

SECTION No. 1

Association of American Railroads

OPERATIONS AND
MAINTENANCE DEPARTMENT

MECHANICAL DIVISION

GENERAL RULES GOVERNING

THE

Loading of Commodities On Open Top Cars

Adopted by the

Former Master Car Builders' Association
as Recommended Practice, 1896

Advanced to Standard 1908

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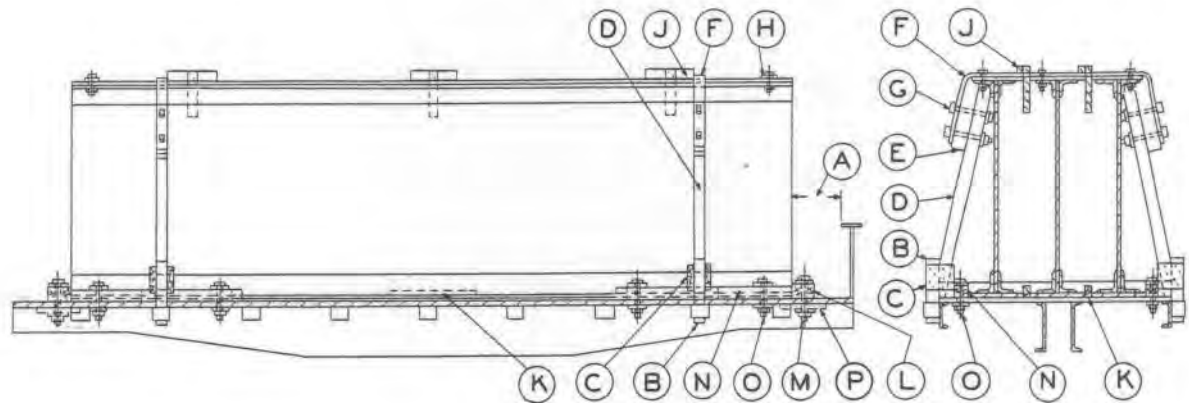
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GIRDERS, VERTICALLY—FLAT OR GONDOLA CARS

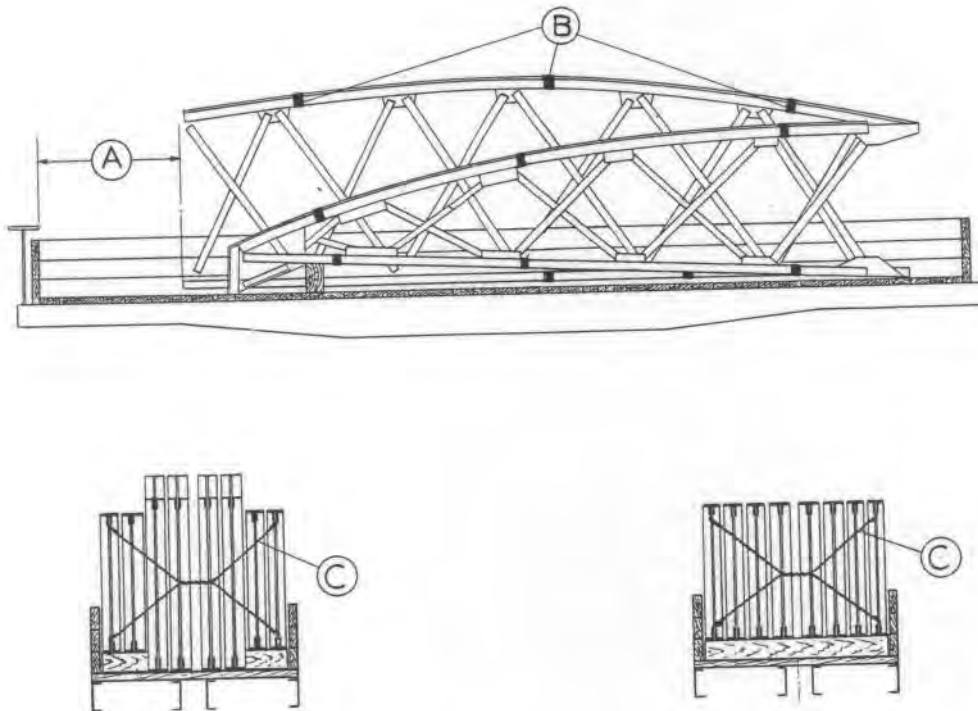


Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	4	Stakes, 4 in. x 5 in., hardwood, length to suit.
C	8	2 in. x 10 in., hardwood.
D	4	4 in. x 6 in., hardwood.
E	4	To suit.
F	2	$\frac{3}{8}$ in. x 4 in. plate, length to suit.
G	8	$\frac{3}{4}$ in. dia. bolt, with washers.
H	2	$\frac{3}{8}$ in. x 4 in. plate, secured to each girder. Dia. of bolt to suit hole in girder.
J	6	2 in. x 4 in. x 16 in., "T" blocks.
K	6	2 in. x 4 in. x 3 ft., nailed to floor.
L	2	6 in. x 8 in., hardwood.
M	6	$\frac{3}{4}$ in. dia. bolt, with washers, through Items "L" and "P".
N	4	4 in. x 4 in. x 6 ft., hardwood.
O	8	$\frac{3}{4}$ in. dia. bolt, with washers.
P	6	4 in. x 4 in. x 18 in., hardwood, or $\frac{1}{2}$ in. x 4 in. x 18 in. plate.

For gondola loading, substitute in lieu of Items "B", "C", "N" and "O"; four pieces, 2 in. x 8 in., hardwood, laterally between bottom flange of outside girder and car side near each Item "D", nailed to floor. Also, four pieces, 2 in. x 8 in., hardwood, laterally between web of outside girder and car sides, nailed to top side of the above mentioned 2 in. x 8 in. pieces. All other bracing to be same as for flat cars.

See General Rules 4, 5, 9, 10, 14 and 15 for further details.

WHOLE OR SECTIONAL ROOF TRUSSES, ETC.—GONDOLA CARS



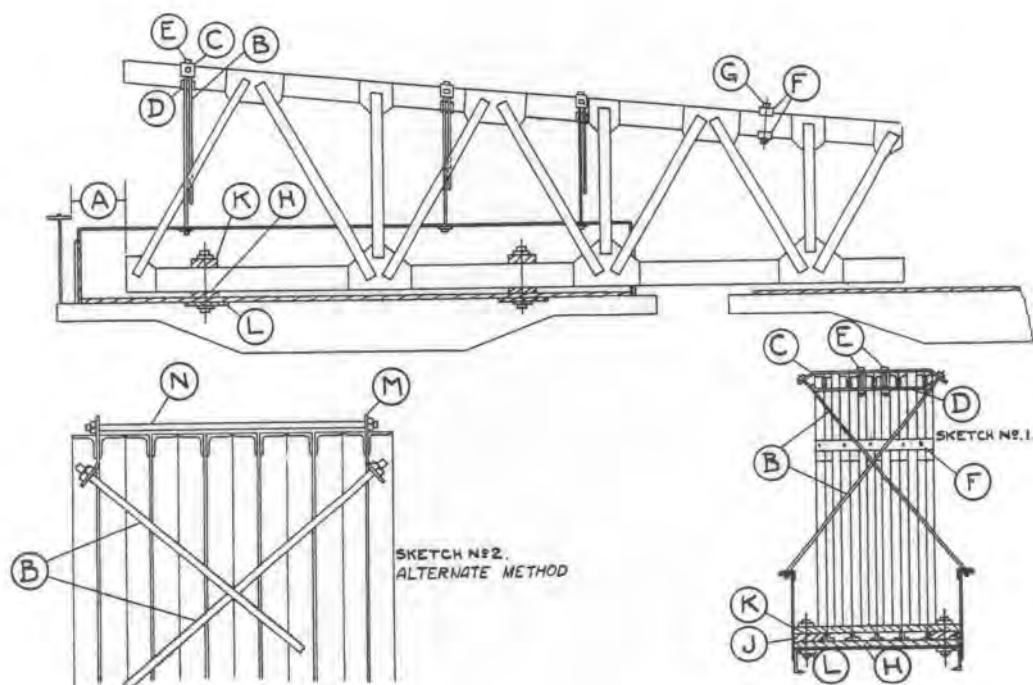
Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	12	1¼ in. x .035 in., high tension bands. Locate as follows: 3 around top and 3 around bottom of inside sections; 3 around top and 3 around bottom of outside sections, tying all sections together, as shown.
C	4	8 strands, No. 11 gage wire, or 2 strands, No. 8 gage high tension wire, or 1 strand, 1¼ in. x .035 in. high tension band. Interlace common wire and twist taut. High tension bands and wires to be tensioned and sealed, or twist tied, respectively.

Stakes, where used to facilitate loading, must be secured so as to prevent displacement.

See General Rules 4, 5, 10 and 15 for further details.

Sec. 2—Fig. 53

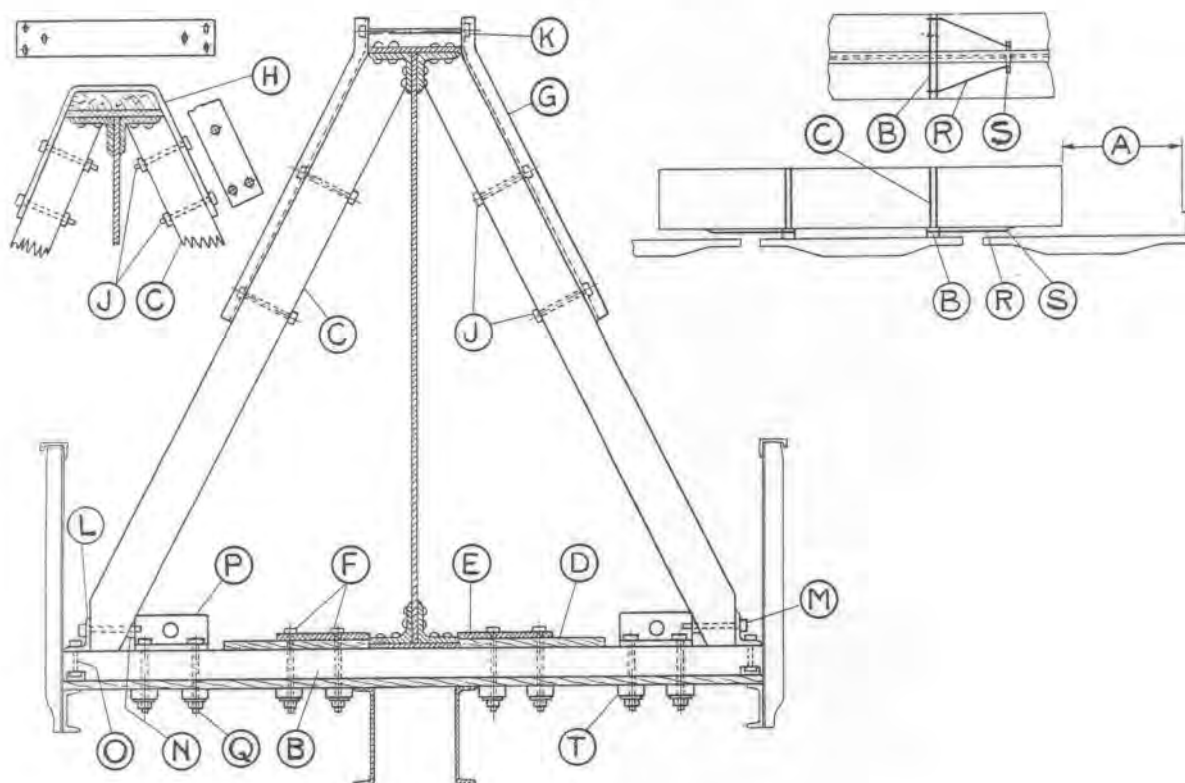
OPEN GIRDERS, WHOLE OR HALF-ROOF TRUSSES, ETC. LOAD ON ONE CAR, WITH OR WITHOUT OVERHANGS—
FLAT OR GONDOLA CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	Loads 5 ft. high or less above top of car sides 2 pr. 3 pr. Loads over 5 ft. high above top of car sides 2 pr. 3 pr.	$\frac{3}{4}$ in. dia. rods, loads less than 20,000 lbs. $\frac{3}{4}$ in. dia. or two pr. $\frac{1}{8}$ in. dia. rods for loads weighing 20,000 lbs. and less than 30,000 lbs. $\frac{1}{8}$ in. dia. rods for loads weighing 30,000 lbs. or less. 1 in. dia. rods for loads weighing over 30,000 lbs. When rods pass through stake pockets, use $\frac{1}{2}$ in. x 4 in. x 10 in. plates underneath stake pockets. Locate rods as shown so as to equalize strain.
C	1 ea. pr. Items "B"	$\frac{3}{4}$ in. x 3 in. plates, length to suit. Not required when Items "M" and "N" are used.
D	1 ea. Item "C"	$\frac{3}{8}$ in. x 3 in. plates, length to suit. Not required when Items "M" and "N" are used.
E	2 ea. Item "D"	$\frac{5}{8}$ in. dia. bolts or rods, through Items "C" and "D". Not required when Items "M" and "N" are used.
F	2 ea. overhang	$\frac{3}{8}$ in. x 2 in. plates, length to suit. Not required when overhang is 10 ft. long or less.
G	1 ea. girder or truss	$\frac{1}{2}$ in. dia. bolts, long enough to pass through Items "F".
H	Load 50 ft. long or less, 2; Load over 50 ft. long, 3	4 in. x 6 in., hardwood, length to suit. Secure each with two bolts $\frac{1}{8}$ in. dia., with washers, through Items "H", "J", "K", "L" and floor.
J	2 ea. Item "H"	6 in. wide, height and length to suit.
K	1 ea. Item "H"	4 in. x 6 in., hardwood, length to suit. Use one bolt, $\frac{1}{2}$ in. dia., crosswise, with washers, at each end to prevent splitting.
L	2 ea. Item "H"	4 in. x 4 in. x 18 in., hardwood, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
M	2 ea. pr. Items "B"	$\frac{3}{8}$ in. x 6 in. steel plates, length to suit. Not required when Items "C", "D" and "E" are used.
N	1 ea. pr. Items "M"	$\frac{5}{8}$ in. dia. rod, length to suit. Not required when Items "C", "D" and "E" are used.

Place additional blocking underneath load if liable to damage by deflection.
Apply blocking to separate material liable to damage by contact.
See General Rules 4, 5, 6, 7, 8, 9, 12, 14, 15 and 16 for further details.

LATTICE GIRDERS, PLATE GIRDERS, COLUMNS, ETC.—SINGLE CAR, OVERHANGING BOTH ENDS OF FLAT OR GONDOLA CARS

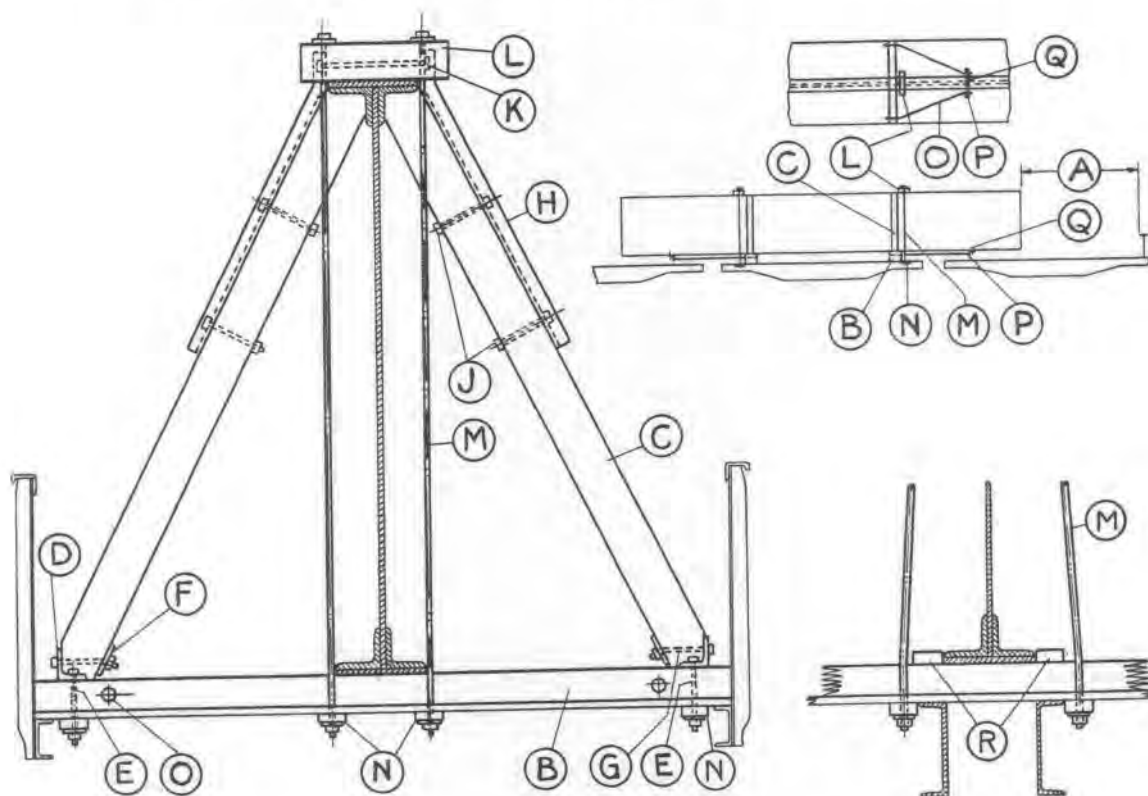


Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2	8 in. wide, hardwood, 36,000 lbs. or less, per bolster.
C	4	10 in. wide, over 36,000 lbs. to 73,000 lbs. per bolster, inclusive, length equal to width of car, high enough to provide 4 in. clearance between load and floor or end gate of idler cars.
D	4	6 in. x 8 in., hardwood, 30,000 lbs. or less.
E	4	6 in. x 10 in., over 30,000 lbs. to 72,000 lbs., inclusive.
F	12	6 in. x 12 in., over 72,000 lbs. to 115,000 lbs., inclusive.
G	4	8 in. x 12 in., over 115,000 lbs. to 146,000 lbs., inclusive.
H	2	10 in. x 2 ft., hardwood, thickness $\frac{1}{8}$ in. less than flange of girder.
I	2	$\frac{3}{4}$ in. x 6 in. x 1 ft. 4 in., plate, 30,000 lbs. or less.
J	8	1 in. x 6 in. x 1 ft. 4 in., plate, over 30,000 lbs. to 115,000 lbs., inclusive.
K	4	1 $\frac{1}{8}$ in. x 6 in. x 1 ft. 4 in., plate, over 115,000 lbs. to 146,000 lbs., inclusive.
L	4	$\frac{3}{4}$ in. dia., bolts, 72,000 lbs. or less.
M	8	$\frac{7}{8}$ in. dia., bolts, 72,000 lbs. to 146,000 lbs., inclusive.
N	4	6 in. x 3 ft., channels or angles; or per Item "H".
O	8	$\frac{1}{2}$ in. x 6 in., plate, length to suit; or per Items "G".
P	4	$\frac{3}{4}$ in. dia., bolts, with washers, when Items "G" are used.
Q	8	$\frac{3}{4}$ in. dia., bolts, with washers, when Items "H" are used.
R	4	$\frac{7}{8}$ in. dia., bolts, 72,000 lbs. or less.
S	2	1 in. dia., bolts, over 72,000 lbs. to 146,000 lbs., inclusive.
T	16 Cleats or 20 Plates	4 in. x 3 in. x $\frac{3}{8}$ in. angle, length to suit.

Material must be suitably protected to prevent becoming permanently distorted.
See General Rules 4, 5, 6, 7, 8, 9, 12, 15 and 16 for further details.

Sec. 2—Fig. 55 (Rev.—10-1960)

LATTICE GIRDERS, PLATE GIRDERS, COLUMNS, ETC.—SINGLE CAR, OVERHANGING BOTH ENDS OF FLAT OR GONDOLA CARS



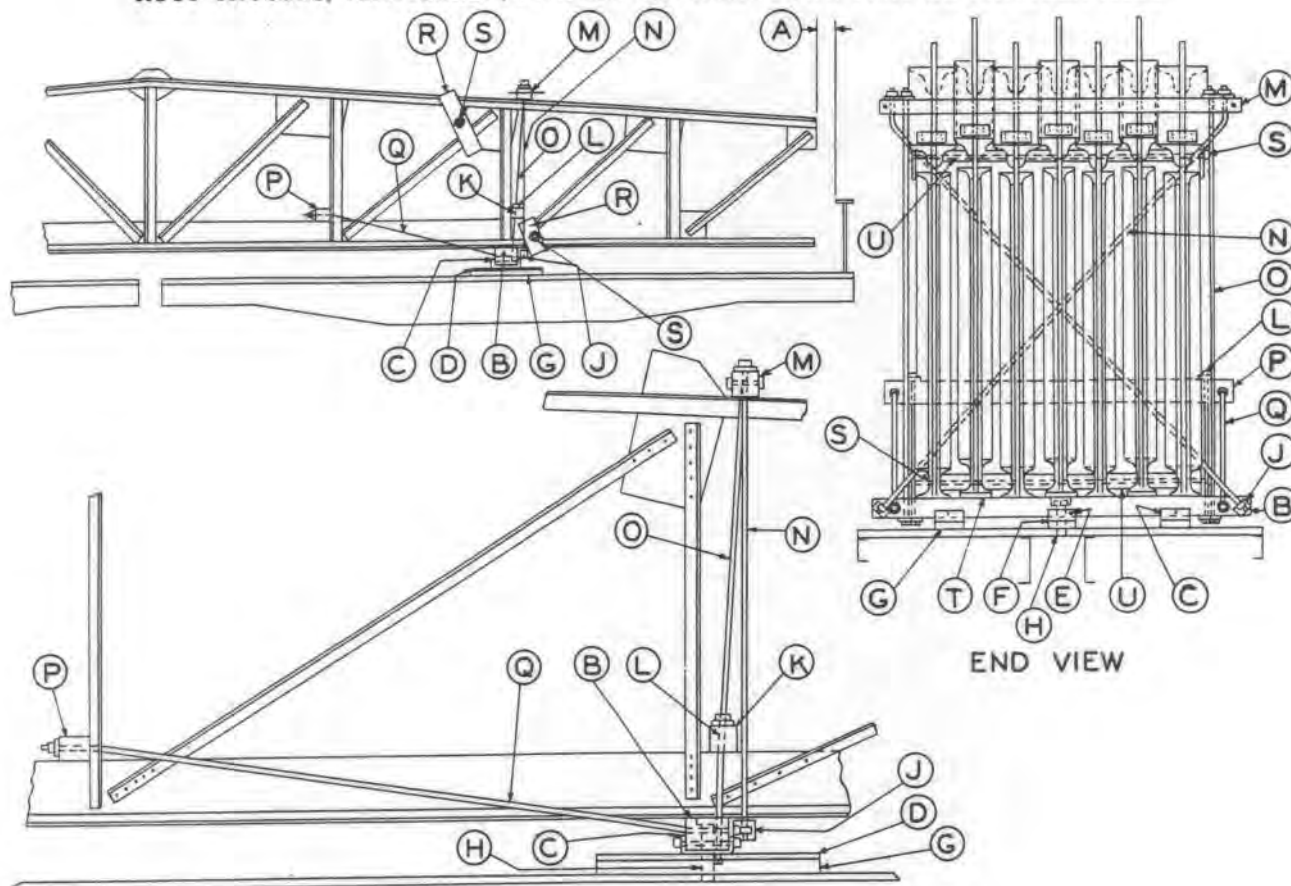
Item	No. of Pcs.	Description
A		Brake Wheel Clearance. See Fig. 2.
B	2	8 in. wide, hardwood, 36,000 lbs. or less, per bolster. 10 in. wide, over 36,000 lbs. to 73,000 lbs. per bolster, inclusive, length equal to width of car, high enough to provide 4 in. clearance between load and floor or end gates of idler cars.
C	4	6 in. x 8 in., hardwood, 30,000 lbs. or less. 6 in. x 10 in., over 30,000 lbs. to 72,000 lbs., inclusive. 6 in. x 12 in., over 72,000 lbs. to 115,000 lbs., inclusive. 8 in. x 12 in., over 115,000 lbs. to 146,000 lbs., inclusive.
D	4	4 in. x 3 in. x $\frac{3}{4}$ in. angle, length to suit.
E	8	$\frac{3}{4}$ in. dia., bolts.
F	4	$\frac{1}{4}$ in. x 3 in., plate, length to suit.
G	8	$\frac{3}{4}$ in. dia., bolts.
H	4	6 in. x 3 ft. channels or angles.
J	8	$\frac{3}{4}$ in. dia., bolts, with washers.
K	4	$\frac{3}{4}$ in. dia., bolts.
L	2	6 in. x 8 in., hardwood, length to suit.
M	4	1 in. dia., rod, with washers, through Item "L" and "N" when width at base of girder is such that Item "M" will come in contact with car center sills, they should be placed as close as possible thereto, bottom flange of girder to be blocked as per Items "R".
N	8 cleats or 12 plates	4 in. x 4 in. x 18 in., hardwood, or $\frac{1}{2}$ in. x 4 in. x 18 in. plate.
O	4	1 in. dia., rod, 30,000 lbs. or less. $1\frac{1}{8}$ in. dia., rod, over 30,000 lbs. to 72,000 lbs., inclusive. $1\frac{1}{4}$ in. dia., rod, over 72,000 lbs.
P	2	$3\frac{1}{2}$ in. x $3\frac{1}{2}$ in. x $\frac{3}{4}$ in. angle, length to suit, bolted to girder.
Q	8	Bolts $\frac{1}{8}$ in. less than dia. of hole in girder.
R	4	2 in. x 6 in. x 10 in., hardwood, length equal to width of Item "B", secured with five 30-D nails.

