Dec. 25, 1928. 1,696,332

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UNDERFRAME FOR WELL CARS

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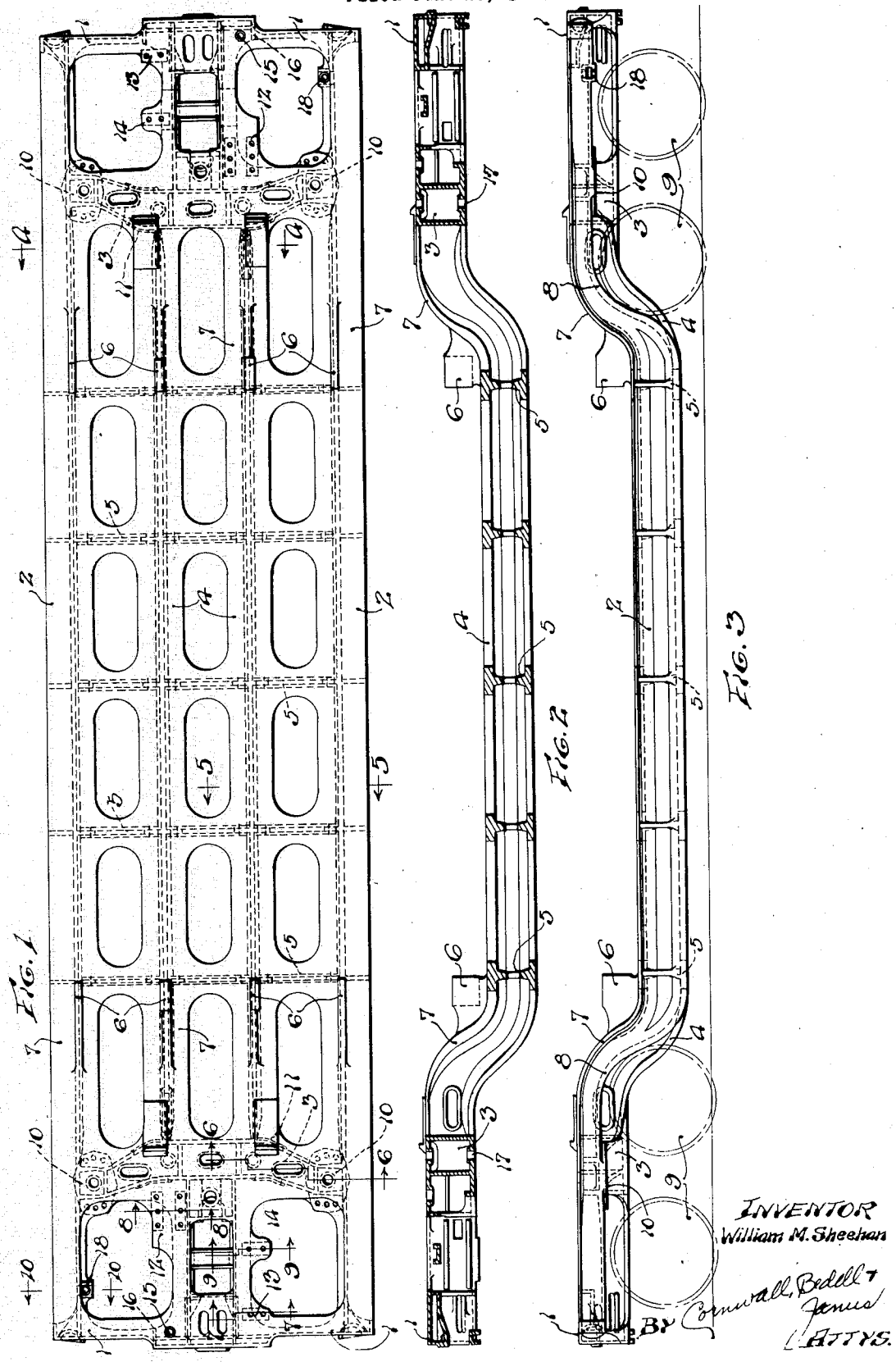

