CAR BUILDERS' CYCLOPEDIA

1946

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1946
Car Builders' Cyclopedia
Of American Practice

Definitions and Typical Illustrations of Railroad and Industrial Cars, Their Parts and Equipment; Cars Built in America for Export to Foreign Countries; Descriptions and Illustrations of Shops and Equipment Employed in Car Construction and Repair

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Foreword

In the tenth edition, 1922, of this work it was transformed from what might be termed an illustrated Dictionary to a Cyclopedia and the data were compiled in a manner differing radically from that of previous editions; all information relating to a specific subject was combined within a single section instead of being placed in several separate groups. In former editions each of these groups—Association of American Railroads (formerly American Railway Association, Mechanical Division, and originally Master Car Builders' Association) specifications and drawings, general illustrations, and manufacturers' descriptive pages—were in different sections of the book, necessitating considerable cross reference and inconvenience in obtaining complete information on any subject. In the tenth edition, the material was so arranged and indexed that reference to the general index, or the table of contents gave the location of each class of cars or appliances.

Other indexes—General Index to Car Parts and Products—Trade Name Index and Index to Advertisers—were given in the last pages of the book. The Association of American Railroads "Rules of Interchange" and diagrams of the "Loading Rules" were omitted as these are now obtainable in convenient booklet forms.

In this volume, the Seventeenth Edition, the same general arrangement has been followed, with the division into sections clearly defined. In a few cases the arrangement has been changed somewhat in order to make the material more readily accessible. As a further aid, the Table of Contents by sections and subdivisions on page six and the General Index to Car Parts and Products at the end of the book have been amplified and improved and in addition a summary of the contents of each section is given on the first page of the several sections.

Many new designs of cars and appliances in the field of railway car construction have been made since the publication of the previous edition. These have been included as far as possible in order that this Edition might contain the latest practices in American Car Construction and Equipment.

The work of compiling data and rearranging the book has entailed a vast amount of research and revision, in connection with which valuable assistance has been given by an Advisory Committee appointed by the Mechanical Division of the Association of American Railroads, by many other railway mechanical officers, by the railway car builders and by the manufacturers of railway supplies.

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Body Brace. An inclined member of the body side or end framing of the car.

Body Center Plate. The center plate attached to the under side of the body bolster. See CENTER PLATE.

Body Check or Safety Chain Eye. An eye bolt or clevis for fastening a truck check chain or safety chain to the car body.

Body Check or Safety Chain Hook. An iron hook on the check chain, which enters into the check chain eye.

Body Cross Tie. A metal bar extending across a hopper or other form of open-top freight car and fastened to the sides to prevent their bulging.

Body End Furring. Furring in the end of a car. See FURRING.

Body End Plate. A transverse member in the end of a car connecting the side plates. See END PLATE.

Body End Rail. See WAINSCOT RAIL.

Body Framing. The framework of that part of a car above the underframe, so called to distinguish it from the underframe. It is commonly subdivided into side, end and roof framing.

Body Post (Freight Car Bodies). An upright piece which is fastened to the sill and plate of a freight car. The body posts and corner posts form the vertical members of the side frame of a car body. See POST and SIDE POST.

Body Side Bearing. The upper one of the two side bearings, which is attached to the body bolster. See SIDE BEARINGS.

Body Transom. A name sometimes given to a Needle-beam or Crossbearer.

Body Unit. One complete part of an articulated car. See ARTICULATED CAR.

Bogie. A British term for a swiveling car truck. American eight-wheel cars are termed bogie carriages, or wagons, in Great Britain

Bogus Plate (Refrigerator Cars). A horizontal timber attached to the posts on the inside of the car, a short distance below the plate. The bogus plates support horizontal cross members, called meat racks, or hanging bars, to which hooks are attached for hanging meat. See MEAT RACK.

Bolster. A cross member on the under side of a car body and in the center of a truck, through which the weight is transmitted. The bolsters carry the body and truck center plates, the body bolster resting on the truck bolster.

