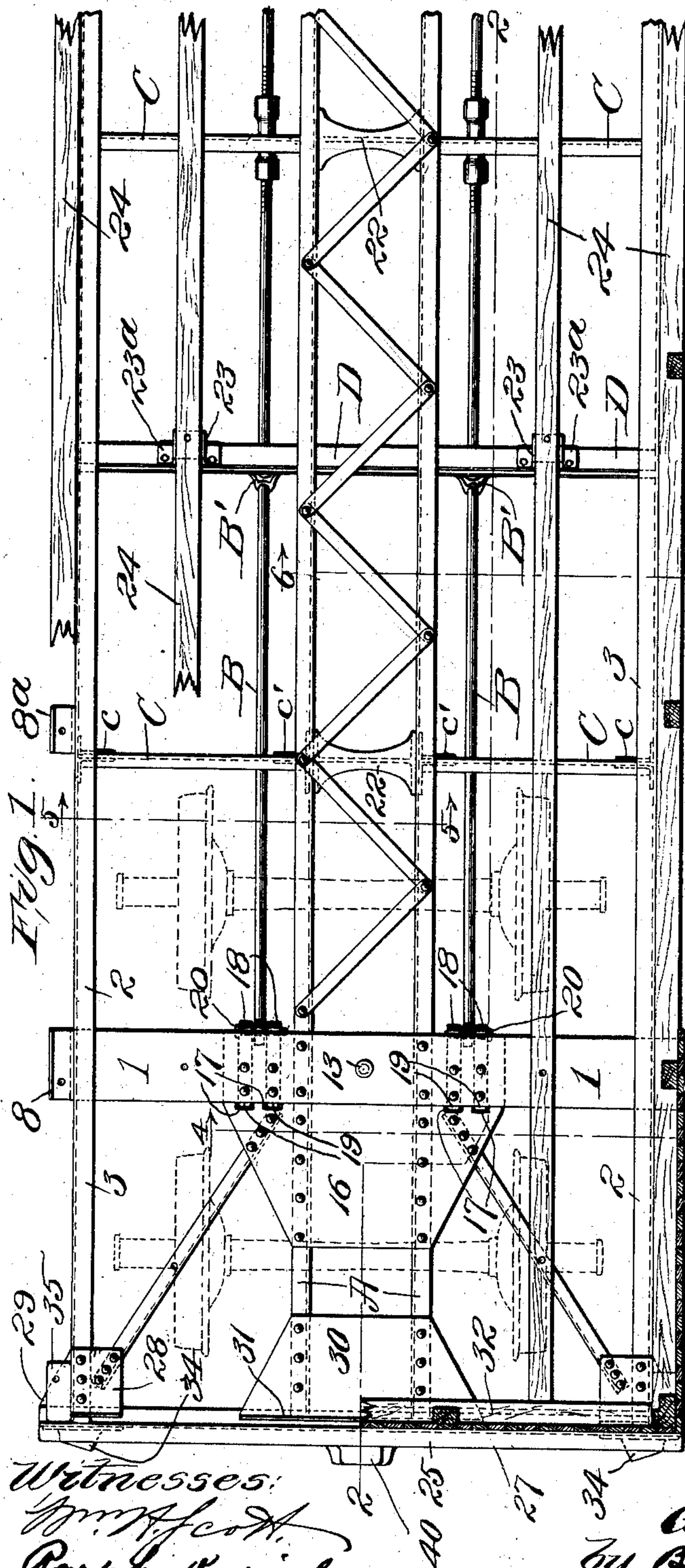
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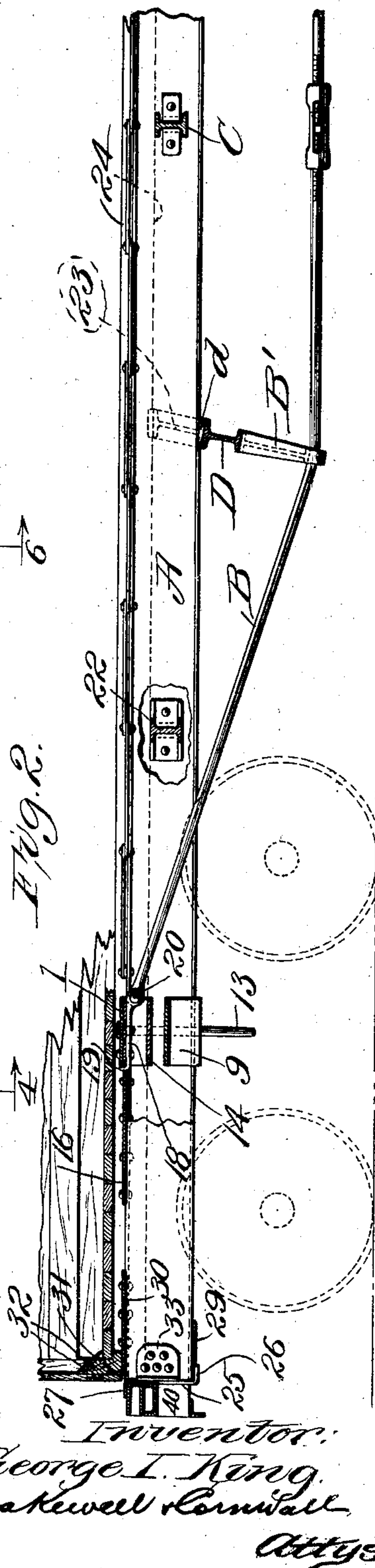
APPLICATION FILED DEC. 26, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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No. 736,739.

