

# THE J. G. BRILL COMPANY

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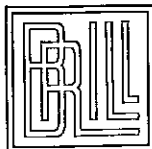
G. C. Kuhlman Car Co.  
CLEVELAND, OHIO

American Car Company  
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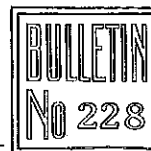
Wason Manfg. Company  
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Compagnie J. G. Brill

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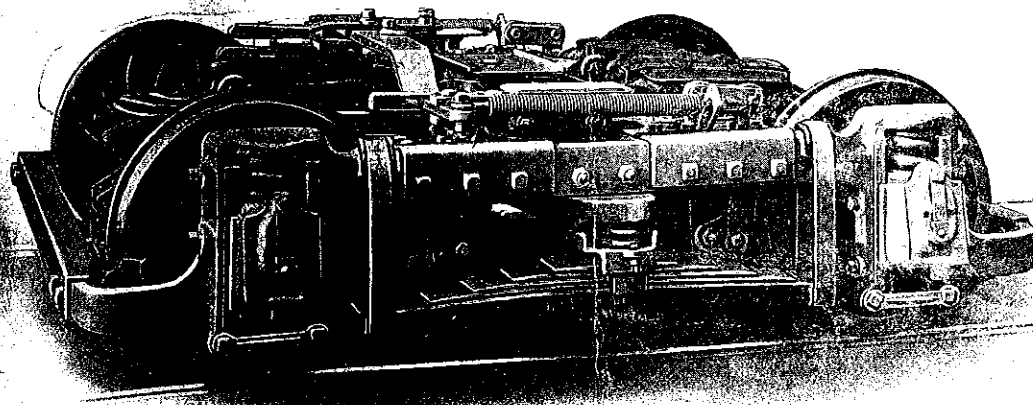


## THE BRILL 77-E TRUCK

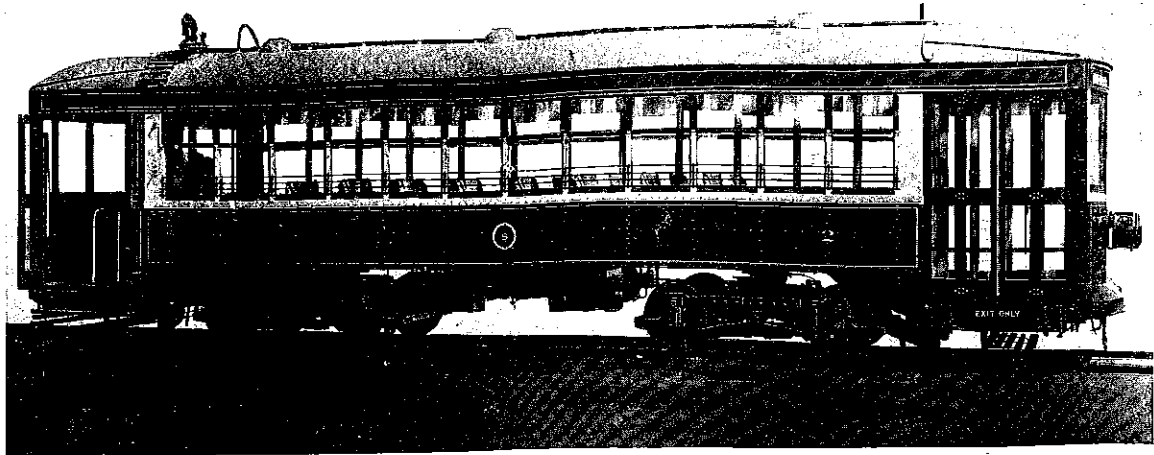
BRILL BOLSTER GUIDE; INSIDE-HUNG MOTORS;  
SOLID-FORGED SIDEFRAMES; GRADUATED SPRINGS

**T**HE Brill 77-E Truck is identical in construction with the Brill 76-E Truck (described in Bulletin No. 225) except that its motors are inside-hung, whereas the motors in the latter truck are hung outside. Both trucks are very similar in type to the popular Brill 39-E, which has

scored such a success for city service. The spring arrangement is the same in the 39-E, the 76-E and the 77-E, the chief point of difference between the 39-E and the 76-E and 77-E being that the former is a single-motor truck with pony wheels and the latter two are designed for two motors each