Material must be suitably protected to prevent becoming permanently distorted.

When the construction of the girder and or the car make it undesirable to apply all of the items stipulated in this figure in the identical manner shown in drawing, Items "B," "C" and "O" may be changed or relocated in such a manner that it will not result in a concentrated load in violation of General Rule 4, provided the attachment to the car structure is equivalent or stronger than the item specified, that the strength of item is not reduced and that their intended functions are not abridged.

See General Rules 4, 5, 6, 7, 8, 9, 12, 14, 15 and 16 for further details.

ROOF TRUSSES, VERTICALLY, PIVOTED BOLSTERS—TWO FLAT OR GONDOLA CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2	8 in. x 10 in., hardwood, loads less than 15,000 lbs., per bolster.
C	2 per bolster	10 in. x 14 in., hardwood, loads 15,000 lbs. to 36,000 lbs., per bolster.
D	4	$\frac{1}{4}$ in. x 12 in. x 1 ft. 3 in., loads less than 15,000 lbs., per bolster.
E	1 per bolster	$\frac{1}{4}$ in. x 12 in. x 1 ft. 7 in., loads 15,000 lbs. to 36,000 lbs., per bolster.
F	1 per bolster	Secure each with one bolt, $\frac{5}{8}$ in. dia.
G	3 per bolster	$\frac{3}{8}$ in. x 12 in. x 4 ft. 6 in., plate, secured with four bolts, $\frac{3}{4}$ in. dia., with washers, through Item "G" and floor.
H	1 per bolster	$\frac{1}{4}$ in. x 12 in. x 1 ft. 3 in., plate, loads less than 15,000 lbs., per bolster.
J	2 per bolster	$\frac{1}{4}$ in. x 12 in. x 1 ft. 7 in., plate, loads 15,000 lbs. to 36,000 lbs., per bolster.
K	1 per bolster	Secure with one bolt, $\frac{5}{8}$ in. dia.
L	2 per bolster	$\frac{1}{2}$ in. x 12 in. x 12 in., plate.
M	1 per bolster	3 in. x 12 in. x 4 ft. 6 in., hardwood.
N	2 per bolster	$2\frac{1}{2}$ in. dia., pin, with head, long enough to rest on center sill cover plate.
O	2 per bolster	6 in. x 8 in., hardwood, loads 30,000 lbs. to 72,000 lbs., length to suit.
P	1 per bolster	Use one bolt, $\frac{1}{2}$ in. dia., crosswise, with washers, at each end to prevent splitting.
Q	2 per bolster	1 in. dia., loads less than 30,000 lbs., $1\frac{1}{8}$ in. dia., loads 30,000 to 72,000 lbs., length to suit.
R	4 per bolster	$1\frac{1}{8}$ in. dia., rod.
S	2 per bolster	6 in. x 8 in., hardwood, length to suit.
T	3 per bolster	Plates to suit.
U	12 per bolster	1 in. dia., rod.

Trusses, may be loaded vertically on pivoted bolsters if clamped together near bolsters and spacing pieces used to make a unit load.

For length of slotted center pin hole see Fig. 5.

For trusses more than 50 ft. long, if necessary to pass a curve of more than 20 degrees curvature, nuts on one bolster should be loosened to allow trusses to shift on bolster. After curve is passed all nuts must be tightened.

Items "K" and "M" must rest on each truss or have suitable blocks secured between them and trusses.

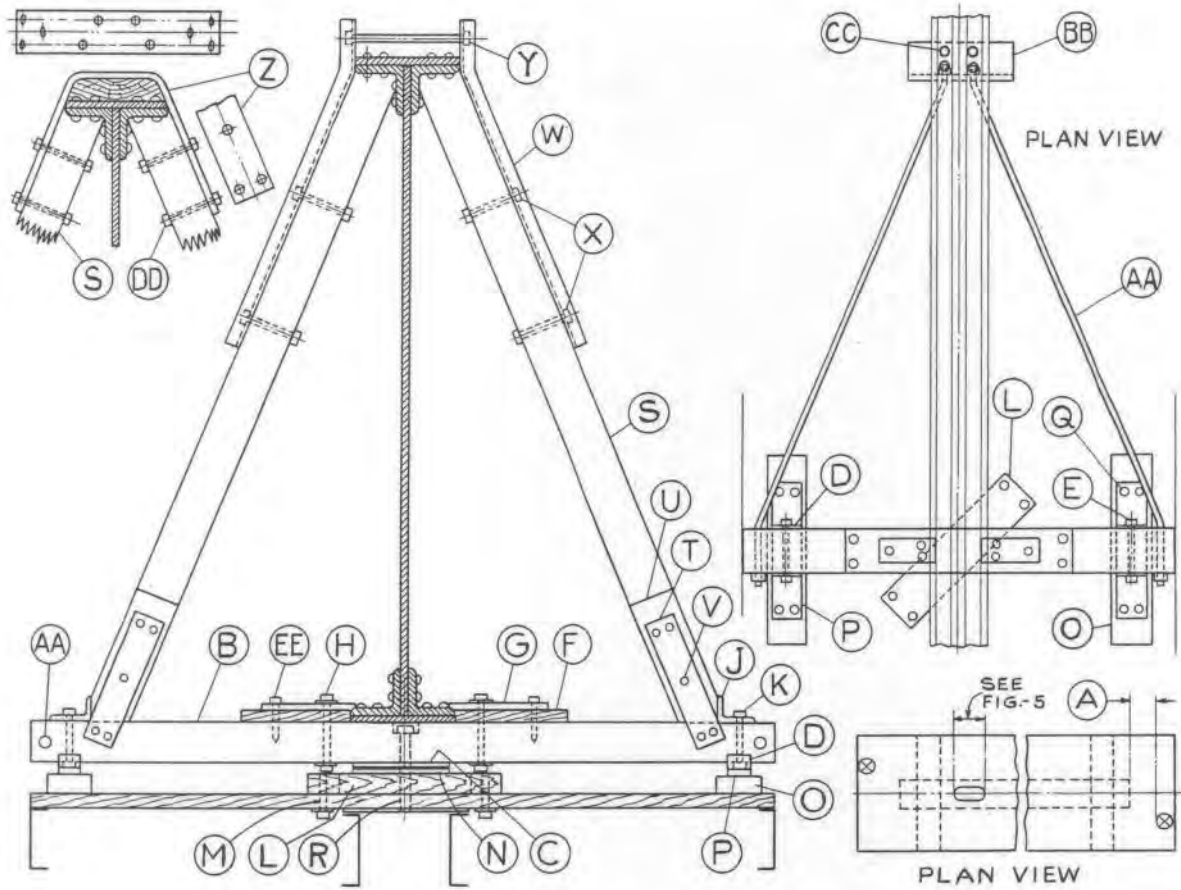
Item "L" must bear against bottom flange and Item "O" against top flange of outside trusses.

Grease center-plates and side-bearings before bolsters are placed in position.

See General Rules 4, 5, 6, 7, 9, 12, 15, 18 and 21 for further details.

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GIRDERS, VERTICALLY ON PIVOTED BOLSTERS—FLAT OR GONDOLA CARS



GIRDERS, VERTICALLY ON PIVOTED BOLSTERS—FLAT OR GONDOLA CARS

Description	Item	No. of Pcs.	Loads weighing 20,000 lbs. or less, per bolster	Loads weighing over 20,000 lbs. and not exceeding 40,000 lbs. per bolster	Loads weighing over 40,000 lbs. and not exceeding 60,000 lbs. per bolster	Loads weighing over 60,000 lbs. and not exceeding 100,000 lbs. per bolster
Brake wheel clearance, See Fig. 2.....	A					
Bolster.....	B	2	8"x10"x9'6"	10"x12"x9'6"	12"x14"x9'6"	14"x16"x9'6"
Center-plate, top.....	C	2	3/8"x12"x12"	3/8"x12"x12"	3/8"x12"x12"	3/8"x12"x12"
Side-bearing plate, top (bent).....	D	4	1/4"x6"x1'3"	1/4"x6"x1'7"	1/4"x6"x1'9"	3/8"x6"x2'1"
Bolts for side-bearing plates, top.....	E	4	5/8" dia.	5/8" dia.	5/8" dia.	5/8" dia.
Bolster-side stops.....	F	4	1"x10"x2'	1"x10"x2'	1"x10"x2'	1"x10"x2'
Flange clamps.....	G	4	3/4"x6"x1'4"	1"x6"x1'4"	1"x6"x1'4"	1 1/2"x6"x1'4"
Bolts for flange clamps.....	H	8	3/4" dia.	3/4" dia.	7/8" dia.	7/8" dia.
Strut angles.....	J	4	5"x3 1/2"x3 3/8"x 9 3/4" long	5"x3 1/2"x3 3/8"x 13 1/2" long	5"x3 1/2"x3 3/8"x 15" long	5"x3 1/2"x3 3/8"x 18" long
Bolts for strut angles.....	K	8	3/4" dia.	3/4" dia.	7/8" dia.	7/8" dia.
Center-plate backing.....	L	2	3"x12"x5'	3"x12"x5'	3"x12"x5'	4"x12"x5'
Bolts for center-plate backing.....	M	8	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Center-plate, bottom.....	N	2	3/8"x12"x12"	3/8"x12"x12"	3/8"x12"x12"	1/2"x12"x12"
Side-bearing, backing.....	O	4	3"x10"x5'	3"x10"x5'	3"x10"x5'	4"x10"x5'
Side-bearing plate, bottom.....	P	4	3/8"x6"x3'6"	3/8"x6"x3'6"	3/8"x6"x4'	3/8"x6"x4'
Bolts for side-bearing plate; bottom.....	Q	16	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Center-pin, with head.....	R	2	2 1/2" dia.	2 1/2" dia.	2 1/2" dia.	2 1/2" dia.
Struts.....	S	4	*6"x8"	*6"x10"	*6"x10"	*8"x12"
Strut straps.....	T	8	3/8"x5"x1'6"	3/8"x5"x1'6"	3/8"x5"x1'6"	1/2"x5"x1'6"
Strut strap fillers.....	U	8	1"x6"x1'6"	2"x6"x1'6"	2"x6"x1'6"	4"x8"x1'6"
Bolts for strut straps.....	V	20	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Strut top irons.....	W	4	6"x3' channels, or angles	6"x3' channels, or angles	6"x3' channels, or angles	6"x3' channels, or angles
Bolts securing strut top irons.....	X	8	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Bolts connecting strut top irons.....	Y	4	7/8" dia.	7/8" dia.	1" dia.	1" dia.
Alternate fastening.....	Z	2	1 1/2"x6"	1 1/2"x6"	1 1/2"x6"	1 1/2"x6"
Brace rods.....	AA	4	1" dia.	1 1/8" dia.	1 1/4" dia.	1 1/4" dia.
Brace rod angle.....	BB	2	5"x3 1/2"x3 3/8"	5"x3 1/2"x3 3/8"	5"x3 1/2"x3 3/8"	5"x3 1/2"x3 3/8"
Bolts for brace rod angles.....	CC	8	1 1/16" less than dia. of hole	1 1/16" less than dia. of hole	1 1/16" less than dia. of hole	1 1/16" less than dia. of hole
Bolts for alternate fastenings.....	DD	12	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Spikes or lag screws.....	EE	12	1 1/2"x4"	1 1/2"x4"	1 1/2"x4"	1 1/2"x4"

*May be made of two pieces, securely bolted together.

†To be 1/8 in. less than flange of girder.

Items "S", must be neatly fitted and driven into place.

Item "AA", may be attached to girders between bolsters, or to both overhanging ends of girders.

Items "B", made of one piece shall have one 3/4 in. transverse bolt on either side of center pin to prevent splitting. When made of 2 or 3 pieces they shall have at least six 3/4 in. transverse bolts.

Items "L", shall have one 5/8 in. transverse bolt on either side of center pin to prevent splitting.

For length of slotted center pin hole see Fig. 5.

Girders over 8 ft. deep, weighing less than 20,000 lbs. per bolster, shall have bolsters as specified for girders weighing over 20,000 lbs. to 40,000 lbs., per bolster.

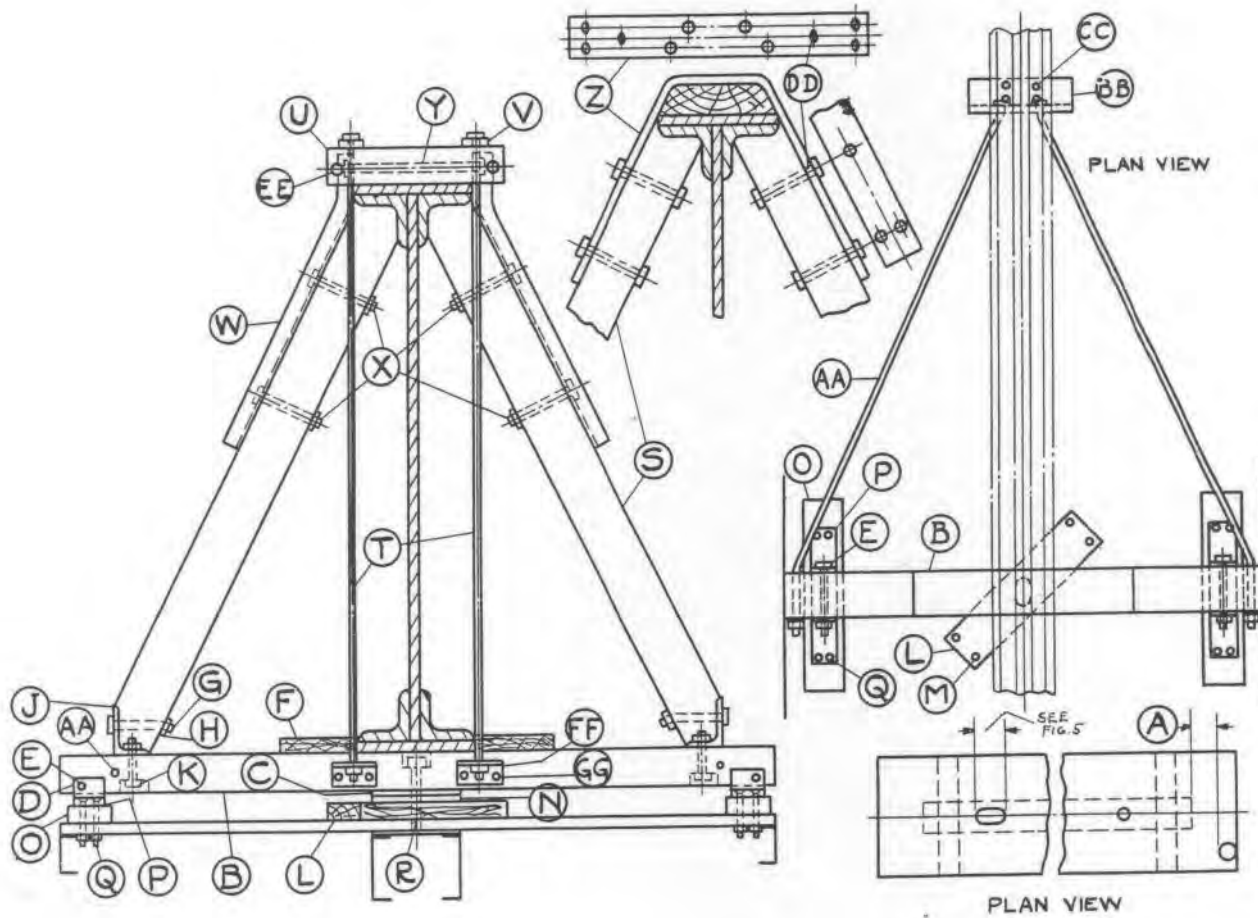
Girders more than 50 ft. long, if necessary to pass a curve of more than 20 degrees, nuts on one bolster should be loosened to allow girder to shift on bolster. After curve is passed all nuts must be tightened.

Items "R" must be sufficiently long to rest on center sill cover plate.

All wooden items must be hardwood.

See General Rules 4, 5, 6, 7, 9, 12 and 15 for further details.

GIRDERS, VERTICALLY ON PIVOTED BOLSTERS—FLAT OR GONDOLA CARS



GIRDERS, VERTICALLY ON PIVOTED BOLSTERS—FLAT OR GONDOLA CARS

Description	Item	No. of Pcs.	Loads weighing 20,000 lbs. or less per bolster	Loads weighing over 20,000 lbs. and not exceeding 40,000 lbs. per bolster	Loads weighing over 40,000 lbs. and not exceeding 60,000 lbs. per bolster	Loads weighing over 60,000 lbs. and not exceeding 100,000 lbs. per bolster
Brake wheel clearance. See Fig. 2.....	A					
Bolster.....	B	2	8"x10"x9'6"	10"x12"x9'6"	12"x14"x9'6"	14"x16"x9'6"
Center-plate, top.....	C	2	3/8"x12"x12"	3/8"x12"x12"	3/8"x12"x12"	3/8"x12"x12"
Side-bearing plate, top (bent).....	D	4	1/4"x6"x1'3"	1/4"x6"x1'7"	1/4"x6"x1'9"	3/8"x6"x2'1"
Bolts for side-bearing plates, top.....	E	4	5/8" dia.	5/8" dia.	5/8" dia.	5/8" dia.
Bolster side stops.....	F	4	2"x10"x1'6", each secured with 6-30D nails	2"x10"x1'6", each secured with 6-30D nails	2"x10"x1'6", each secured with 6-30D nails	2"x10"x1'6", each secured with 6-30D nails
Bolts securing struts.....	G	4	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Washers for strut bolts.....	H	4	1/4"x3"x3"	1/4"x3"x3"	1/4"x3"x3"	1/4"x3"x3"
Strut angles.....	J	4	5"x3 1/2"x3 3/8"x 9 3/4" long	5"x3 1/2"x3 3/8"x 13 1/2" long	5"x3 1/2"x3 3/8"x 15" long	5"x3 1/2"x3 3/8"x 18" long
Bolts for strut angles.....	K	8	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Center-plate backing.....	L	2	3"x12"x5'	3"x12"x5'	3"x12"x5'	4"x12"x5'
Bolts for center-plate backing.....	M	8	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Center-plate, bottom.....	N	2	3/8"x12"x12"	3/8"x12"x12"	3/8"x12"x12"	3/8"x12"x12"
Side-bearing backing.....	O	4	3"x10"x5'	3"x10"x5'	3"x10"x5'	4"x10"x5'
Side-bearing plate, bottom.....	P	4	3/8"x6"x3'6"	3/8"x6"x3'6"	3/8"x6"x4'	3/8"x6"x4'
Bolts for side-bearing plate, bottom.....	Q	16	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Center-pin with head.....	R	2	2 1/2" dia.	2 1/2" dia.	2 1/2" dia.	2 1/2" dia.
Struts.....	S	4	*6"x8"	*6"x10"	*6"x12"	*8"x12"
Vertical tie rods.....	T	4	1" dia.	1" dia.	1" dia.	1" dia.
Top tie clamp (hardwood).....	U	2	6"x8"	6"x8"	6"x8"	6"x8"
Vertical tie rod washers.....	V	4	1/4"x4"x4"	1/4"x4"x4"	1/4"x4"x4"	1/4"x4"x4"
Strut top irons.....	W	4	6"x3' channels, or angles	6"x3' channels, or angles	6"x3' channels, or angles	6"x3' channels, or angles
Bolts securing strut top irons.....	X	8	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Bolts connecting strut top irons.....	Y	4	7/8" dia.	7/8" dia.	1" dia.	1" dia.
Alternate fastening.....	Z	2	1/2"x6"	1/2"x6"	1/2"x6"	1/2"x6"
Brace rods.....	AA	4	1" dia.	1 1/8" dia.	1 1/4" dia.	1 1/4" dia.
Brace rod angles.....	BB	2	5"x3 1/2"x3 3/8"	5"x3 1/2"x3 3/8"	5"x3 1/2"x3 3/8"	5"x3 1/2"x3 3/8"
Bolts for brace rod angles.....	CC	8	1/16" less than dia. of hole	1/16" less than dia. of hole	1/16" less than dia. of hole	1/16" less than dia. of hole
Bolts for alternate fastenings.....	DD	12	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.
Bolts for top tie clamps.....	EE	4	5/8" dia., with washers	5/8" dia., with washers	5/8" dia., with washers	5/8" dia., with washers
Vertical tie rod angles.....	FF	4	3 1/2"x3 1/2"x3 3/8"	3 1/2"x3 1/2"x3 3/8"	3 1/2"x3 1/2"x3 3/8"	3 1/2"x3 1/2"x3 3/8"
Bolts securing vertical tie rod angles.....	GG	8	3/4" dia.	3/4" dia.	3/4" dia.	3/4" dia.

*May be made of two pieces, securely bolted together.

Items "S", must be neatly fitted and driven into plates.

Items "AA", may be attached to girders between bolsters, or to both overhanging ends of girders.

Items "B", made of one piece shall have one 3/4 in. transverse bolt on either side of center pin to prevent splitting. When made of 2 or 3 pieces they shall have at least six 3/4 in. transverse bolts.

Items "L", shall have one 5/8 in. transverse bolt on either side of center pin to prevent splitting.

For length of slotted center pin hole see Fig. 5.

Girders over 8 ft. deep, weighing less than 20,000 lbs. per bolster, shall have bolsters as specified for girders weighing over 20,000 lbs. to 40,000 lbs., per bolster.

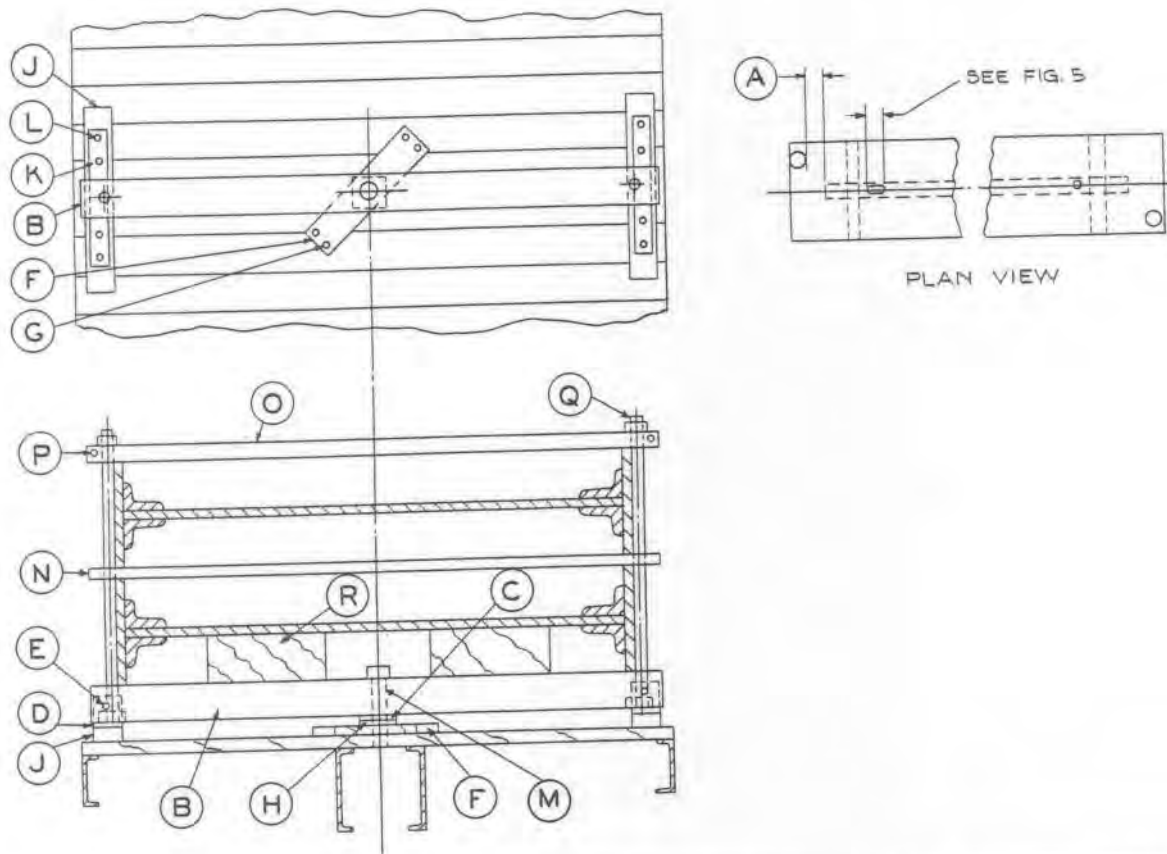
Girders more than 50 ft. long, if necessary to pass a curve of more than 20 degrees, nuts on one bolster should be loosened to allow girder to shift on bolster. After curve is passed all nuts must be tightened.