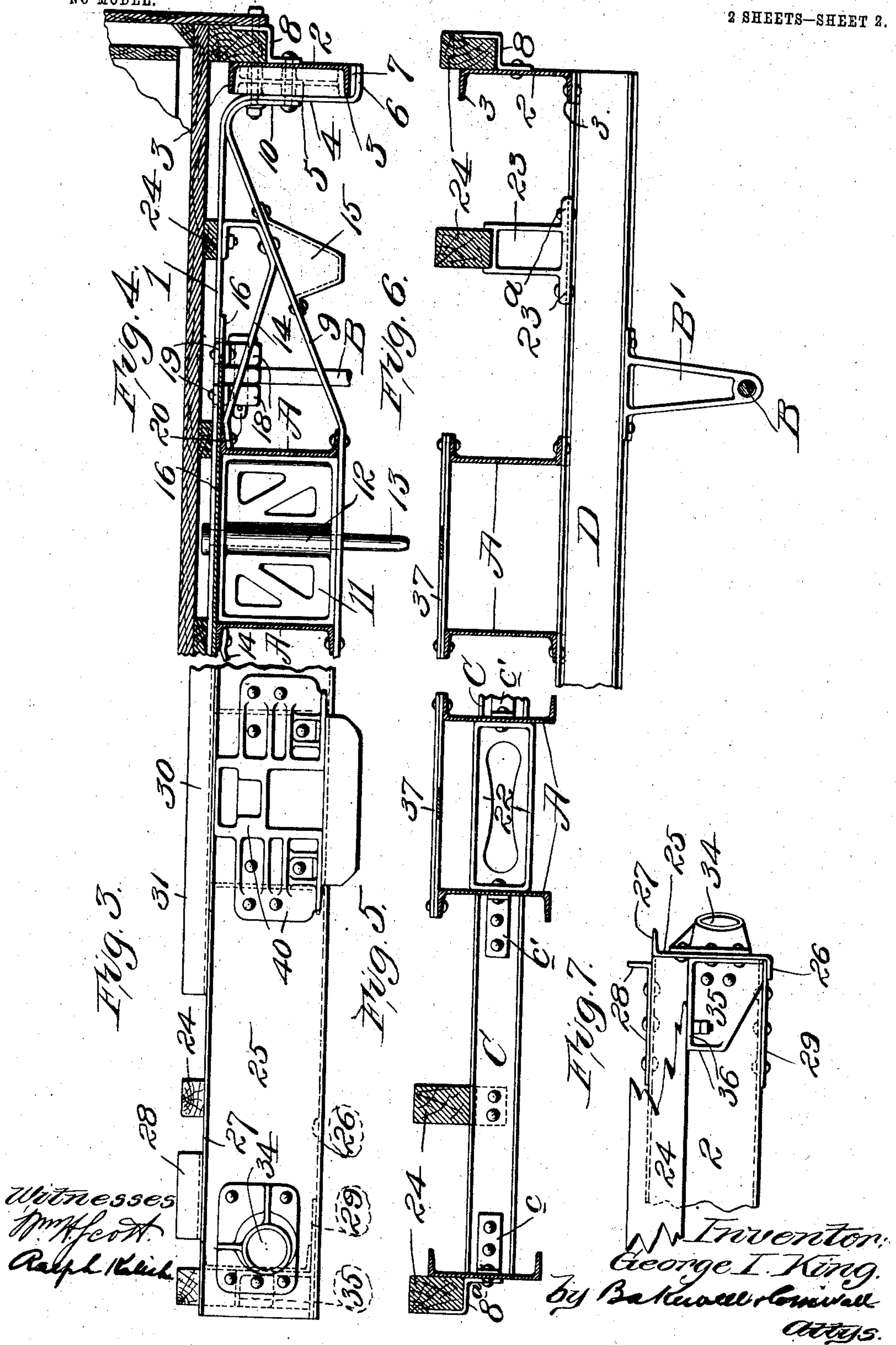
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2 SHEETS—SHEET 2.





