Oct. 6, 1936. W. H. MUSSEY ET AL 2,056,227

ARTICULATED CAR

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Fig. 1

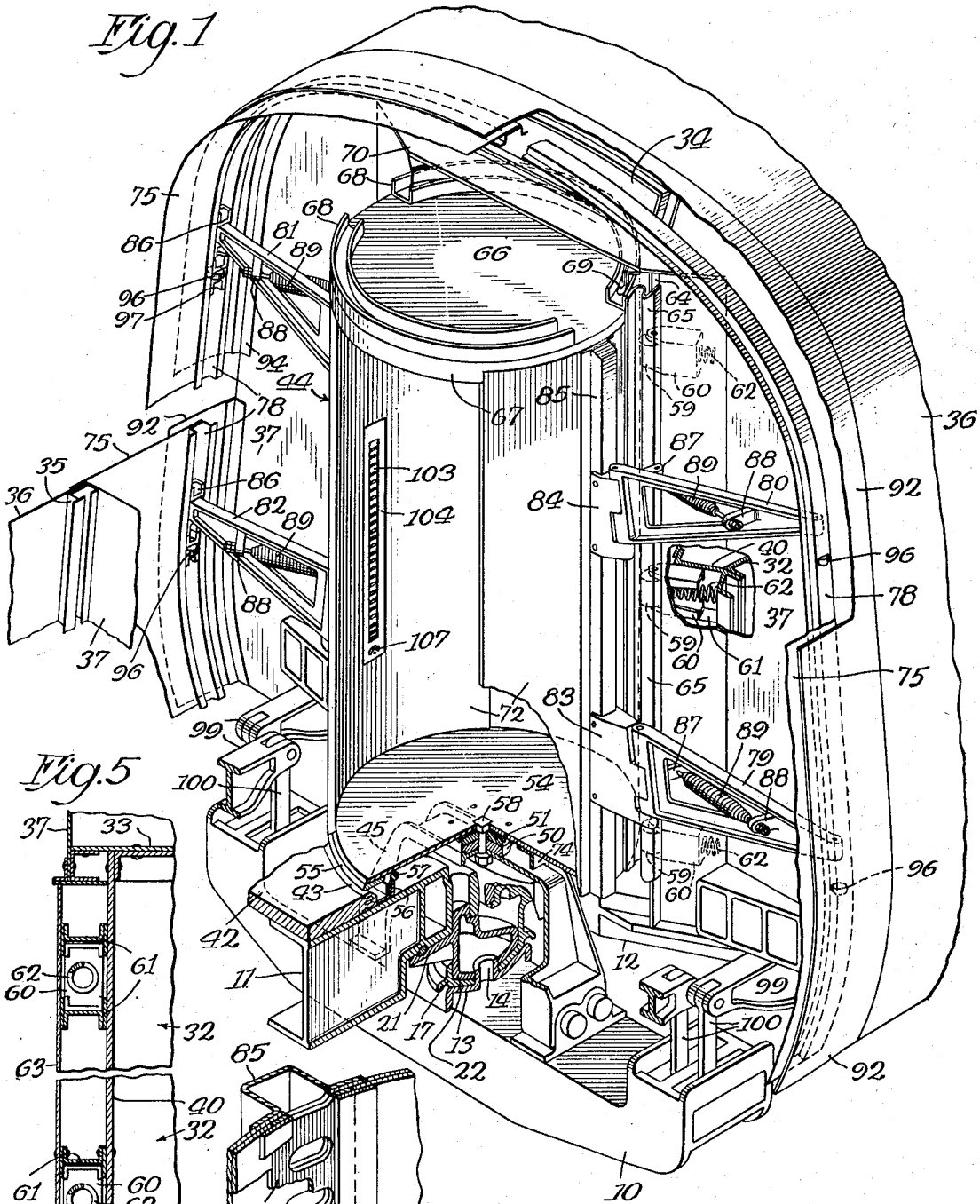