This truck differs from the Brill 76-E only in that it has inside-hung motors, whereas the motors of the 76-E are hung outside. Both the 76-E and the 77-E are very similar in design to the 39-E, the chief point of difference being that the latter is a single-motor truck with pony wheels, while the 76-E and 77-E have two motors and wheels of the same diameter. Exclusive Brill features, such as Brill Graduated Spring System, Brill Bolster Guide, "Half-ball" Brake Hanger, and Solid-forged Sideframes, are incorporated in all three trucks



This car, with a seating capacity of 48 persons, which may be supplemented by folding seats on the platforms, measures 44 ft. 2 in. over the bumpers, 30 ft. 8 in. over the body, 3 ft. 0 $\frac{1}{4}$  in. from track to underside of side sills, and 8 ft. 9 $\frac{1}{2}$  in. from underside of side sills over trolley boards. The trucks weigh 12,750 lb., the motors 7600 lb., and the carbody 21,450 lb. including air and electrical equipment and heater

with all wheels the same diameter.

The Brill Graduated Spring System plays an important part in the design of the truck, providing an easy spring action when the car is lightly loaded and furnishing superior riding qualities at all times, which is a very great advantage over the old construction, in which all the springs were arranged to take care of the car when heavily loaded. The system consists of a spiral spring placed between the bolster and the semi-elliptic spring. This spiral spring is so designed that the spring cap and seat come into contact when the spring is compressed beyond a certain point, the spring being designed so that this contact takes place when the car has a seated load. Beyond this point the semi-elliptic spring takes care of the load. The amount of compression of the spiral springs necessary to bring about contact of seat and cap is on the average three-eighths of an inch.

The Brill Bolster Guide is another very important—and new—feature of the truck. This device, acting in com-

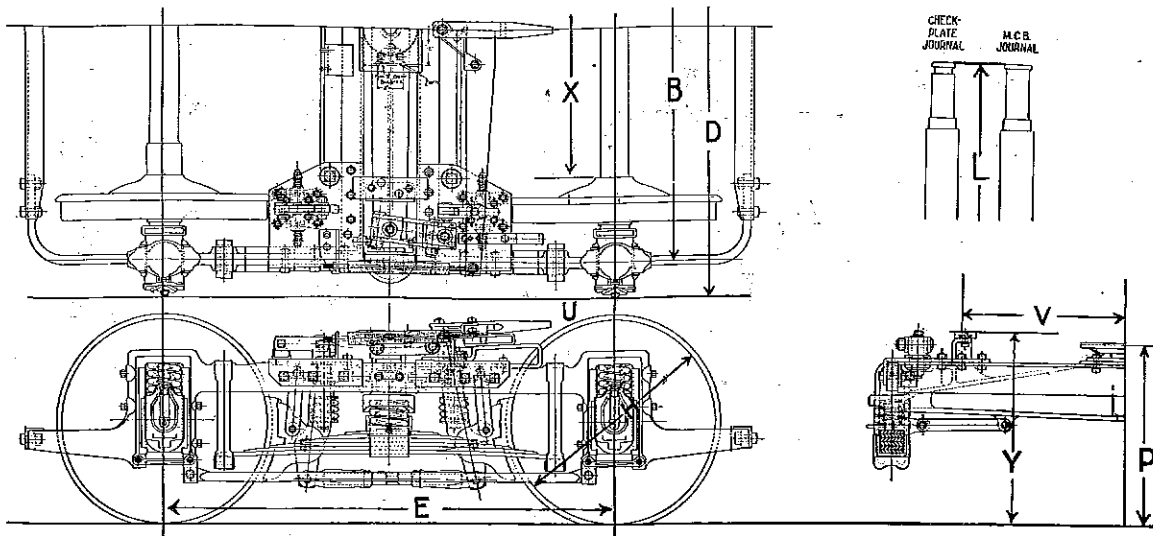
bination with the Graduated Spring System, corrects the vertical motion of the truck and furnishes a smoothness of riding which is decidedly apparent. The guide consists of a link between transom and bolster which is designed so that it will absorb all vibrations and jolts set up at any point in the truck, the bolster end of the link merely turning on its pin. The friction-producing and friction-transmitting chafing plates of the old trucks are done away with altogether through the use of the Bolster Guide.

The 77-E is equipped with Brill solid-forged sideframes, which fact speaks eloquently for its ruggedness and stamina. Brill "Half-ball" Brake Hangers constitute another very important feature.