# UNITED STATES PATENT OFFICE.

GEORGE I. KING, OF MIDDLETOWN, PENNSYLVANIA.

## UNDERFRAMING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 736,739, dated August 18, 1903.

Application filed December 26, 1902. Serial No. 136,704. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE I. KING, a citizen of the United States, residing at Middletown, Dauphin county, Pennsylvania, have invented a certain new and useful Improvement in Underframing for Railway-Cars, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of one end of a car-frame constructed according to my invention, partly broken away. Fig. 2 is a longitudinal sectional view on the line 2 2. Fig. 3 is an end view of the major portion thereof. Fig. 4 is a transverse view on line 4 4. Fig. 5 is a transverse view on the line 5 5. Fig. 6 is a transverse view on the line 6 6, the views of Figs. 4, 5, and 6 representing the parts as shown when looking in the direction indicated by the arrows; and Fig. 7 is a broken side elevational view looking at the side near the end sill.

This invention relates to improvements in underframing for railway-cars, the object of the invention being to unite in a car-frame of the type illustrated novel constructions and arrangement of parts which tend toward a simple and convenient structure which will be very strong and durable and contain many desirable features new in car construction, all as will be hereinafter more fully described, and specifically pointed out in the claims.

The body-bolster or transom, hereinafter called the "transom," is of the skeleton type, built in with the underframing and forming an essential part thereof in the finished structure. The upper plate or tension member 1 of the transom extends unbroken from side sill to side sill, as best shown in Figs. 1 and 4, and, as shown in the latter figure, is bent downwardly and outwardly at its ends where it is secured to the side sills 2. The side sills illustrated herein are formed of deep channels, in which the flanges 3 are turned inwardly or toward the body of the car, and between the web portion thereof and the downwardly-extending portion 4 of the upper plate 1 is interposed a filler-block 5, while below

the side sills and between them and the outwardly-bent portion 6 of said upper plate 1 is another filler-block 7. Upon the outer side of the side sills are Z-bars 8, which form supports for the nailing-strips 9, to which are secured the lower portion of the siding and the flooring-boards of the car.

It will be noted that the portions 4 and 6 of the transom, the filler-blocks 5 and 7, and the Z-bars 8 are all held rigidly in place by securing means passing therethrough and through the side sills.

The compression member or lower plate 9 of the bolster is secured at its downturned ends 10 by the same means used to secure the portion 4 of the tension member to the side sills and conforms to the curve of the tension member, from which point it turns downwardly in an oblique line to the point where it passes under the center sills A, to the lateral flanges of which it is riveted, as shown. The tension member is also secured to the flanges of said center sills.

Between the tension member 1 and the compression member 9 and the center sills A is a skeleton casting or filler-block 11, provided with a central vertical enlargement 12, through which passes the king-bolt 13, as shown.

Secured to the under face of the upper flanges of said center sills at one end are brace-rods 14, which extend obliquely downwardly and outwardly to a point about midway above the side bearings 15, where said brace-rods are riveted to the compression member, from which said brace-rods extend vertically upwardly to the tension member, where they are bent inwardly toward the center sills, as best shown in Fig. 4.

The side bearings 15 are riveted to said compression member at each side of the point where the brace-rod 14 is secured thereto, the filler-blocks 5 and 7 being interposed, as shown, between the ends of the transom, and the side sill permits of a wider curvature of said transom members, while permitting of close contact of all the associate parts thereat.