FIG. 1

FIG. 2

FIG. 3

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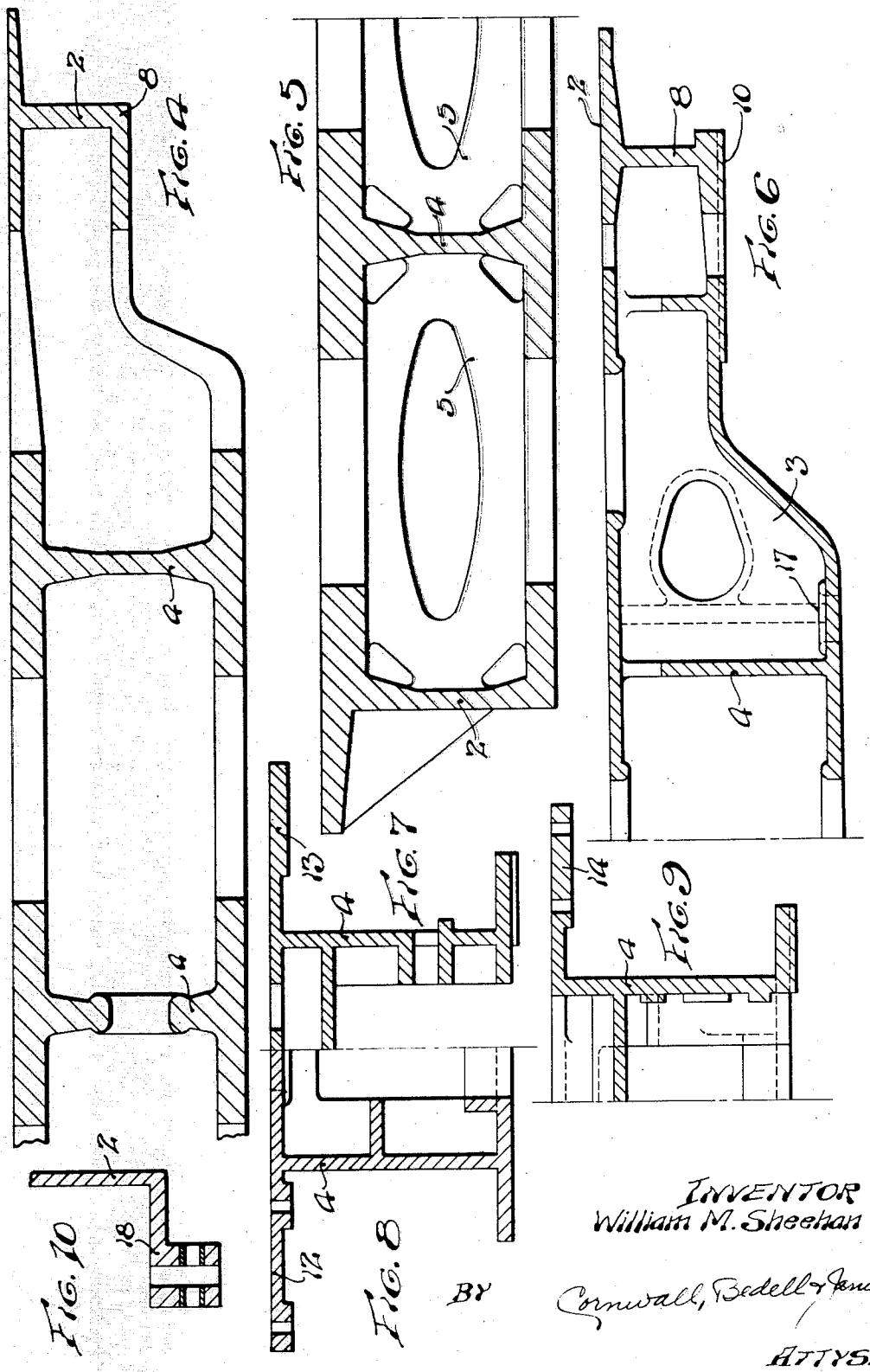

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UNITED STATES PATENT OFFICE.

WILLIAM M. SHEEHAN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO COMMONWEALTH STEEL COMPANY, OF GRANITE CITY, ILLINOIS, A CORPORATION OF NEW JERSEY.

UNDERFRAME FOR WELL CARS.

Application filed June 25, 1926. Serial No. 118,550.

My invention relates to a new and useful improvement in railway rolling stock and more particularly to a unitary cast metal well or depressed center car.

In an underframe for well cars of this type, it is desirable to make the well or depressed portion throughout the maximum percentage of the length of the car and limit the platforms at either end to the minimum. The purpose of this can be readily seen when it is understood that the depressed portion is the useful load carrying surface and the raised platforms are practically waste space since they are seldom used. This type of car is used for the transportation of plate glass, boiler plate, large machinery, and the like. The depressed portion is required to reduce the height of the loaded car to provide overhead clearance in passage under viaducts and in tunnels. It has heretofore been necessary in the manufacture of fabricated well cars to make the well floor more than the minimum allowed height from the rails to obtain the necessary strength. This is due to regulations governing rail clearance and since the purpose of well cars is to reduce the floor height, this feature is objectionable.

The principal object of my invention is to provide a one-piece integrally formed frame for a well or depressed center car.

Another object is to proportion the car and arrange its necessary equipment to provide the maximum proportion of available carrying surface, that is, to provide a well of maximum length and end platforms of minimum length.

A further object is to provide body bolsters with offset centers to allow the brake equipment to be located nearer the truck center and to shorten the distance from the truck center to the end sill of the car.