This truck has been used extensively for low-level cars, being equipped in such cases with 24-in. wheels. The efficiency of the truck for such service is convincingly demonstrated by the number of such orders that have been received.

# DIMENSIONS OF BRILL 77-E TRUCK

Patented and patents pending in the United States and foreign countries



	77-E1										77-E2X										77-E2										
Gage . . . . .	3'2 3/4"	3'6"	4'0"	4'8 1/4"	5'0"	5'2 3/4"	5'3"	5'3 3/4"	5'6"	5'10"	5'11"	5'11 1/4"	5'11 1/2"	5'11 3/4"	5'12"	5'12 1/4"	5'12 1/2"	5'12 3/4"	5'13"	5'13 1/4"	5'13 1/2"	5'13 3/4"	5'14"	5'14 1/4"	5'14 1/2"	5'14 3/4"	5'15"	5'15 1/4"	5'15 1/2"	5'15 3/4"	5'16"
B Centers of Side Frames . . . . .	5'0"	5'2 1/4"	5'8 1/4"	6'3"	6'6 1/4"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"
V Radius of Rub Plates . . . . .	1'11 1/4"	2'1 1/4"	2'4"	2'6"	2'7 3/4"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"	2'9"
L Length of Axle . . . . .	5'8 1/4"	5'10 1/4"	6'4 3/4"	6'11 1/4"	7'2 3/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"	7'5 1/4"
D Width Over All . . . . .	6'6"	6'8 3/4"	7'2 3/4"	7'9"	8'0 3/4"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"	8'3"
E Wheel Base . . . . .	6'0" and 6'6"										6'0" and 6'6"										6'3" and 6'6"										
H Wheel Diameter . . . . .	30"	33"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"
P Height of Body Bolster with Empty Body . . . . .	28 1/2"	30"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"
Y Height (Minimum) of Side Bearings with Empty Body . . . . .	31 1/2"	33"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"	34 1/2"

\* If width of motor does not allow length of wheel hub to equal diameter of wheel bore, these dimensions may be increased.

- X Distance between hubs. This is variable to suit motor.
- U Truck brakes furnished to this point only.
- Z Contact beam support cast on journal boxes if required.
- King bolt not furnished by truck builder.

### The Following Limitations are Recommended

	77-E1	77-E2X	77-E2
Maximum Diameter of Journal . . . . .	3 3/4"	4 1/4"	4 1/4"
Weight of Car Body with Equipment and Passenger Load—Not to Exceed . . . . .	46,000 Lbs.	46,000 Lbs.	63,000 Lbs.
Speed—Not to Exceed . . . . .	50 M. P. H.	50 M. P. H.	80 M. P. H.
Motors—Not to Exceed . . . . .	75 H. P.	75 H. P.	125 H. P.