Referring to Figs. 2 and 4, it will be noted that a plate 16 rests upon the center sills A and between them and the tension member 1 of the transom, which plate extends longi-



itudinally of the transom to a point about midway between the center sills and the side sills, near which point said plate 16 is provided with oblong slots 17, said slots being  
 5 located between the transom and the end sills of the car. Said plate 16 also extends over the center sills, as shown in Fig. 1, in a direction toward the end sills some distance from said transoms. Secured by suitable rivets to  
 10 the under side of said plate are loops 18, provided at the ends thereof toward the end sills with angular upwardly-bent extensions 19, which fit into and are engaged by said angular slots 17. Within the opposite looped ends  
 15 of 18 are held pintles 20, which pass through eyes formed in the ends of the truss-rods B, which truss-rods are supported at their ends thereby and pass downwardly under the queen-posts B', shown directed slightly ob-  
 20 liquely toward the ends of the car, and it will be noted that the axial line of said truss-rods if continued would intersect the upper plate 1 at a point about midway its width, thereby providing such connection between said truss-  
 25 rods and the tension member that strain on the truss-rods will not bend down the edge portion of the said plate toward said truss-rods, and the upturned angular portion 19, engaging said slots 17 of the plate 16, will  
 30 assist in securing said parts together.

Between the side sills and center sills are floor-beams C, which are connected to the side sills by means of straps c. Z-bars 8<sup>a</sup> are se-  
 35 cured in position by means of the same rivets used to hold said straps to the side sill, while straps c' connect their opposite ends to the center sills, the rivets for such connection securing the filler-blocks 22 in position be-  
 40 ing to reinforce the underframe and make the same more rigid.

Referring to Figs. 1, 2, and 6, it will be noted that the cross-ties D extend across the car underneath the center and side sills, and  
 45 the queen-posts B' are secured to the under side thereof at an angle to the floor of the car, extending so that the portion of the truss where the oblique portion and horizontal por-  
 50 tion of said truss-rods meet. There are two, or at most three, truss-rods only, all of which are within the rail-lines, thus preventing interference with obstructions, platforms, &c., sometimes found near railway-tracks. Upon the cross-ties are castings 23, which extend  
 55 upwardly sufficiently far to support the longitudinally-extending nailing-strips 24, to which is secured the flooring of the car, said castings having flanges 23<sup>a</sup> resting on the cross-ties D, as shown. The cross-ties if se-  
 60 cured to the center sills and side sills will have filler-blocks d interposed between said ties and sills at one edge thereof, because of the angularity of said cross-ties. The end sill is formed of a Z-shaped member 25, one  
 65 flange 26 of which extends below the ends of the side sills and center sills, as shown in Figs. 2 and 7, while the opposite flange 27

projects outwardly beyond the general line of the car. At the corners, where the side sills are joined with the end sills, are provided  
 70 gusset-plates 28 and 29, which are secured, respectively, above and below said sills, the gusset 29 being a flat plate and the gusset-plate 28 being flanged upwardly along its  
 75 outer end portion. Secured to and above the center sills at their end portions are plates 30, which plates extend nearly to the end sills and flanged upwardly on their outer ends, as shown at 31. Resting on the gussets 28  
 80 and plate 30 are the nailing-strips 32, to which are secured the lower ends of the end walls of the car, which end walls terminate above the end sills, whereby is left a slight  
 85 space between said end sills and side wall, through which water may drip which would otherwise remain standing on the upper face of the end sill and cause rusting thereof, to the injury of said sill and the end walls. The  
 90 end sills are connected to the side sills and center sills by means of brackets 33, which serve as supports for the end sills. In line with the side sills are push-pole pockets 34,  
 95 riveted to said end sills. Brackets 35, with reinforcing-flanges 36, are secured to the outer side of said side sills in line with said push-pole pockets, so as to reinforce the end sills thereat, the upper portion of said flanges 36  
 100 serving as supports for the ends of the outer nailing-strips 24 and the vertical flanges abutting against the rear face of the end sills, as best seen in Fig. 7. Extending obliquely  
 105 across between the center sills are strips 37, forming a lattice extending the length of said center sills between the transoms, which lattice is used to stiffen said center sills, said  
 110 sills acting as a column under stress induced by pull from the truss-rods before described. The end sills are cut away between the center sills, and surrounding said cut-away por-  
 115 tion is the casting 40, provided with openings for the draft-rigging, &c., common to railway-cars, but not shown herein, as I do not claim the same.

I am aware that minor changes in the construction, arrangement, and combination of  
 115 the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what  
 120 I claim as new, and desire to secure by Letters Patent, is—

1. In an underframing for railway-cars, a transom having a tension member extending from under the side sills upwardly and over  
 125 the center sills, a compression member extending under the center sills to said tension member where both members are joined to the side sills, and an interposed filler-block in which is held a king-bolt; substantially as  
 130 described.

2. In an underframing for railway-cars, a transom having a tension member which serves as a support, with which is connected



means for supporting the ends of tension-rods extending longitudinally of the car; substantially as described.