Fig. 5

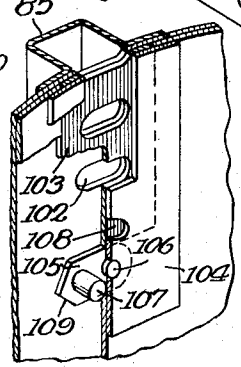


Fig. 6

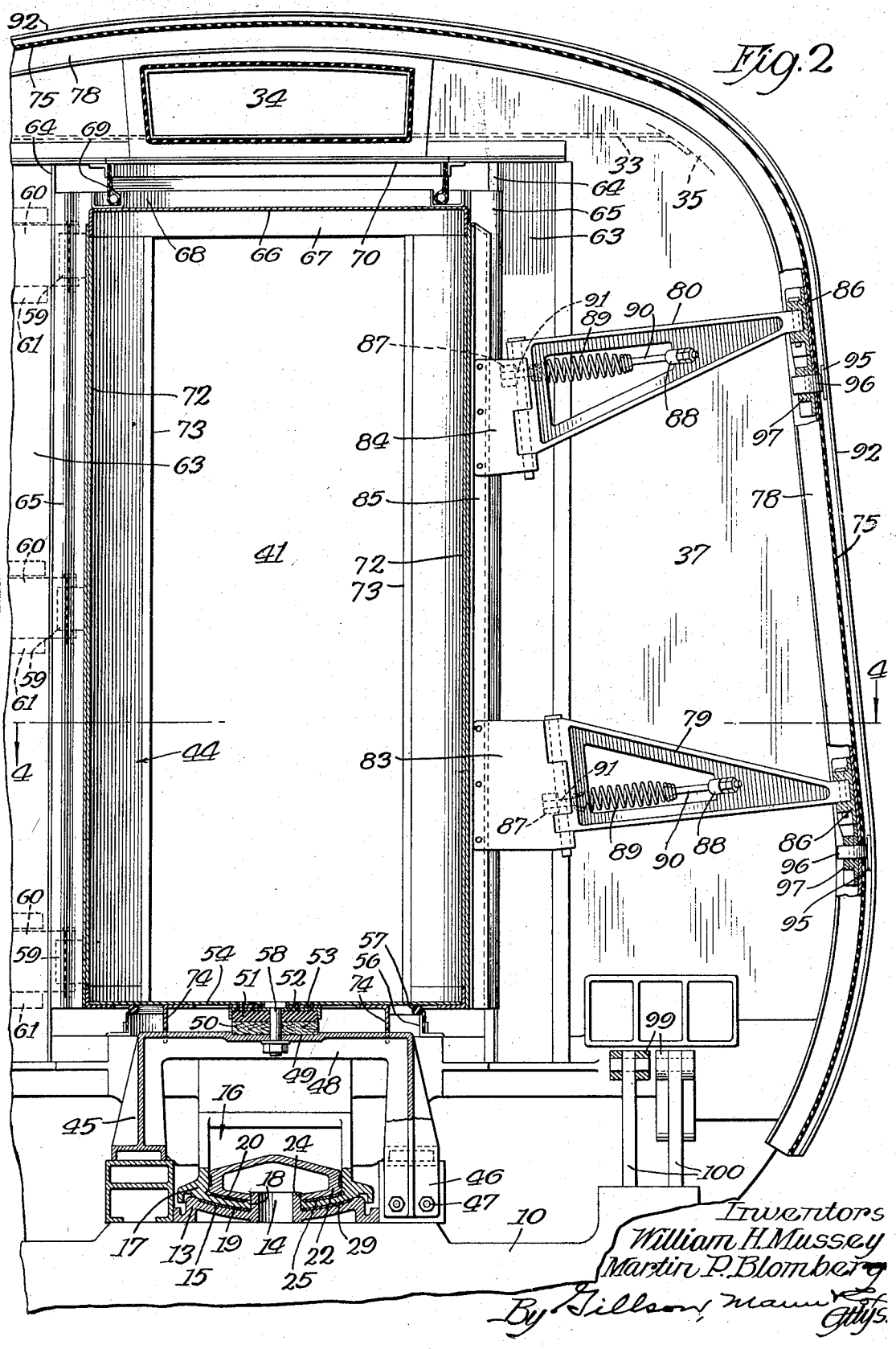
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ARTICULATED CAR