## 77-E1 Special Truck for Low-Floor Cars

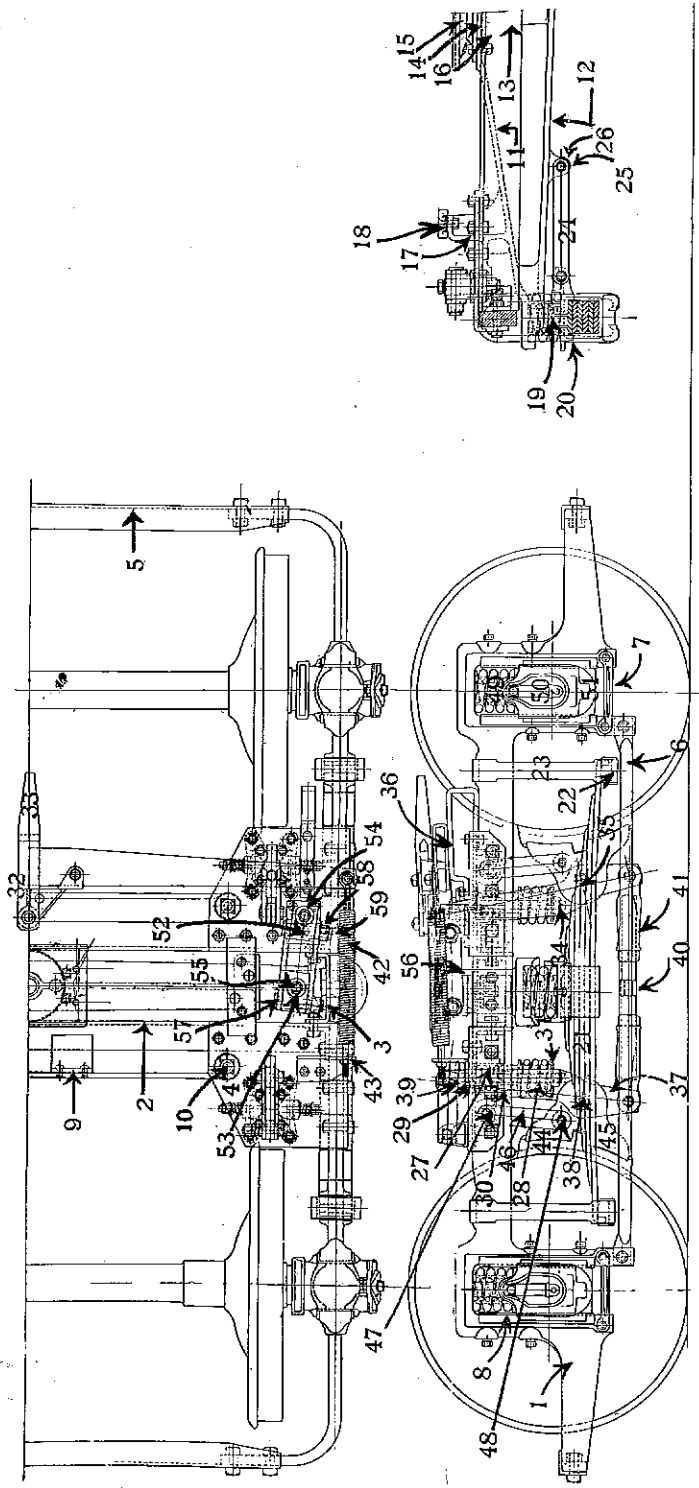
		Metre	3' 6"	4' 0"	4' 8 1/4"	5' 0"	5' 2 1/2"	5' 3"
B	Gage . . . . .	3' 8 3/8"	3' 6"	4' 0"	4' 8 1/4"	5' 0"	5' 2 1/2"	5' 3"
B	Centers of Side Frames . . . . .	4' 10 3/8"	5' 2"	5' 8 1/4"	5' 9 1/4"	5' 10 1/4"	5' 10 3/4"	5' 11 1/4"
V	Radius of Rub Plates . . . . .	1' 5 1/8"	1' 6 3/4"	1' 9 3/4"	2' 2"	2' 3 3/4"	2' 4 3/4"	2' 4 3/4"
L	Length of Axle—M. C. B. Journal . . . . .	5' 8 3/8"	5' 10 1/4"	5' 4 3/8"	5' 5 1/2"	5' 8 3/8"	5' 10 1/4"	5' 11 1/4"
L	Length of Axle—Check Plate Journal . . . . .	5' 6 1/4"	5' 8 3/8"	5' 3 3/4"	5' 5"	5' 8 3/8"	5' 10 1/4"	5' 11 3/8"
L	Length of Axle—Check Plate Journal—Restricted Width . . . . .	5' 6 1/4"	5' 8 3/8"	5' 3 3/4"	5' 4 3/8"	5' 8 3/8"	5' 10 1/4"	5' 11 3/8"
D	Width Over All—M. C. B. Journal . . . . .	6' 1 3/8"	6' 4 3/4"	6' 10 7/8"	7' 0"	7' 3 3/8"	7' 5 3/8"	7' 6 1/2"
D	Width Over All—Check Plate Journal . . . . .	6' 1 3/8"	6' 4 3/4"	6' 10 7/8"	7' 0"	7' 3 3/8"	7' 5 3/8"	7' 6 1/2"
D	Width Over All—Check Plate Journal—Restricted Width . . . . .	5' 8 1/8"	5' 11 1/8"	5' 5 3/8"	5' 6 3/4"	5' 10 1/4"	5' 11 3/8"	5' 11 3/8"

- \* It is necessary to use a longer axle with wheels over 3" width of tread. These dimensions require to be increased proportionately. King bolt not furnished by truck builder.
- U Truck brakes are furnished complete to this point only.
- X Distance between hubs. This is variable.

