Dec. 31, 1935. E. G. HALLQUIST ET AL 2,026,035

RAILWAY VEHICLE UNDERFRAME STRUCTURE

Filed May 18, 1932 3 Sheets-Sheet 1

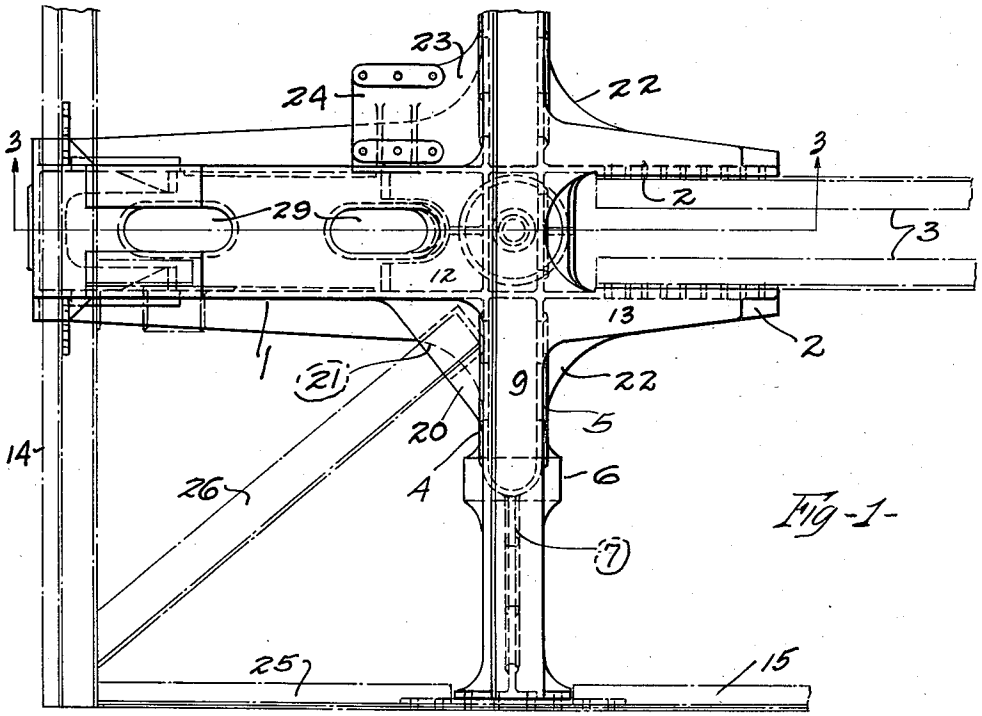


Fig-1-

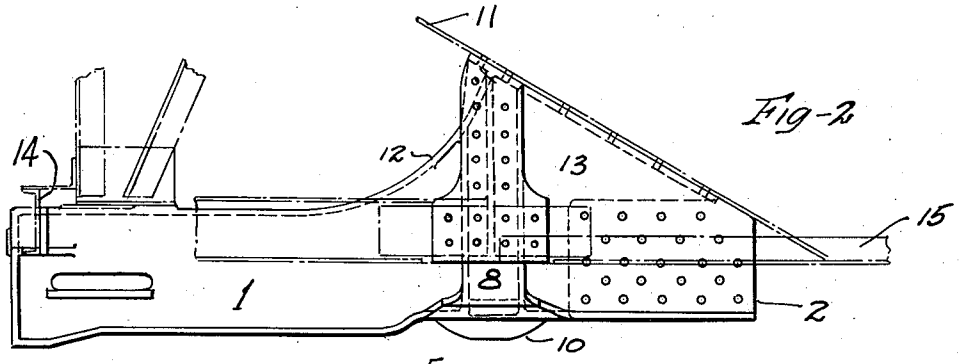


Fig-2

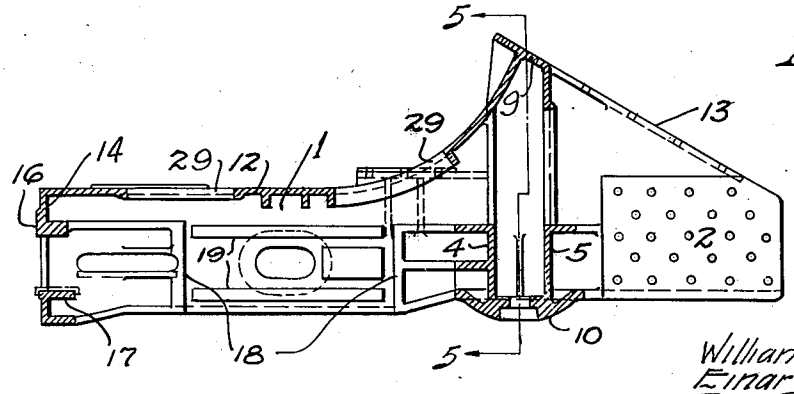


Fig-3-

Inventor
William M. Sheehan
Einar G. Hallquist
By Rodney Bedell
Attorney

Dec. 31, 1935. E. G. HALLQUIST ET AL 2,026,035

RAILWAY VEHICLE UNDERFRAME STRUCTURE

Filed May 18, 1932 3 Sheets-Sheet 2

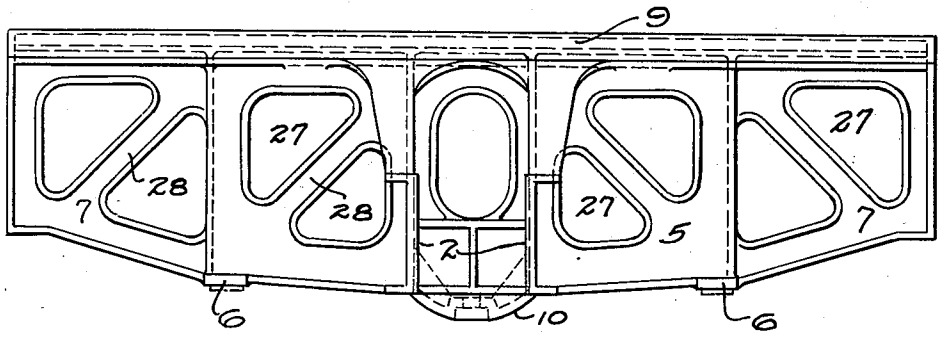


Fig-4-