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Fig. 2



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ARTICULATED CAR

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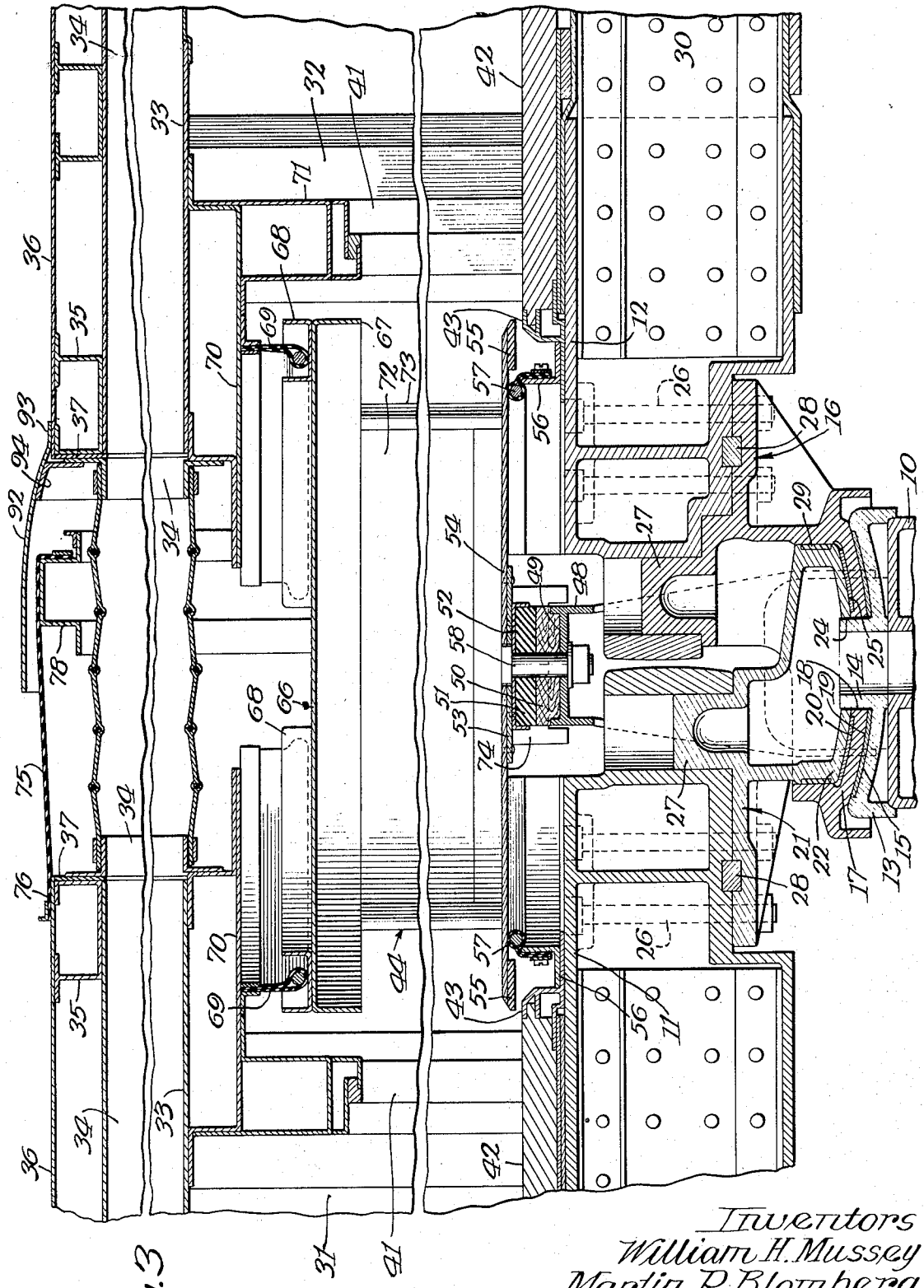