H	Diameter of Wheel . . . . .	24"	26"
P	Distance from Track to Underside of Body Bolster with Empty Body . . . . .	21 1/4"	22 1/4"
Y	Height (Minimum) of Side Bearings with Empty Body . . . . .	22 3/8"	22 3/8"
	Standard Wheel Base . . . . .	5' 1 1/2"	5' 3 1/2"

### The Following Limitations are Recommended

	77-E1 Special
Maximum Diameter of Journal . . . . .	3 3/4"
Weight of Car Body with Equipment and Passenger Load—Not to Exceed . . . . .	40,000 Lbs.
Speed—Not to Exceed . . . . .	40 M. P. H.
Motors—Not to Exceed . . . . .	40 H. P.



NAMES OF PARTS OF BRILL 77-E TRUCK

- |    |   |    |                                       |    |   |
|----|---|----|---------------------------------------|----|---|
| 1  | Side Frame  | 30 | Motor Suspension Spring Seat (Top)    | 45 | Brake Head                                    |
| 2  | Transom   | 31 | Motor Suspension Spring Seat (Bottom) | 46 | Brake Hanger                                  |
| 3  | Transom Corner Bracket (Inside)                   | 32 | Brake Rod                             | 47 | Brake Hanger Carrier (Top)                    |
| 4  | Transom Gusset Plate                              | 33 | Brake Rod Clevis                      | 48 | Brake Hanger Carrier (Bottom)                 |
| 5  | End Frame   | 34 | Live Lever                            | 49 | Journal Box Spring                            |
| 6  | Pedestal Tie Bar                                  | 35 | Live Lever Fulcrum                    | 50 | Journal Box Lid                               |
| 7  | Pedestal Cap                                      | 36 | Live Lever Guide                      | 51 | Journal Box                                   |
| 8  | Pedestal Gib or Wear Plate                        | 37 | Dead Lever                            | 52 | Trunnion Block (Transom)                      |
| 9  | Motor Suspension Bar                              | 38 | Dead Lever Fulcrum                    | 53 | Trunnion Block (Bolster)                      |
| 10 | Motor Suspension Bar Bolt                         | 39 | Dead Lever Guide                      | 54 | Trunnion Pin (Transom)                        |
| 11 | Bolster Top Plate                                 | 40 | Bottom Truck Connection               | 55 | Trunnion Pin (Bolster)                        |
| 12 | Bolster Bottom Plate                              | 41 | Bottom Truck Connection Jaw           | 56 | Trunnion Tie                                  |
| 13 | Bolster Filling Castings                          | 42 | Brake Release Spring                  | 57 | Trunnion Tie Bolt                             |
| 14 | Truck Center Plate Bushing (location indicated)   | 43 | Brake Release Spring Nut              | 58 | Trunnion Tie Bolt Spring (location indicated) |
| 15 | Body Center Plate                                 | 44 | Brake Shoe                            | 59 | Trunnion Tie Bolt Spring Cap                  |
| 16 | Truck Center Plate                                |    |                                       |    |   |
| 17 | Side Bearing Wear Plate                           |    |                                       |    |   |
| 18 | Bolster Spring                                    |    |                                       |    |   |
| 19 | Bolster Spring Seat                               |    |                                       |    |   |
| 20 | Semi-Elliptic Spring                              |    |                                       |    |   |
| 21 | Semi-Elliptic Spring Rocker Seat                  |    |                                       |    |   |
| 22 | Semi-Elliptic Spring Link                         |    |                                       |    |   |
| 23 | Bolster Spring Seat Guide Link                    |    |                                       |    |   |
| 24 | Bolster Spring Seat Guide Link                    |    |                                       |    |   |
| 25 | Bolt  |    |                                       |    |   |
| 26 | Bolster Spring Seat Guide Link Spring (indicated) |    |                                       |    |   |
| 27 | Motor Suspension Spring (Top)                     |    |                                       |    |   |
| 28 | Motor Suspension Spring (Bottom)                  |    |                                       |    |   |
| 29 | Motor Suspension Spring Cap                       |    |                                       |    |   |
| 36 | Trunnion Block (Transom)                          |    |                                       |    |   |
| 37 | Trunnion Block (Bolster)                          |    |                                       |    |   |
| 38 | Trunnion Pin (Transom)                            |    |                                       |    |   |
| 39 | Trunnion Pin (Bolster)                            |    |                                       |    |   |
| 40 | Trunnion Tie                                      |    |                                       |    |   |
| 41 | Trunnion Tie Bolt                                 |    |                                       |    |   |
| 42 | Trunnion Tie Bolt Spring                          |    |                                       |    |   |
| 43 | Trunnion Tie Bolt Spring Cap                      |    |                                       |    |   |