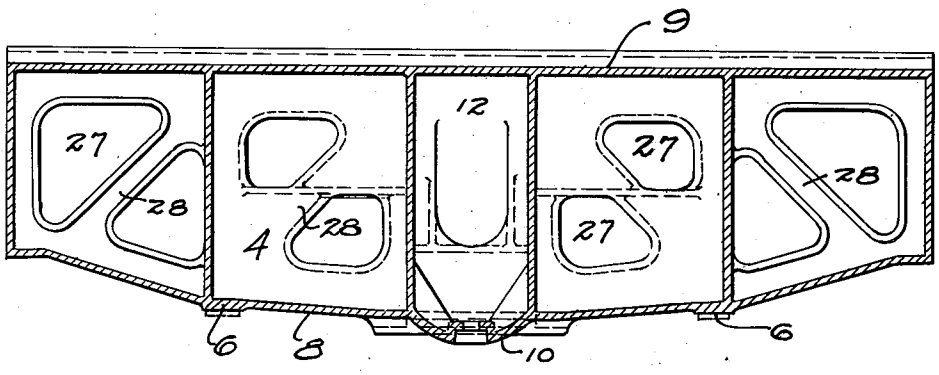


Fig-5-

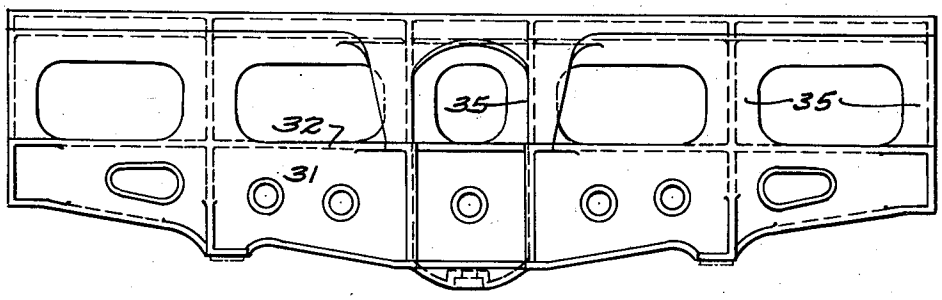


Fig-9-

Inventors
William M. Sheehan
Einar G. Hallquist
By Rodney Bedell
Attorney

Dec. 31, 1935. E. G. HALLQUIST ET AL 2,026,035

RAILWAY VEHICLE UNDERFRAME STRUCTURE

Filed May 18, 1932 3 Sheets-Sheet 3

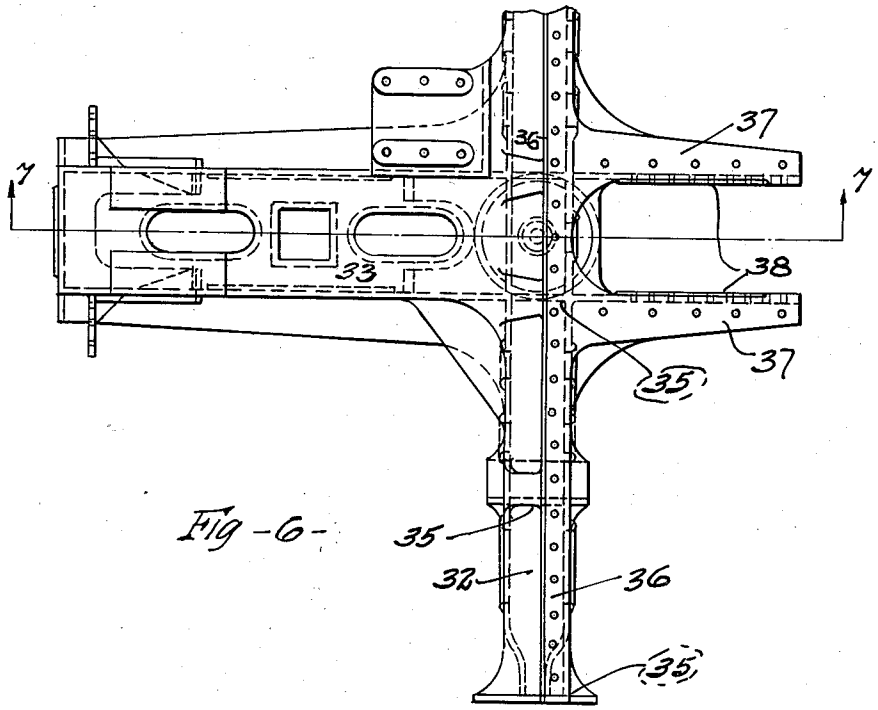


Fig -6-

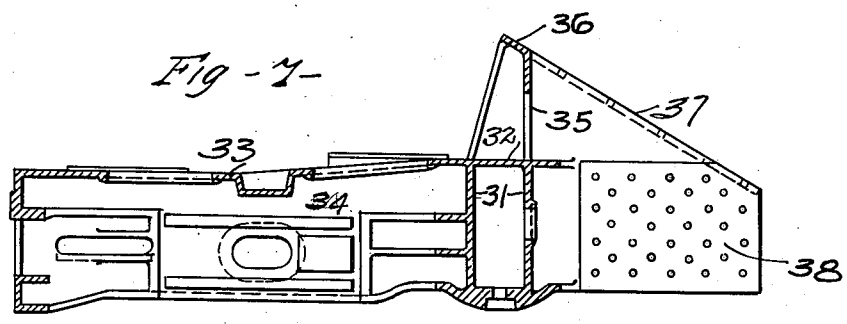


Fig -7-

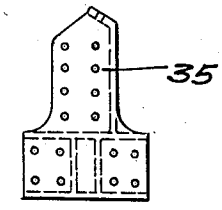


Fig -8-

Inventors
William M. Sheehan
Einar G. Hallquist
By Rodney Bedell
Attorney

Patented Dec. 31, 1935 2,026,035

UNITED STATES PATENT OFFICE

2,026,035

RAILWAY VEHICLE UNDERFRAME STRUCTURE

Einar G. Hallquist, Edwardsville, Ill., and William M. Sheehan, Merion, Pa., assignors to General Steel Castings Corporation, Granite City, Ill., a corporation of Delaware

Application May 18, 1932, Serial No. 612,000

11 Claims. (Cl. 105—415)

The invention relates to railway rolling stock and consists in novel underframe structure and, in the preferred form, more particularly in a novel integral end unit for use in dump cars having sloping end floors.

