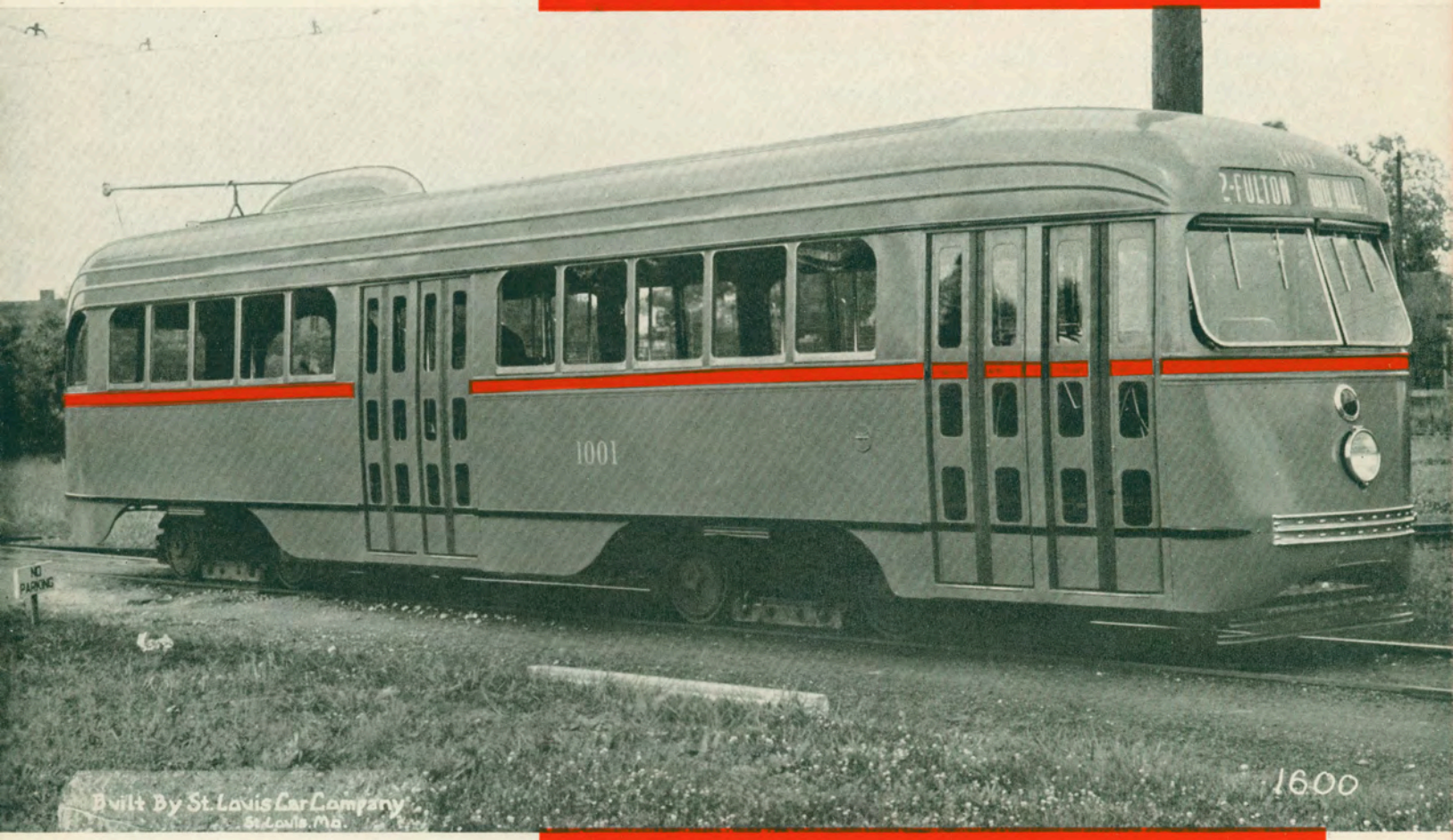
NOW A REALITY



The P. C. C. Car

St. Louis Car Company
St. Louis, Mo.

The Presidents' Conference Committee Car

From a Vision to a Reality

Transport achievement now delivers an entirely new mass transportation vehicle. It is the Presidents' Conference Committee Car...the P. C. C. Car...a **practical** reality.

In 1930, the Electric Railway Industry, desperately moved to revitalize its use of city streets...transport by rail...launched the Electric Railway Presidents' Conference Committee upon a comprehensive program of car and equipment research and experimentation. This contemplated a scientific analysis of all functions and details of design and construction for the car body, trucks, and all motive and accessory equipment. Numerous test units and sample cars were built and scientifically checked... progressively...to develop a vehicle in which the various elements were co-ordinated as to function and assembly, with full consideration of space, weight and cost. All under the urge for pleasing features of operation and appearance which, in turn, govern "Passenger Appeal". New type motors, controls, lighting, ventilating, door operating equipment, trucks, springs and numerous other innovations were developed, all of which consumed time and required talent, patience and tenacity of purpose.

As a result of these years of work, study, and close co-operation between the Committee, its picked Staff, and the representatives of operating companies and manufacturers, a laboratory car was evolved, embodying among its numerous features modern styling, passenger appeal, absence of noise, smoothness, and performance characteristics far surpassing those ever deemed possible to incorporate in an electric railway unit.

The St. Louis Car Company is grateful to be chosen to build and make this car a reality...to be the "Perfecting Ground" for it...to make it available to the Electric Railway Industry on a practical, attractively priced, production basis. **Brooklyn** paved the way by ordering the first 100 P. C. C. Cars, and other prominent properties have followed by ordering their P.C.C. cars from **St. Louis.** Besides the first **Brooklyn** 100, **Baltimore** has ordered 27, **Chicago** 83, **Pittsburgh** 101, **San Diego** 25 and **Los Angeles** 60.

The Presidents' Conference Committee Staff, the Mechanical and Executive Departments of the operators and equipment manufacturers co-operated genuinely with us in this development to accommodate and

St. Louis Car Company
St. Louis, Mo.

perfect the many advanced features of this car without sacrificing its marvelous performance characteristics.

But all of this did not "just happen". Every detail of P. C. C. progress from the selection of personnel, engineering talent, participating manufacturers, and most important...the car builder...were a matter of careful and deliberate consideration. The St. Louis Car Company, having a well known record for successful pioneering, was chosen and was prepared with ample experienced and proven engineering talent and production facilities to develop and to utilize modern methods and materials in building equipment of this advanced design.