Items "R", must be sufficiently long to rest on center sill cover plate.

All wooden items must be hardwood.

See General Rules 4, 5, 6, 7, 9, 12 and 15 for further details.

GIRDERS, HORIZONTALLY, ON PIVOTED BOLSTERS—TWO OR MORE FLAT OR GONDOLA CARS



Description	Item	No. of Pcs.	Loads weighing 15,000 lbs. or less per bolster	Loads weighing over 15,000 lbs. to 36,000 lbs. per bolster	Loads weighing over 36,000 lbs. per bolster
Brake wheel clearance. See Fig. 2.	A				
Bolster	B	2	8"x10"x9'6"	10"x14"x9'6"	12"x14"x9'6"
Center-plate, top	C	2	3/8"x12"x12"	3/8"x12"x12"	3/8"x12"x12"
Side-bearing plate, top (bent)	D	4	1/4"x6"x1'3"	1/4"x6"x1'7"	1/4"x6"x1'7"
Bolts for side-bearing plate, top	E	4	5/8" dia.	5/8" dia.	5/8" dia.
Center-plate backing	F	2	3"x12"x5'	3"x12"x5'	3"x12"x5'
Bolts for center-plate backing	G	8	3/4" dia.	3/4" dia.	3/4" dia.
Center-plate, bottom	H	2	3/8"x12"x12"	3/8"x12"x12"	3/8"x12"x12"
Side-bearing backing	J	4	3"x10"x5'	3"x10"x5'	3"x10"x5'
Side-bearing plate, bottom	K	4	1/4"x6"x3'6"	1/4"x6"x3'6"	1/4"x6"x3'6"
Bolts for side-bearing plate, bottom	L	16	3/4" dia.	3/4" dia.	3/4" dia.
Center-pin with head	M	2	2 1/2" dia.	2 1/2" dia.	2 1/2" dia.
Spacers	N	2	2"x8"	2"x8"	2"x8"
Top clamping-piece	O	2	4"x6"	6"x8"	6"x8"
Bolts for top clamping-piece	P	4	1/2" dia. with washers	1/2" dia. with washers	1/2" dia. with washers
Tie rods	Q	4	1 1/4" dia. with washers	1 1/4" dia. with washers	1 1/4" dia. with washers
Web bearing blocks, located as near flanges as possible	R	4	To suit	To suit	To suit

Items "B" made of one piece shall have one 3/4 in. transverse bolt on either side of center pin to prevent splitting. When made of 2 or 3 pieces they must have at least six 3/4 in. transverse bolts.

Item "F" shall have one 5/8 in. transverse bolt on either side of center-pin to prevent splitting.

For length of slotted center pin hole see Fig. 5.

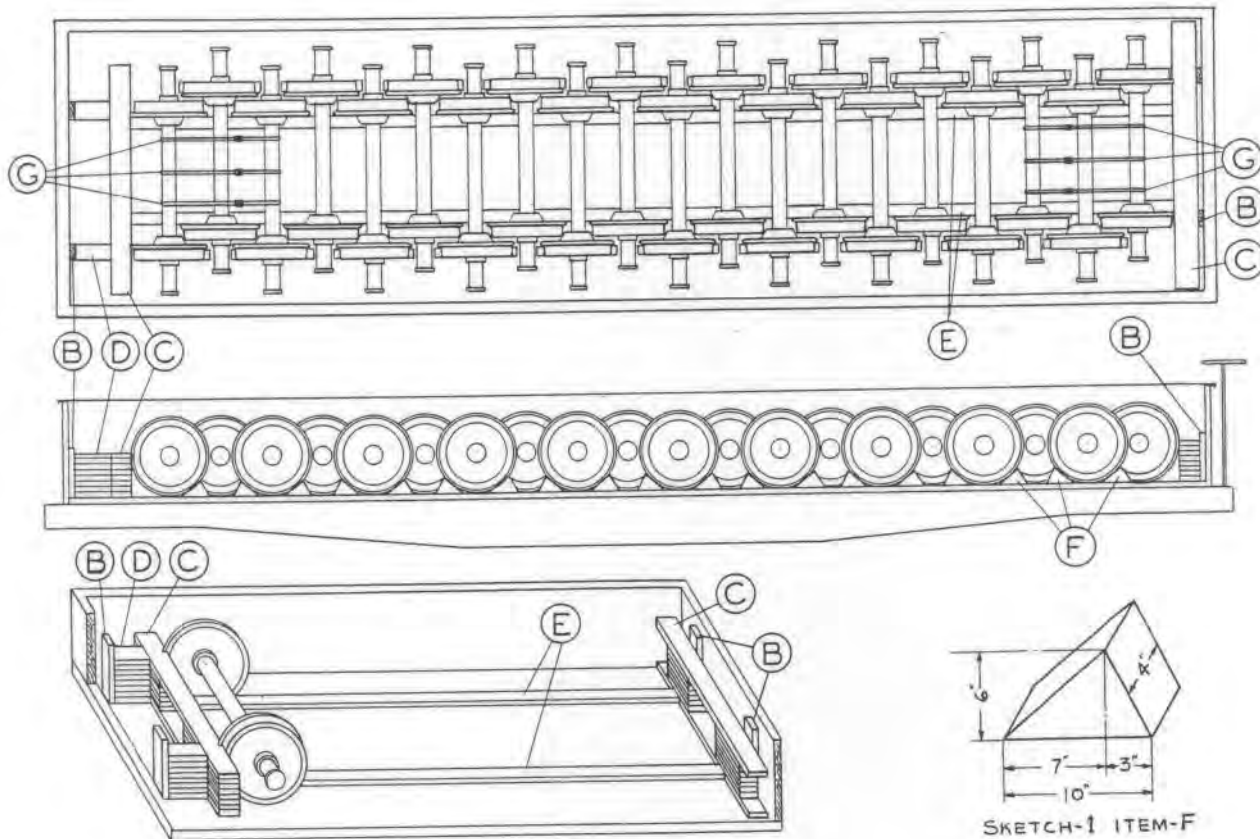
All wooden items must be hardwood.

Girders more than 50 ft. long, if necessary to pass a curve of more than 20 degrees curvature, nuts on one bolster should be loosened to allow girder to shift on bolster. After curve is passed all nuts must be tightened.

Items "M" must be sufficiently long to rest on center sill cover plate.

See General Rules 4, 5, 6, 7, 9, 12, 15, 18 and 21 for further details.

MOUNTED WHEELS—GONDOLA CARS



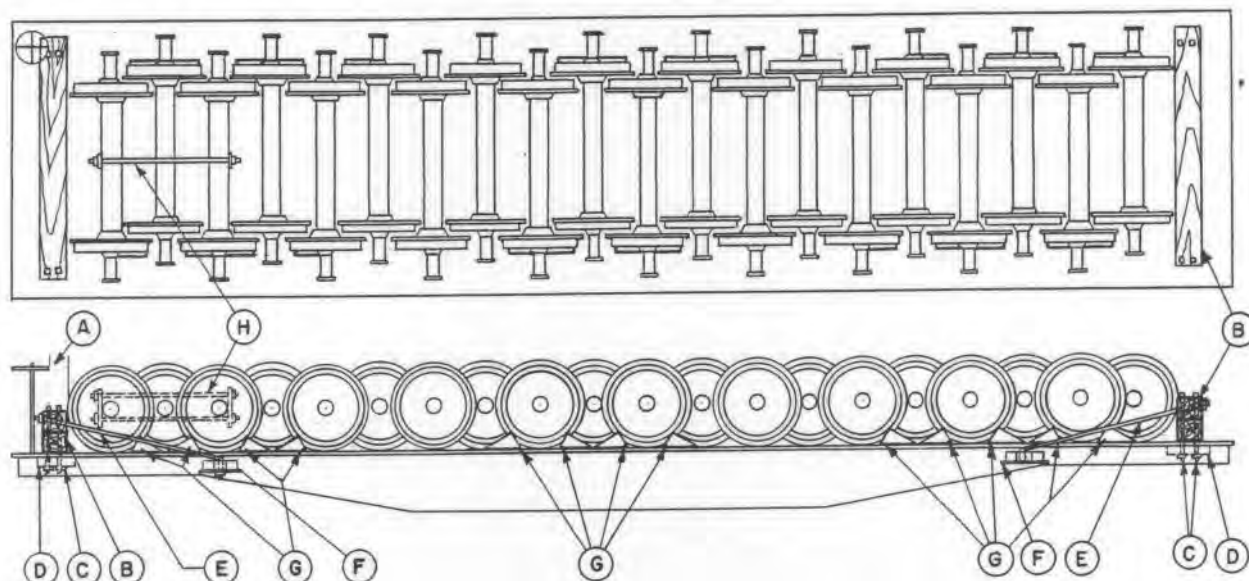
SKETCH-1 ITEM-F

Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2 ea. end of load	1 3/4 in. x 6 in. x 18 in., hardwood, securely wedged between Items "D" or "C" and end of car.
C	As required	1 3/4 in. x 7 in., hardwood, long enough to extend 12 in. beyond outside face of wheels, height equal to 1/2 the dia. of wheels or a maximum of 16 in. Nail to floor and to each other with ten 20-D nails in each. Toe-nail top piece to Items "B" with two 20-D nails at each location where Items "D" are not used. Pieces contacting flanges must be cut to fit flange so as to provide full bearing on wheel tread. Substitute, if desired, the intermediate pieces with 1 3/4 in. x 7 in. x 24 in. pieces, centered against wheel. Nail to bottom Item "C" and to each other with three 30-D nails in each.
D	As required 1 end only	1 3/4 in. x 6 in., hardwood, long enough to completely fill space between Items "B" and "C", height equal to Items "C". Locate against Items "C" at center of wheel and nail to floor and to each other with three 20-D nails in each. Top piece must be toe-nailed to Items "B".
E	2 per load	2 in. x 3 in., hardwood, full length of load. Locate against inside faces of inside wheels and nail each to floor with 20-D nails spaced about 18 in. apart.
F	2 ea. outside wheel	4 in. x 6 in. x 10 in., hardwood, per Sketch 1. Locate against tread of wheel and nail each to floor with three 40-D nails.
G	3 ea. end of load	1 1/4 in. x .035 in. high tension bands, equally spaced, encircling 3 end axles. Substitute, if desired, two 3/4 in. dia. rods, long enough to tie three pair of wheels together, and two 1/2 in. x 2 1/2 in. x 10 in. clamps.

See General Rules 4, 5, 9, 14 and 15 for further details.

Sec. 2—Fig. 84 (Rev.—10-1960)

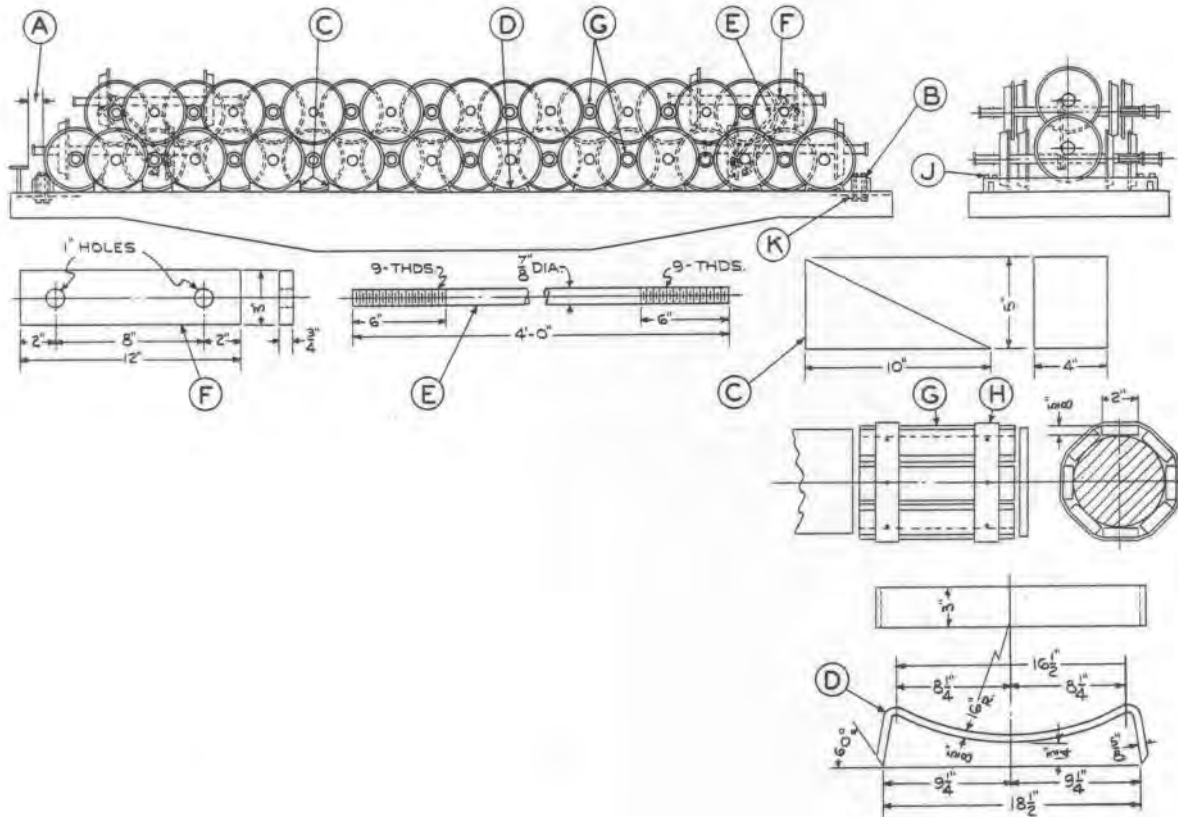
MOUNTED WHEELS LESS THAN 42 IN. IN DIAMETER—FLAT OR GONDOLA CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	1 ea. end of load	Flat cars.—8 in. wide, 16 in. high, hardwood. Gondola cars.—6 in. wide, 16 in. high, hardwood. Must be long enough to extend 6 in. beyond outside face of wheels.
C	4 ea. Item "B"	$\frac{3}{4}$ in. dia. bolts, through Item "B", floor and Item "D".
D	2 ea. end of load	4 in. x 4 in. x 18 in., hardwood, or $\frac{1}{2}$ in. x 4 in. x 18 in. plate.
E	2 ea. Item "B"	$\frac{1}{8}$ in. dia. rods, with washers, through upper portions of Items "B", near each end and Item "F" under stake pocket at a suitable angle. Not required for gondola cars.
F	1 ea. Item "E"	$\frac{1}{2}$ in. x 4 in. x 10 in. plate. Not required for gondola cars.
G	As required	4 in. x 5 in. x 8 in., hardwood, each secured with three 20-D nails.
H	3 ea. end of load.	$1\frac{1}{4}$ in. x .035 in. high tension bands, equally spaced, encircling 3 end axles. Substitute, if desired, two $\frac{3}{4}$ in. dia. rods, long enough to tie three pair of wheels together, and two $\frac{1}{2}$ in. x $2\frac{1}{2}$ in. x 10 in. clamps.

See General Rules 4, 5, 9, 14 and 15 for further details.

MOUNTED WHEELS—DOUBLE DECKED—FLAT OR GONDOLA CARS

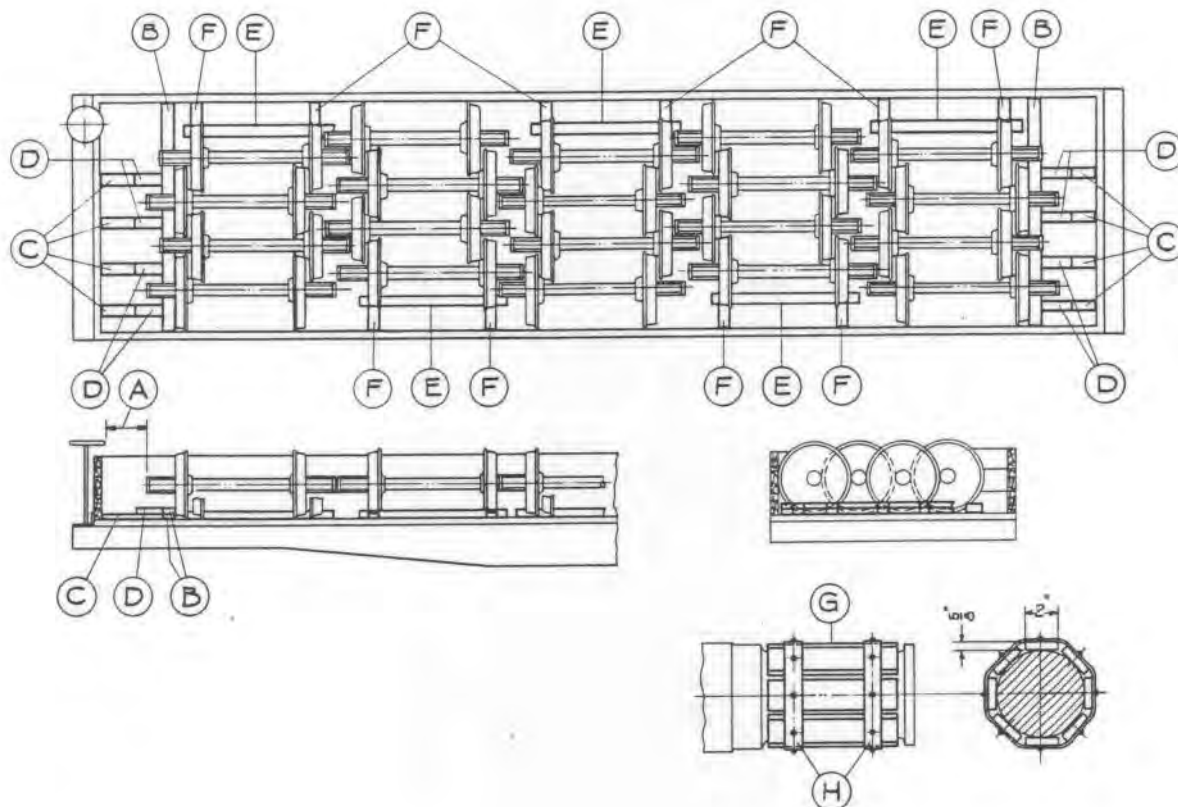


Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2	Flat cars.—8 in. wide, 8 in. high, hardwood, full width of load. Gondola cars.—6 in. wide, 8 in. high, hardwood, full width of load. Must be backed up with two 4 in. x 5 in. hardwood stakes each end. When stake pockets are not available, use tapered blocks, secured with 20-D nails.
C	2 ea. outside wheel	4 in. x 5 in. x 10 in., secured to floor with 30-D nails. Item "D" may be substituted.
D	1 ea. outside wheel	5/8 in. x 3 in. x 18 1/2 in. Item "C" may be substituted.
E	4	7/8 in. dia. x 4 ft. rods. Substitute, if desired, four 1 1/4 in. x .035 in. high tension bands.
F	4	3/4 in. x 3 in. x 12 in. plate.
G	To protect journal	Hardwood strips, 5/8 in. x 2 in., length of journal.
H	2 per journal	20 ga. 1 1/4 in. wide, metal band, nailed to Item "G".
J	8	3/4 in. dia. bolts through Item "B" and floor.
K	4	4 in. x 4 in. x 18 in. hardwood, or 1/2 in. x 4 in. x 18 in. plates.

See General Rules 4, 5, 9, 14 and 15 for further details.

Sec. 2—Fig. 86

MOUNTED WHEELS, LOADED CROSSWISE—GONDOLA CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2 ea. end of load	Each to consist of two pieces 2 in. x 4 in., hardwood, length about equal to width of car. Nail lower pieces to floor with 30-D nails spaced about 12 in. apart, and top pieces to those below in like manner.
C	4 ea. end of load	2 in. x 4 in., hardwood, long enough to extend from Item "B" to end of car. To be suitably located and nailed to floor with six 30-D nails in each.
D	1 ea. Item "C"	2 in. x 4 in. x 12 in., hardwood. Locate on top of Item "C", with one end against Item "B". Nail to Item "C" with four 30-D nails in each.
E	1 ea. row of wheels	3 in. x 4 in. x 6 ft. long or over. Locate against wheels and toe-nail to floor with 40-D nails spaced about 12 in. apart.
F	2 ea. Item "E"	2 in. x 4 in., long enough to extend from Item "E" to car side. Locate opposite to wheel treads and nail each to floor with five 20-D nails.
G	To protect journal	Hardwood strips, $\frac{5}{8}$ in. x 2 in., length of journal.
H	2 per journal	20 ga., $1\frac{1}{4}$ in. wide, metal bands, nailed to Item "G".

Wheels in each row must be of same nominal diameter.

See General Rules 4, 5, 9 and 14 for further details.

SECTION No. 4

Association of American Railroads

OPERATIONS AND
MAINTENANCE DEPARTMENT

MECHANICAL DIVISION

RULES GOVERNING

THE

Loading of Miscellaneous Commodities Including Machinery On Open Top Cars

Adopted by the
Former Master Car Builders' Association
as Recommended Practice, 1896
Advanced to Standard 1908

EFFECTIVE FEBRUARY 1, 1960

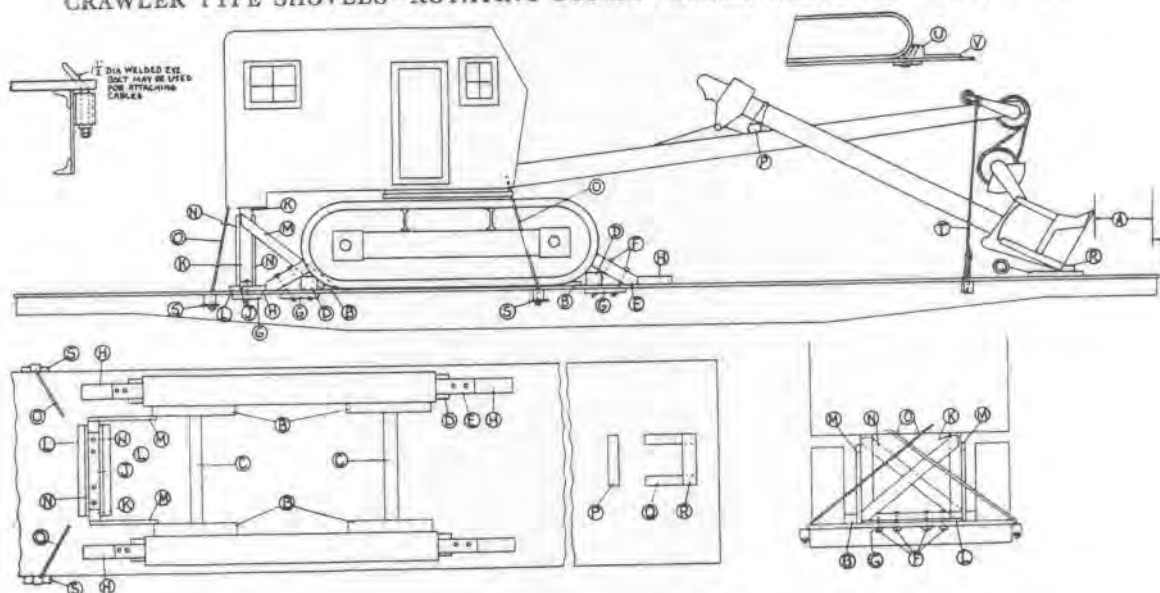
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1960