3. In an underframing for railway-cars, a transom comprising a continuous tension member and a continuous compression member, the former being turned downwardly and outwardly to form supports for side sills, side sills thereon, and interposed filler-blocks, all connected rigidly together; substantially as described.

4. In an underframing for railway-cars, end sills, center sills continuous from end sill to end sill, a transom comprising a tension member and a compression member joined and bent downwardly at their outer end portions, the tension member forming a seat at its ends, and side sills resting thereon; substantially as described.

5. In an underframing for railway-cars, center sills, end sills joined thereto, side sills connected to said end sills, Z-bars connected with the outer side of said side sills forming pockets for nailing-strips, and brackets at the end sills adapted to resist said end sills and support the ends of said nailing-strips; substantially as described.

6. In an underframing for railway-cars, center sills, side sills, floor-beams relatively of less depth than said sills, and Z-bars secured to said side sills substantially in line with said floor-beams, said Z-bars forming pockets for nailing-strips; substantially as described.

7. In an underframing for railway-cars, center sills, side sills, floor-beams relatively of less depth than said sills, Z-bars secured to said side sills substantially in line with said floor-beams, said Z-bars forming pockets for nailing-strips, and nailing-strips resting therein, which strips project above the plane of said side sills; substantially as described.

8. In an underframing for railway-cars, center sills, a transom cover-plate connected therewith, an auxiliary cover-plate between said sills and cover-plate, said auxiliary cover-plate extending beyond said center sills in one direction and to a point about midway between said transom-plate and the end sill in another direction, in line with which it is connected to said center sills; substantially as described.

9. In an underframing for railway-cars, center sills, a transom cover-plate, an auxiliary plate connected therewith, and truss-rod supports connected with said auxiliary plate; substantially as described.

10. In an underframing for railway-cars, center sills, a transom cover-plate and an auxiliary plate connected with the upper flanges of said center sills, and truss-rod supports supported beneath said plates; substantially as described.

11. In an underframing for railway-cars, center sills, a plate connected therewith, and

truss-rod supports secured to the under side of said plate; substantially as described.

12. In an underframing for railway-cars, center sills, a plate connected therewith, and truss-rod supports secured to the under side of said plate and interlocking therewith; substantially as described.

13. In an underframing for railway-cars, center sills, a plate connected therewith, and truss-rod supports secured to the under side of said plate and interlocking therewith through openings in said plate; substantially as described.

14. In an underframing for railway-cars, a skeleton transom, and truss-rod supports connected with the under face of the tension member of said transom; substantially as described.

15. In an underframing for railway-cars, center sills, and end sills connected therewith, said end sills consisting of Z-bars whose oppositely-disposed legs project respectively under said center sills and outwardly therebeyond; substantially as described.

16. In an underframing for railway-cars, center sills, side sills, end sills formed of single Z-bars, one flange of which extends outwardly from said center sills, and supporting-brackets secured to said side sills forming abutments for said end sills; substantially as described.

17. In an underframing for railway-cars, end sills, side sills, and brackets with lateral flanges thereon adapted to serve as reinforcing means for said end sills; substantially as described.

18. In an underframing for railway-cars, side sills, end sills, push-pole pockets on said end sills, and brackets on said side sills serving to reinforce said push-pole pockets and also adapted to serve as supporting means for the ends of nailing-strips; substantially as described.

19. In an underframing for railway-cars, side sills, center sills, a cover-plate thereupon extending partly within a transom, gusset-plates with upturned flanges near the ends of said side sills, and diagonal braces extending from said gussets to said cover-plate; substantially as described.

20. In an underframing for railway-cars, side sills, center sills, a cover-plate secured thereupon, a plate with upturned angles near the ends of and secured to said center sills, gusset-plates with upturned angles near the ends of said side sills, and diagonals extending from said gussets to said cover-plate; substantially as described.

21. In an underframing for railway-cars, center sills, side sills, means for supporting nailing-strips for the end walls, end walls secured thereto, and end sills so constructed and arranged with relation thereto as to leave a space between the same and said end walls for the passage of water therethrough; substantially as described.



22. In an underframing for railway-cars,  
center sills, transoms, truss-rods, and sup-  
porting means for said truss-rods supported  
between the center sills and the upper mem-  
5 ber of said transoms; substantially as de-  
scribed.

In testimony whereof I hereunto affix my

signature, in the presence of two witnesses,  
this 17th day of December, 1902.

GEORGE I. KING.

Witnesses:

WM. A. CROLL,  
JOHN H. FRANK.