NOYES BROS. (Sydney) LTD.
115 CLARENCE STREET,
SYDNEY.

THE J. G. BRILL COMPANY

PHILADELPHIA, PA.

Cable Address: "Brill," Philadelphia — *London Office: 110 Cannon St., E.C.* — *Cable Address: "Axles," London*

G. C. Kuhlman Car Co.
CLEVELAND, OHIO

American Car Company
ST. LOUIS, MO.

Compagnie J. G. Brill
49 Rue des Mathurins, PARIS, FRANCE. *Cable Address* *" Paris*

...on Manfg. Company
SPRINGFIELD, MASS.
...TERS, ANDERSON, Ansd.
Recd. By A. A.
9 FEB 1922

AGENCIES

Australasia—Noyes Brothers, Melbourne, Sydney, Dunedin, Brisbane, Perth.
Argentine, Paraguay & Uruguay—Sucesors de C. S. Clarke & Co., Calle 25 de Mayo, No. 158, Buenos Aires.
Belgium and Holland—C. Dubbleman, 48 Rue de Luxembourg, Brussels.
China—Anderson, Meyer & Co., Ltd., 4 and 5 Yuen Ming, Yuen Road, Shanghai.
Colombia and Venezuela—Wesselhoeft & Poor. Bogota an... ...uilla, Colombia and Caracas...
Italy—Giovanni ... Piaza Sicilia 1, Milan.
Natal, Transvaal ... ...nge River Colony—Thomas Barlow & Sons (S.A.) Ltd., Durban, Natal.
Philippine Islands, French Indo-China, Federated Malay States, Dutch East Indies—Pacific Commercial Company, Manila, P. I.