Truck bolsters are either swing bolsters, admitting of lateral motion to mitigate shocks, or rigid bolsters, which permit no lateral motion. See BODY BOLSTER, SWING BOLSTER and TRUCK BOLSTER.

Bolster Anchor. An arm pivoted to the truck frame and to the truck bolster to constrain the movement of the latter in a desired manner.

Bolster Bridge (Six-Wheel Truck). See SIDE BEARING ARCH.

Bolster Center Filler. A hollow box-shaped member placed between the center sills and body bolster plates; the king bolt passes through it.

Bolster Diaphragm. See BODY BOLSTER DIAPHRAGM.

Bolster Guide Bars (Diamond Arch Bar Trucks). See COLUMN.

In modern trucks with cast steel side frames the bolster guide bars are cast integral, as part of the frame.

Bolster Hanger. See SWING HANGER.

Bolster Hanger Carrier. A Swing Hanger Pin Bearing.

Bolster Jack Screw (Wreck Cranes). A jack screw attached to the spring plank for the purpose of taking the load off the springs and making the entire truck and car body one rigid structure when the derrick of the crane is in use.

Bolster Roll Stabilizer. Comprises a split spring plank, the two separate parts of which are connected to each other and to the bolster so as to prevent the bolster from moving out of plane with the track and overloading the springs.

Bolster Spring. The main spring of a car, supporting the truck bolster, on which the weight of the car body rests.

Bolster Thimble. A small filler sometimes used between the cover plates of a bolster when the main filler or web does not extend clear to the end of the bolster.

Boom (Steam Shovel). The heavy swinging arm which carries the boom engine and ratchet beam. It is stepped at the foot of the "A" frame and held in its inclined position by boom guys.

Bottom Arch Bar. See ARCH BAR.

Bottom Connecting Rod. The brake rod connecting the bottom ends of the live and dead truck brake levers.

Bottom Rod. See BRAKE ROD and BOTTOM CONNECTING ROD.

Bottom Rod Guard or Emergency Support. Name applies to devices designed to support the bottom rod and prevent it from dropping to the track in case of failure of any part which normally supports the bottom rod. Also called safety support.

Bottom Truck Connection. See BOTTOM CONNECTING ROD.

Bow. See PLATFORM HOOD BOW.

Box. See JOURNAL BOX.

Box Car. A car with sides enclosed and having a roof; doors are placed in the sides or sides and ends. Used for general service and especially for lading which must be protected from the weather.

Box Car Door. Used on both the sides and sometimes on the ends of automobile car.

Box Cars, Framing for. See general drawings of cars. Sections 2 and 3.

Box Car End, Design and Strength. Manual, C-7.

Box Cover. See JOURNAL BOX LID.

Box Guide. See PEDESTAL.

Box Lid. See JOURNAL BOX COVER or LID.

Box Packing. See JOURNAL PACKING.

Box Section Bolster. A bolster whose cross-section is of rectangular shape.

Box Steps. A term sometimes used to distinguish platform steps made with sides, from open steps.

Brace. An inclined piece which unites two or more of the points of a frame or truss, where other members of the structure are connected together, and which prevents them from turning about their joints.

Bracket Lamp. A lamp attached to a wall by a suspension in the form of a bracket.

Bracket Steps (Hopper Cars). Steps secured to the side of the car on the inside to serve as a substitute for a running board.

Brake or **Brake Gear.** The whole combination of parts by which the motion of a car or train is retarded or arrested. The foundation brake gear includes all the parts by which the pressure of the

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the bolt. A cotter is then inserted, thus securing the nut.

Ceiling. The inside or under surface of the roof or covering of a car. This term is sometimes used to mean Sheathing. The ceiling of a passenger car is generally termed Head Lining. Deafening Ceiling is boarding under the sills of a car. See HEAD LINING.

Ceiling Furring. Strips or pieces of wood fastened to the under side of the carlines, to which the paneling or veneering of the ceiling is applied.