The P. C. C. Car is not just another street car. It is such a pronounced departure from the ordinary street car that, except for the fact that it obtains its power from a trolley wire and operates on tracks, there is very little in common between it and the older type cars.

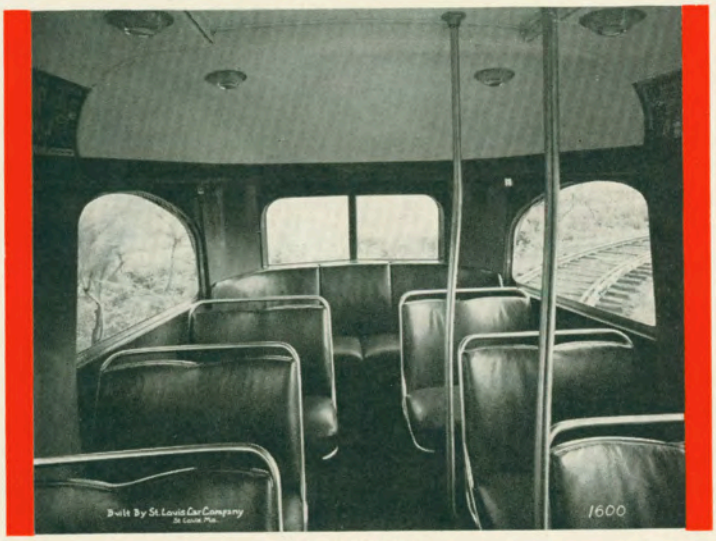
The ducts for heating and ventilating, the ducts for the cables, rods and pipes, the protection of the electrical and other equipment, the arrangement for clean air for the motors, the provision for the efficient and modernistic "Blinker" doors and many other features are all part of the car structure... not separate parts hung on to the body but built into and forming an integral part of the structure.

The simplification in the arrangement and grouping of all of the levers and switches utilized by the operator, the provision in the structure for non-glare lighting, the practical development of the shapes and construction to provide the sleek graceful exterior and interior contours are some of the additional features which place this car in a class by itself.

Our undertaking has been to build and combine all of the many advanced features into a structure, the assembly of which is so radically different that it is revolutionary. We process and build this modern streamlined car in a modern way...in unit assemblies and on a progressive production line. Bolsters, sides, ends, cable and rod housings, etc., are assembled as units and a specific amount of work is accomplished at each of the various stations along the production line, with a present capacity of four cars per day exclusive of facilities for production of Trolley Buses and steam railroad equipment. Of course, the preparatory arrangements and facilities for such an improved and elaborate plan of car building required time, planning and expenditures. The special dies and tools for manufacturing the many contoured parts together with the special elaborate welding equipment and precision machinery necessitated a heavy investment. However, we repeat, we are gratified to have had the opportunity to carry on our part of this progressive undertaking, since we are convinced that this rail vehicle can and will use the city streets much more effectively and most economically.

In rails and overhead construction, Street Railways have a permanent operating channel of steel and copper which provide superior advantages when adequately used. This car is a means of doing so since it makes use of wheel-rail adhesion to the limit both in starting and stopping, and in

Convenience, Comfort and Passenger Appeal are the Keynote of the P. C. C. Car Interior



Rear End Interior

Specially designed form fitting seats, non-glare lighting and positive ventilation contribute to the quality of the ride in the car, while a sufficient number of stanchions and grab rails on the seats are of assistance to moving and standing passengers.

An inviting, neatly blended color scheme adds further charm and appeal to the car interior.

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addition in stopping even grabs the rail with the magnetic track brake which insures against skidding such as encountered by other vehicles operating on an icy or wet pavement. With these characteristics, it will be "out in front". It will command its place in street traffic by reason of rapid acceleration and highly effective deceleration. Since the P. C. C. Car serves more people per unit than other vehicle, and with comfort and convenience, it will compel public confidence and respect. Furthermore, traveling a defined course on its own rails, it is a safer vehicle. Other vehicles treading traffic at random cannot be as safe.

With all of these improvements and with apparatus so advantageously placed, it is predicted that equipment maintenance costs will be greatly reduced; and in the future, as these rubber sprung cars are universally used, a marked saving in track maintenance will be realized.

These features together with the unquestioned rider appeal of this more attractive and effective vehicle, should, and unquestionably will, make investment in these cars self-liquidating over a very short period.

Among the improvements providing passenger comfort are specially designed seats, positive ventilation and excellent illumination.

In the P. C. C. seats, special attention has been given to features controlling knee room in order to procure passenger comfort without sacrificing seating capacity. Contributing largely to this accomplishment was a studied distribution of the back padding. This padding is sufficiently thick at the top to be soft and comfortable but reduces in thickness toward the bottom so that it tapers off to only the thickness of the leather covering and the metal panel. The careful manner in which the back padding is used, together with the slope and shape of the seat back and height and shape of the cushion, provide greater knee room for a given seat spacing. For convenience of passengers, grab handles run across full width of seat.

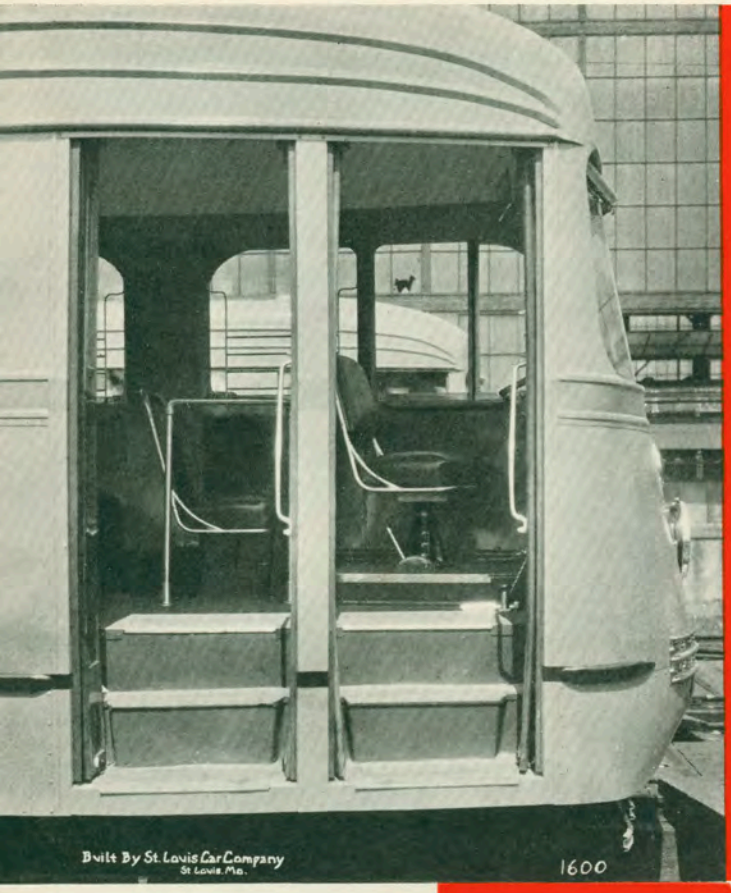
Adequate stanchions of a unique design are an important aid to moving and standing passengers. Placed well away from the seats in order not to cause restrictions to seated passengers and to define aisle space as well, they are curved at the bottom and attached to the seat underframing with brackets. This arrangement allows more clear floor space and facilitates cleaning.