A still further object is to provide in the integral frame means for carrying and protecting the brake cylinder, the air reservoir, and the triple valve.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts, hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of my improved well car.

Figure 2 is a longitudinal center sectional view.

Figure 3 is a side elevational view.

Figure 4 is an enlarged cross section taken on line 4—4 of Figure 1, illustrating the diminished size of the side sill over the trucks.

Figure 5 is an enlarged cross sectional view taken on line 5—5 of Figure 1, illustrating the full depth portion of the side sill.

Figure 6 is an enlarged cross sectional view taken on line 6—6 of Figure 1 through the bolster.

Figure 7 is an enlarged cross sectional view taken on line 7—7 of Figure 1, illustrating the triple valve supporting bracket.

Figure 8 is an enlarged cross sectional view taken on line 8—8 of Figure 1, illustrating the brake cylinder supporting bracket.

Figure 9 is an enlarged cross sectional view taken on line 9—9 of Figure 1, illustrating the air reservoir supporting bracket.

Figure 10 is an enlarged cross section taken on line 10—10 of Figure 1, illustrating the brake lever fulcrum.

The numeral 1 in the drawings indicates the end sills of the car which are preferably channel-shaped in cross section. 2 are side sills. Body bolsters 3 of box-shape cross section connect side sills 2 a short distance from the end sills. The central portions of the body bolsters are offset toward the center of the car for purposes hereinafter referred to. Side sills 2 are preferably of Z-shaped cross section between the bolsters and end sills and have inwardly extending lower flanges between the bolsters. 4 are center or draft sills extending between the end sills. Between bolsters, draft sills 4 are I-shaped but from the bolsters to the end sills the shape is governed by certain requirements of the body foundation brake. Said sills 2 and draft sills 4 are curved downwardly at 7 a short distance toward the center of the car from either bolster and recurved parallel to the end portions. This depressed center is the main load carrying platform of the car.

A plurality of I-beam cross members 5 are equidistantly spaced throughout the depressed portion. This design divides the floor of the depressed portion into similar panels and has its obvious advantages in casting since the same core arrangement

is used throughout, thus obtaining substantial simplification.

Upstanding brace lugs 6 are provided at either end of the depressed portion on each of draft sills 4 and side sills 2. These members are preferably cast integrally with the remainder of the car frame and are used to brace and block the load carried on the depressed portion. Draft sills 4 are adapted to transmit the longitudinal forces applied to the car, and to properly perform this function the curved portions are on arcs of large radii and maintain their full depth throughout their length. Side sills 2, however, are adapted to merely support the vertical load and, as shown at 8 in Figures 3 and 4, their depth is greatly diminished at the upper ends of their curved portions to provide clearance for the truck frames (not shown).

It is desirable to use trucks that swivel on their side pieces, though the frame will accommodate center swiveling trucks. In the present illustrations, two center plates 10 are provided for each truck.

In a car of this type, it is desirable to have independent body brake rigging for each of the trucks. This requires the utilization of a certain amount of space between the bolster and the end sill. To provide the space necessary and still retain the minimum size for the end platforms, the bolsters 3, as hereinbefore mentioned, are offset at 11 toward the center of the car. The top flanges of the bolster and the adjacent flange of the draft sill are projected slightly as indicated by the numeral 12 to provide a bracket for the support of the brake cylinder (not shown). This arrangement locates the brake cylinder much nearer to the truck center than is ordinarily feasible due to the offset portions 11 of the bolsters. It is located entirely below the floor of the car platform and above the truck brake connections, thus receiving substantial protection from the surrounding frame. The air brake reservoir and the triple valve, neither of which are illustrated, are provided for similarly by brackets formed by extending the flanges on the end sill and on the draft sill 4. Bracket 13 is provided on the end sills adjacent one of the draft sills and brackets 14 are formed on the draft sills to carry the air reservoir and triple valve. These members which constitute the body foundation brake also are arranged to lie below the platform floor and over the truck brake rigging and to receive the fullest protection from the surrounding frame.

Opening 15 is provided in end sill 1 to fulcrum the hand brake lever, the top flange of the end sill acting as a top bearing and the lower flange acting as the lower bearing. The brake operating chain (not shown) which is connected to the hand brake lever will be housed by the vertical web of the draft sill, the outer wall of the end sill, and the intermediate web 16 of the end sill.

Brake lever fulcrums 18, shown in Figure 10, are provided integrally with side sills 2.

The construction herein described produces maximum strength and minimum weight since no reinforcement is necessary to strengthen joints. Also the necessary strength is obtained in this integrally formed car frame with members of relatively small size, thus permitting the top of the well portion to be the minimum allowed distance from the rails and thereby provide maximum overhead clearance.