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Sec. 4—Fig. 20

CRAWLER TYPE SHOVELS—ROTATING BODIES—BOOMS ATTACHED—FLAT CARS

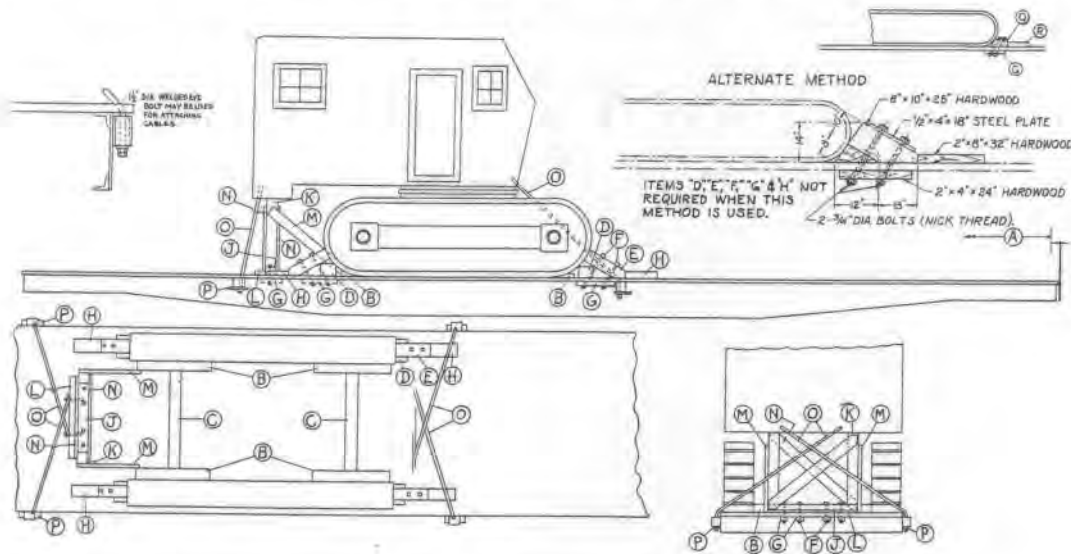


Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2	4 in. x 6 in., hardwood, length equal to that portion of crawler tread resting on floor. Locate on floor, against crawlers, and secure each with four $\frac{3}{8}$ in. dia. bolts or eight 60-D nails. Substitute, if desired, four pieces 4 in. x 6 in. x 4 ft. Locate as shown and secure each with two $\frac{3}{8}$ in. dia. bolts or four 60-D nails.
C	2	4 in. x 4 in., hardwood, long enough to fit between Items "B". Secure each to floor with two $\frac{3}{8}$ in. dia. bolts or four 60-D nails.
D	4	4 in. x 6 in. x 21 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in. x 21 in., hardwood, for machines weighing over 45,000 lbs. Toe-nail each to floor with four 40-D nails. Not required when Items "U" and "V" are used.
E	4	6 in. x 6 in., hardwood, length to suit. Locate on top of Items "D", with one end against crawler and secure each with two $\frac{3}{8}$ in. dia. bolts. Items "F". Not required when Items "U" and "V" are used.
F	8	$\frac{3}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "E", "G" and floor.
G	As required.	4 in. x 4 in. x 18 in., hardwood cleats, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
H	4	2 in. x 4 in. x 18 in., hardwood. Locate on floor, with one end against Item "E" and secure each with six 30-D nails.
J	1	4 in. x 6 in., hardwood, length to suit, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs. Secure to floor with four $\frac{3}{8}$ in. dia. bolts, with nuts and washers.
K	As required.	Two 4 in. x 6 in., hardwood, for machines weighing 45,000 lbs. or less; two 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs. to 120,000 lbs.; four 6 in. x 6 in., hardwood, for machines weighing over 120,000 lbs. They must be long enough to fit between Item "J" and body of machine.
L	2	2 in. x 6 in., hardwood, length to suit. Locate against Item "J" and secure each to floor with six 30-D nails.
M	2	2 in. x 6 in., hardwood, length to suit. Secure top ends to Items "K" and bottom ends to Items "B" with four 30-D nails at each location.
N	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally and secure ends to opposite Items "K" with six 20-D nails at each location.
O	2	1 $\frac{1}{4}$ in. diameter rods. Attach two at front and two at rear of rotating portion and pass through opposite stake pockets and Items "S". 1 in. diameter rods may be used for machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{3}{8}$ in. x 6 x 7 steel cable, doubled, for 1 $\frac{1}{4}$ in. diameter rods, or $\frac{1}{2}$ in. x 6 x 19 steel cable, doubled, for 1 in. diameter rods. Items "O" may be applied at front end of machines, crossed between rotating portion and crawler structure, or applied on same side of machines equipped with two brackets cast integral on both rotating and crawler structures.
P	1	6 in. x 6 in., hardwood, length to suit. Wire in position after weight of boom has been placed on same.
Q	2	6 in. x 6 in., hardwood, length to suit. Toe-nail each to floor with six 40-D nails.
R	1	1 in. x 8 in., length to suit. Locate on top of Items "Q", ahead of bucket, and secure to each Item "Q" with four 20-D nails.
S	1 ea. Item "O".	$\frac{1}{2}$ in. x 4 in. x 10 in. plates. Not required when Items "O" consists of cable.
T	1	$\frac{3}{8}$ in. x 6 x 7 steel cable, doubled. Loop over and around boom near front end and through opposite stake pockets.
U	4	8 in. x 8 in. x 36 in., hardwood, cut to fit contour of crawler treads, for machines weighing 45,000 lbs. to 120,000 lbs. Secure each with three $\frac{3}{4}$ in. dia. bolts through floor and Item "G". 12 in. x 12 in. x 36 in., hardwood, cut to fit contour of crawler treads, for machines weighing over 120,000 lbs. Secure each with three $\frac{3}{4}$ in. dia. bolts through floor and Item "G". Not required when Items "D" and "E" are used.
V	4	2 in. x 12 in. x 36 in., hardwood cleats, for machines weighing 45,000 to 120,000 lbs. 3 in. x 4 in. x 18 in., hardwood cleats, for machines weighing over 120,000 lbs. Locate on floor against Items "U" and secure each to floor with six 30-D nails. Not required when Items "D" and "E" are used.

Booms with buckets attached must not extend beyond end of carrying car.
 Loading machines with treads extending beyond floor of car is permitted, provided machines are centrally located on car and not more than one-half of tread extends beyond outside face of side sill.
 Machines equipped with locking devices should have such devices placed in locked position by shippers.
 For proper location of load on car, see Fig. 34.
 See General Rules 4, 5, 9, 14, 15, 19 and 19A for further details.

Sec. 4—Fig. 21

CRAWLER TYPE MACHINES—ROTATING BODIES—BOOMS DETACHED—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2	4 in. x 6 in., hardwood, length equal to that portion of crawler tread resting on floor. Locate on floor, against crawlers, and secure each with four $\frac{5}{8}$ in. dia. bolts or eight 60-D nails. Substitute, if desired, four pieces, 4 in. x 6 in. x 4 ft. Locate as shown and secure each with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
C	2	4 in. x 4 in., hardwood, long enough to fit between Items "B". Secure each to floor with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
D	4	4 in. x 6 in. x 21 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in. x 21 in., hardwood, for machines weighing over 45,000 lbs. Toe-nail each to floor with four 40-D nails. Not required when Items "P" and "Q" are used.
E	4	6 in. x 6 in., hardwood, length to suit. Locate on top of Items "D", with one end against crawler and secure each with two $\frac{5}{8}$ in. dia. bolts, Items "F". Not required when Items "P" and "Q" are used.
F	8	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "E", "G" and floor.
G	As required.	4 in. x 4 in. x 18 in., hardwood cleats, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
H	4	2 in. x 4 in. x 18 in., hardwood. Locate on floor with one end against Item "E" and secure each with six 30-D nails.
J	1	4 in. x 6 in., hardwood, length to suit, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs. Secure to floor with four $\frac{5}{8}$ in. dia. bolts, with nuts and washers.
K	As required.	Two 4 in. x 6 in., hardwood, for machines weighing 45,000 lbs. or less; two 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs. to 120,000 lbs.; four 6 in. x 6 in., hardwood, for machines weighing over 120,000 lbs. They must be long enough to fit between Item "J" and body of machine.
L	2	2 in. x 6 in., hardwood, length to suit. Locate against Item "J" and secure each to floor with six 30-D nails.
M	2	2 in. x 6 in., hardwood, length to suit. Secure top ends to Items "K" and bottom ends to Items "B" with four 30-D nails at each location.
N	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally and secure ends to opposite Items "K" with six 20-D nails at each location.
O	4	1 $\frac{1}{4}$ in. diameter rods. Attach two at front and two at rear of rotating portion and pass through opposite stake pockets and Items "P". 1 in. diameter rods may be used on machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, doubled, for 1 $\frac{1}{4}$ in. diameter rods, or $\frac{1}{2}$ in. x 6 x 19 steel cable, doubled, for 1 in. diameter rods. Items "O" may be applied at front end of machine, crossed between rotating portion and crawler structure, or applied on same side of machine equipped with two brackets cast integral on both rotating and crawler structures, providing two additional rods are applied attached to crawler structure and passed through opposite stake pockets and Items "P", or through floor and Items "G".
P	1 ea. Item "O"	$\frac{1}{2}$ in. x 4 in. x 10 in. plates. Not required when Items "O" consists of cable.
Q	4	8 in. x 8 in. x 36 in., hardwood, cut to fit contour of crawler treads, for machines weighing 45,000 lbs. to 120,000 lbs. Secure each with three $\frac{3}{4}$ in. dia. bolts through floor and Item "G". 12 in. x 12 in. x 36 in., hardwood, cut to fit contour of crawler treads, for machines weighing over 120,000 lbs. Secure each with three $\frac{7}{8}$ in. dia. bolts through floor and Item "G". Not required when Items "D" and "E" are used.
R	4	2 in. x 12 in. x 36 in., hardwood cleats, for machines weighing 45,000 lbs. to 120,000 lbs. 3 in. x 4 in. x 18 in., hardwood cleats, for machines weighing over 120,000 lbs. Locate on floor against Items "Q" and secure each to floor with six 30-D nails. Not required when Items "D" and "E" are used.

Loading machines with treads extending beyond floor of car is permitted, provided machines are centrally located on car and not more than one-half of tread extends beyond outside face of side sill.

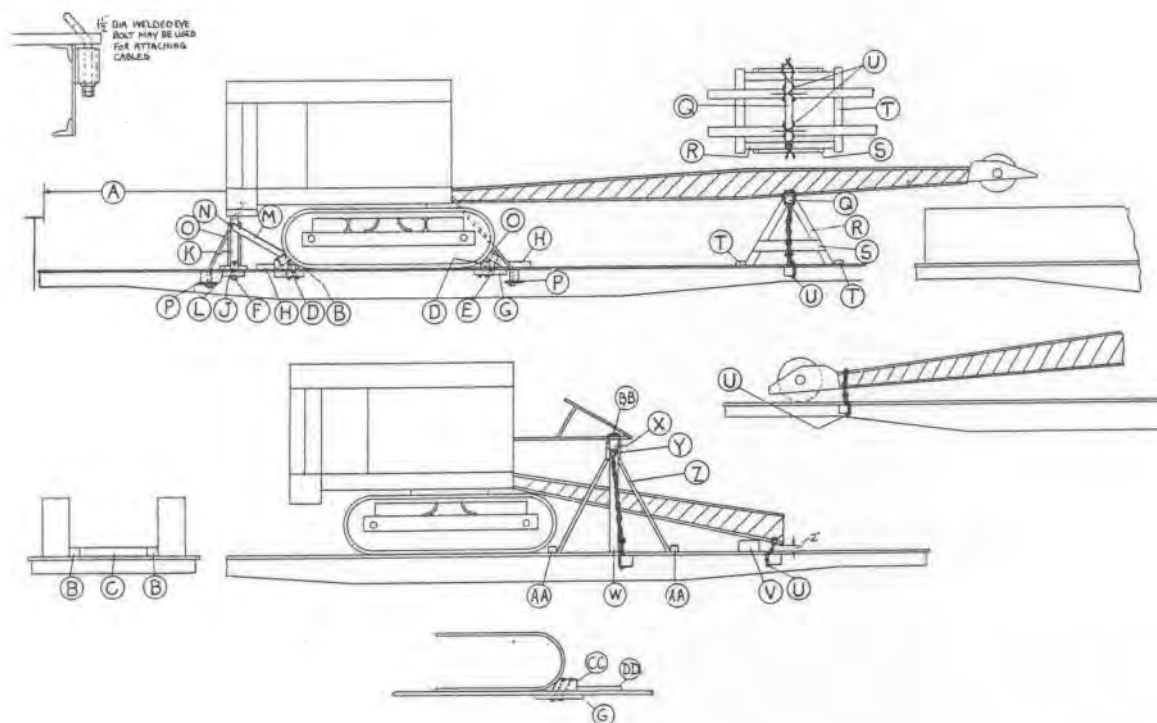
Machines equipped with locking devices should have such devices placed in locked position by shippers.

For proper location of load on car. See Fig. 34.

See General Rules 4, 5, 9, 14, 15, 19 and 19A for further details.

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CRAWLER TYPE CRANES, DRAGLINES, ETC.—ROTATING BODIES—BOOMS ATTACHED—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2	4 in. x 6 in., hardwood, length equal to that portion of crawler tread resting on floor. Locate on floor, against crawlers, and secure each with four $\frac{5}{8}$ in. dia. bolts or eight 60-D nails. Substitute, if desired, four pieces 4 in. x 6 in. x 4 ft. Locate as shown and secure each with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
C	2	4 in. x 4 in., hardwood, long enough to fit between Items "B". Secure each to floor with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
D	4	4 in. x 6 in. x 21 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in. x 21 in., hardwood, for machines weighing over 45,000 lbs. Toe-nail each to floor with four 40-D nails. Not required when Items "CC" and "DD" are used.
E	4	6 in. x 6 in., hardwood, length to suit. Locate on top of Items "D", with one end against crawler and secure each with two $\frac{5}{8}$ in. dia. bolts, Items "F". Not required when Items "CC" and "DD" are used.
F	8	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "E", "G" and floor.
G	As required.	4 in. x 4 in. x 18 in., hardwood cleats, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
H	4	2 in. x 4 in. x 18 in., hardwood. Locate on floor, with one end against Item "E" and secure each with six 30-D nails.
J	1	4 in. x 6 in., hardwood, length to suit, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs. Secure to floor with four $\frac{5}{8}$ in. dia. bolts, with nuts and washers.
K	As required.	Two 4 in. x 6 in., hardwood, for machines weighing 45,000 lbs. or less; two 6 in. x 6 in., hardwood for machines weighing over 45,000 lbs. to 120,000 lbs.; four 6 in. x 6 in., hardwood, for machines weighing over 120,000 lbs. They must be long enough to fit between Item "J" and body of machine.

Sec. 4—Fig. 22

CRAWLER TYPE CRANES, DRAGLINES, ETC.—ROTATING BODIES—BOOMS ATTACHED—FLAT CARS

Item	No. of Pcs.	Description
L	2	2 in. x 6 in., hardwood, length to suit. Locate against Item "J" and secure each to floor with six 30-D nails.
M	2	2 in. x 6 in., hardwood, length to suit. Secure top ends to Items "K" and bottom ends to Items "B" with four 30-D nails at each location.
N	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally and secure ends to opposite Items "K" with six 20-D nails at each location.
O	4	1¼ in. diameter rods. Attach two at front and two at rear of rotating portion and pass through opposite stake pockets and Items "P". 1 in. diameter rods may be used for machines weighing 45,000 lbs. or less. Substitute, if desired, ¾ in. x 6 x 7 steel cable, doubled, for 1¼ in. diameter rods, or ½ in. x 6 x 19 steel cable, doubled, for 1 in. diameter rods. Items "O" may be applied at front end of machines, crossed between rotating portion and crawler structure, or applied on same side of machines equipped with two brackets cast integral on both rotating and crawler structures.
P	1 ea. Item "O".	½ in. x 4 in. x 10 in. plates. Not required when Items "O" consists of cable.
Q	1	4 in. x 6 in., hardwood, long enough to extend 6 in. beyond each side of boom.
R	4	4 in. x 6 in., hardwood, length to suit. Secure each piece to Item "Q" with four 30-D nails and to floor with five 30-D nails. Items "R" must be long enough to keep boom at least six inches above top of sides and ends of idler car.
S	2	2 in. x 6 in., hardwood, length to suit. Secure to Items "R" with four 30-D nails in each end.
T	2	2 in. x 6 in., hardwood, long enough to extend beyond Items "R". Secure each to floor with six 30-D nails.
U	1	¾ in. x 6 x 7 steel cable, doubled. Loop over and around boom, near front end, and through stake pockets on opposite sides of car.
V	1	6 in. x 6 in., hardwood, long enough to extend beyond each side of boom. Locate so as to maintain 2 in. clearance between end of boom and floor and toe-nail to floor with six 60-D nails in each side. Not required when sheave wheel rests on floor.
W	2	4 in. x 6 in., hardwood, length to suit.
X	1	4 in. x 6 in., hardwood, long enough to extend 6 in. beyond each side of gantry. Toe-nail to each Item "W" with four 30-D nails.
Y	4	2 in. x 6 in. x 12 in., hardwood. Locate one on front and one on back face of each Item "W" and secure each to Items "W" and "X" with six 20-D nails.
Z	4	2 in. x 6 in., hardwood, length to suit. Toe-nail bottom end of each to floor with two 30-D nails and top end of each to Item "W" with three 30-D nails.
AA	4	2 in. x 6 in. x 12 in., hardwood cleats. Locate one against each Item "Z" and secure each to floor with four 30-D nails.
BB	1	¾ in. steel cable, doubled. Loop over and around gantry, and through opposite stake pockets.
CC	4	8 in. x 8 in. x 36 in., hardwood, cut to fit contour of crawler treads, for machines weighing 45,000 lbs. to 120,000 lbs. Secure each with three ¾ in. dia. bolts through floor and Item "G". 12 in. x 12 in. x 36 in., hardwood, cut to fit contour of crawler treads, for machines weighing over 120,000 lbs. Secure each with three ¾ in. dia. bolts through floor and Item "G". Not required when Items "D" and "E" are used.
DD	4	2 in. x 12 in. x 36 in., hardwood cleats, for machines weighing 45,000 lbs. to 120,000 lbs. 3 in. x 4 in. x 18 in., hardwood cleats, for machines weighing over 120,000 lbs. Locate on floor against Items "CC" and secure each to floor with six 30-D nails. Not required when Items "D" and "E" are used.

Items "Q", "R", "S" and "T" not required when Items "V" are used, or vice versa.

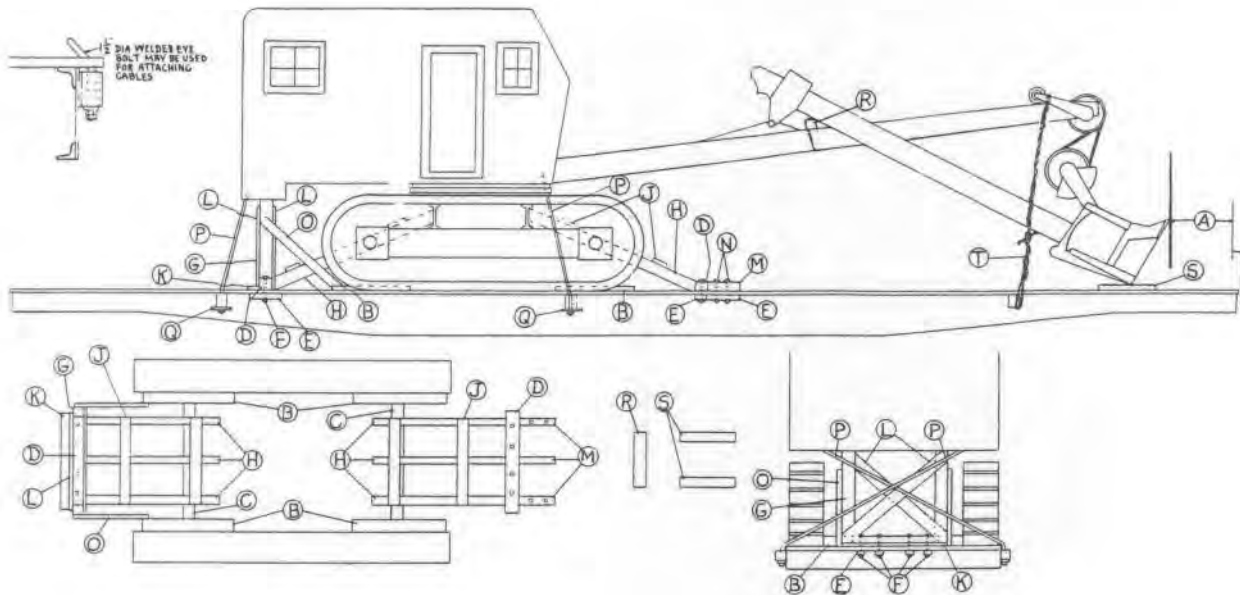
Loading machines with treads extending beyond floor of car is permitted, provided machines are centrally located on car and not more than one-half of tread extends beyond outside face of side sill.

Machines equipped with locking devices should have such devices placed in locked position by shippers.

For proper location of load on car, see Fig. 34.

See General Rules 4, 5, 8, 9, 14, 15, 19, 19A and 21 for further details.

CRAWLER TYPE SHOVELS—ROTATING BODIES—BOOMS ATTACHED—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2, Sec. 1.
B	2	4 in. x 6 in., hardwood, length equal to that portion of crawler tread resting on floor. Locate on floor, against crawlers, and secure each with four $\frac{5}{8}$ in. dia. bolts or eight 60-D nails. Substitute, if desired, four pieces, 4 in. x 6 in. x 4 ft. Locate as shown and secure each with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
C	2	4 in. x 4 in., hardwood, long enough to fit between Items "B". Secure each to floor with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
D	2	4 in. x 6 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood for machines weighing over 45,000 lbs.; long enough to extend beyond Items "G" and "H". Secure each to floor with four $\frac{5}{8}$ in. dia. bolts.
E	As Required.	2 in. x 4 in. x 18 in., hardwood cleats, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
F	8	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "D", "E" and floor.
G	2	4 in. x 6 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs.; long enough to fit between Items "D" and body of machine.
H	4 6	4 in. x 6 in., hardwood, for machines weighing 112,000 lbs. or less. 6 in. x 6 in., hardwood, for machines weighing over 112,000 lbs. They must be long enough to fit between Items "D" and base of machine.
J	4	2 in. x 6 in., hardwood, long enough to extend beyond outside Items "H". Secure to Items "H" with three 20-D nails at each location.
K	1	2 in. x 6 in., hardwood, length to suit. Locate against Item "D", and secure to floor with six 30-D nails. Not required when Items "M" are used at both ends.

Item	No. of Pcs.	Description
L	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally and secure ends to opposite Items "G" with six 20-D nails at each location.
M	1 ea. Item "H".	4 in. x 6 in. x 18 in., hardwood. Locate against Items "D", opposite Items "H". Secure each outside Item "M" with two $\frac{5}{8}$ in. dia. bolts, Items "N", and each intermediate Item "M" to floor with four 60-D nails. Not required when Items "K" are used at both ends.
N	2 ea. outside Item "M".	$\frac{5}{8}$ in. dia. bolts, with nuts and washers. Pass through Items "M", "E" and floor. Not required when Items "K" are used.
O	2	2 in. x 6 in., hardwood, length to suit. Secure top ends to Items "G" and bottom ends to Items "B" with four 30-D nails at each location.
P	4	1 $\frac{1}{4}$ in. diameter rods. Attach two at front and two at rear of rotating portion and pass through opposite stake pockets and Items "Q". 1 in. diameter rods may be used for machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, double, for 1 $\frac{1}{4}$ in. diameter rods, or $\frac{1}{2}$ in. x 6 x 19 steel cable, doubled, for 1 in. diameter rods. Items "P" may be applied at front end of machines, crossed between rotating portion and crawler structure, or applied on same side of machines equipped with two brackets cast integral on both rotating and crawler structures.
Q	1 ea. Item "P"	$\frac{1}{2}$ in. x 4 in. x 10 in. plates. Not required when Items "P" consists of cable.
R	1	6 in. x 6 in., hardwood, length to suit. Wire in position after weight of boom has been placed on same.
S	2	4 in. x 6 in. x 30 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs. Secure each to floor with two $\frac{5}{8}$ in. dia. bolts, or six 60-D nails.
T	1	$\frac{3}{8}$ in. steel cable, doubled, for machines weighing 45,000 lbs. or less; $\frac{1}{2}$ in. steel cable, doubled, for machines weighing over 45,000 lbs. Loop over and around boom near front end and through opposite stake pockets.

Booms with buckets attached must not extend beyond end of carrying car.