The main object of the invention is to simplify and strengthen the end structure of a car of this type in which the usual vehicle side sills and walls do not extend to the end of the car.

Another object of the invention is to simplify the assembly labor required to build up a bolster, center sill and end floor supporting structure in the usual manner.

Another object of the invention is to eliminate the labor of drilling and riveting or bolting a number of relatively small parts to each other and we also desire to avoid the weakening of such a structure which usually results upon the loosening of securing elements holding a number of parts together.

Another object of the invention is to utilize the end floor support structure as a part of the bolster and to brace the same forwardly and rearwardly of the bolster to the draft sills and center sills of the car.

These objects and other detail objects which will appear hereafter are attained in the structures shown in the accompanying drawings, in which—

Figure 1 is a top view of one corner of an underframe embodying the invention.

Figure 2 is a side elevation of the same.

In Figures 1 and 2 the cast unit comprising the invention is shown in full lines, and associated parts attached thereto are shown in broken lines.

Figure 3 is a vertical longitudinal section on the line 3—3 of Figure 1.

Figure 4 is an end elevation of the unitary structure viewed from the intermediate portion of the car.

Figure 5 is a vertical transverse section taken on the line 5—5 of Figure 3.

Figure 6 is a top view of a modified structure.

Figure 7 is a vertical longitudinal section taken on the line 7—7 of Figure 6.

Figure 8 is a side elevation of a portion of the structure at the end of the bolster.

Figure 9 is an end elevation viewed from the intermediate part of the car.

The device comprises a main member extending longitudinally of the car and another main member extending transversely of the car, said members intersecting each other intermediate their ends. The longitudinal member comprises draft sills 1 and inward extensions 2 for attachment to the car center sills 3. The transverse member comprises a bolster structure extending from side to side of the car and including spaced vertical webs 4 and 5 between the side bearing mounting portions 6, single webs 7 extending outwardly from portions 6 to the side of the car, a bottom wall 8 and a top wall 9. The center plate 10 is integral with bottom wall 8. Top wall 9 is inclined, as best shown in Figure 3, to engage a sloping end floor 11 of the car. The bolster webs 4 and 5 extend from the bottom wall 8 to top wall 9. The top web 12 of the draft sill structure curves upwardly and inwardly to brace top wall 9. Inclined braces 13 extend between top wall 9 and the inner ends of extensions 2.

The structure described forms a rigid triangular brace for the end floor 11 and provides an unusually deep bolster structure, and through its inherent strength and manner of attachment to the end floor, offers maximum resistance to longitudinal forces applied to the underframe.

The outer ends of the draft sills are arranged for connection to the end sill 14 and the outer ends of the bolster are arranged for connection to the side sills 15. Preferably the draft sills include a striking block 16, a coupler carrier 17, draft lugs 18 and draft guides 19. The corners between the draft sills and the bolster, and the center sill attaching elements and the bolster, are braced by suitable gussets 20, 21, 22, and 23, and one of the gussets 23 is enlarged, as indicated at 24, to mount a brake cylinder. The structural elements 14, 25 and 26 cooperate with the integral unit to support a platform but are not required for load carrying or longitudinal force-transmitting functions. The vertical webs 4, 5, and 7 are provided with suitable openings 27 for lightening the structure. These openings are so arranged as to produce diagonal reinforcing struts 28 for the deep bolster web. Web 12 is similarly apertured, as indicated at 29.

In the modification illustrated in Figures 6 to 9, the bolster webs 31 are both the same height and extend in parallel relation substantially throughout the width of the car and the bolster top wall 32 is substantially a horizontal continuation of the top web 33 of the draft sills 34. Spaced upright angular elements 35 project upwardly from the bolster and mount the continuous floor support element 36. An inclined brace and floor support flange 37 extends from element 36 to the inner end of each center sill attaching

arm 38, but there is no corresponding downward and outward extension from element 36 to the draft sills. In this structure the bolster is a box-section substantially throughout its length and is of substantially less height which eliminates the necessity of diagonal reinforcements as are utilized in the device previously described. The buffing stresses are transferred directly from the draft sills to the center sills instead of being carried in part up to the inclined floor support element 36 as in the device previously illustrated.