Ceiling Veneers. Thin boards used for covering the ceilings of passenger cars. The term is also misapplied to the thin preparations of paper maché, etc., in imitation of natural wood veneers. See VENEER.

Celestial Field. A term used in interior illumination. The celestial field of a car interior would be the upper walls and ceilings.

Cement Car. See COVERED HOPPER CAR.

Center Anchor. An arrangement of plates, which are riveted to the tank and to the center sills at the center of a tank car. These plates anchor the tank to the frame and supplant head blocks and double anchors at the ends.

Center Bearing. The place in the center of a truck where the weight of the body rests, the truck bolster center plate. A body center plate attached to the car body here rests on a truck center plate attached to the truck. The general term center bearing is used to designate the whole arrangement and the functions which it performs, in distinction from Side Bearing. See also CENTER PLATE.

Center Bearing Arch Bar. See CENTER BEARING BRIDGE.

Center Bearing Beam. See CENTER BEARING BRIDGE.

Center Bearing Bridge (Six-Wheel Trucks). A structure formed by the top and bottom center bearing arch bars to support the center plate block or center bearing beam and transmit the weight of the car to the bolsters, on which its extremities rest.

Center Bolster. A center bearing bridge made in a single unit either built up, welded or cast steel.

Center Buffer Spring. A spiral spring situated above the draft springs in some forms of passenger draft gear and intended for buffing purposes only.

Center Buffer Stem. See BUFFER STEM.

Center Door Rail. See MIDDLE DOOR RAIL.

Center Draft Drawbar. A drawbar which is connected directly with the king bolt of a truck. It is especially designed for use on very sharp curves. Sometimes termed radial drawgear.

Center Dump Car. A car which will discharge its entire load between the rails.

Center Girth. See DOOR CENTER GIRTH.

Center Pin or **King Bolt.** A large bolt which passes through the center plates on the body bolster and truck bolster. The truck turns about the bolt, but the stress is taken by the center plates. It is, therefore, a mere pin and not a bolt in the usual sense. The name king bolt is derived from the name of the corresponding part of the front wheels of a wagon. Center pin, however, is the more common term.

Center Pin Floor Plate. A plate or casting set into the floor of a passenger equipment car to cover the head of the center pin.

Center Plate. One of a pair of plates which fit one into the other and which support the car body on the trucks, allowing them to turn freely under the car. The center pin or king bolt passes through both, but does not really serve as a pivot. The body center plate or male center plate is attached to the under side of the body holster or in cast steel bolsters is made an integral part of the casting. The female or truck center plate is attached to the top side of, or cast integral with, the truck bolster. When the car is tilted, as on a curve, part of the weight is carried on the Side Bearings. See ANTI-FRICTION, BALL BEARING, and ROLLER CENTER PLATES.

Center Plate Block. The member supporting the center plate of a six-wheel truck.

Center Rod (Postal Car). A device which fits in a socket at the top of the pedestals, and to which the ends of the two rods, which support the distributing trays, etc., near the center of the car, are fastened.

Center Sill. The central longitudinal member of the underframe of a car, which forms, as it were, the backbone of the underframe and transmits most of the buffing shocks, from one end of the car to the other. In the A. A. R. standard box car the center sill is one of the units for which a required standard has been established. In freight cars with cushioned underframe a special type of floating center sill construction is followed. For passenger cars no set standard has been established and some unique designs are in use, as in the case of passenger cars built entirely of stainless steel. See CUSHIONED UNDERFRAME.

Center Sill Bottom Angle. The angle at the bottom of a center sill of the built-up type.

Center Sill Bottom Cover Plate. See CENTER SILL COVER PLATE.

Center Sill Cover Plate. A flat plate riveted or welded across steel center sills, either above or below, to give additional strength.

Center Sill Separator. A filler piece placed between the center sills at cross members.

Center Sills, Splicing of. See Manual, C-10.

Center Sill Stiffener. A filling piece riveted between the center sills to act as a brace for holding them rigid.