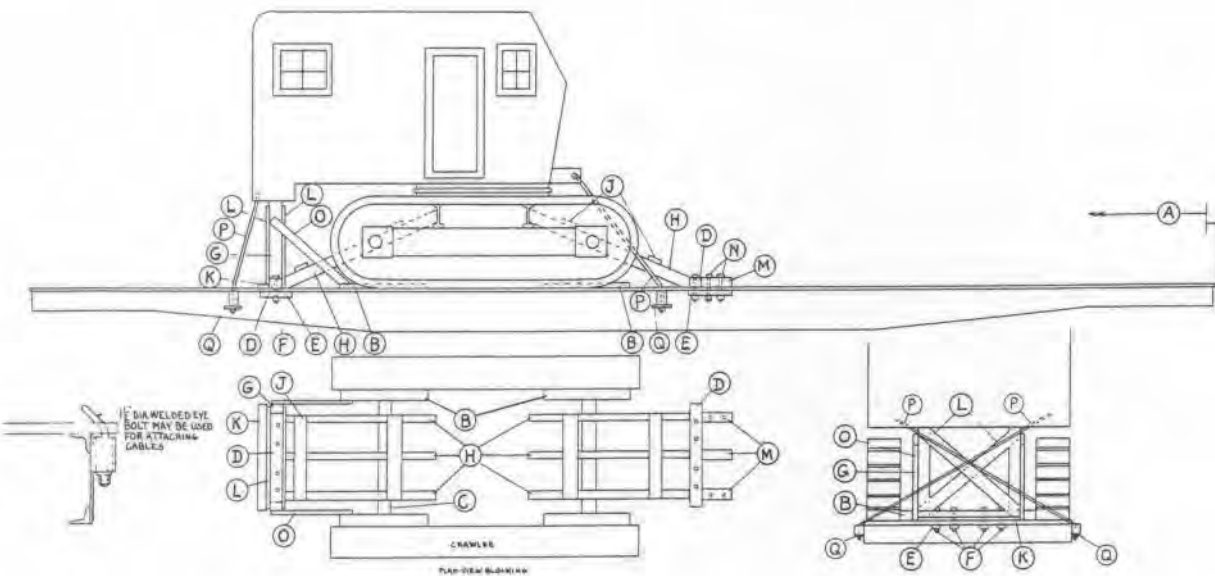
Loading machines with treads extending beyond floor of car is permitted, provided machines are centrally located on car and not more than one-half of tread extends beyond outside face of side sill.

Machines equipped with locking devices should have such devices placed in locked position by shippers.

For proper location of load on car, see Fig. 34.

See General Rules 4, 5, 9, 14, 15, 19 and 19A for further details.

CRAWLER TYPE MACHINES—ROTATING BODIES—BOOM DETACHED—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2, Sec. 1.
B	2	4 in. x 6 in., hardwood, length equal to that portion of crawler tread resting on floor. Locate on floor, against crawlers, and secure each with four $\frac{5}{8}$ in. dia. bolts or eight 60-D nails. Substitute, if desired, four pieces, 4 in. x 6 in. x 4 ft. Locate as shown and secure each with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
C	2	4 in. x 4 in., hardwood, long enough to fit between Items "B". Secure each to floor with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
D	2	4 in. x 6 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs.; long enough to extend beyond Items "G" and "H". Secure each to floor with four $\frac{5}{8}$ in. dia. bolts.
E	As required.	2 in. x 4 in. x 18 in., hardwood cleats, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
F	8	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "D", "E" and floor.
G	2	4 in. x 6 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs.; long enough to fit between Items "D" and body of machine.
H	6	4 in. x 6 in., hardwood, long enough to fit between Items "D" and base of machine. Four only required for machines weighing 112,000 lbs. or less.
J	4	2 in. x 6 in., hardwood, long enough to extend beyond outside Items "H". Secure to Items "H" with three 20-D nails at each location.
K	1	2 in. x 6 in., hardwood, length to suit. Locate against Item "D", and secure to floor with six 30-D nails. Not required when Items "M" are used at both ends.
L	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally and secure ends to opposite Items "G" with six 20-D nails at each location.

Item	No. of Pcs.	Description
M	1 ea. Item "H".	4 in. x 6 in. x 18 in., hardwood. Locate against Items "D", opposite Items "H". Secure each outside Item "M" with two $\frac{5}{8}$ in. dia. bolts, Items "N", and each intermediate Item "M" to floor with four 60-D nails. Not required when Items "K" are used at both ends.
N	2 ea. outside Item "M".	$\frac{5}{8}$ in. dia. bolts, with nuts and washers. Pass through Items "M", "E" and floor. Not required when Items "K" are used.
O	2	2 in. x 6 in., hardwood, length to suit. Secure top ends to Items "G" and bottom ends to Items "B" with four 30-D nails at each location.
P	4	$1\frac{1}{4}$ in. diameter rods. Attach two at front and two at rear of rotating portion and pass through opposite stake pockets and Items "Q". 1 in. diameter rods may be used on machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{3}{8}$ in. x 6 x 7 steel cable, doubled, for $1\frac{1}{4}$ in. diameter rods, or $\frac{1}{2}$ in. x 6 x 19 steel cable, doubled, for 1 in. diameter rods. Items "P" may be applied at front end of machine, crossed between rotating portion and crawler structure, or applied on same side of machine equipped with two brackets cast integral on both rotating and crawler structures, providing two additional rods are applied attached to crawler structure and passed through opposite stake pockets and Items "Q", or through floor and Items "E".
Q	1 ea. Item "P".	$\frac{1}{2}$ in. x 4 in. x 10 in. plates. Not required when Items "P" consists of cable.

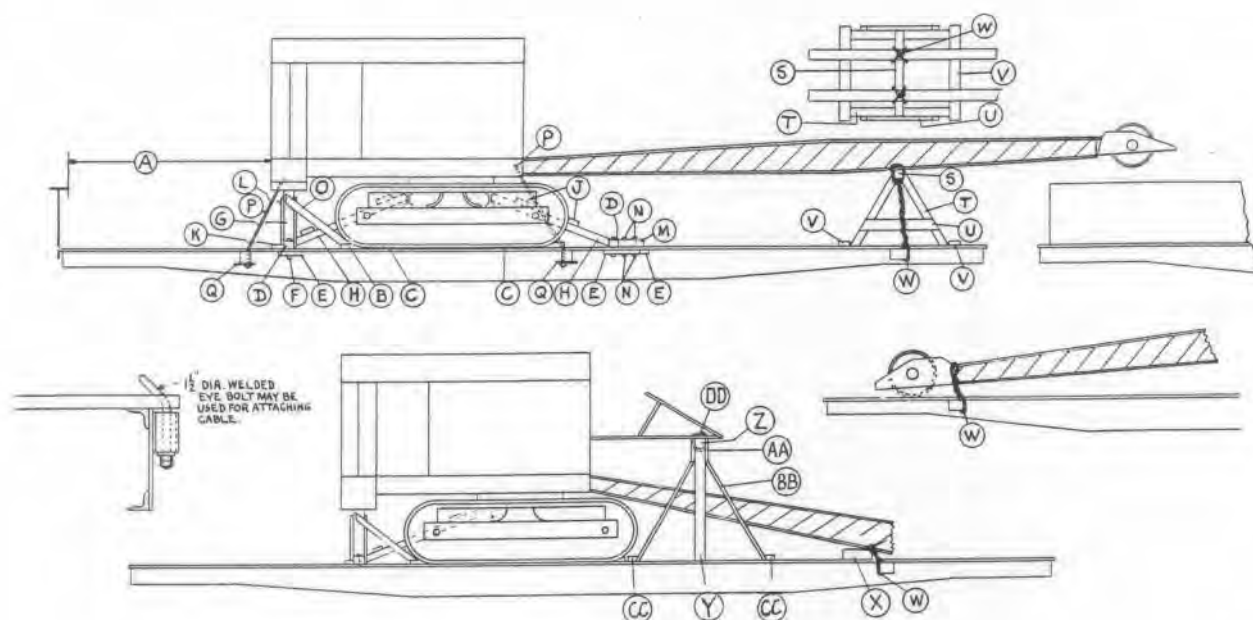
Loading machines with treads extending beyond floor of car is permitted, provided machines are centrally located on car and not more than one-half of tread extends beyond outside face of side sill.

Machines equipped with locking devices should have such devices placed in locked position by shippers.

For proper location of load on car, see Fig. 34.

See General Rules 4, 5, 9, 14, 15, 19 and 19-A for further details.

CRAWLER TYPE CRANES, DRAGLINES, ETC.—ROTATING BODIES—BOOMS ATTACHED—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2, Sec. 1.
B	2	4 in. x 6 in., hardwood, length equal to that portion of crawler tread resting on floor. Locate on floor, against crawlers, and secure each with four $\frac{5}{8}$ in. dia. bolts or eight 60-D nails. Substitute, if desired, four pieces, 4 in. x 6 in. x 4 ft. Locate as shown and secure each with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
C	2	4 in. x 4 in., hardwood, long enough to fit between Items "B". Secure each to floor with two $\frac{5}{8}$ in. dia. bolts or four 60-D nails.
D	2	4 in. x 6 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs.; long enough to extend beyond Items "G" and "H". Secure each to floor with four $\frac{5}{8}$ in. dia. bolts.
E	As required.	2 in. x 4 in. x 18 in., hardwood cleats, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
F	As required.	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "D", "E" and floor.
G	2	4 in. x 6 in., hardwood, for machines weighing 45,000 lbs. or less; 6 in. x 6 in., hardwood, for machines weighing over 45,000 lbs.; long enough to fit between Items "D" and body of machine.
H	6	4 in. x 6 in., hardwood, long enough to fit between Items "D" and base of machine. Four only required for machines weighing 112,000 lbs. or less.
J	4	2 in. x 6 in., hardwood, long enough to extend beyond outside Items "H". Secure to Items "H" with three 20-D nails at each location.
K	1	2 in. x 6 in., hardwood, length to suit. Locate against Item "D", and secure to floor with six 30-D nails. Not required when Items "M" are used at both ends.
L	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally and secure ends to opposite Items "G" with six 20-D nails at each location.

Item	No. of Pcs.	Description
M	1 ea. Item "H"	4 in. x 6 in. x 18 in., hardwood. Locate against Items "D", opposite Items "H". Secure each outside Item "M" with two $\frac{5}{8}$ in. dia. bolts, Items "N", and each intermediate Item "M" to floor with four 60-D nails. Not required when Items "K" are used at both ends.
N	2 ea. outside Item "M".	$\frac{5}{8}$ in. dia. bolts, with nuts and washers. Pass through Items "M", "E" and floor. Not required when Items "K" are used.
O	2	2 in. x 6 in., hardwood, length to suit. Secure top ends to Items "G" and bottom ends to Items "B" with four 30-D nails at each location.
P	4	1 $\frac{1}{4}$ in. diameter rods. Attach two at front and two at rear of rotating portion and pass through opposite stake pockets and Items "Q". 1 in. diameter rods may be used for machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, doubled, for 1 $\frac{1}{4}$ in. diameter rods, or $\frac{1}{2}$ in. x 6 x 19 steel cable, doubled, for 1 in. diameter rods. Items "P" may be applied at front end of machine, crossed between rotating portion and crawler structure, or applied on same side of machines equipped with two brackets cast integral on both rotating and crawler structures.
Q	1 ea. Item "P"	$\frac{1}{2}$ in. x 4 in. x 10 in. plates. Not required when Items "P" consists of cable.
R		VACANT.
S	1	4 in. x 6 in., hardwood, long enough to extend 6 in. beyond each side of boom.
T	4	4 in. x 6 in., hardwood, length to suit. Secure each piece to Item "S" with four 30-D nails and to floor with five 30-D nails. Items "T" must be long enough to keep boom at least 6 inches above top of sides and ends of idler car.
U	2	2 in. x 6 in., hardwood, length to suit. Secure to Items "T" with six 30-D nails.
V	2	2 in. x 6 in., hardwood, long enough to extend beyond Items "T". Secure each to floor with six 30-D nails.
W	1	$\frac{3}{8}$ in. steel cable, doubled. Loop over and around boom and through opposite stake pockets.
X	1	6 in. x 6 in., hardwood, long enough to extend beyond each side of boom. Locate so as to maintain 2 in. clearance between end of boom and floor and toe-nail to floor with six 60-D nails in each side. Not required when sheave wheel rests on floor.
Y	2	4 in. x 6 in., hardwood, length to suit.
Z	1	4 in. x 6 in., hardwood, long enough to extend 6 in. beyond each side gantry. Toe-nail to each Item "Y" with four 30-D nails.
AA	4	2 in. x 6 in. x 12 in., hardwood. Locate one on front and one on back face of each Item "Z" and secure each to Items "Y" and "Z" with six 20-D nails.
BB	4	2 in. x 6 in., hardwood, length to suit. Toe-nail bottom end of each to floor with two 30-D nails and top end of each to Item "Y" with three 30-D nails.
CC	4	2 in. x 6 in. x 12 in., hardwood cleats. Locate one against each Item "BB" and secure each to floor with four 30-D nails.
DD	1	$\frac{3}{8}$ in. steel cable, doubled. Loop over and around gantry and Item "Z".

Items "S", "T", "U", "V" and "W" are not required when Item "X" is used, or vice versa.

Loading machines with treads extended beyond floor of car is permitted, provided machines are centrally located on car and not more than one-half of tread extends beyond outside face of side sill.

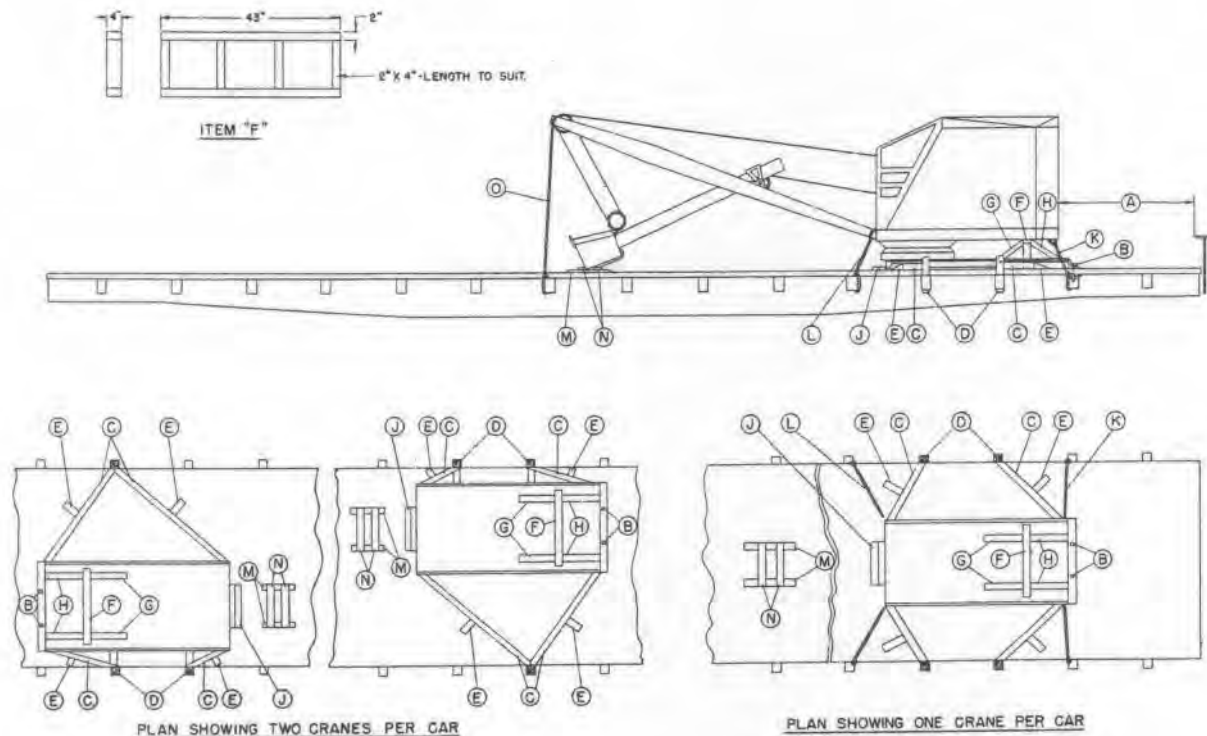
Machines equipped with locking devices should have such devices placed in locked position by shippers.

For proper location of load on car, see Fig. 34.

See General Rules 4, 5, 8, 9, 14, 15, 19, 19A and 21 for further details.

Sec. 4—Fig. 23

ROTATING TRUCK SHOVELS (WITHOUT CRAWLERS)—ONE OR TWO—FLAT CARS



Item	*No. of Pcs.	Description
	*-See first paragraph)	
A		Brake wheel clearance. See Fig. 2., Sec. 1.
B	2	$\frac{3}{4}$ in. dia. bolts with nuts and washers. Pass through frame, floor and cleat under floor.
O	4	4 in. x 6 in., length to suit. Locate between corner of bed frame and Items "D". Nail each to floor with six 60-D nails.
D	4	4 in. x 5 in., long enough to extend 8 in. above floor.
E	4	4 in. x 4 in. x 12 in. wedge shaped blocks. Locate against Item "C" and nail each to floor with four 30-D nails.
F	1	Frame as per sketch. Locate near rear of rotating portion of machine. Nail lower piece to floor with eight 20-D nails.
G	2	2 in. x 4 in., length to suit. Nail top end to Item "F" and bottom end to floor with three 30-D nails at each location.
H	2	2 in. x 4 in., long enough to extend from Item "F" to rear of frame. Nail top end to Item "F" and bottom end to floor with three 30-D nails at each location.
J	1	To consist of two pieces of 2 in. x 4 in., length equal to width of frame. Locate one piece against frame and second piece against first piece. Nail each to floor with seven 30-D nails.
K	2	$\frac{5}{16}$ in. seven-strand steel cable, doubled. Attach to rear of rotating portion of machine and to stake pockets.
L	2	$\frac{5}{16}$ in. seven-strand steel cable, doubled. Attach to front of rotating portion of machine and to stake pockets.
M	2	2 in. x 4 in. x 24 in. Locate under bucket, lengthwise of car, and nail to floor with six 20-D nails in each.
N	2	2 in. x 4 in., length to suit. Locate against bucket, on top of Items "M" and nail each end to Item "M" with three 20-D nails.
O	1	$\frac{5}{16}$ in. seven-strand steel cable, doubled. Loop over and around boom near front end and through opposite stake pockets.

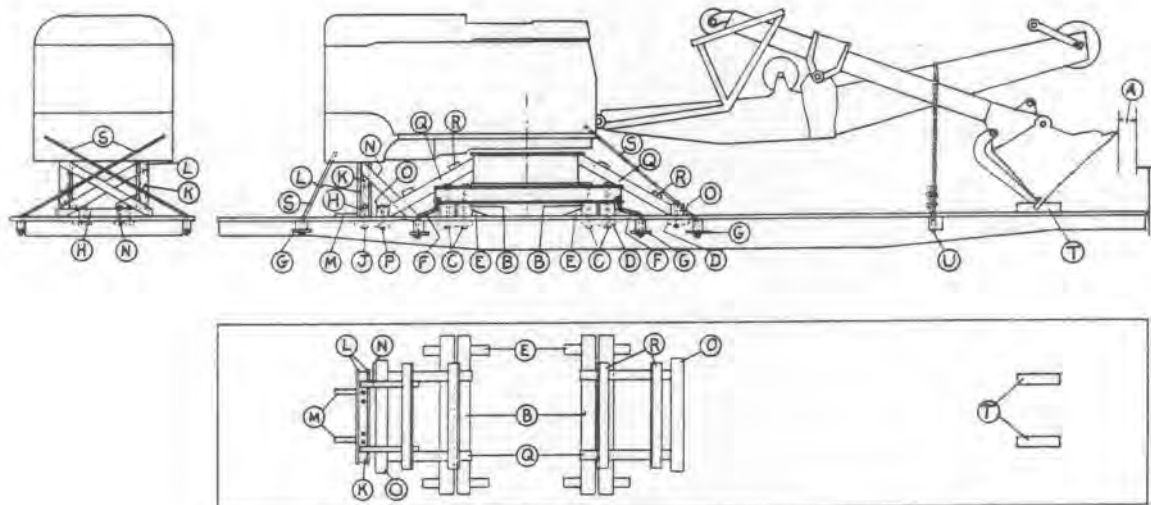
*Number of pieces shown are for one machine. When two machines are loaded double all pieces, except 6 pieces required for Item "D".

For proper location of load on car, see Fig. 34.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

See General Rules 4, 5, 9, 10, 14, 15, 19 and 19-A for further details.

Sec. 4—Fig. 24 (Rev.—1-1962)

CRAWLER TYPE SHOVELS, CRAWLERS REMOVED, ROTATING BODIES, BOOMS AND BUCKETS ATTACHED—
FLAT CARS

Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2, Sec. 1.
B	4	10 in. x 10 in., hardwood, length to suit, higher and wider if necessary. Locate under base of machine, near each end. Secure each to floor with four $\frac{5}{8}$ in. dia. bolts.
C	16	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "B", floor and Items "D".
D	As required.	4 in. x 4 in. x 18 in., hardwood, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
E	8	4 in. x 6 in. x 12 in., hardwood wedges. Nail two to floor against each Item "B" with four 30-D nails in each.
F	4	$1\frac{1}{4}$ in. dia. rods. Attach to base of machine and pass through stake pockets and Items "G".
G	8	$\frac{1}{2}$ in. x 4 in. x 10 in. plates.
H	1	6 in. x 6 in., hardwood, length to suit. Secure to floor with four $\frac{5}{8}$ in. dia. bolts.
J	4	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "H", floor, and Items "D".
K	As required.	Two 6 in. x 6 in., hardwood, for machines weighing 120,000 lbs. or less; four 6 in. x 6 in., hardwood, for machines weighing over 120,000 lbs. They must be long enough to fit between Items "H" and body of machine. Toe-nail each to Item "H" with four 30-D nails.
L	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally. Secure to Items "K" and, to Item "H" at bottom, with four 30-D nails at each location.
M	2	2 in. x 4 in. x 18 in., hardwood. Nail to floor against Item "H" with six 30-D nails in each.
N	2	2 in. x 6 in., length to suit. Secure top ends to Items "K" and bottom ends to Items "Q" with four 30-D nails at each location.
O	2	4 in. x 6 in., hardwood, length to suit. Secure to floor with four $\frac{5}{8}$ in. dia. bolts. Use optional.
P	8	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "O", floor, and Items "D".
Q	As required.	Four 6 in. x 6 in., hardwood, for machines weighing 120,000 lbs. or less; eight 6 in. x 6 in. hardwood, for machines weighing over 120,000 lbs. They must be long enough to fit between Items "O" and body of machine. Toe-nail to Items "O" with two 40-D nails. Use optional.
R	4	2 in. x 6 in., hardwood, long enough to extend beyond outside Items "Q". Secure to Items "Q" with three 20-D nails at each location. Use optional.
S	4	$1\frac{1}{4}$ in. dia. rods, length to suit, for machines weighing 120,000 lbs. or less; $1\frac{1}{2}$ in. dia. rods for machines weighing more than 120,000 lbs. Attach to front and rear of rotating portion. Pass bottom ends through and secure underneath stake pockets and Items "G" on opposite sides of car. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, doubled.
T	2	6 in. x 6 in. x 30 in. Secure each to floor with two $\frac{5}{8}$ in. dia. bolts or six 60-D nails.
U	1	$\frac{5}{8}$ in. x 6 x 7 steel cable, doubled. Loop over and around boom, near front end and through opposite stake pockets.

Booms with buckets attached must not extend beyond end of carrying car.

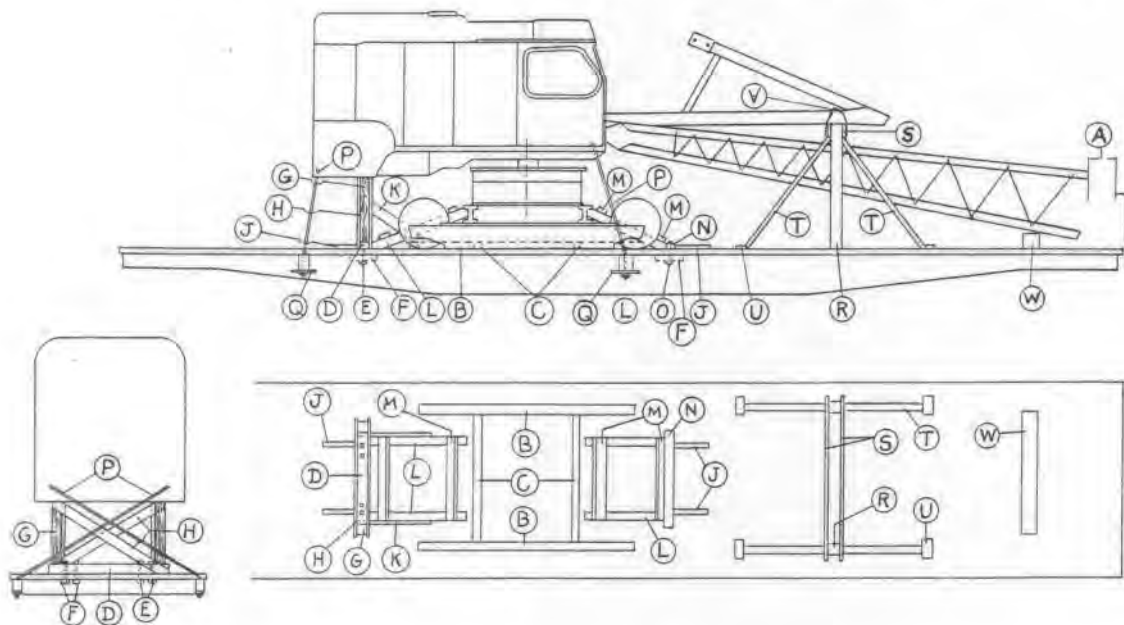
Detached parts must be loaded as far from car sides and ends as practicable and secured to prevent displacement.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

For proper location of load on car, see Fig. 34.