Each of the devices described embodies the same general principle of an integral underframe end structure which attains to various degrees the objects previously set forth. Each of the devices has certain advantages over the other which will justify its selection for different installations. Either of the devices may be modified in many details and some of the features illustrated may be omitted without departing from the spirit of the invention and the exclusive use is contemplated of all the structures covered by the claims herein.

What is claimed is:

1. As a new article of manufacture, a railway vehicle underframe end casting comprising draft sills, a center sill connection, a combined bolster and slope sheet support applicable as a unit to a built-up underframe and superstructure, and an inclined web extending from the top of the draft sills beyond the bolster to the slope sheet support and merging with the same.

2. As a new article of manufacture, a railway vehicle underframe end casting comprising draft sills, a center sill connection, and a combined bolster and slope sheet support applicable as a unit to a built-up underframe and superstructure, said bolster including spaced elements for mounting side bearings, parallel webs extending continuously between said elements, and intersecting said draft sills and center sill connection, and a single vertical web extending outwardly from each of said elements to the end of the bolster.

3. In a railway vehicle underframe, draft sill structure and a bolster structure comprising spaced vertical walls extending transversely of the underframe for at least a portion of its width and intersecting said draft sill structure, a bottom wall substantially in alinement with the bottom of said sill structure and merging with said vertical walls and carrying the body center plate, a top wall inclined longitudinally of the car to support a sloping end floor and merging with one of said vertical walls, and braces extending downwardly and outwardly from said top wall towards and merging with a portion of said draft sill structure spaced from said bolster structure.

4. As a new article of manufacture, a railway vehicle underframe end casting comprising draft sills, a center sill connection, and a combined bolster and slope sheet support applicable as a unit to a built-up underframe and superstructure, the top portion of said center sill connection being inclined upwardly from the end of the connection so as to support the end slope sheet and merging with the upper portion of the combined bolster and slope sheet support.

5. A railway vehicle end structure comprising a bolster vertical web having a slope sheet support element at its upper extremity, and a draft sill projecting from said bolster with a substantial part throughout its length being above the lower part of the adjacent portion of said bolster, said draft sill progressively increasing in height towards said bolster vertical web and bracing the same adjacent said element.

6. A railway vehicle end structure comprising a bolster vertical web having a slope sheet support element at its upper extremity, and draft sill and center sill supporting members projecting oppositely from said bolster, said members embodying top webs sloping upwardly from points spaced from said vertical web towards said bolster vertical web and bracing the same adjacent said element.

7. A railway vehicle underframe structure comprising a continuous draft and buff transmitting longitudinal member, spaced transverse upright webs extending outwardly from said member and the full depth of said member, and an inclined top wall on said webs disposed to support a car sloping end floor a substantial distance above the level of said member.

8. A structure as specified in claim 7 which includes braces extending downwardly in opposite directions from said top wall towards and merging with said longitudinal member at points on the latter spaced substantially from said transverse webs.

9. In a hopper car, a center sill and an integral end frame structure including a bolster with an upward projection for supporting a hopper slope sheet, and draft and buff transmitting members projecting longitudinally in opposite directions from the intermediate portion of said bolster and intersecting the same above the bottom thereof, one of said members being attached to said center sill and including bracing elements extending diagonally from the inner end of said last-mentioned member to the upper extremity of said slope sheet supporting projection.

10. Structure as described in claim 9 in which the longitudinal member extending oppositely from said center sill attaching member constitutes a draft sill and includes a diagonal bracing element extending from a point spaced from said bolster to the top of said slope sheet supporting projection and cooperating with said first-mentioned diagonal element to reinforce said longitudinal members by substantially increasing the depth thereof.

11. A railway vehicle end structure comprising a bolster vertical web arranged at its upper portion to support a hopper slope sheet element, and longitudinal sill members projecting from said bolster, said members including laterally disposed top flanges sloping upwardly from points spaced from said vertical web towards the latter and bracing the same adjacent said portion.

EINAR G. HALLQUIST.
WILLIAM M. SHEEHAN.