Center Sill Top Angle. The angle at the top of a center sill of the built-up type.

Center Sill Top Cover Plate. See CENTER SILL COVER PLATE.

Center Sill Web Plate. The plate which forms the web of a center sill of the built-up type.

Center Stop (Tip Car). A bracket or block attached to a draw member to restrain the body from moving longitudinally.

Centering Device. See COUPLER CENTERING DEVICE.

Centering Gage. A gage to fix the middle point of an axle.

Centrifugal Dirt Collector. A device connected in the branch pipe between the brake pipe and distributing valve, or triple valve, and so constructed that due to the combined action of centrifugal force and gravity, all dirt and foreign material is automatically eliminated from the air flowing through the collector chamber and by means of a plug may be removed without breaking any pipe connections whatever. When this device is used, the brake pipe air strainer is omitted.

Chafing Plate. A removable metal plate to resist wear, used on truck transoms, pedestal jaws, and other places where wear concentrates.

Chair. The usual designation for the seats of parlor cars. Ordinary chairs are used in dining cars. See RECLINING CHAIR, PARLOR CAR CHAIR.

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As its name implies, the resilience of the rubber draft gear is provided by blocks or rubber set between steel plates.

For further draft gear details see Section 10.

Draft Gear Attachments. The parts which connect the Coupler and the Draft Gear.

Draft Gear Carrier. A plate which extends underneath the draft sills and supports the draft gear.

Draft Gear Cheek Casting. See DRAFT CASTING.

Draft Gear Followers. See FOLLOWERS.

Draft Gear Pocket. The space occupied by the draft gear and followers in the center or draft sills. Manual M-901.

Draft Gear Yoke. See YOKE.

Draft Key. A key used to connect the coupler shank to the yoke. It is extended to pass through key slots in the draft sills and front draft lugs. Section 10.

Draft Key Retainer. A pin inserted at one end of the draft key to prevent it from backing out through the slot in the center sills. The pin has an elongated head to provide a larger wearing surface against the sill.

Draft Lug Angle. An angle riveted to the bottom of the center sill at the draft gear, to which the lower part of the draft lug is fastened.

Draft Plate. See DRAFT LUG.

Draft Sill. Same as CENTER SILL.

Draft Sill Tie Plate. A plate riveted to the draft sills to aid in holding them rigid.

Draft Spring. A spring attached to a coupler or drawbar to give elasticity. They are so arranged by means of follower plates at each end as to resist either tension or compression.

Drain Cock. See RESERVOIR DRAIN COCK.

Drain Cup (Air Brake). A globular receptacle under a triple valve to collect the water of condensation.

(Refrigerators and Ice Cars.) A metal cup through which the drippings from the ice pass, but which is so arranged as to prevent the entrance of air to the car.

Drain Valve (Car Heating). A valve for draining off the water condensed in the steam pipes where an automatic trap is not used.

Drapes. Heavy cloth hung at windows instead of roller curtains. They are usually supported on rods to adjust the closure. Also used in door ways to smoking and reclining rooms.

Draw Head. The head of an A. A. R. automatic coupler, exclusive of the knuckle, knuckle pin and lock.

Drawbar. A term formerly used synonymously with Coupler. It has been used indiscriminately to designate both the old link and pin drawbar and the modern automatic car coupler. There has been in the past an effort to confine the name drawbar to the old link and pin type, but in the proceedings of the M. C. B. Association, now A. A. R., in speaking of the height of drawbars, the term is applied to the standard automatic coupler. See COUPLER.

Drawbar Safety Lug. See COUPLER HORN.

Drawbar Stop. See DRAFT CASTING.

Drawing Room. A small room or compartment in a sleeping or drawing-room car. Usually fitted with double berths, a sofa or lounge and private toilet facilities. See STATEROOM.

Drinking Cup Vendor. A device for holding and supplying drinking cups.

Drip Coupling or **Basin Coupling** (Wash Basin). The connection of the waste pipe or drip pipe with the basin.