See General Rules 4, 5, 7, 9, 14, 15, 19 and 19-A for further details.

CRAWLER TYPE CRANES, CRAWLERS REMOVED, ROTATING BODIES, BOOMS ATTACHED—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2., Sec. 1.
B	2	4 in. x 6 in., hardwood, length equal to base of machine. Locate on floor, against crawler frame and secure each with four $\frac{5}{8}$ in. dia. bolts, or eight 60-D nails. Substitute, if desired, four pieces 4 in. x 6 in. x 4 ft. Secure each with two $\frac{5}{8}$ in. dia. bolts, or four 60-D nails.
C	2	4 in. x 4 in., hardwood, long enough to fit between Items "B". Secure each to floor with two $\frac{5}{8}$ in. dia. bolts, or four 60-D nails.
D	1	6 in. x 6 in., hardwood, length to suit. Secure to floor with four $\frac{5}{8}$ in. dia. bolts.
E	4	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "D", floor, and Items "F".
F	As required.	4 in. x 4 in. x 18 in., hardwood, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
G	As required.	Two 6 in. x 6 in., hardwood, for machines weighing 120,000 lbs. or less; four 6 in. x 6 in., hardwood for machines weighing over 120,000 lbs. They must be long enough to fit between Items "D" and body of machine. Toe-nail each to Item "D" with four 30-D nails.
H	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally. Secure to Items "G" and to Item "D" at bottom, with four 30-D nails at each location.
J	4	2 in. x 4 in. x 18 in., hardwood. Nail to floor against Items "D" and "N" with six 30-D nails in each.
K	2	2 in. x 6 in., hardwood, length to suit. Secure top ends to Items "G" and bottom ends to Items "L", with four 30-D nails at each location.
L	As required.	Four 6 in. x 6 in., hardwood, for machines weighing 120,000 lbs. or less; eight 6 in. x 6 in., hardwood, for machines weighing over 120,000 lbs. They must be long enough to fit between Item "D", "N", and base of machine. Toe-nail bottom end to Items "D" and "N" with four 30-D nails.
M	4	2 in. x 6 in., hardwood, long enough to extend beyond outside Items "L". Secure with three 20-D nails at each location.
N	1	4 in. x 6 in., hardwood, length to suit. Locate about six feet from base of machine. Secure to floor with four $\frac{5}{8}$ in. dia. bolts.
O	4	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Item "N", floor and Items "F".
P	4	1 $\frac{1}{4}$ in. dia. rods, length to suit, for machines weighing 120,000 lbs. or less; 1 $\frac{1}{2}$ in. dia. rods for machines weighing more than 120,000 lbs. Attach to front and rear of rotating portion. Pass bottom ends through and secure underneath stake pockets and Items "Q" on opposite sides of car. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, doubled.
Q	4	$\frac{1}{2}$ in. x 4 in. x 10 in. plates.
R	2	4 in. x 6 in., hardwood, length to suit. Toe-nail each to floor with four 30-D nails.
S	2	2 in. x 6 in., hardwood, long enough to extend 6 in. beyond each side of gantry. Nail to Items "R" with four 30-D nails at each location.
T	4	2 in. x 6 in., hardwood, length to suit. Toe-nail top ends to Items "R" with three 30-D nails and bottom ends to floor with two 30-D nails.
U	4	2 in. x 4 in. x 12 in., hardwood. Locate one against each Item "T" and nail to floor with four 30-D nails.
V	1	Suitable wire or cable to prevent gantry from moving upward.
W	1	6 in. x 6 in., hardwood, long enough to extend 6 in. beyond each side of boom. Locate so as to maintain 2 in. clearance between boom and floor. Toe-nail to floor with six 60-D nails in each side. Not required when sheave wheel rests on floor.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

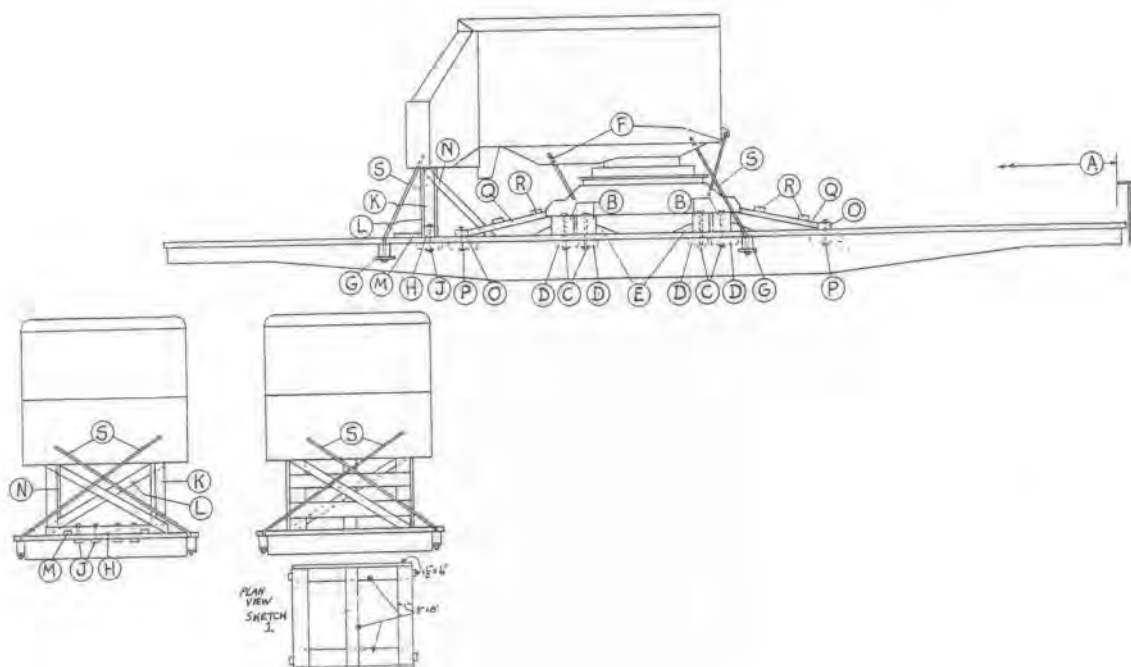
Detached parts must be loaded as far from car sides and ends as practicable and secured to prevent displacement.

For proper location of load on car, see Fig. 34.

See General Rules 4, 5, 7, 9, 14, 15, 19 and 19-A for further details.

Sec. 4—Fig. 26

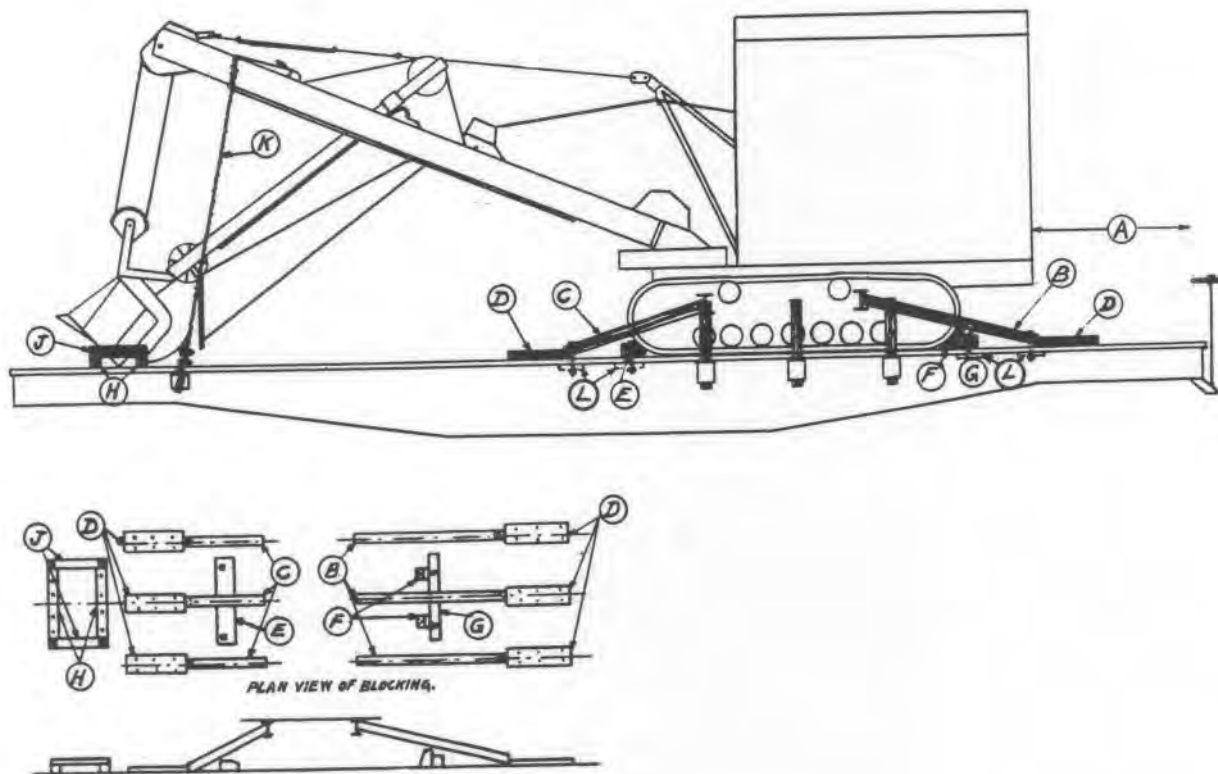
CRAWLER TYPE SHOVELS, CRAWLERS REMOVED, ROTATING BODIES, BOOMS DETACHED—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	4	10 in. x 10 in., hardwood, length to suit, higher and wider if necessary. Locate under base of machine, near each end. Secure each to floor with four $\frac{5}{8}$ in. dia. bolts.
O	16	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "B", floor and Items "D".
D	As required.	4 in. x 4 in. x 18 in., hardwood, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
E	8	4 in. x 6 in. x 12 in., hardwood wedges. Nail two to floor against each Item "B" with four 30-D nails in each.
F	4	$1\frac{1}{4}$ in. dia. rods, length to suit. Attach two to front and two to rear of rotating portion and to opposite sides of crawler structure. Substitute, if desired, $\frac{3}{8}$ in. x 6 x 7 steel cable, doubled, at each location.
		Where machines are equipped with two brackets cast integral on both rotating portion and crawler structure, Items "F", need not be crossed but may be applied to same side of machine.
G	As required.	$\frac{1}{2}$ in. x 4 in. x 10 in. plates.
H	1	6 in. x 6 in., hardwood, length to suit, for machines weighing 120,000 lbs. or less; 8 in. x 8 in., hardwood, for machines weighing more than 120,000 lbs. Secure to floor with four $\frac{5}{8}$ in. dia. bolts.
J	4	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Item "H", floor and Items "D".
K	As required.	Two 6 in. x 6 in., hardwood, for machines weighing 120,000 lbs. or less; four 8 in. x 8 in., hardwood, for machines weighing more than 120,000 lbs. They must be long enough to fit between Item "H" and body of machine. Toe-nail each to Item "H" with four 30-D nails.
L	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally. Secure to Items "K" and to Item "H" at bottom, with four 30-D nails at each location.
M	2	2 in. x 4 in. x 18 in., hardwood. Nail to floor against Item "H" with six 30-D nails in each.
N	2	2 in. x 6 in., length to suit. Secure top ends to Items "K" and bottom ends to Items "Q" with four 30-D nails at each location.
O	2	4 in. x 6 in., hardwood, length to suit. Secure to floor with four $\frac{5}{8}$ in. dia. bolts.
P	8	$\frac{5}{8}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "O", floor, and Items "D".
Q	As required.	Four 6 in. x 6 in., hardwood, for machines weighing 120,000 lbs. or less; eight 6 in. x 6 in., hardwood, for machines weighing more than 120,000 lbs. They must be long enough to fit between Items "O" and body of machine. Toe-nail to Items "O" with four 30-D nails.
R	4	2 in. x 6 in., hardwood, long enough to extend beyond outside Items "Q". Secure to Items "Q" with three 20-D nails at each location.
S	4	$1\frac{1}{4}$ in. dia. rods, length to suit, for machines weighing 120,000 lbs. or less; $1\frac{1}{2}$ in. dia. rods for machines weighing more than 120,000 lbs. Attach to front and rear of rotating portion. Pass bottom ends through and secure underneath stake pockets and Items "G" on opposite sides of car. Substitute, if desired, $\frac{3}{8}$ in. x 6 x 7 steel cable, doubled.

Cribbed blocking, per Sketch 1, may be substituted for Items "H", "J", "K", "L", "M" and "N".
 Detached parts must be loaded as far from car sides and ends as practicable and secured to prevent displacement.
 Machines equipped with locking devices must have such devices placed in locked position by shippers.
 For proper location of load on car, see Fig. 34.
 See General Rules 4, 5, 7, 9, 14, 15, 19 and 19-A for further details.

MACHINES ON WHICH BOOM ONLY ROTATES—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	3	4 in. x 4 in., length to suit, outside braces bolted, center braces nailed.
C	3	4 in. x 4 in., length to suit, outside braces bolted, center braces nailed.
D	6	3 in. x 8 in., nailed to floor with six, 60-D nails.
E	1	5 in. x 8 in. x 30 in., secured to floor with two $\frac{1}{2}$ in. bolts.
F	2	5 in. x 5 in. x 8 in., against crawler portion, nailed with three 60-D nails.
G	1	5 in. x 5 in. x 30 in., secured to floor with two $\frac{1}{2}$ in. bolts.
H	2	4 in. x 4 in. x 36 in., nailed to floor with four 60-D nails.
J	2	2 in. x 4 in. x 24 in., secured with two $\frac{1}{2}$ in. bolts passing through Items "H" and floor.
K	1	$\frac{3}{8}$ in. x 6 x 19 steel cable, doubled. Attach to front of boom and body of car. Substitute, if desired, $\frac{5}{8}$ in. dia. rods or 8 strands No. 11 gage wire.
L	8	4 in. x 4 in. x 18 in., hardwood cleat, or $\frac{1}{2}$ in. x 4 in. x 18 in. plate.

Other suitable blocking may be used in cases where the design of the machine does not permit the use of the blocking specified.

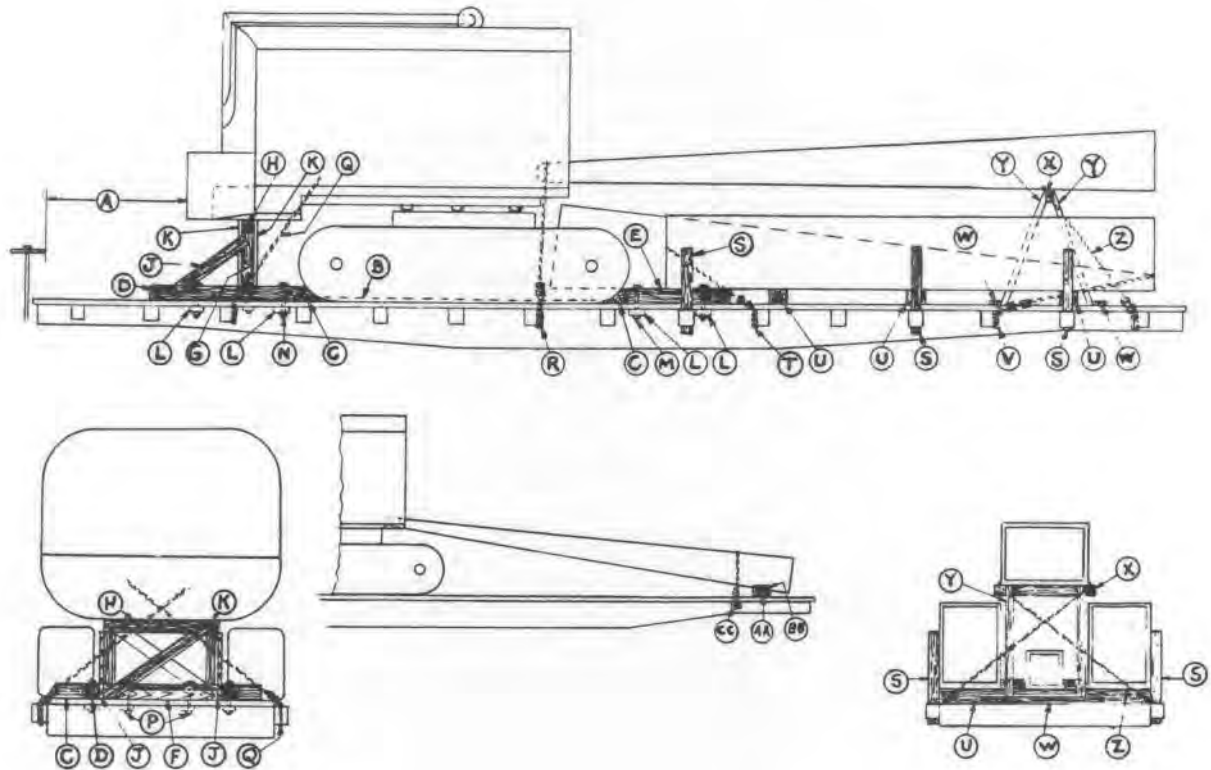
For proper location of load on car, see Fig. 34.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

See General Rules 4, 5, 9, 10, 14, 15, 19 and 19A for further details.

Sec. 4—Fig. 28

MACHINE WITH BOOM ATTACHED AND NOT EXTENDING BEYOND END OF CAR—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2	2 in. x 6 in., length of crawler, inside or outside, nailed to floor with 20-D nails.
C	2	8 in. x 8 in. x 9 ft., cut to fit contour of crawler treads. Secure each to floor with two $\frac{5}{8}$ in. dia., bolts with nuts and washers.
D	2	8 in. x 8 in. x 6 ft. 6 in.
E	2	8 in. x 8 in. x 4 ft. 6 in.
F	1	6 in. x 6 in., length to suit.
G	2	6 in. x 6 in., length to suit, nailed to Items "F" and "H".
H	1	6 in. x 6 in., length to suit, nailed to Items "G".
J	2	2 in. x 6 in., length to suit, nailed to Items "D" and "G".
K	2	2 in. x 6 in., length to suit, nailed to Items "F", "G" and "H".
L	8	4 in. x 4 in. x 18 in., hardwood cleat, or $\frac{1}{2}$ in. x 4 in. x 18 in. plate.
M	4	Bolts, $\frac{5}{8}$ in. dia., with nuts and washers, through Items "E", "L" and floor.
N	8	Bolts, $\frac{5}{8}$ in. dia., with nuts and washers, through Item "C", "D", "L" and floor.
O		VACANT.
P	2	Bolts, $\frac{5}{8}$ in. dia., with nuts and washers, through Items "F", "L" and floor.
Q	2	$\frac{5}{8}$ in. x 6 x 7 steel cable, doubled. Attach to rotating portion of machine, near rear end, and to opposite stake pockets.
R	2	$\frac{5}{8}$ in. x 6 x 7 steel cable, doubled. Attach to rotating portion of machine, near front end, and to opposite stake pockets.
S	6	Stakes, extending 30 in. above floor.
T	1	$\frac{5}{8}$ in. x 6 x 7 steel cable. Pass through lattice work of three lower sections of boom and secure to stake pockets.
U	3	8 in. x 8 in. x 9 ft. Toe-nail to floor with 20-D nails.
V	1	$\frac{5}{8}$ in. x 6 x 7 steel cable. Pass through lattice work of three lower sections of boom nearest end of car, and secure to stake pockets.
W	2	2 in. x 6 in., length to suit, nailed to floor and Items "Y" with 20-D nails.
X	1	4 in. x 6 in., hardwood, length to suit.
Y	4	4 in. x 4 in., hardwood, length to suit, nailed to Item "X" and floor with 40-D nails.
Z	1	$\frac{5}{8}$ in. x 6 x 7 steel cable. Pass through lattice work of boom above Item "X" and secure to stake pockets.
AA	1	4 in. x 4 in., hardwood, length to suit, toe-nailed to floor with 20-D nails.
BB	2	4 in. x 4 in. x 12 in., hardwood. Secure each to Item "AA" with one $\frac{5}{8}$ in. dia. bolt, long enough to pass through Item "AA" and floor.
CC	1	$\frac{5}{8}$ in. x 6 x 7 steel cable. Pass over top of boom and secure to stake pockets.

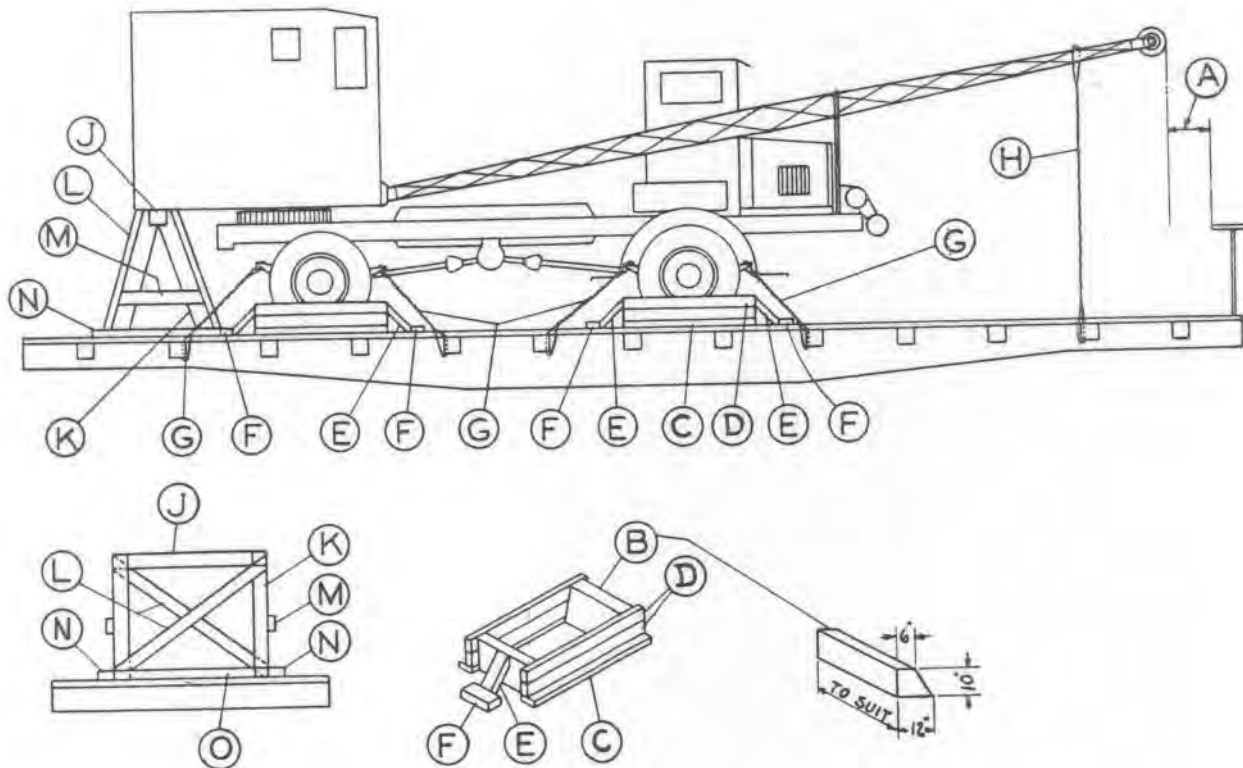
Items "AA", "BB" and "CC" required only when boom rests on floor.

For proper location of load on car, see Fig. 34.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

See General Rules 4, 5, 9, 10, 14, 15, 19, 19-A and 19-B for further details.