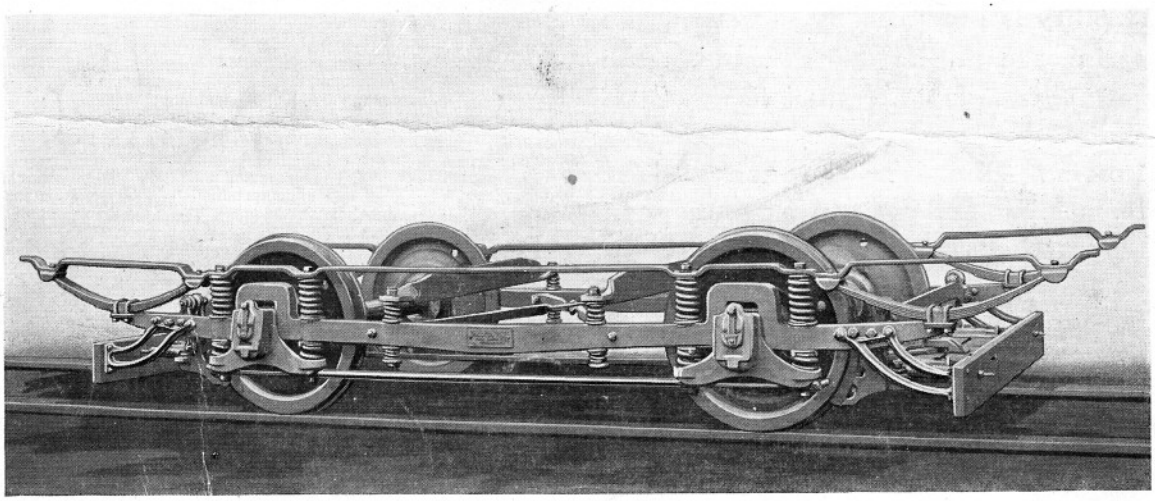
BULLETIN No 220

THE BRILL 21-E TRUCK

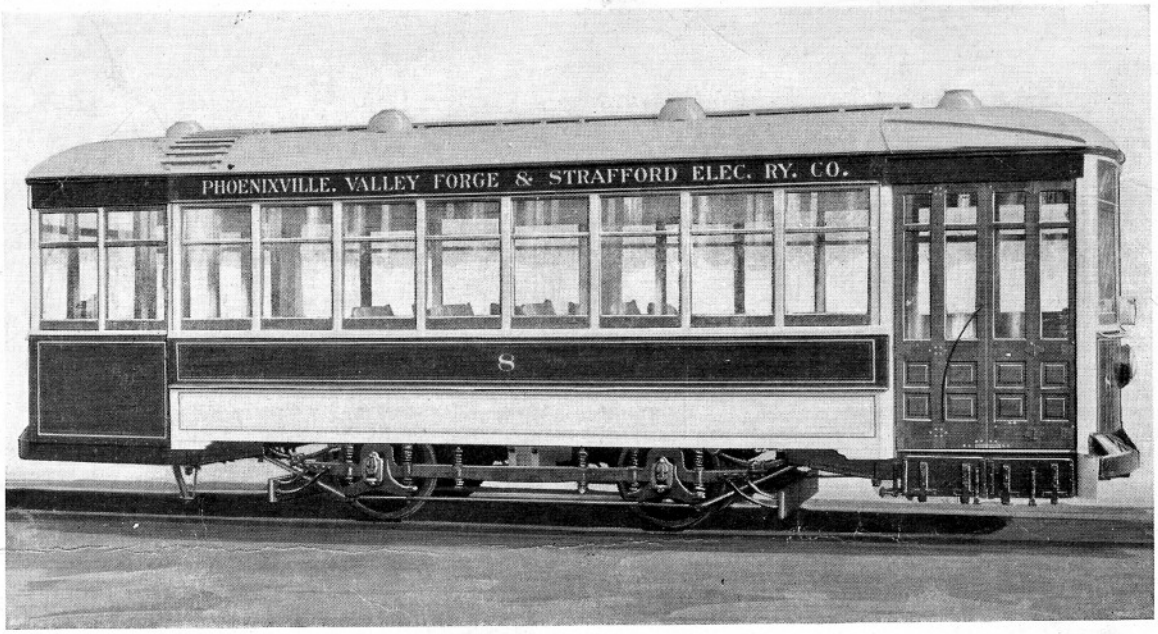
LOW LEVEL A GREAT ADVANTAGE

THIS truck has the great advantage of keeping the car at a low level. The reduction of a few inches in the height of the steps lessening the chance of accidents and making a great saving in the time normally taken up in loading and unloading a car having higher steps.

In addition to the semi-elliptics, which are placed so that they extend the springbase as far as is necessary to obtain an easy and steady support, there are used eight coil springs, placed on the frame directly over the journal box coil springs which support the frame. Thus it may be seen that the length of each side frame between the inner of these pairs of springs is relieved of most of the carbody weight and therefore is left free to support the



This truck is designed to take care of all single-truck cars where length is not sufficiently great to warrant the use of the "Radiax." It has the great advantage of keeping the car at a low level, lessening the chance of accidents and saving time in loading and unloading



Brill Semi-Convertible Car mounted on 21-E Truck. Length of car overall, 31 ft. 6¾ in.; length over body, 19 ft. 6¾ in.; seating capacity, 30; total weight, 22,200 pounds

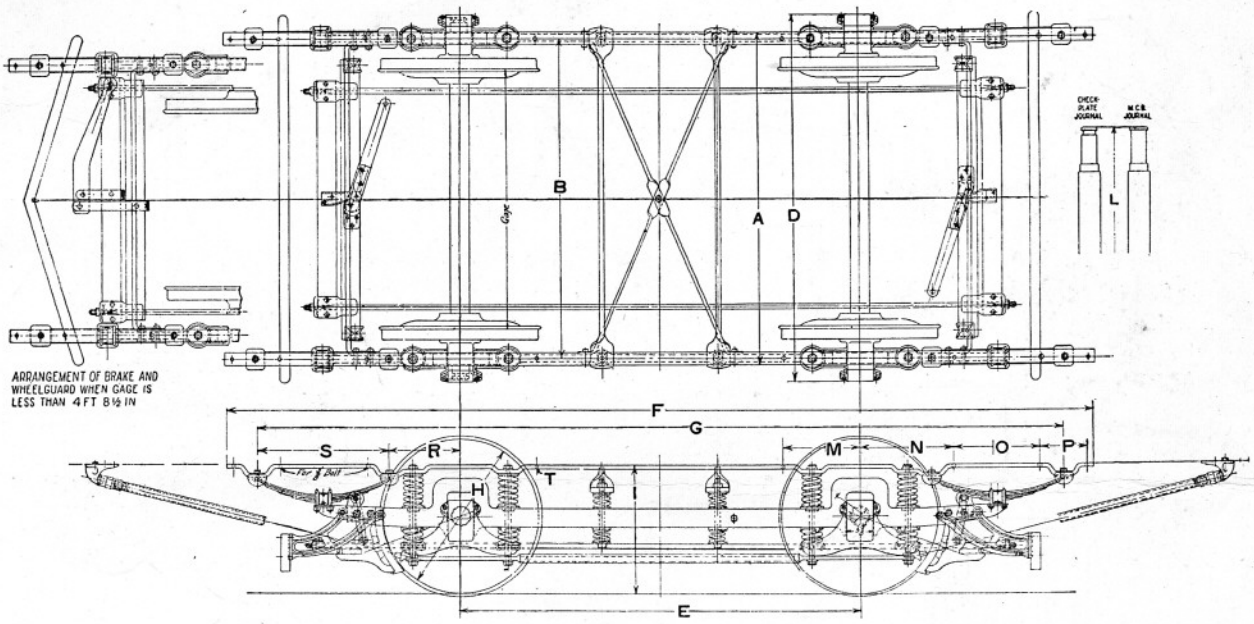
motors. Sufficient space is allowed in the side frames for play of the spring posts and thus the side motion of the car is cushioned, the torsional action of the springs controlling it.