As a result of P. C. C. experiments, new car lighting features have been established. The P. C. C. car includes illumination giving a degree of lighting intensity higher than previous standards with a conspicuous absence of glare.

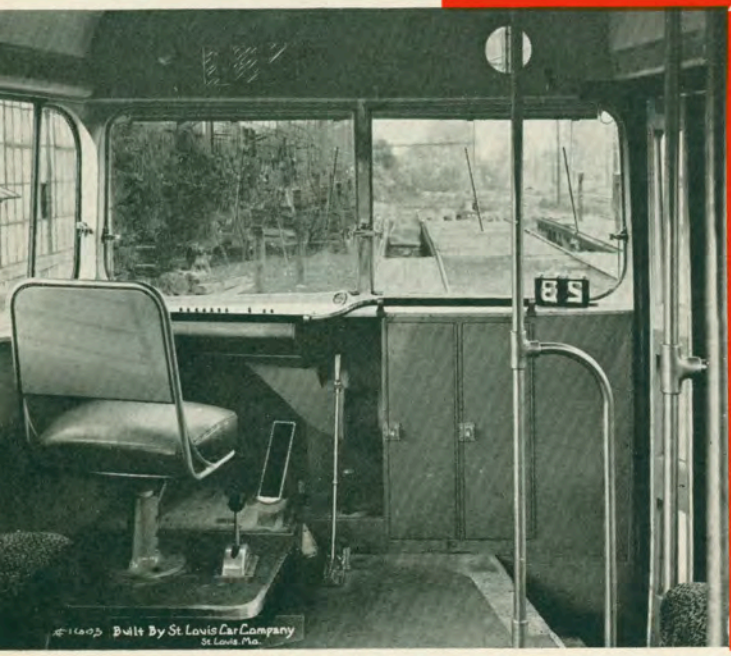
The satin finish stainless steel interior trim adds to the attractiveness of the car. Window guards, window sash and hardware, grab rails, stanchions and similar parts are made of this material.

The window guards, which consist of horizontal bars extending part way across the windows, have recesses at the sides making it convenient for passengers to raise and lower the windows.

FRONT ENTRANCE...Doors in Open Position
The Steps are "Naturals"



FOOT PEDALS
For Control
and Braking



OPERATOR'S POSITION...Looking Through Front of Car

The P. C. C. Car not only provides the last word in operating characteristics but, with its pleasing sloped front and rear ends, beautiful bonnet lines and slightly curved sides with flush doors of the same contour, is also the last word in modern appearance. Even the exterior accessories and trim... skirting, headlight, emblem, stop and marker lights, as well as the choice mouldings, are well placed and blended into the car body to give that enlivening modern styling. All of these features make the car inviting and bespeak speed, comfort, safety, and eye-appeal...so essential in this swift yet exacting age.

The car is easy of access, having fixed steps inside the car in preference to folding or other movable steps outside. Distance from rail level to the first step is 15 inches, and each of the two remaining steps is 8½ inches, considerably less than step heights in ordinary cars and more like step heights as found in well designed buildings.

The arrangement at the operator's position has been given particular consideration. The picture at the left illustrates the convenient location of the operating devices. Note the pedals for control and braking, the automotive type hand brake handle, for emergency use and parking mainly, reverser and life guard plunger as well as the neat and convenient bank of switches just ahead of operator's position.

The combination desk and cabinet...the operator's delight. It provides ample storage space and houses all unsightly piping and connections, making a neat and clean platform inherent in the P. C. C. Car ...and one that can easily be kept in that condition.

The adjustable automotive type windshields as well as the hinged window at the left assure comfort for the operator in all temperatures.

St. Louis Car Company
St. Louis, Mo.

THE BALTIMORE TRANSIT COMPANY

BALTIMORE, MD.

BANCROFT HILL
PRESIDENT

September 9th, 1936.

Mr. Edwin B. Meissner, President
St. Louis Car Company
St. Louis, Mo.

Dear Mr. Meissner:

We have had our first new Baltimore PCC car only about a week but my first impressions of it are decidedly favorable, chiefly due to the welcome it seems to be getting from the public. I am more than a little gratified about this because my feeling about the new car has always been that it must stand or fall on what the public thinks about it. Of its mechanical efficiency we have so far seen little cause for doubt, although we can judge only from our tests here which, as I write this, have been going on for less than a week. Of its performance in traffic there seems to be no question, based on our limited experience so far. Of its tremendous advance in every detail over every kind of street car produced in the past no one can be doubtful. We expect to get additional proof of these things as we run our test car longer and as we get the rest of the fleet of 27 we have ordered and put them into service.

But the important thing to me so far has been the way the people on the street seem to feel about it, and the way it has affected the few who have already had a ride on it. We have not let the general public ride it yet, though we plan to invite everybody who can get aboard as soon as our men have learned its operation. Nevertheless we have run it through quiet streets on a few suburban routes and have taken a few people, including

THE BALTIMORE TRANSIT COMPANY

BALTIMORE, MD.

BANCROFT HILL
PRESIDENT

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Mr. Meissner:

newspaper men, on short trips. Everybody on these routes has displayed the most intense interest. The sight of it stops people in their tracks. We find them cheering and waving to us from the sidewalk like folks waving to favorite candidates in a political parade. They clamor for a ride and do it so good good-naturedly that we feel impelled to change our plans and begin a progam of free rides earlier than we had expected to. As for those who have had the luck to get a ride they are so enthusiastic about its comfort, its smooth riding qualities, its interior beauty, its quietness, its lighting and all its other details that some of them find it difficult to describe how they feel. So far there has been not one word of reproach or criticism. This, to me, is a revelation as well as a cause for reassurance and encouragement.