ROTATING SHOVEL, (TRUCK CHASSIS) HAVING PNEUMATIC TIRES—FLAT CARS



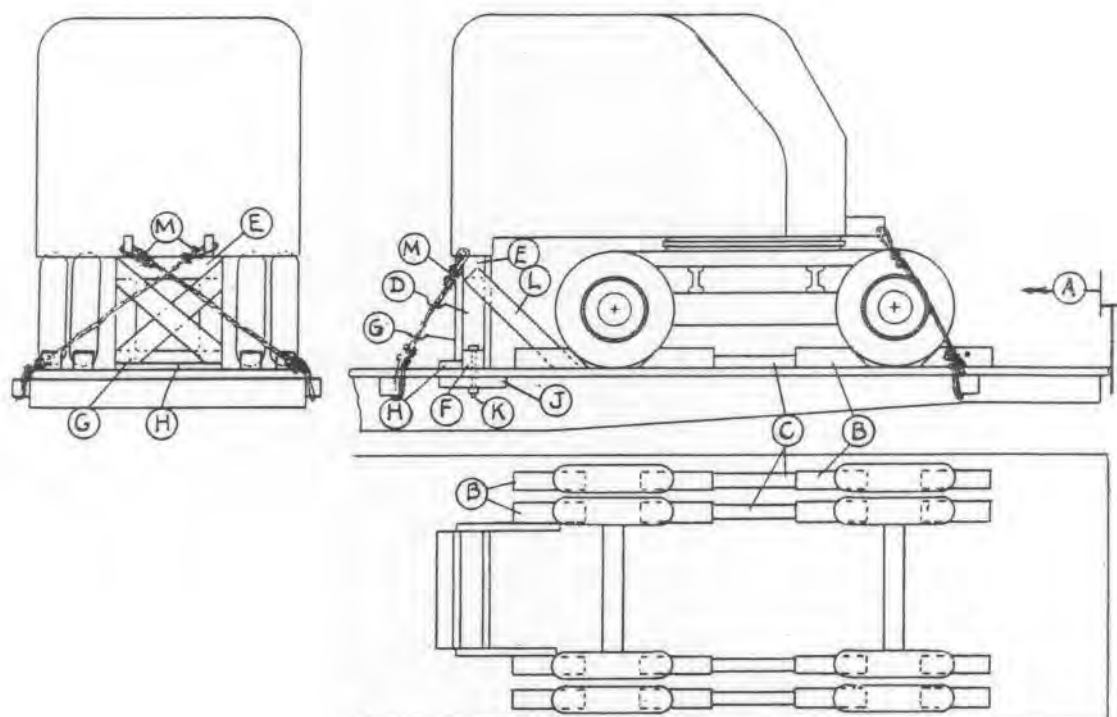
Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2 ea. front wheel.	6 in. x 10 in. x 12 in., hardwood, length to suit. Locate against wheels and toe-nail each to floor with three 40-D nails.
C	2 ea. pr. Items "B".	2 in. x 4 in., hardwood, long enough to extend 1 in. beyond Items "B". Locate on inside and outside of wheels and nail each to floor with six 30-D nails.
D	4 ea. pr. Items "B".	2 in. x 4 in., hardwood, long enough to extend 1 in. beyond Items "B". Locate above Items "C" and nail 4 in. face to each Item "B" with three 30-D nails.
E	1 ea. Item "B".	2 in. x 4 in., hardwood, length to suit. Toe-nail to Items "B" and floor with two 30-D nails at each end.
F	1 ea. Item "E".	2 in. x 4 in. x 12 in., hardwood. Locate against each Item "E" and nail to floor with four 30-D nails.
G	8	Each to consist of six strands, No. 7 gage wire, (cable shaped). Securely attach one end to spring shackle of machine and opposite end to stake pocket so as to provide effective angularity. Twist taut.
H	1	To consist of six strands, No. 7 gage wire, (cable shaped). Loop around near end of and pass through boom and securely attach ends to opposite stake pockets. Twist taut.
J	1	6 in. x 6 in., hardwood, length equal to width of and cut to fit projections underneath cab.
K	4	4 in. x 5 in., hardwood, length to suit, notched to fit under and against Items "J". Nail to Item "J" and toe-nail to floor with three 30-D nails at each end.
L	2	2 in. x 4 in., hardwood, length to suit. Nail each end to Items "K" with three 30-D nails.
M	2	2 in. x 4 in., hardwood, length to suit. Locate about 18 in. above floor and nail each end to Item "K" with three 30-D nails.
N	2	1½ in. x 3 in., hardwood, long enough to extend to outside face of Items "O". Locate against Items "K" and nail each end to floor with six 30-D nails.
O	2	1½ in. x 3 in., hardwood, length equal to distance between inside face of Item "N". Locate against Items "K" and nail each to floor with six 30-D nails.

For proper location of load on car, see Fig. 34.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

See General Rules 4, 5, 9, 14, 15, 19, 19-A and 19-B for further details.

ROTATING CRANES, HAVING PNEUMATIC TIRES, BOOM DETACHED—FLAT CARS



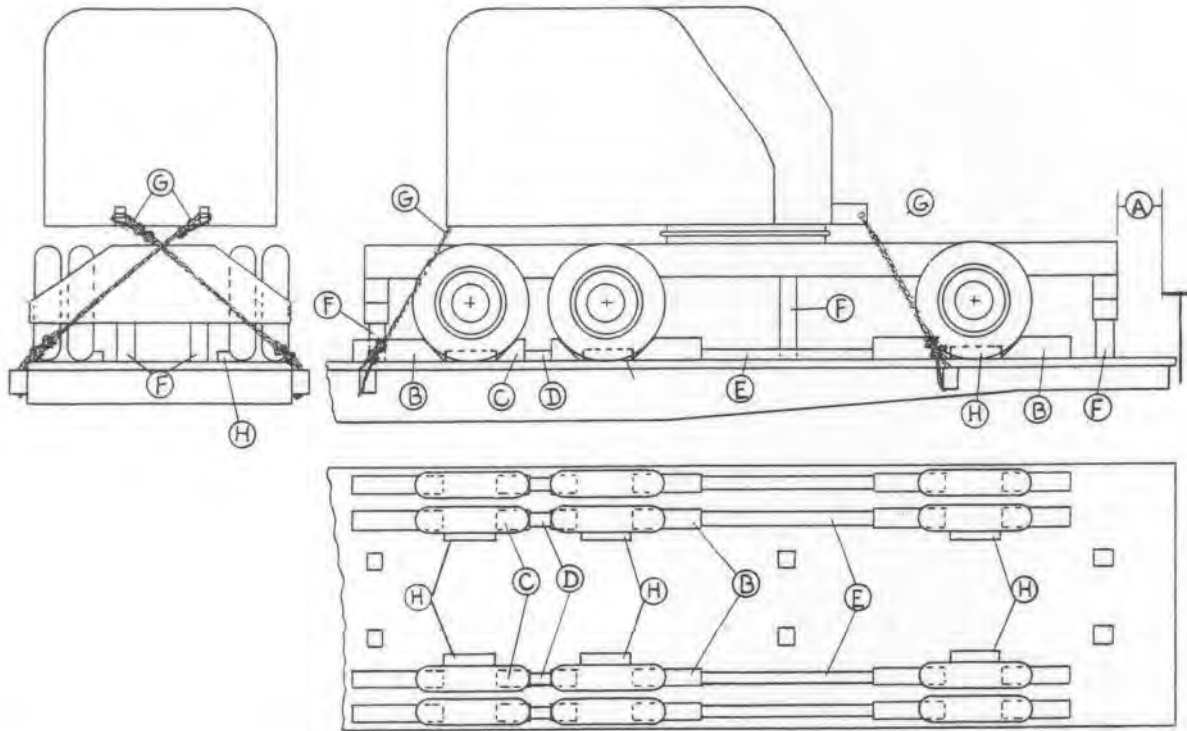
Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2., Sec. 1.
B	16	8 in. x 8 in. x 36 in., hardwood. Locate on floor, against tires and secure each with four $\frac{3}{4}$ in. dia. bolts, with nuts and washers.
C	4	$3\frac{1}{2}$ in. x $5\frac{1}{2}$ in., hardwood, long enough to fit between Items "B". Nail each to floor with four 60-D nails.
D	2	6 in. x 6 in., hardwood, long enough to fit between Items "E" and "F".
E	1	6 in. x 6 in. x 30 in., hardwood. Locate on top of Items "D".
F	1	6 in. x 6 in., hardwood, length to suit. Secure to floor, under Items "D", with four Items "K".
G	2	2 in. x 6 in., hardwood, length to suit. Locate diagonally and secure to Items "E", "F" and to opposite Items "D".
H	1	2 in. x 6 in., hardwood, length to suit. Locate against Item "F" and nail to floor with six 30-D nails.
J	As required.	4 in. x 4 in. x 18 in., cleats or $\frac{1}{2}$ in. x 4 in. x 18 in. plates.
K	4	$\frac{3}{4}$ in. dia. bolts, with nuts and washers, long enough to pass through Items "F", "J" and floor.
L	2	2 in. x 6 in., hardwood, length to suit. Nail top ends to Items "D" and bottom ends to Items "B" with four 30-D nails at each location.
M	4	$1\frac{1}{4}$ in. dia. rods, with threaded ends, length to suit. Attach two to boom connection brackets and two to counterweight. Pass bottom ends through stake pockets and $\frac{1}{2}$ in. x 4 in. x 10 in. plates underneath stake pockets on opposite sides of car. 1 in. dia. rods may be used on machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, doubled.
N	4	Each to consist of two pieces 2 in. x 4 in. x 18 in. Locate one against each front and each rear wheel. Nail lower pieces to floor with four 20-D nails in each and top pieces to those below in like manner.

For proper location of load on car, see Fig. 34.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

See General Rules 4, 5, 9, 14, 15, 19, 19-A and 19-B for further details.

ROTATING CRANE, HAVING PNEUMATIC TIRES, BOOM DETACHED—FLAT CARS



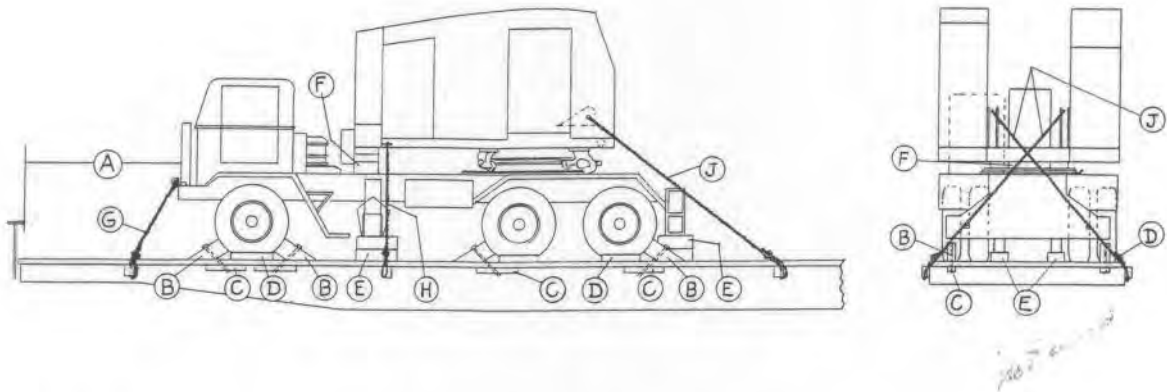
Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2, Sec. 1.
B	16	8 in. x 8 in. x 36 in., hardwood. Locate on floor against tires and secure each with $\frac{3}{4}$ in. dia. bolts with nuts and washers.
C	8	8 in. x 8 in. x 8 in., hardwood. Locate on floor against tires and secure each with two $\frac{3}{4}$ in. dia. bolts.
D	4	$3\frac{1}{2}$ in. x 5 in., hardwood, long enough to fit between Items "C". Nail each to floor with four 60-D nails.
E	4	$3\frac{1}{2}$ in. x 5 in., hardwood, long enough to fit between Items "B". Nail each to floor with eight 60-D nails.
F	6	8 in. x 8 in., hardwood, length to suit. Locate under front center and rear of crane and toe-nail each to floor with four 60-D nails.
G	4	$1\frac{1}{4}$ in. dia. rods, with threaded ends, length to suit. Attach two to boom connection brackets and two to counterweight. Pass bottom ends through stake pockets and $\frac{1}{2}$ in. x 4 in. x 10 in. plates underneath stake pockets on opposite sides of car. 1 in. dia. rods may be used on machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, doubled.
H	4	Each to consist of two pieces 2 in. x 4 in. x 18 in. Locate one against each front and each rear wheel. Nail lower pieces to floor with four 20-D nails and top pieces to those below in like manner.

For proper location of load on car, see Fig. 34.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

See General Rules 4, 5, 9, 14, 15, 19, 19-A and 19-B for further details.

ROTATING CRANE, HAVING PNEUMATIC TIRES, BOOM DETACHED—FLAT CARS



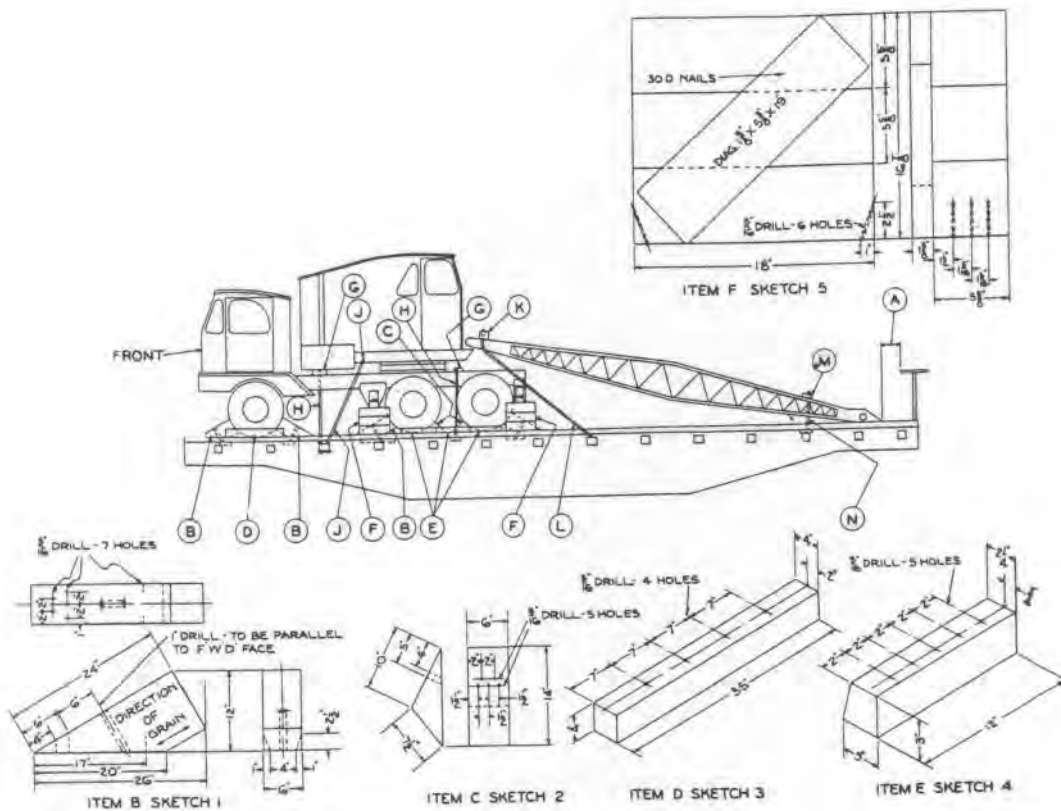
Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	8	8 in. x 8 in. x 21½ in., hardwood. Locate one in front and at rear of each front wheel, one in front of each intermediate wheel, and one behind each rear wheel. Secure each with one ¾ in. dia. rod, with nuts. Pass rod through plate washer, Item "B", floor and Item "C". Use bevel washer under Item "C".
C	8	4 in. x 4 in. x 18 in., hardwood, or ½ in. x 4 in. x 18 in. plates. Locate under floor as required.
D	6	4 in. x 4 in. x 28 in., hardwood. Locate one against outside of each wheel. Nail each to floor with six 40-D nails.
E	4	Each to consist of two pieces, 6 in. x 8 in. x 18 in., hardwood. Locate under each side at center and rear of chassis. Toe-nail lower piece to floor with six 40-D nails and top piece to the one below with four 40-D nails.
F	2	6 in. x 6 in. x 15 in., hardwood. Locate between rotating and body portion of unit. Secure to prevent displacement.
G	2	½ in. dia. steel cable, doubled. Attach one to each side of body of unit, at front, and to stake pocket.
H	2	½ in. dia. steel cable, doubled. Attach one to each side of rotating portion of unit and to opposite stake pocket.
J	2	½ in. dia. steel cable, doubled. Attach one to each side of rotating portion of unit and to opposite stake pocket.

For proper location of load on car, see Fig. 34.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

See General Rules 4, 5, 7, 9, 14, 15, 19, 19-A and 19-B for further details.

Sec. 4—Fig. 33
ROTATING CRANES, HAVING PNEUMATIC TIRES—FLAT CARS



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	8	Blocks, 6 in. x 10 in. x 24 in., Sketch 1. Locate one in front and one in rear of each front wheel, one in front of each intermediate wheel and one in rear of each rear wheel. Secure each to floor with one $\frac{3}{4}$ in. dia. x 22 in. rod passed through floor and 2 in. x 4 in. x 12 in. cleat under floor, five 60-D nails in heel of block and toe-nail each side of block with one 60-D nail.
C	4	Blocks, 6 in. x $7\frac{1}{2}$ in. x 10 in., Sketch 2. Locate one in front of each rear wheel and one in rear of each intermediate wheel. Nail each to floor with five 60-D nails.
D	4	Blocks, 4 in. x 4 in. x 35 in., Sketch 3. Locate one against inside and outside of each front wheel. Nail each to floor with four 60-D nails.
E	4	Blocks, 3 in. x 3 in. x 12 in., Sketch 4. Locate one against outside of each rear and intermediate wheel. Nail each to floor with five 60-D nails.
F	4	Blocks, each to consist of three pieces $5\frac{1}{2}$ in. x $5\frac{1}{2}$ in. x 18 in. and one piece $1\frac{1}{2}$ in. x $5\frac{1}{2}$ in. x 19 in., Sketch 5. Locate one under each outrigger on each side of unit. Toe-nail each to floor with six 60-D nails.
G	2	4 in. x 6 in. x 62 in. Locate on top of frame of unit, secure with Items "H".
H	4	$\frac{3}{4}$ in. dia. rods. Pass through each end of Items "G" and through $\frac{1}{2}$ in. x 4 in. x 10 in. plates under stake pockets or 4 in. x 4 in. x 18 in. hardwood cleats, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates under floor.
J	2	$1\frac{1}{4}$ in. dia. rods, with threaded ends, length to suit. Attach two to front of rotating portion and pass bottom ends through stake pockets and $\frac{1}{2}$ in. x 4 in. x 10 in. plates underneath stake pockets on opposite sides of car, or through floor and 4 in. x 4 in. x 18 in. cleats, or $\frac{1}{2}$ in. x 4 in. x 18 in. plates under floor on opposite sides of car. 1 in. dia. rods may be used on machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, doubled.
K	1	4 in. x 4 in. x 4 ft. Locate on top of boom and secure with Item "L".
L	2	$1\frac{1}{4}$ in. dia. rods, with threaded ends, length to suit. Pass through Items "K" and $\frac{1}{2}$ in. x 4 in. x 10 in. plates underneath stake pockets on opposite sides of car. 1 in. dia. rods may be used on machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, doubled.
M	1	When boom is detached, attach rods to boom connection bracket.
N	2	2 in. x 4 in., long enough to extend beyond sides of boom. Secure with two Items "N", $\frac{3}{4}$ in. dia. rods. Pass through each end of Item "M" and through floor and 4 in. x 4 in. x 18 in. cleat, or $\frac{1}{2}$ in. x 4 in. x 18 in. plate under floor.

Items "K", "M" and "N" not required when boom is detached.

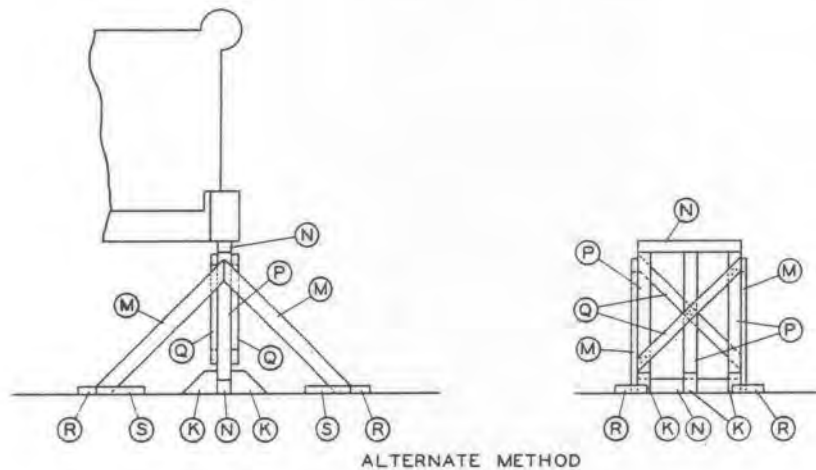
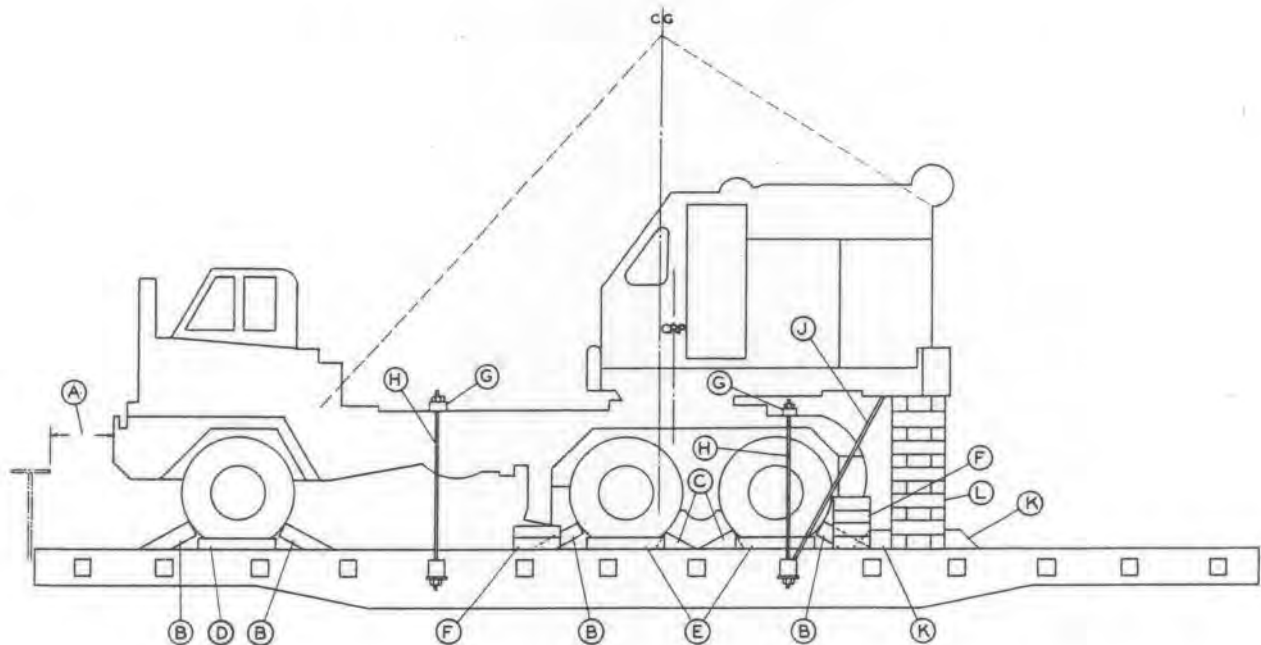
On units where counterweight of rotary portion extends beyond rear of frame, overhanging portion must be supported by suitable built-up frame.

Machines equipped with locking devices must have such devices placed in locked position by shippers.

For proper location of load on car, see Fig. 34.

See General Rules 4, 5, 9, 14, 15, 19, 19-A and 19-B for further details.

ROTATING CRANES HAVING PNEUMATIC TIRES—FLAT CARS

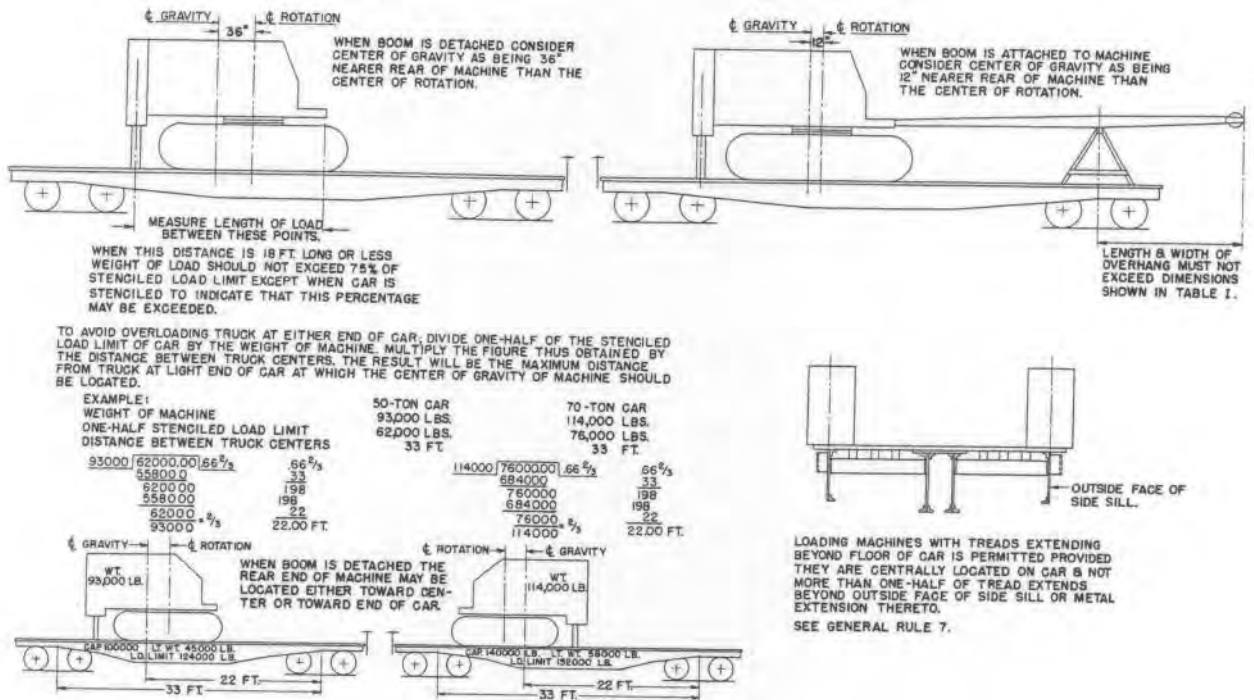


Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2, Sec. 1.
B	8	Blocks, pattern 55, Sec. 6. Locate one in front and one in rear of each front wheel, one in front of each intermediate wheel, and one in rear of each rear wheel. Secure each to floor with one $\frac{3}{4}$ in. dia. bolt, five 60-D nails in heel of block, and toe-nail each side of block with one 60-D nail.
C	4	Blocks, pattern 56, Sec. 6. Locate one in front of each rear wheel, and one in rear of each intermediate wheel. Secure each to floor with five 60-D nails.
D	4	Blocks, pattern 57, Sec. 6. Locate one against inside and outside of each front wheel. Secure each to floor with four 60-D nails.
E	4	Blocks, pattern 58, Sec. 6. Locate one against outside of each rear and intermediate wheel. Secure each to floor with five 60-D nails.