Brill Wide-wing Journal Boxes are a part of every Brill 21-E Truck. This journal box has two advantages over the short wing journal box used heretofore. The first advantage is that greater stability is produced by increasing the springbase of the truck frame. The springbase of the frame of the 21-E equipped with the Wide-wing Journal Box is 7½ inches greater than with the former box and 20 inches greater than that of trucks having the journal springs on top of the box. The second advantage of the Wide-wing Journal Box is that it reduces the stress on the truck frame by supporting the frame directly under the body coil springs. The position of these springs makes possible the lower level of the car and their equal bearing guarantees the upright position of the journal boxes, preventing tilting and sticking in the frame jaws. Being grouped in pairs, the springs have large carrying capacity without stiffness. Cars of longer dimensions are provided for by the setting of truss pipes upon the ends of the post stays, forming substantial trusses.

Other important features of the truck are the brake system and the solid-forged side frames. The brake system is simple, easily adjusted, responds quickly to the operating mechanism and insures uniform pressure of the entire surface of the brake shoes upon the wheels. The solid-forged side frames make promise of longevity of service. They are a part of all Brill trucks.

DIMENSIONS OF BRILL 21-E TRUCK

Patented and patents pending in the United States and foreign countries



		Metre						
	Gauge	3'0"	3'3⅜"	3'6"	4'0"	4'8½"	5'0"	5'2½"	5'3"
A	Width Over Top Chords	5'0¾"	5'1⅜"	5'4¾"	5'10⅞"	6'0"	6'2⅜"	6'5⅜"	6'5⅜"
B	Centers of Top Chords	4'10"	4'10⅝"	5'2"	5'8⅛"	5'9¼"	5'11⅜"	6'2⅝"	6'2⅝"
D	Width Over Journal Boxes—M. C. B. Journal	6'0¾"	6'1⅜"	6'4¾"	6'10⅞"	7'0"	7'2⅜"	7'5⅜"	7'5⅜"
	" " " " —Check Plate Journal	6'0¾"	6'1⅜"	6'4¾"	6'10⅞"	7'0"	7'2⅜"	7'5⅜"	7'5⅜"
	" " " " —Check Plate Journal—Restricted Width	5'7½"	5'8⅛"	5'11½"	6'5⅝"	6'6¼"	6'9⅛"	7'0⅛"	7'0⅛"
L	Length of Axle—M. C. B. Journal	5'6¼"	5'6⅞"	5'10¼"	6'4⅜"	6'5½"	6'7⅞"	6'10⅞"	6'10⅞"
	" " " —Check Plate Journal	5'5⅝"	5'6¼"	5'9⅝"	6'3¾"	6'5"	6'7¼"	6'10¼"	6'10¼"
	" " " —Check Plate Journal—Restricted Width	5'5⅝"	5'6¼"	5'9⅝"	6'3¾"	6'4⅞"	6'7¼"	6'10¼"	6'10¼"

E	Wheel Base	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"
F	Total Length—With 36" Semi-Elliptic Spring	15'7"	16'1"	16'7"	17'1"	17'7"	18'1"	18'7"
	" " —With 30" Semi-Elliptic Spring	14'3"	14'9"	15'3"	15'9"	16'3"	16'9"	17'3"
G	Spring Base—With 36" Semi-Elliptic Spring	14'6"	15'0"	15'6"	16'0"	16'6"	17'0"	17'6"
	" " —With 30" Semi-Elliptic Spring	13'2"	13'8"	14'2"	14'8"	15'2"	15'8"	16'2"
M	Location of Body Bolt Hole	16"	16"	16"	16"	16"	16"	16"
N	" " " " "	19⅝"	19⅝"	19⅝"	19⅝"	19⅝"	19⅝"	19⅝"
P	" " " " "	10"	10"	10"	10"	10"	10"	10"
O	" " " " " —With 36" Semi-Elliptic Spring	26⅜"	26⅜"	26⅜"	26⅜"	26⅜"	26⅜"	26⅜"
	" " " " " —With 30" Semi-Elliptic Spring	18⅜"	18⅜"	18⅜"	18⅜"	18⅜"	18⅜"	18⅜"
R	Location of Body End Spring Cap	15"	15"	15"	15"	15"	15"	15"
S	" " " " " " —With 36" Semi-Elliptic Spring	36"	36"	36"	36"	36"	36"	36"
	" " " " " " —With 30" Semi-Elliptic Spring	28"	28"	28"	28"	28"	28"	28"