Very truly yours,

President

PITTSBURGH RAILWAYS COMPANY

435 SIXTH AVENUE
PITTSBURGH, PENNSYLVANIA

September 9, 1936

Mr. E. B. Meissner, President
St. Louis Car Company
St. Louis, Mo.

ADDRESS REPLY TO

Dear Mr. Meissner:

September 8. This is in reply to your wire of

Our P.C.C. car, which is better in appearance and performance than anyone had expected, has created a large amount of public interest and has, we believe, had a very important effect upon public opinion.

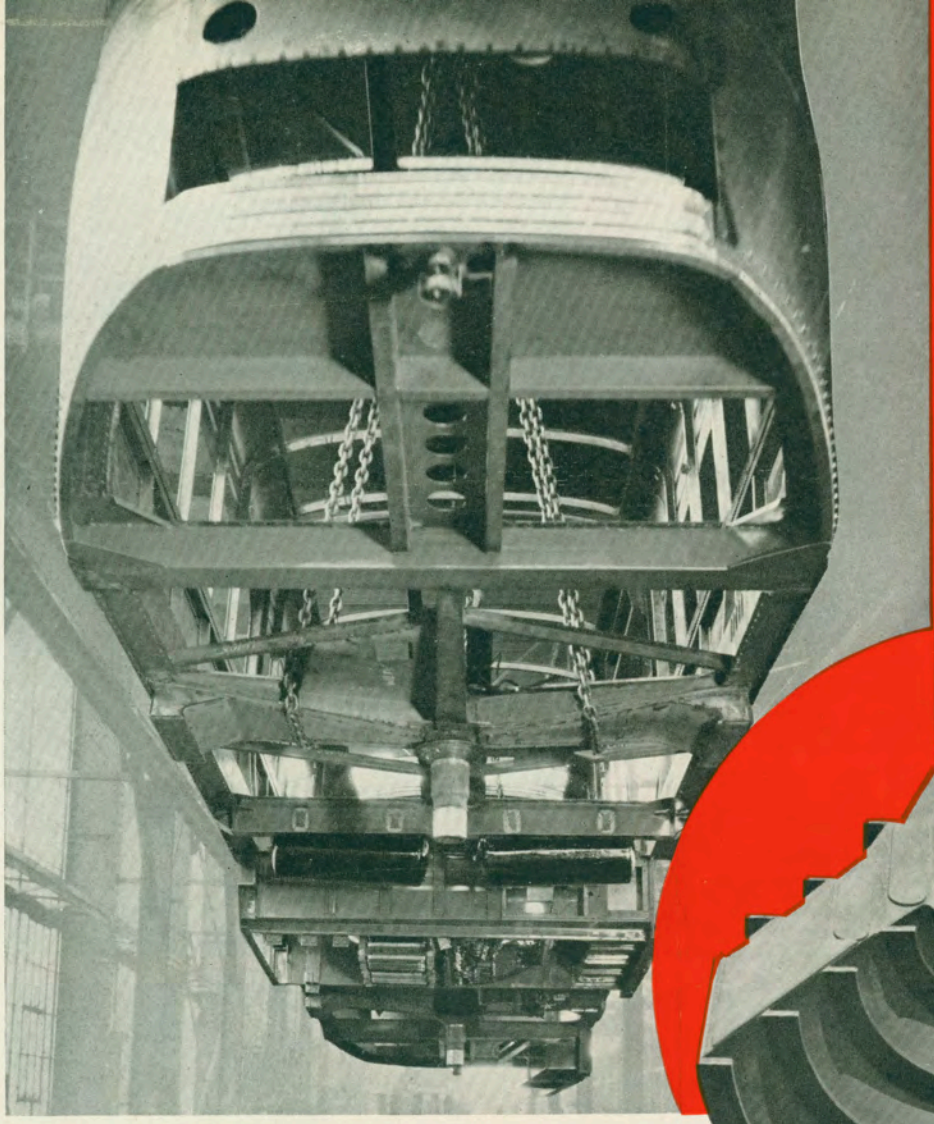
The re-establishment of the prestige of the street car will, in our opinion, permit the application of the proper facilities in their proper fields in the mass transportation system serving the Pittsburgh district.

Yours very truly,

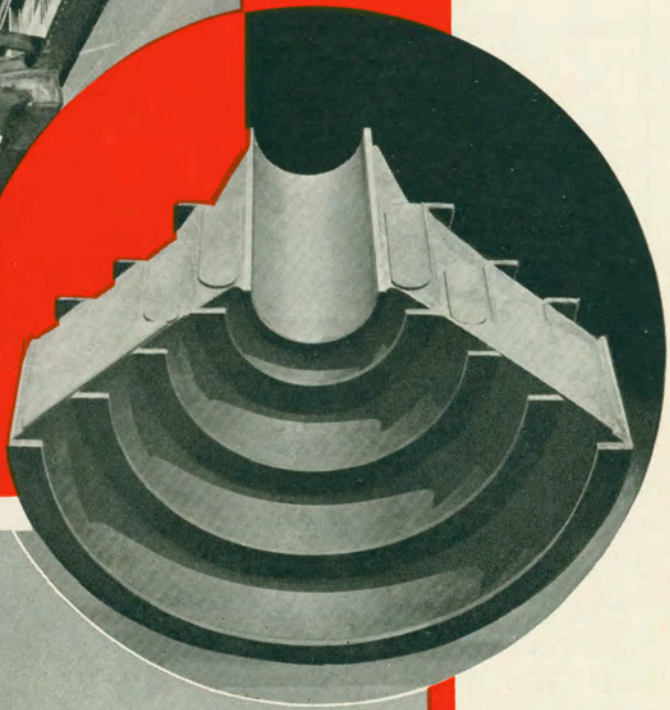
T. Fitzgerald
Vice President and General Manager

These letters indicate that the new P. C. C. Car is destined for enthusiastic public acceptance.