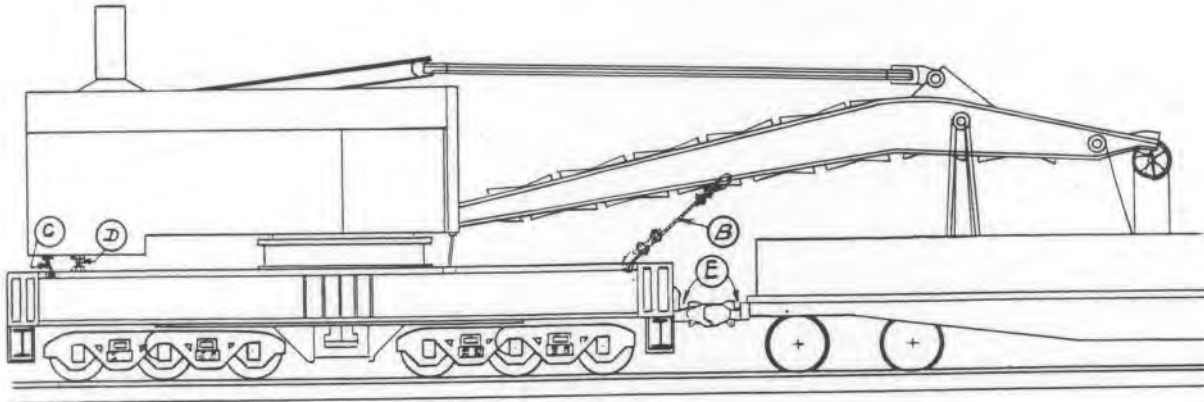
ROTATING CRANES HAVING PNEUMATIC TIRES—FLAT CARS

Item	No. of Pcs.	Description
F	4	Blocks, pattern 59, Sec. 6. Locate one under each outrigger on each side of unit. Toe-nail each to floor with six 60-D nails.
G	2	4 in. x 6 in. x 62 in. Locate on top of frame of unit and secure with Items "H".
H	4	$\frac{3}{4}$ in. dia. rods. Pass through each end of Items "G" and through $\frac{1}{2}$ in. x 4 in. x 10 in. plates underneath stake pockets or through floor.
J	2	$1\frac{1}{4}$ in. dia. rods. Attach two behind rotating portion and pass bottom ends through stake pockets and $\frac{1}{2}$ in. x 4 in. x 10 in. plates underneath stake pockets on opposite sides of car, or through floor on opposite sides of car. 1 in. dia. rods may be used on machines weighing 45,000 lbs. or less. Substitute, if desired, $\frac{5}{8}$ in. x 6 x 7 steel cable, doubled.
K	6	Blocks, pattern 67, Sec. 6. Locate 3 in front and 3 in back of sill, Item "N". Secure each to car floor with three 60-D nails.
L	12	6 in. x 6 in. x 54 in.
	10	6 in. x 6 in. x 24 in. Alternate in tiers of two, lengthwise and crosswise, as shown under crane counterweight. Secure lower pieces to floor with eight 60-D nails, and upper pieces to those below with one 60-D nail front and one 60-D nail rear.
		Alternate Method
M	4	2 in. x 6 in. x 80 in., braces. Secure to top of Item "P" with six 20-D nails and to Item "S" with three 20-D nails.
N	2	6 in. x 6 in. x 54 in., used as header and sill. Toe-nail sill to floor of car with eight 60-D nails and secure header to Item "P" with twelve 20-D nails.
P	3	6 in. x 6 in. x length to suit. Secure to bottom Item "N" with twelve 20-D nails, as shown.
Q	2	2 in. x 6 in. x 87 in., diagonal braces. Secure to opposite sides of Item "P" with nine 20-D nails in each piece.
R	4	2 in. x 6 in. x 9 in. Locate one in front of each Item "M". Secure to floor of car with two 40-D nails.
S	8	2 in. x 6 in. x 24 in. Locate one on each side of Item "M". Secure to floor with four 40-D nails in each piece.

See General Rules 3, 4, 5, 7, 9, 14, 15, 19 and 19-B for further details.



WRECKING CRANES SHIPPED WITH BOOMS SUPPORTED EXCLUSIVELY BY THEIR CABLES



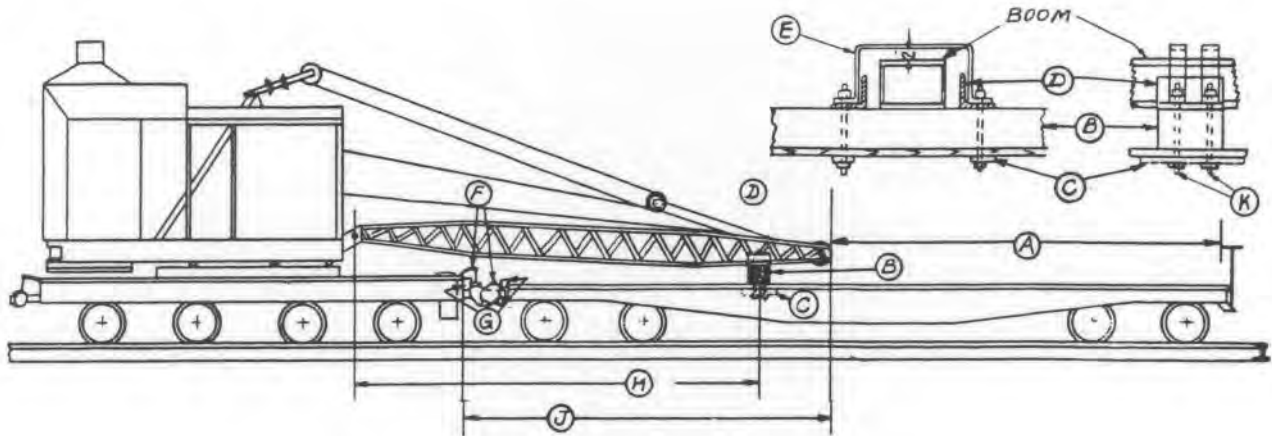
Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	2	1 in. steel cables 6 x 9, secured with two "U"- bolt cable clips at each end. Sharp turns must be protected with thimbles. Permanent anchors acceptable as substitutes.
C	2	1¼ in. rods, length to suit, or anchors equivalent in strength. Parts to which anchors are secured must be equally as strong as the anchors. Rods with hooked ends must not be used.
D		Rear jacks must be screwed tight to eliminate vertical motion.
E		Uncoupling mechanism must be made inoperative.

Cable blocks may be detached, pulled up to boom head, or lay loose on idler car with cables sufficiently slack to negotiate curves.

Boom end of crane must trail.

See General Rules 4, 5, 15, 16, 19, 19A and 21 for further details.

DERRICKS, CRANES, ETC., ON THEIR OWN WHEELS, WITH BOOMS ATTACHED, WHEN LENGTH OF BOOM DOES NOT EXCEED 30 FT. BEYOND END SILL OF THE CAR ON WHICH THE MACHINE IS MOUNTED



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2, Sec. 1.
B	1	Hardwood 10 in. wide, high enough to keep boom 4 in. from floor. Secure to floor with four $\frac{3}{4}$ in. bolts.
C	4	4 in. x 4 in. x 18 in., hardwood cleats, or plates $\frac{1}{2}$ in. x 4 in. x 18 in.
D	2	6 in. x 6 in. x $\frac{3}{8}$ in. x 10 in. angles, or 8 in. x 8 in. x 24 in., hardwood blocks. Clearance between boom and angles, or boom and blocks, must be at least 3 in.
E	2	Straps, wrought iron, $\frac{1}{2}$ in. x 2 in., formed to suit.
F		Uncoupling mechanism must be made inoperative.
G		Spacing blocks to be applied after draft gears have been fully compressed and slack taken out by jacking cars apart.
H		Item "B" must be located not more than 25 ft. from point where boom is attached to body of derrick.
J		When this distance exceeds 30 ft., be governed by Fig. 37.
K	2 ea. Item "D".	$\frac{3}{4}$ in. dia. bolts, through Items "B", "C", "D", and "E".

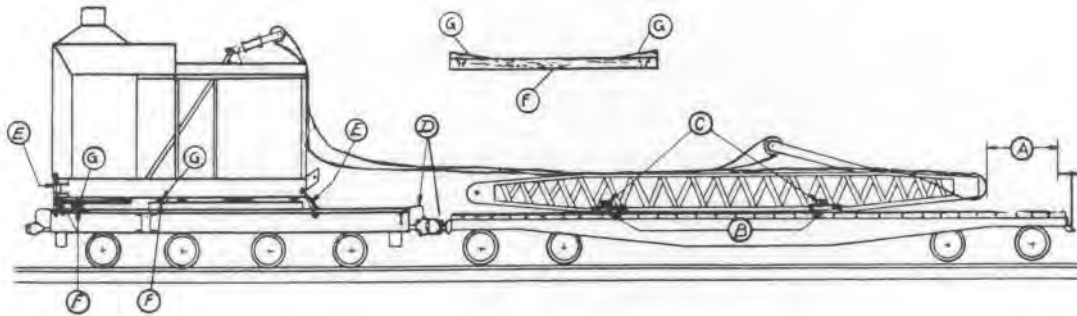
Rotating portion of derrick must be free to swing without any impediment.

All coal must be removed from bunkers. Water must be removed from boiler and reservoir.

Boom end of crane must trail.

See General Rules 4, 5, 9, 14, 15, 16, 19, 19A and 21 for further details.

DERRICKS, CRANES, ETC., ON THEIR OWN WHEELS, WITH BOOMS, DETACHED, CABLES NOT REMOVED



Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2, Sec. 1.
B	4	4 in. wide, 18 in. long, high enough to permit application of Items "C", nailed to floor against boom.
C	2	2 in. x 4 in., long enough to extend beyond Items "B", nailed to Items "B".
D		Uncoupling mechanism must be made inoperative.
E	4	1¼ in. rods with nuts and washers, for machines weighing 150,000 lbs. or less. For machines weighing more than 150,000 lbs. use 1½ in. rods. Threads must be riveted over or nuts secured with lock nuts or nut locks. Permanent anchor devices with which the crane is usually equipped are acceptable substitutes. Anchors must be attached to extreme front and rear of rotating portion. If construction of machine will not permit application to extreme rear, they must be placed as close to rear as construction will permit. Rods with hooked ends must not be used.
F	2 ea. machine.	Hardwood, 6 in. wide, long enough to extend beyond rotating portion. Thickness 2 in. less than distance between rotating portion and carriage. Secure to floor with one ¾ in. dia. bolt at each end with head countersunk.
G	2 ea. Item F.	2½ in. x 4 in. x 12 in., hardwood, driven between Items "F" and machine. Nail to Items "F" with 40-D nails.

Items "F" and "G" not required at center, unless machine has two piece bed casting, nor at rear end of machine equipped with jacks.

Pivoted machines equipped with jacks must have jacks screwed tight to prevent vertical motion of rotating portion.

Jacks must not be used to apply Items "F" and "G".

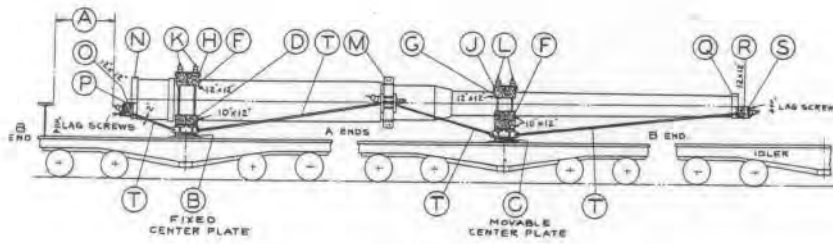
All coal must be removed from bunkers. Water must be removed from boiler and reservoir.

Remove key or nut from center pin of truck at end opposite to the counterbalance.

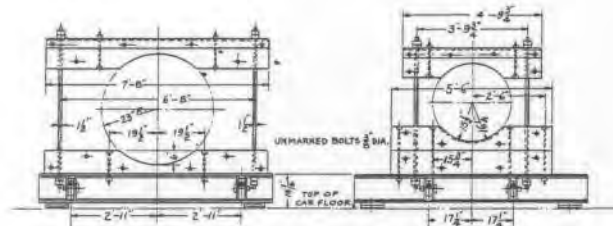
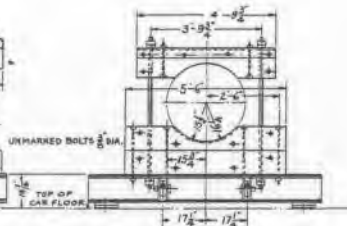
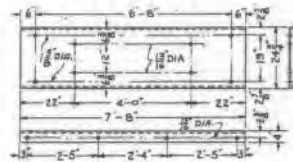
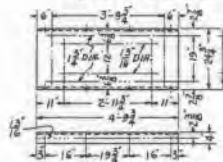
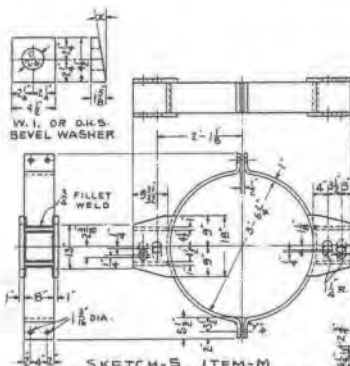
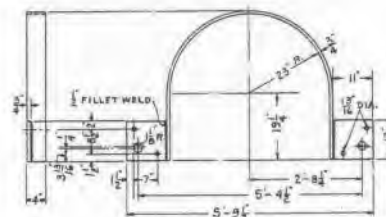
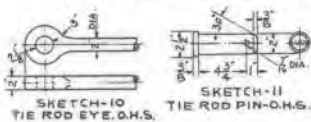
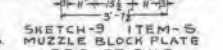
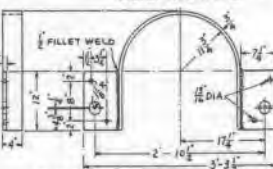
See General Rules 4, 5, 9, 14, 15, 19, 19A and 21 for further details.

Sec. 6—Fig. 84

GUN BARRELS, 16 IN. 45 CALIBRE—FLAT CARS



DETAILS

SKETCH-1
ITEMS B-D-F-H-KSKETCH-2
ITEMS C-E-G-J-LSKETCH-3 ITEM-H
BREECH YOKE CAP
C.B.S. OR O.H.S.SKETCH-4 ITEM-J
BARREL YOKE CAP
C.B.S. OR O.H.S.SKETCH-5 ITEM-M
BARREL CLAMP C.B.S. OR O.H.S.SKETCH-6 ITEM-N
BREECH STIRRUP C.B.S. OR O.H.S.SKETCH-7 ITEM-P
BREECH BLOCK PLATE
C.B.S. OR O.H.S.SKETCH-8 ITEM-S
MUZZLE BLOCK PLATE
C.B.S. OR O.H.S.SKETCH-9 ITEM-G
MUZZLE STIRRUP C.B.S. OR O.H.S.SKETCH-11
METHOD OF BLOCKING
DRAFT GEARSKETCH-12
METHOD OF FASTENING
UNCOUPLING LEVERS

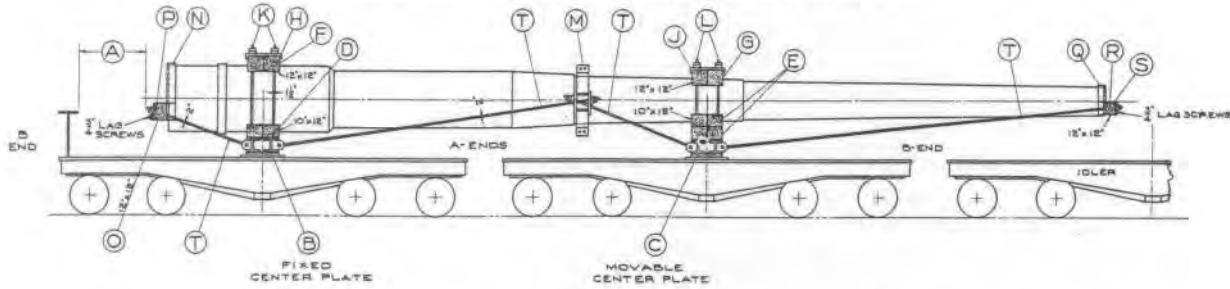
GUN BARRELS, 16 IN. 45 CALIBRE—FLAT CARS

Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2 .
B	1	Fixed center plate and bolster. See Sketch 1.
C	1	Movable center plate and bolster. See Sketch 2.
D	2	Cradle, breech end. See Sketch 1.
E	4	Cradle, barrel end. See Sketch 2.
F	2	Timber clamp, breech end. See Sketch 1.
G	2	Timber clamp, barrel end. See Sketch 2.
H	1	Yoke cap, breech end. See Sketches 1 and 3.
J	1	Yoke cap, barrel end. See Sketches 2 and 4.
K	4	Timber clamp bolts, breech end. See Sketch 1.
L	4	Timber clamp, bolts, barrel end. See Sketch 2.
M	1	Clamp, barrel. See Sketch 5.
N	1	Stirrup, breech end. See Sketch 6.
O	1	Stirrup block, breech end.
P	1	Block plate, breech end. See Sketch 7.
Q	1	Stirrup, muzzle end. See Sketch 8.
R	1	Stirrup block, muzzle end.
S	1	Block plate, muzzle end. See Sketch 9.
T	8	Tie rods. See Sketches 10 and 11.

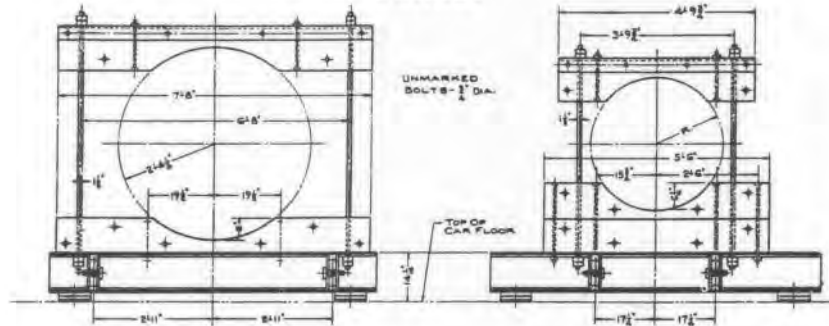
At A ends of cars, draft gears must be blocked and made inoperative, see Sketch 12 or Fig. 3. Uncoupling levers must be securely fastened to prevent operation of same in transit, see Sketch 13 or Fig. 4.

See General Rules 4, 5, 6, 7, 8, 9, 12, 15, 16 and 21 for further details.

GUN BARRELS, 16 IN. 50 CALIBRE—FLAT CARS

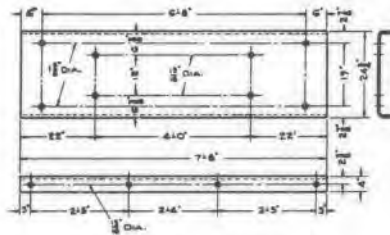
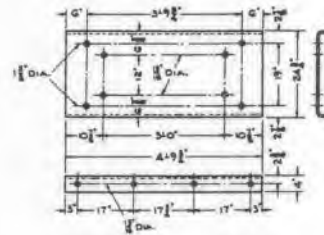
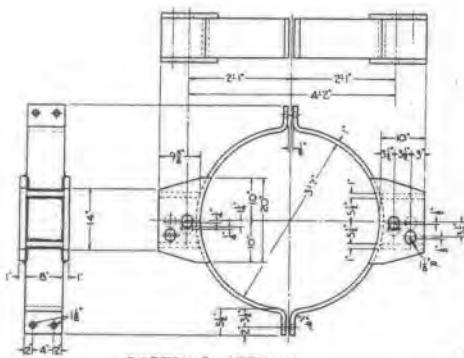
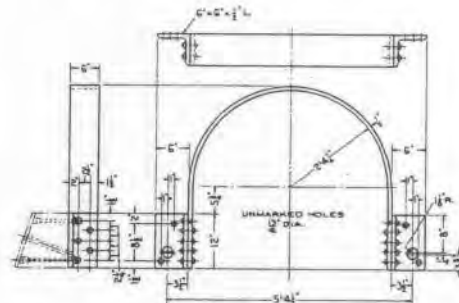
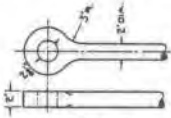
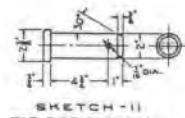
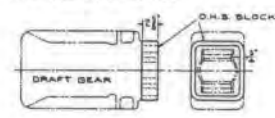
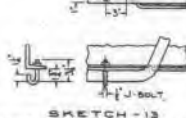
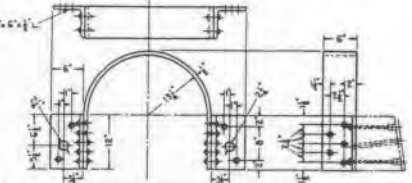


DETAILS



SKETCH-1 ITEMS-B-D-H-F-K

SKETCH-2 ITEMS-C-E-G-I-L

SKETCH-3 ITEM-H
BREECH YOKE CAP
1/2" C.B.S. OR Q.H.S.SKETCH-4 ITEM-J
BARREL YOKE CAP
1/2" C.B.S. OR Q.H.S.SKETCH-5 ITEM-M
BARREL CLAMP—C.B.S. OR Q.H.S.SKETCH-6 ITEM-N
BREECH STIRRUP—C.B.S. OR Q.H.S.SKETCH-10
TIE ROD EYE—Q.H.S.SKETCH-11
TIE ROD PIN—Q.H.S.SKETCH-7 ITEM-P
BREECH BLOCK PLATE
1/2" C.B.S. OR Q.H.S.SKETCH-9 ITEM-S
MUZZLE BLOCK PLATE
1/2" C.B.S. OR Q.H.S.SKETCH-12
METHOD OF BLOCKING
DRAFT GEARSKETCH-13
METHOD OF FASTENING
UNCOUPLING LEVERSSKETCH-8 ITEM-Q
MUZZLE STIRRUP—C.B.S. OR Q.H.S.

Sec. 6—Fig. 85

GUN BARRELS, 16 IN. 50 CALIBRE—FLAT CARS

Item	No. of Pcs.	Description
A		Brake wheel clearance. See Fig. 2.
B	1	Fixed center plate and bolster. See Sketch 1.
C	1	Movable center plate and bolster. See Sketch 2.
D	2	Cradle, breech end. See Sketch 1.
E	4	Cradle, barrel end. See Sketch 2.
F	2	Timber clamp, breech end. See Sketch 1.
G	2	Timber clamp, barrel end. See Sketch 2.
H	1	Yoke cap, breech end. See Sketches 1 and 3.
J	1	Yoke cap, barrel end. See Sketches 2 and 4.
K	4	Timber clamp bolts, breech end. See Sketch 1.
L	4	Timber clamp bolts, barrel end. See Sketch 2.
M	1	Clamp, barrel. See Sketch 5.
N	1	Stirrup, breech end. See Sketch 6.
O	1	Stirrup block, breech end.
P	1	Block plate, breech end. See Sketch 7.
Q	1	Stirrup, muzzle end. See Sketch 8.
R	1	Stirrup block, muzzle end.
S	1	Block plate muzzle end. See Sketch 9.
T	8	Tie rods. See Sketches 10 and 11.

At A ends of cars, draft gears must be blocked and made inoperative, see Sketch 12 or Fig. 3. Uncoupling levers must be securely fastened to prevent operation of same in transit, see Sketch 13 or Fig. 4.

See General Rules 4, 5, 6, 7, 8, 9, 12, 15, 16 and 21 for further details.