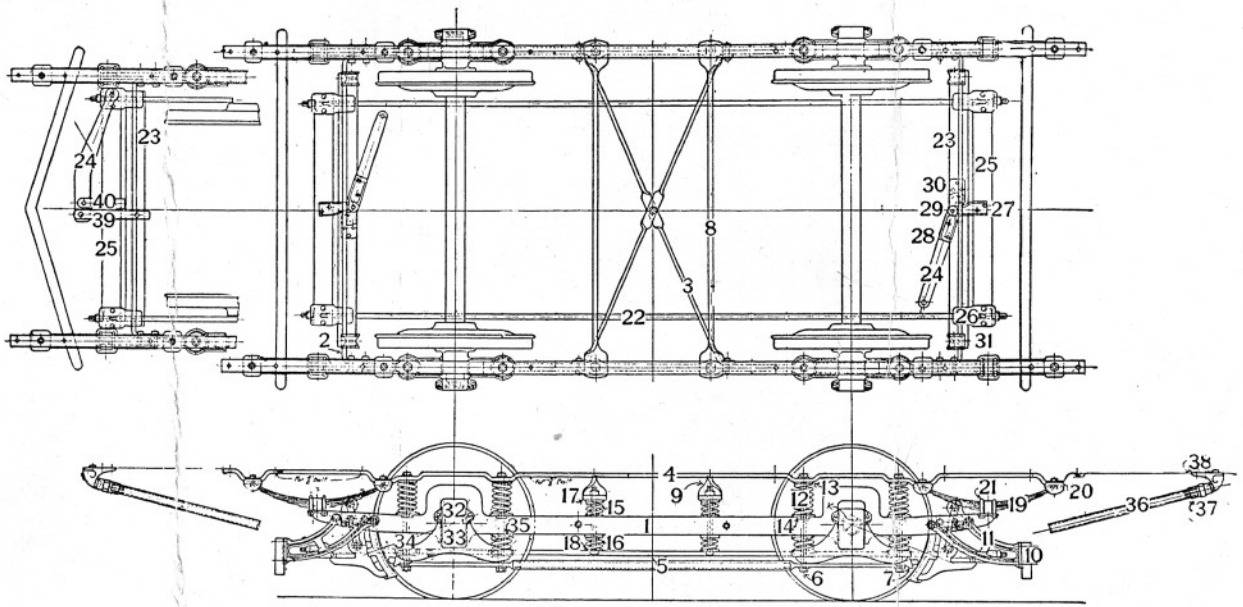
T Car Body Bolt Holes ¾" Diameter for ⅝" Bolts.

Semi-Elliptic Springs. 36" Springs Only Furnished on Trucks Built to Restricted Width Dimensions Unless Otherwise Desired.

The Following Limitations Are Recommended

Maximum Diameter of Journal	3¼"
Weight of Car Body with Equipment and Passenger Load—Not to Exceed	24,000 Lbs.
Speed—Not to Exceed	25 M. P. H.
Motors—Not to Exceed	50 H.-P.

H	Wheel Diameter	30"	33"	34"
I	Height of Truck with Weight of Empty Body	25⅛"	26⅛"	27⅛"



Item No.	Name of Part
1	Side Frame
2	End Frame
3	Diagonal Brace
4	Top Chord
5	Spring Post Stay
6	Spring Post
7	Truss Pipe Lug
8	Motor Support
9	Motor Support Bolt
10	Pilot Board
11	Pilot Board Bracket
12	Body Spring
13	Body Spring Cap
14	Body Spring Seat
15	Motor Support Spring (Top)
16	Motor Support Spring (Bottom)
17	Motor Support Spring Cap
18	Motor Support Spring Seat
19	Semi-elliptic Spring
20	Semi-elliptic Spring Cap
21	Semi-elliptic Spring U-Bolt
22	Bottom Brake Rod
23	Brake Beam
24	Brake Lever
25	Equalizing Lever
26	Equalizing Lever Casting
27	Equalizing Lever Fulcrum
28	Brake Lever Casting
29	Brake Beam Stud
30	Brake Beam Fulcrum
31	Brake Hanger Carrier
32	Journal Box Lid
33	Journal Box
34	Journal Box Spring
35	Journal Box Spring Cap
36	Truss Pipe
37	Truss Pipe Adjusting Sleeve
38	Truss Pipe Casting
39	Brake Beam Strap
40	Equalizing Lever Strap

When ordering spare parts give type of truck, order number (see plate on truck side frame), and name of part. Where possible give casting number shown on part. When part with same name is on both sides of truck, specify whether "right" or "left" hand. Use motorman's position nearest part in determining right and left hand parts.