Drip Pan (Refrigerator Car). A dish or pan at one corner or end of the car for receiving the water from the melting ice, usually permitting it to escape to the roadbed through a trap.

Drop Bottom. See DROP DOOR.

Drop Bottom Car. A gondola car with a level floor or bottom, equipped with a number of drop doors, for discharging the load. See also HOPPER BOTTOM GONDOLA CAR.

Drop Brake Shaft. A brake shaft for flat cars which is normally in a vertical position, but can be dropped to a horizontal position and still remain operative should conditions of lading require this to be done.

Drop Door. A door at the bottom of a drop bottom or hopper gondola car for unloading it quickly by allowing the load to fall through the opening. Drop doors are usually in pairs, and are supported by a chain wound upon a winding shaft; or by a lever arrangement. Frequently a drop door beam extends across the car above the winding shaft to assist in supporting it and to stiffen the car.

Drop Door Chain. A chain attached to a drop door, and usually connecting it with a winding shaft, for the purpose of controlling the door. Also sometimes termed Hopper Chain.

Drop Door Chain Ring. An iron ring to which are fastened the single chain passing around the door winding shaft and the two chains which are attached to eye bolts in each of the double drop doors.

Drop Door Eye Bolt. An iron bolt with an eye in the upper end which is fastened to a drop door near the edge away from the hinge and to which is secured the drop door chain.

Drop Door Gear. See DOOR OPERATING GEAR.

Drop End. Used on many gondola cars. The entire end is arranged to swing down at right angles to its normal position, for loading long materials.

Drop End Gondola Car. A gondola car with the ends in the form of doors, which can be dropped when the car is used for shipping long material which extends over more than one car.

Drop Forging. One made by the use of dies, under a drop hammer.

Drop Suspension (Electric Lighting). A drop or bent frame attached to the truck frame. The belt or chain is adjusted by sliding the generator along on the frame and this arrangement is called the sliding-type suspension. See SUSPENSION.

Drop Table. A table hinged to the wall so as to drop against it out of the way when desired.

Drovers' Car. A car similar to a caboose except that a drovers' car is equipped with bunks for the accommodation of stockmen and drovers who accompany a train carrying a shipment of livestock. The car is attached to a stock train.

Drum. (Hoisting Gear.) The main cylinder upon which the hoisting rope winds and unwinds. The spur wheel is carried on the same shaft.

Drum Shaft (of a Derrick or Crane). The shaft on which the winding drum is carried.

Dry Closet. A closet, so called in distinction from a water closet, which is not flushed with water.

Dummy End (Passenger Equipment). See BLIND-END CAR.

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To overcome contact friction, rollers, and rockers are used in many different ways. If the portion containing the anti-friction member is fastened to the truck bolster, it is known as a truck side bearing; if fastened to the body bolster, it is considered a body side bearing.

Other types of side bearings employ springs and friction elements to maintain constant contact and control relative movement between car body and truck.

Side Bearing Arch or Bridge (Six-Wheel Truck). A truss attached to the bolsters to support the truck side bearing.

Side Bearing Brace. A filler block between the body bolster diaphragms that supports the side bearing.

Side Bearing Truck. A truck in which the weight of the car is transmitted at the side instead of the center. The term balanced side bearing truck is also used to indicate that the car body is so balanced on the truck that the weight is equally distributed to all the wheels at all times. Not commonly used.

Side Brace. Commonly designated as body brace or brace, except when the end braces are to be distinguished from them.

Side Casting. See DRAFT LUG.

Side Deck Lamp. A bracket lamp fastened above the windows and to the deck sill, or to the lower deck ceiling and the deck post.

Side Door. Designated thus to distinguish from end door on both freight and passenger equipment.

Side Door Bottom Guide. An iron bracket attached to the side of freight cars having sliding doors to guide the door while it is being opened and shut and also to prevent its swinging away from the car at the bottom.

Side Door Fixtures. See Section 3.