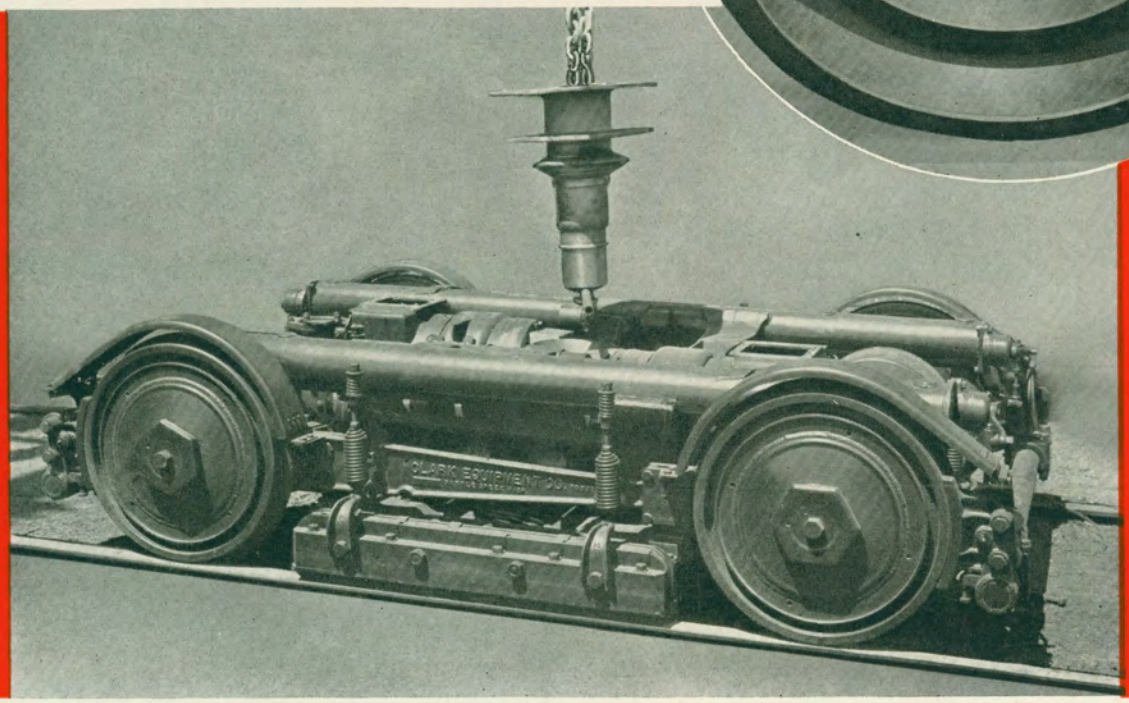
St. Louis Car Company
St. Louis, Mo.



VIEW
Taken beneath suspended underframe



CROSS SECTION
rubber spring



TRUCK
with king pin suspended over it

St. Louis Car Company
St. Louis, Mo.

In the rigid yet well proportioned and light-weight welded underframe, note the unique spider type bolster with the huge center bearing protruding. With this P.C.C. construction, conventional side bearings are unnecessary, and the bolster arms emanate directly from the massive center casting over a much greater area of the car underframing than has been the case in previous car designs. This construction not only provides strength and durability, but incorporates other useful purposes.

The bolster arms form walls for the ducts for supplying clean air to the motors. This fresh air is drawn through louvres into the duct just below the side sills, while jacking pads are attached to the bottom of the combination bolster and air duct.

It should be noted that the air reservoirs and electrical apparatus are neatly and conveniently located centrally without huge masses of cable, conduit and piping extending all over the underpart of the car.

The P. C. C. type truck illustration shows one of the large bolster center bearings or pins about to be lowered into the deep well arrangement built into the truck to receive it. This unusual center pin arrangement, which makes full use of the floating truck bolster, is one of the many innovations which make for smooth riding.

The use of rubber springs, shock absorbers, and rubber cushion wheels, with the consequent absence of a direct metal path from rail to car body, are other features improving the quality of the ride.

The trucks are propelled by specially built electric motors functioning through hypoid gears floating in oil.

Note the magnetic track brake suspended between the wheels.

The insert shows a cross section of one of the built-up rubber truck springs. The springs are of rubber and steel, so arranged that the metal holds the rubber in place and transmits forces to it. The rubber serves as the resilient member.

Baltimore Seating Arrangement

Pittsburgh Seating Arrangement

St. Louis Car Company
St. Louis, Mo.

BODY DETAILS

The P. C. C. Car is 46 feet in length over all, 8 feet 4 inches total outside width, and the height to top of roof is 10 feet ⅛ inch.

The superstructure of this car is built up of formed shapes electrically welded into an integral unit. Side posts are winged channel section pressings, extending from side sill to top of letter panel. At the bottom the post is flared and welded to side sill, window sill, and at the top of upper ledge of letter panel. Side post covers are electrically welded to side posts between belt rail and letter panel.

Body corner posts, except one at front doorway, are of built-up box section, using two winged channel section posts. Corner post covers are electrically welded to outside wings of posts between belt rail and letter panel. Door posts are of built-up box section, using one winged channel section post and a pressed channel section post. Posts at the center of the car on blind side are duplicates of the center door posts on the door side of the car. Door post covers are electrically welded to outside wings of posts between belt rail and letter panel.

Front vestibule corner posts are of formed sections welded to the underframe at bottom, window sills at middle, and vestibule roof at top. Reinforcing curved angle pressings are welded to these posts at top and bottom of windshield openings. Front vestibule center post extends from destination sign header to anti-telescoping plate. Rear vestibule corner pier is of built-up box section. The front post of box section is curved behind the letter panel so as to form a structural member for carrying rear vestibule roof purlins. Rear vestibule corner pier cover extends between belt rail and letter panel.

Side sheets are made of copper bearing steel, spot-welded to wings of all post members. The side sheets extend from behind the belt rail to the bottom of side sill, and are spot welded to the top flange of side sill and riveted to bottom flanges. Front dasher sheet is formed to contour of and spot welded to vestibule structural members. Rear vestibule dasher is formed to contour of and spot welded to vestibule structural members. Side skirts are of copper bearing steel, welded to pressed shapes which in turn are bolted to bottom edge of side sill.

Belt rail is made of 3/32-inch copper bearing steel pressed into shape forming the window sill. Belt rails are carried completely around car, with exception of doorways, and are electrically welded to side sheets and posts.

Letter panels are made of copper bearing steel, including roof cove and formed to shape, and are electrically welded to top of side posts and to roof carlines between body corner posts. Formed reinforcements are added to inside of letter panel over front and center doorways. Front and rear vestibule hood roofs are made of deep drawn O. H. S. formed to shape.

Front View of P. C. C. Car, showing Windshield-Type Vestibule Windows, Destination Signs, Etc.

St. Louis Car Company
St. Louis, Mo.