Fig. 3

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ARTICULATED CAR

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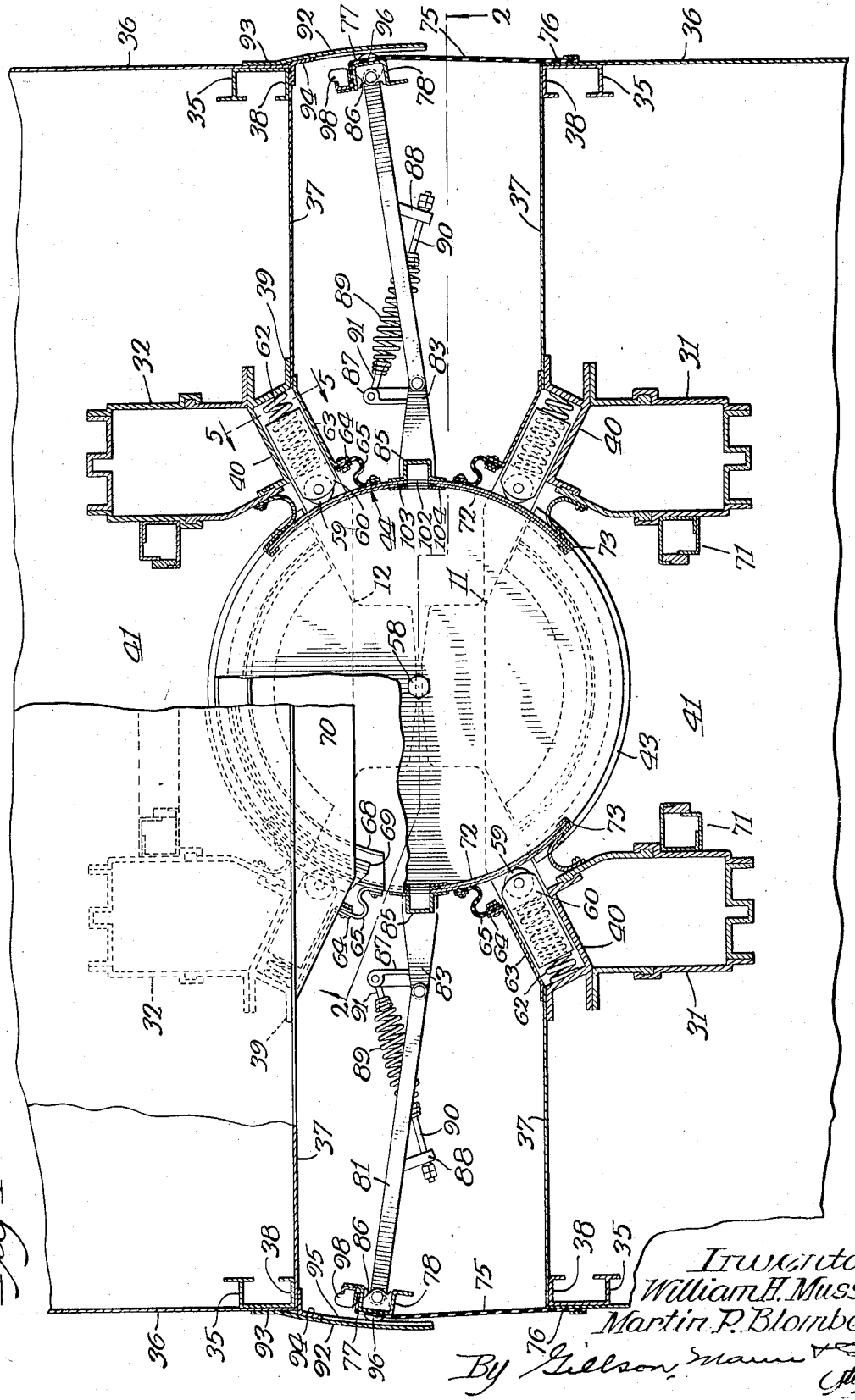