Side Door Hanger. See DOOR HANGER.

Side Door Protection Strip. See PROTECTION STRIP.

Side Door Top Track. See DOOR TRACK.

Side Dump Car. A car so constructed that its contents may be discharged to either side or both sides of the track through doors in the car sides, or drop doors in the floor; by means of an inclined floor and side doors; or by tipping the car body sidewise. See also DUMP CAR.

Side Eave. A term sometimes used to designate a steel plate running along the eaves or edge of the roof of a steel passenger equipment car.

Side Fascia. See FASCIA.

Side Frame. The frame which forms the side of a car body or a truck. It includes the posts, braces, plate, belt rail, etc., for the car body; and the side member of a truck frame. See TRUCK SIDE FRAME.

Side Furring. See FURRING.

Side Lamp. A lamp attached to the side of a passenger car in distinction from a center lamp, which is attached to the roof. They are usually made with brackets, by which they can be conveniently fastened.

Side Nailing Strip. A piece of wood bolted outside the side sills of steel underframe cars to which the ends of the floor planks and the bottom ends of the sheathing are nailed. See NAILING STRIP.

Side Plate. More properly, simply plate. The longitudinal member connecting the tops of the side posts of the car body. So called as distinguished from the end plate.

Side Plate Stiffening Angle (Steel Cars). An angle iron riveted to the side plate, and serving the same purpose as the stakes. Often called stake.

Side Plate Tie Rod. A rod extending across the top of the car and tying the side plates together.

Side Post. Vertical member used in the side framing of freight and passenger cars.

Side Rail. A longitudinal member extending along the top of the side frame of a coal or ore car. It rests upon posts and braces and connects with end rails, which go across the end of the car. It corresponds to the plate of a box car, but does not carry any carlines, as does a plate.

Side Seat. A longitudinal car seat, the back of which is against the side of a car.

Side Sheet. A plate used for closing in the sides of a steel car.

Side Sill. The outside longitudinal members of the underframe. In some designs of steel cars the side sills are dispensed with and the entire side of the car is designed as a deep plate girder to carry most of the load to the bolster.

Side Sill Step. See SILL STEP and Section 14.

Side Slope. That part of the floor which slopes from the side of a hopper to the hopper door. See HOPPER SLOPE SHEET.

Side Stake. See STAKE.

Side Stake Pocket. See STAKE POCKET.

Side Stem. A bar attached to the side of a three-stem coupler to transmit part of the force to springs separate from the regular draft springs. See THREE-STEM PLATFORM EQUIPMENT.

Side Straps (Wooden Gondola Car). The straps to which the end planks and sometimes also the side planks, are bolted. They are also called side plank tie straps.

Side Strut for Hopper Floor (Hopper Cars). An inclined strut or support for the hopper floor between the bolster and the end of the car, fastened to the corner of the end sill.

Siding. See SHEATHING.

Signal Branch Pipe. A pipe leading from the train air signal pipe to the car discharge valve.

Signal Cord. A rope or sash cord extending along a passenger car wall inside and attached to the air signal discharge valve; a pull on the cord releases the air in the signal pipe and blows the signal in the cab.

Signal Cord Bushing. A thimble lining a hole through a partition for a signal cord to pass through, in distinction from a signal cord guide, which is attached to the side or roof of the car or to the signal cord hanger.

Signal Cord Guide. A metal eye or ring attached to the roof or ceiling of a car, or to the end of a Signal Cord Hanger, and by which a signal cord is carried or conducted. See also SIGNAL CORD BUSHING.

Signal Cord Splice. A metal coupling with right and left hand screws for permanently splicing the ends of a broken cord. See also SIGNAL CORD COUPLING.

Signal Hose. An air hose similar to, but of smaller diameter than, an air brake hose, and used between cars to connect the train air signal lines.

Signal Lamp. See MARKER.

Signal Lamp Bracket. See MARKER BRACKET.

Signal Lamp Socket. See MARKER BRACKET.

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