Roof carlines are winged channel shape of No. 16 gauge Copper Bearing O. H. S. electrically welded to upper ledge of panels. The rub rail extending along side of car over vestibule corner post, except at doorways, is of extruded aluminum alloy bolted in place. Front and rear vestibule roof framing is Copper Bearing O. H. S., and is electrically welded so as to form a rigid structure for support of vestibules. Trolley base supports are built between three carlines.

The roof between body corner posts is made of three-ply 5/16-inch poplar plywood bolted through wings of carlines, and anti-squeak material is laid between wings of carlines and roofing veneer. Roof covering is of No. 8 cotton duck, laid in white lead, tightly stretched, and is held in place with aluminum mouldings bolted to roof cover. Top ceiling is made of 3/16-inch Masonite, fastened to carlines with shake-proof screws.

Flooring is level from end to end of car and is of 15/16-inch tongued and grooved 3¼-inch face long leaf yellow pine, bolted to flanges of cross sills, end sills, floor supports and bolster top covers. Strips of Johns-Manville No. 50 waterproof asbestos felt, 5 inches wide are placed on top of cross sills under flooring as an anti-squeak. Floor covering is Armstrong's Automat Linoleum cemented in place, and all unprotected edges are covered with suitable moulding.

Wainscot sheet below window sills are of ⅛-inch Masonite, extending between top edge of side sill and inside bottom of window sills. Curtain moulding is made of extruded aluminum, and extends completely around car except at doorways and across front vestibule. Advertising card racks are made of No. 28 gauge steel for 11-inch advertising cards. Side lower deck ceiling is formed of No. 18 gauge steel, and is arranged for louver or lens lighting.

Side sash are of single raise type, arranged to raise 15⅝ inches and are equipped with two lift type locks, and glazed with double strenght grade "A" glass. Two front vestibule sash are hinged at the top, arranged to swing out and equipped with mechanical arrangements for opening and closing, and are glazed with ¼-inch safety plate glass. Rubber weather stripping is provided around the outside of sash to provide weather-tight fit when sash are closed.

Front vestibule sash to the left of operator includes a stationary frame and a movable frame glazed with ¼-inch safety plate glass, the front frame being hinged vertically and is provided with a mechanical arrangement for opening and closing. Rear vestibule side sash is stationary and is glazed with double strength grade "A" glass. Rear vestibule rear sash is glazed with ¼-inch safety plate glass. Both rear sash are stationary.

Door and Door Equipment

Each passageway at front and center doorways is equipped with two precision doors which are built up of copper bearing steel and the outside line conforms to contour of side of car and they are practically flush. Doors are equipped with moulded rubber bumpers on both edges, and each door panel has three lights of double strength grade "A" glass set in rubber. Grab handles are provided on the first door of each passageway.

All doors are operated pneumatically; the front doors from a valve at the operator's position, the center doors by pneumatic rubber mat treadles. These doors are of the two-leaf type which cleverly turn and fold out of passageway. Door units are identical and replaceable. Stanchions, as required, are 1¼ inches outside diameter stainless steel clamped in cast aluminum alloy fittings at top and bottom.

Underframe

Underframe of this car is built up of pressed shapes and composite members of high tensile steel electrically welded into an integral unit. Side sills are ⅛-inch pressed high tensile steel and are employed as longitudinal ducts in the ventilating system. They extend on blind side of car between vestibule corner post, and on door side from front body corner post to front center door post, and from rear center door post to rear vestibule corner post. The bottom cover of side sills, pressed out of No. 13 gauge copper bearing steel, where provision is made for removal, is riveted except where skirt braces are located, the skirt braces being secured to side sills by bolts. Draft sills are

pressed out of No. 11 gauge copper bearing steel, and extend between bumper channels and body end sill, providing an anchorage for draw-bar casting.

Bumpers are pressed out of No. 11 gauge copper bearing steel and extend between vestibule corner posts, connected to draft sills, anti-telescoping plates and posts. Anti-climbers are pressed from No. 11 gauge stainless steel, and anti-telescoping plates are made of No. 11 gauge copper bearing steel welded to bumpers, vestibule corner posts and draft sills. The upper surface of anti-telescoping plates are at floor level.

Body end sills are formed as box section girders **to act as transverse ventilating ducts.** The ends of end sills are welded into side sills of car, so as to provide adequate area for the ventilating system, the end sills being made of No. 16 and No. 11 gauge Cor-Ten steel or equal.

Sills at center doorway are formed as box section girders of Cor-Ten or equal steel to act as transverse ventilating ducts. **Provision has been made in these sills for installation of auxiliary heaters and dampers for heating system,** the girders also serving as part of the equipment compartment. Intermediate sills are of the fish bellied type with ends welded into side sills of car. Flooring supports are welded at ends to side sills, and in the center to bolster members.

The body bolster comprises four transverse members extending from center casting to side sills, and of two longitudinal members extending from center casting to cross sills. The six beams of bolster with the two cross sills provide eight points of support for the car body weight. The center casting provides the center bearing and carries the center pin tube. Bolsters are built of S. A. E. 1035 steel, and the center casting with integral center pin tube is of electric furnace vanadium steel. Draw bar pockets are made of aluminum alloy, located under bumpers between draft sills.

Provision for Ventilation of Motors

Ventilation for motors is taken from the side of the car between transverse radial beams, and is carried by ducts terminated in a vertically adjustable frame, sliding over a corresponding opening in the motor commutator housing. Ducts are made of Cor-Ten steel, or equal.

Accessories and Trim

All necessary accessories are included and properly applied in the P. C. C. Car. Proper provision has been made for energy saving devices and fare collection systems and registers. Advertising racks take the standard size card. The pull cord signal system has been neatly installed and close-fitting hinged covers have been provided over the door openings to house the door operating mechanism.

The batteries at the rear of the car are placed in a compartment built into the car structure. The hinged doors of this battery compartment swing outwardly. This arrangement makes the battery sets readily accessible at a convenient height.

Curtain box mouldings are of aluminum section, extending full length along both sides of the car, except at door openings, and continue around the rear vestibule. This neat moulding arrangement greatly enhances the appearance of the interior of the car.

All side windows are equipped with curtains, mounted on all-metal rollers with rubber noise insulating fixtures.

Seats

Cross seats have spring upholstered cushions and padded backs, covered with No. 1 machine buffed leather, and they are mounted in welded tube framing. The back of seat backs is of metal, painted to match color of leather, and the top member of the seat frame forms a grab rail. Seats have one pedestal.