Fig. 4

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UNITED STATES PATENT OFFICE

2,056,227

ARTICULATED CAR

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Application March 26, 1934, Serial No. 717,417

6 Claims. (Cl. 105—4)

This invention relates to cars of the type sometimes called articulated cars, and which comprise two or more sections having car bodies with adjacent ends articulated to and carried by a common truck, and the principal objects are to enclose the passageway and preserve the contour between the car bodies.

Further objects and advantages of the invention will appear as the disclosure proceeds and the description is read in connection with the accompanying drawings, in which

Fig. 1 is a perspective view of the articulation, the vestibule unit, portions of the adjacent car bodies, etc., with parts broken away and details omitted to clearly show the general arrangement;

Fig. 2 is a transverse, vertical section taken on line 2—2 of Fig. 4;

Fig. 3 is a longitudinal, vertical section through the axis of articulation with parts broken away and the remaining parts enlarged as compared with the other views;

Fig. 4 is a horizontal, sectional view taken on the line 4—4 of Fig. 2, looking downwardly;

Fig. 5 is a sectional view through the guide spring housing, the section being taken on the line 5—5 of Fig. 4;

Fig. 6 is a fragmentary, perspective view of the ventilating means in the side of the vestibule drum.

But these drawings and the description that follows of the particular form built to meet customers' conditions, and the principal features of the invention lend themselves to various other embodiments intended to be covered herein.

Swing-motion trucks are generally preferred for articulated cars (Car Builders Cyclopedia, 1931, pages 83, 569 and 580) but that is a matter of selection from numerous types. (Ibid, sec. 10, pp. 763 to 791.)

The common truck is here represented by a bolster 10, which carries a body center plate 13 (Fig. 1) having a pintle 14 surrounded by a concave bearing surface 15. The end sill 12 of one car body (the one to the rear or following the articulated truck) is equipped with a body center plate bracket, generally indicated at 16 (Figs. 1 and 3) which bears the body center plate 17 having an opening 18 to receive the pintle 14 and presenting a convex bearing surface 19 towards the truck bearing surface 15 and a concave bearing surface 20 upwardly.

The end sill 11 of the adjacent or front car body is equipped with a similar body center plate bracket, generally indicated by 21, which bears a center plate 22 having an opening 24 for the pintle 14, and presenting a convex bearing surface 25 to the surface 20 of the center plate 17.

The actual bearing surfaces of the center plates are separated by anti-friction material 29, preferably of that type comprising porous metal charged with a lubricant. Oilite is an example of such material. The brackets 16 and 21 are secured to the respective end sills 12 and 11 by bolts 26, dowels 27 and keys 28.

The particulars of car construction are not important here and it will suffice to say that the end sills 11 and 12 are connected to corresponding end sills at the opposite ends of the car bodies by center sill structures 30.

Fabricated box columns 31, 32 (Fig. 4) rise from strong joints with the end sills to the top chord structure, which includes a horizontal plate 33 extending from side to side (Figs. 2 and 3) and other parts necessary to fabrication, but unimportant here. Above the plate 33 is a duct 34 which runs longitudinally of the car and is a part of the ventilation system.

The shell of the car bodies is formed on channel-shaped ribs of which the corner ribs 35 (Figs. 1 and 3) are examples. They are bent into a form most accurately described by the word "bow", as will be seen by Fig. 2, and have their end portions made fast to the corresponding end sill structure or to the center sill according to the position lengthwise to the car body. They may be arranged with the leg portions extending inwardly as shown in Figs. 1 and 4, or with the legs extending outwardly as shown in Fig. 3. The side and roof sheets 36 are secured to these bow ribs and form with them the outside shell within which, of course, there is appropriate finish and trim. The end sheets 37 are secured to the flanges 38 of the corner ribs 35 (Fig. 4), and the flanges 39 of one section 40 of the adjacent end posts 31 or 32.