Cover plates, which in this type of car have previously been necessary to reinforce the various members and tie them together, are done away with. This eliminates unnecessary weight and the unitary construction permits strengthening where necessary without requiring excess materials at portions where it is not needed. Strengthening at critical points in unitary cast metal construction of the type contemplated in this disclosure is accomplished by making the members slightly heavier where necessary.

The omission of the outwardly extending lower flange on the side sills between bolsters provides sufficient rail clearance so that the car may be used in third rail territories even though the floor is the minimum height specified for ordinary use. At the same time, the full width of the floor is retained and there is nothing in the construction to prevent loading the full length and width of the depressed portion.

The bolster and body foundation brake arrangements are such that the end platforms are shorter relatively than was previously possible in this type of car, and the well portion correspondingly longer.

It is to be understood that minor changes in the size, form, and construction of the various parts of my device may be made and substituted for those herein shown and described, without departing from the spirit of my invention as set forth in the appended claims.

I claim:

1. A car having an integrally formed frame including end sills, side sills, and center sills, and trucks adapted to carry said frame, said side sills being diminished in depth over said trucks to provide clearance.

2. A well car including end sills, a longitudinal draft sill of substantially uniform depth throughout its length, said draft sill being depressed intermediate its ends, and side sills depressed similarly to said draft sill, the depressed portions of said side sills being of greater depth than their ends beyond said depressed portions.

3. A well car frame including transverse end sills, longitudinal center and side sills,

said longitudinal sills being depressed intermediate their ends, and end portions on said side sills being of diminished depth.

4. In a car frame, an end sill, a bolster, and a center sill therebetween, and a bracket formed integrally with and at the junction of said center sill and bolster adapted to support a brake cylinder within the confines of said members.

5. In a car frame, an end sill, a draft sill, and a bracket formed integrally with and at the junction of said sills, said bracket being adapted to support an air reservoir.

6. A car frame including an end sill, a bolster, a draft sill, and a bracket on said draft sill adapted to support a brake mechanism within the vertical limits of the frame.

7. An integrally formed well car including end sills, longitudinal center and side sills, said longitudinal members being depressed intermediate their ends, and brackets at the ends of said depressed portion adapted to brace a load.

8. An integrally formed well car frame having side sills, depressions in said side sills intermediate their ends, and brake fulcrums formed with said side sills.

9. An integrally formed well car frame including a longitudinal draft sill, an end sill of channel-shape having openings in the top and bottom surfaces thereof adjacent said draft sill adapted to receive a hand brake operating shaft, and a vertical longitudinally disposed web in said end sill spaced from said draft sill and adapted to enclose a brake operating chain together with said end sill, draft sill, and their flanges.

10. A well car comprising a plurality of integrally formed spaced longitudinal members curved downwardly intermediate their ends to form a depressed load carrying platform.

11. A well car comprising a plurality of integrally formed spaced longitudinal members curved downwardly intermediate their ends to form a depressed load carrying platform, and a plurality of transverse members in said depressed portion.

12. An integrally formed car frame including end sills, side sills, and center sills, said side and center sills being depressed intermediate their ends.

13. A car underframe comprising an end sill, side sills, and a bolster offset bodily, intermediate its ends, away from said end sill, all of said parts being formed integrally.

14. In a car underframe, longitudinal members, a transverse body bolster offsets bodily between its ends, and foundation brake mounting elements in the space provided by the offsetting of said bolster.

15. In a car underframe, longitudinal members, and a transverse body bolster having front and rear walls from end to end of the bolster and offset, intermediate the ends of the bolster, towards the longitudinal center of the car.

16. A cast metal frame for a well car including end sills, longitudinal center and side sills, said longitudinal sills being depressed intermediate their ends forming a platform, and transverse ties connecting said longitudinal members in their depressed portions.

17. A cast metal frame for a well car including longitudinal center and side sills, said longitudinal sills being depressed intermediate their ends forming a platform, and transverse ties connecting said longitudinal members in their depressed portions, said transverse ties being equidistantly spaced to form a repeated core box arrangement in the casting of said depressed platform portion.

18. A well car including a frame consisting of end sills, side sills, draft sills, and bolsters, all integrally formed, trucks having brake rigging under each of said bolsters, and brackets formed with said frame adapted to carry the body foundation brake below the top surface of said frame and above the truck brake rigging.

19. An integrally formed well car frame including an end sill, a side sill, and a center sill, said side and center sills being depressed intermediate their ends and all of said sills being of greater strength at critical points and lesser strength at other points.

20. In a well car, a relatively heavy center sill primarily adapted to transmit pulling and buffing stresses, and a relatively light load supporting side sill of lesser depth adapted to provide rail clearance.

21. In a well car, a side sill having its central portion depressed, inward and outward extending flanges on the top of said side sill, and an inwardly extending flange on the lower edge of said side sill.

In testimony whereof I hereunto affix my signature this 22nd day of May, 1926.

WILLIAM M. SHEEHAN.