Transverse and longitudinal seats have cushions and backs of the same construction as cross seats. One operator's seat is located as shown in the illustration, and is arranged for adjustment fore and aft, and vertically.

A destination sign with a glass opening 8 inches by 50 inches mounted in the front hood has a single

roller curtain having 6-inch letters maximum and not more than thirty exposures. This sign is so designed and installed that inside of glass may be cleaned from vestibule of car.

Sign mechanism and curtains are easily removable, and operation of sign is by means of an operating handle extending through sign box into front vestibule above operator's position. Four lamps, similar to those installed in car body, are mounted in destination sign box. A roller curtain sign, illumi-

nated from interior of car, providing for 4½-inch letters, is installed in first side window to the rear of doorway.

Each car is equipped with a non-glare rear vision mirror, and a combination of mirrors capable of providing the operator with a distinct view of the exit door step as well as the street area adjacent to the exit door for a distance of about six feet beyond the side of the car body.

A 14-inch diameter single stroke air operated gong operated by a hand button is located under the front platform. An instrument and control board is mounted at operator's position, having all switches, toggle type, air gauges, etc. A St. Louis Car Co. H. B. type life guard is installed under front platform with provision for latching the basket in the raised position. The hand brake is of the lever and ratchet type, capable of providing 100 per cent braking on the forward truck, and is designed for the addition of similar braking on rear truck.

The signal system is battery-operated with cords on each side of car, each cord being connected to a pull switch operating a 12-volt buzzer.

Trolley catcher is of "streamlined design" complete with mounting bracket and rope.

Window wipers are provided on each front windshield, air operated with provision for manual operation. Each wiper is controlled by a separate valve.

General Dimensions

Length over anti-climbers	46′ 0″
Length of front vestibule	6′ 9″
Length of rear vestibule	5′ 9″
Length over body corner posts	33′ 6″
Center to center of bolsters	22′ 9″
Width over all—maximum	8′ 4″
Height—rail to top of floor, car light	32″
Height—rail to top of first step, car light	15″
Width—first tread, entrance and exit	12″
Width—second tread, entrance and exit	9″
Height—floor to top of window sill	32¾″
Height—floor to bottom of letterboard (clear vision line)	60″
Height—rail to top of roof	10′ 0⅛″
Height—floor to ceiling	7′ 1½″
Center to center of window posts	30″
Door openings, post to post	60″
Height—floor to bottom of raised sash	48⅜″
Rise of sash	15⅝″
Height—door opening	6′ 5″
Width of aisle at top of seat back	27″
Width of aisle at seat cushion or frame	24⅛″
Width of double seat cushion	33″
Height front edge seat cushion	17″
Truck wheel base	6′ 0″
Wheel diameter	25″

St. Louis Car Company
St. Louis, Mo.

HEATING *and* VENTILATION

A COMBINED HEATING AND VENTILATION SYSTEM TAKES IN AIR FROM THE ROOF OF THE CAR, WARMS IT, AND DISTRIBUTES IT THROUGH DUCTS THROUGHOUT THE LENGTH OF THE CAR

For heating and ventilating of the car a combined system has been devised which functions automatically. All the air is taken in through an opening A in the roof adjacent to the trolley base, as seen in the diagram. This air is carried through a duct formed between the roof and the headlining to the hollow pier posts B at the four corners of the body and the two hollow posts opposite the center door. Thence it is carried downward to the hollow side sills on the blind side. The air led down through the pier posts on the near side is transferred across the frame through ducts C formed by the end cross-members. All the entering air is then drawn through the hollow side sill on the blind side to the middle section of the car opposite the step well.

All the rheostats used in the control of the motors during acceleration and dynamic braking are enclosed in a compartment under the center of the car. A stream of cooling air must be blown over them at all times when the car is in operation, to prevent them from reaching destructively high temperatures.

When the air is delivered through the various channels D to the middle of the car it is picked up by the blower which is a part of the motor-generator unit and passed into the compartment E housing these resistors, over which it is blown, cooling them and heating the air. An interlock between the drive of this motor and the main power circuit prevents operation of the car unless the blower is running. With an average number of stops and slowdowns the waste heat from the resistors is sufficient to supply a large part of the heat needed to maintain a comfortable temperature in cold weather. For a considerable portion of the winter there is heat to spare. To meet this condition discharge vents controlled by thermostats in the body are opened automatically to discharge the heated air to the outside. However, should the outside temperature be so low that the car cannot be kept warm enough from this source of heat alone, auxiliary heaters take current from the trolley line when cut into circuit by the automatic thermostatic control. In addition, a set of automatic baffles can be so adjusted that a portion of the air within the car body can be recirculated to conserve its heat and reduce the amount of cold air which must be drawn in from the outside during periods of extremely low temperature.

From the resistor compartment the air passes to ducts F formed by the hollow side sills on the open side of the car and is distributed through louvers located alongside the seats at intervals throughout the length of the car body. The air inside the car being under slight pressure due to the action of the blower system, the vitiated air is discharged through the doors and other openings.

During warm weather when car heating is not required the air passed over the resistors is discharged directly to the outside by the operation of the dampers in the air ducts. These can be so set as to divert all or a portion of the heated air outside as needed to maintain the desired temperature.

Heat for the car operator and the front vestibule is provided by an independent electric heater of 1.5 kw. capacity. Warm air is delivered by a blower to a point near the operator's feet. It also is possible to divert a portion of the warm air against the windshield in order to prevent the formation of frost or sleet on it.

The heating system is designed to maintain at a height of 3 feet above the floor level a continuous and steady car temperature of not less than 45 degrees F. above an outdoor temperature of not less than zero, with cross-winds of 30 m. p. h. While the ventilating fan is so interlocked with the control that it will blow air over the resistors at all times when the car is in operation, there is a provision for cutting out the interlock in case of emergencies.

What does the P. C. C. Car weigh?

Ans. The car complete as built for Brooklyn weighs approximately 33,000 pounds.

In such a roomy car, how is this light weight attained?

Ans. For a car 46 feet long, seating 59 passengers, and including dynamic brake control, magnetic track brakes, motor-generator fan set, etc., and with the high factor of safety used in the design of all of its parts, the P. C. C. Car is exceptionally light in weight. Each part has been designed with extreme care so that it is adequately strong for its purpose but contains no excess material. In addition to that, many individual parts are so arranged that they perform multiple functions, thus reducing the number of parts to a minimum.

How fast does this car get away or accelerate?