The end posts 31 and 32 mark the doorways 41 into which the floors 42 extend to a curved metallic threshold strip 43.

A vestibule unit, here shown as a barrel-shaped drum 44, is mounted on the bolster 10 and extends into each doorway, as best shown in Figs. 1, 3 and 4.

It is mounted on an arch 45, having forked ends 46 fitted to the bolster and made fast by bolts 47. The intermediate portion 48 of the arch (Figs. 2 and 3) is of H cross-section and is provided with a perforated seat 49 for a block of wood 50 surmounted by a block of rubber 51, fitted within the flanged plate 52, riveted to a

reinforcing plate 53, which, in turn, is riveted to the bottom 54 of the vestibule unit 44, the whole assembly being made fast by a bolt 58. This bottom 54 extends somewhat beyond the sides of the vestibule unit and overhangs the threshold strip 43, where it is reinforced with a ring 55.

The threshold strip is surmounted by a curved angle 56 (Fig. 3) on which is a flexible weather strip 57 bearing against the underside of the vestibule bottom or passageway floor 54.

The vestibule unit is yieldingly held in position relative to the car bodies by four sets of rollers 59, mounted in shoes 60, sliding between channel-shaped guides 61 fixed to the member 40 of the end posts 31 and 32, and urged towards the vestibule unit by springs 62.

A supplemental end plate 63 closes the pocket in which these shoes are assembled, and has an out-turned flange 64, to which one edge of a fabric sheet 65 is made fast; the other edge is attached to the adjacent side wall of the vestibule unit 44.

The top 66 of the vestibule unit has a marginal downwardly extending flange 67, to which the side walls of the vestibule drum are secured. The top is surmounted by two curved channels 68 receiving and cooperating with curved weather strips 69, fixed to a transverse finish plate 70 carried by the chord plate 33. Inwardly from the vestibule unit in each car body are door frames 71 secured to the end posts 31 and 32 at the sides and to the chord plate 33 and finish plate 70 at the top.

The passageway through the vestibule unit is made by cutting away the side walls, leaving arc-shaped portions 72, the edges of which are bound at 73.

The bottom 54 of the vestibule unit carries two angles 74 (Fig. 2) notched to embrace the intermediate portion 48 of the arch and thereby require the vestibule unit to move with the bolster relative to the car bodies.

A flexible fly 75 of some suitable fabric has one edge secured at 76 to the side and top plates 36 of the rearmost, or following car body. Its forward edge 77 is secured to a metallic channel 78 bent to form a bow quite similar in shape and size to the corner ribs 35.

The bow is hinged to and carried by four arms 79, 80, 81 and 82, hinged to brackets 83 and 84, which fit astride and are secured to posts 85 formed as channels and fastened to the opposite sides of the vestibule unit 44.

The arms which support the fly 75 may be mounted on one or the other of the car bodies, if desired, or upon some part which is fixed with respect to one of the car bodies.

The outer ends of the arms 79, 80, 81 and 82, are actually hinged to brackets 86 fitted within the channel 78, which bears the forward edge of the fly 75.

Each of the brackets 83 and 84 has a laterally directed finger 87 between which and a finger 88, on each of the arms 79, 80, 81 and 82, is stretched a spring 89, by means of conical headed bolts 90 and 91.

The fly is overlapped by a rearwardly projecting metallic shed 92, arched about the passageway and having its forward edge secured to the corner of the forward car body at 93, and reinforced by an angle 94. The shed 92 is slightly curved, fore and aft, and provided with wear strips 95 to cooperate with rollers 96, journaled in blocks 97 carried by the channeled bow 78.

The outer or forward side of the arched channel 78 is fitted with rubber bumpers 98 at the sides adapted to strike the reinforcing angle 94, or the end sheet 37, of the leading car when rounding a curve of sufficient degree.

The springs 89 make the arms 79, 80, 81 and 82 constantly extend the fly 75 towards the leading car body and, being closely overlapped by the weather shed 92, the contour of the car bodies is substantially preserved and a fairly tight weather joint is maintained. Upon traversing a curve sufficient to bring the bumpers 98 into contact with the leading car, the springs will yield to allow for the angularity of the car bodies.

Instead of side bearings, each of the end sills 11 and 12 is equipped with a pair of arms 99 pivoted to the upper end of I bars 100, the lower ends of which are pivotally and resiliently connected with the corresponding ends of the bolster 10, in a manner not sufficiently important here to require detailed description.

The articulated joint formed by the truck and body center plates will allow all the relative rotor movements required in service and the linkage used instead of side bearings will brace the car bodies in a way to make for improved articulation. The arched fly and weather shed will accommodate the movements and protect the vestibule unit from the major effects of the weather. The loose mounting of the vestibule unit will allow it to accommodate the relative movements between the car bodies while preserving a safe and protected passageway across the articulated joint.

The vestibule is ventilated through adjustable openings 102 in the walls 72 of the vestibule unit, opposite the channels 85 (Figs. 1 and 6). The size of the openings is varied by manipulating a vertically slidable apertured bar 103 guided by a finish plate 104 and resting upon the arm of a crank 105 journaled at 106 in the finish plate 104. The handle 107 of the crank travels in an arcuate slot 108 in the finish plate, the slot being of such length that when the crank handle is moved to the extreme right of the slot, it passes dead center, and the weight of the bar 103 is exerted against the flat face 109 of the crank arm.

As shown in Fig. 6, when the slide bar 103 is in its lowered position, the openings 102 are alined with the openings in the slide bar and the interior of the vestibule unit is in communication with the outside atmosphere through the channels 85 which are closed at the top but open at the bottom. When the bar is raised by moving the crank handle to the right, the openings are closed.

What we claim, therefore, is:—

1. In a device of the class described, a truck, car bodies with adjacent ends carried by the truck, a vestibule between the car bodies, a flexible weather fly secured to the following car body, means on the vestibule holding the fly extended forwardly, and an arched weather shed extending rearwardly from the leading car body and overlapping the fly.

2. In a device of the class described, a truck, a bolster on the truck, car bodies with adjacent ends carried by the truck, a vestibule between the car bodies, swinging arms at the sides of the vestibule, an arched bow carried by the arms, a fly extending between the bow and the margin of the following car, springs urging the bow

forwardly, and an arched shed carried by the leading car overlapping the fly.

3. In a device of the class described, a truck, a bolster on the truck, car bodies with adjacent ends carried by the truck, a yoke on the bolster, a barrel-shaped vestibule yieldingly mounted on the yoke between the car bodies and forming a passageway between them, an arched bow carried by the vestibule, a fly extending between the bow and the margin of the following car body, and an arched shed carried by the forward car body overlapping the fly.

4. In a device of the class described, a truck bolster, car bodies having adjacent ends articulated to the truck bolster, a vestibule unit yieldingly mounted on the bolster and forming a passageway between the car bodies, a weather fly arched over the vestibule unit and secured to the rearward car body, means at each side of the vestibule unit for resiliently extending the fly forwardly, and a relatively inflexible weather shed projecting rearwardly from the forward car and overlapping the fly.

5. In an articulated car which includes a pair of car bodies the adjacent ends of which are swiveled on a common truck and are provided with alined door openings in their end walls, the combination therewith of an enclosed passageway member connecting the doorways and an inverted U-shaped structure at the perimeter of the bodies for closing the space between the car bodies at the top and sides thereof.

6. In an articulated car which includes a pair of car bodies the adjacent ends of which are swiveled on a common truck and have substantially flat end walls provided with alined door openings, the combination therewith of a substantially weather-sealed passageway member connecting the doorways and an inverted U-shaped structure at the perimeter of the bodies for closing the space between the car bodies at the top and sides thereof and forming substantially a continuation of the car top and sides respectively.

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