Ans. The maximum accelerating rate is 4.75 M. P. H. P. S., and the average accelerating rate is 4.00 M. P. H. P. S.

How does this get-away compare with that of the conventional street car?

Ans. The average rate is more than twice that of the ordinary street car and substantially greater than that of the ordinary automobile.

How fast is this car on a level tangent track?

Ans. The balancing speed on a level tangent track is 42 M. P. H. with a maximum safe speed of 50 M. P. H.

At what rate can this car be stopped?

Ans. The service braking rate with a loaded car weighing 38,000 pounds is between 6 and 7 M. P. H. P. S. with an average braking rate of 4.75 M. P. H. P. S. The maximum braking rate with the car fully loaded is between 8 and 9 M. P. H. P. S.

These accelerating and braking rates, being higher than normal, will they not cause discomfort to passengers?

Ans. Experiments made by the Presidents' Conference Committee established that these acceleration and braking rates are well within the limits of agreeable human tolerance so long as they are accomplished without jerking or sudden changes in rates. Under ordinary conditions of service with eight stops per mile, seven seconds duration, schedule speeds exceeding 14 M. P. H. can readily be accomplished.

How is this smooth acceleration accomplished?

Ans. A greatly increased number of resistance points is one of the features of the new control. This permits the speed to be stepped up quickly in a smooth acceleration. Also the use of rheostatic acceleration instead of series parallel eliminates the transition notch and makes it possible to obtain high rates smoothly throughout the accelerating range.

How do you stop the car so rapidly without jerking?

Ans. Three types of brakes are used: dynamic, magnetic track, and air. By means of the first two the car can be slowed down quickly and smoothly from high speeds without generating excessive heat in the wheels and with effective insurance against skidding. The air brake completes the last phase of the braking cycle and holds the car after it is stopped. These brakes give rates of retardation not heretofore achieved in practice, and the maximum braking is comparable with that of a good automobile on a dry pavement.

When do each of the three types of brakes come into use?

Ans. The dynamic brake comes into service first and is increased as the brake foot pedal is depressed. At 3-inch pedal movement, the track brake cuts in. The air brake comes into action last and is not effective until the dynamic brake fades out.

What about the auxiliary controls?

Ans. All the auxiliary controls, such as those for lights, heaters, gong, etc., are combined in a gang switch placed on the edge of the operator's desk immediately in front of and exceptionally convenient to the operator.

The seating plan, can it be altered?

Ans. Seating arrangements may be made to suit without changing basic body design or dimensions.

How much rubber is used in building the complete car?

Ans. More than 400 pounds of pure rubber.

Where is the rubber chiefly used?

Ans. In the wheels and the springs. The wheels are really flanged steel bands with large discs of rubber supporting the axle. The rubber disc in the wheel separates the metal tire from the rest of the wheel. The hub of the wheel and the axle are also separated from the frame of the truck by rubber. The large conical rubber springs are used for this purpose.

By whom is the P. C. C. Car built?

Ans. By the St. Louis Car Company, St. Louis, Mo.

How large is the plant of the St. Louis Car Company?

Ans. The St. Louis Car Company's plant covers approximately 60 acres of ground, over one-third of which is floor space for the various manufacturing departments, and the remaining space is storage, yard tracks, lumber kilns and yards, transfer table and trolley system.

What about the location and transportation facilities for assembly of materials?

Ans. Track connections with the Terminal Railroad afford excellent shipping facilities, and St. Louis being in the approximate center of the United States, "THE QUALITY SHOPS" are ideally located for the ready assembly of raw materials, equipment and specialties. In addition, 29 railroads from all directions enter St. Louis.

How long has the St. Louis Car Company been building electric cars?

Answer. The St. Louis Car Company was organized in 1887... coincident with the introduction of electric railway motors. It has therefore been actively engaged in the building, development and progress of electric motor cars since their inception.

Were any special plant arrangements made to turn out P. C. C. Cars in production lots?

Ans. Many thousands of dollars were spent in improving methods of processing these cars. A complete shop was laid out and fully equipped with every needed facility for producing these cars on a progressive assembly line.

St. Louis Car Company
St. Louis, Mo.

Previous Projects Pioneered by "St. Louis"

ROBERTSON STEEL CHANNEL SIDE SILLS—The forerunner of steel underframing in Street Cars.

STEEL TEE SIDE POSTS—Substituted for wood side posts.

COMBINED STEEL TEE POSTS AND RAFTERS.

THE FIRST BIRNEY SAFETY CAR—Designed, engineered and developed in the plant of the St. Louis Car Company.

THE FIRST ALL-STEEL COACHES—Built for the New York Central Railroad —1905.

THE FIRST ELECTRIC INTERURBAN SLEEPING CARS—Built for the McKinley Lines—Illinois Traction System—1912.

PALATIAL PRIVATE CARS—Built for Electric Railway Executives—1902-1906.

DRAKE AUTOMOTRICE—GAS-ELECTRIC RAIL CARS—Built under Austrian patents for the M. O. & G. Ry. Co.—1912.

THE MODERN GAS-ELECTRIC RAIL CAR—Built in conjunction with the Electro-Motive Corp.—1923. (This was the beginning of the now greatly growing high-speed train and Diesel-Electric propulsion program.)

SYKES MECHANICAL DRIVE RAIL CARS—Built in 1924.

EARLY DEVELOPMENT OF TROLLEY BUSES as built for the Hydro Electric Co., Toronto, Canada—1922.

NON-PARALLEL AXLE TRUCKS—Built under Warner-English patents.

EXPERIMENTAL SILENT WHEELS WITH WOOD CENTERS as built for Grand Rapids Railway Company—1925.

EXPERIMENTAL RESILIENT WHEELS WITH RUBBER IN SHEAR—For "The New Birney Car"—1928.

FIRST TRUCKS WITH RUBBER PEDESTAL SPRINGS IN SHEAR—In actual revenue service. Ten sets built for Capital Transit Company, Washington, D. C.—1935.

SUPER CHIEF 3600 H. P. DIESEL-ELECTRIC LOCOMOTIVE—Mechanical parts built and unit assembled in St. Louis Car Company plant for Santa Fe Railway Co.

FIRST RAILWAY POST OFFICE GAS RAIL CAR WITH ALL-WELDED UNDERFRAME TO RECEIVE APPROVAL OF RAILWAY POST OFFICE DEPARTMENT.

MODERN FULLY STREAMLINED TROLLEY BUSES.

and last but not least... the **P. C. C. Car.**