OPERATOR'S MANUAL

Brillion

Hydra-Lift

SPRING TOOTH HARROW

MODELS HSD–272 & 296

SPRING TINE HARROW

MODELS HSDS–272 & 296

FEMA

BRILLION IRON WORKS
BRILLION, WISCONSIN 54110

SETTING UP AND OPERATING INSTRUCTIONS

BRILLION MODELS: HSD-272 AND HSD-296 TRANSPORT SPRING TOOTH HARROW
HSDS-272 AND HSDS-296 TRANSPORT SPRING TINE HARROW

Your Brillion Transport Spring Tooth Harrow is built with the best materials and workmanship available. It has been designed to give years of trouble free operation, and proper care and operation will insure the service and long life built into it.

Study this manual carefully before attempting to assemble or operate the machine.

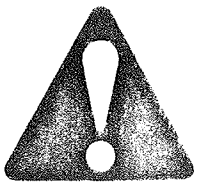
LOCATION REFERENCE

"Right" and "Left", "Front" and "Rear" refer to operators "Right" and "Left", "Front" and "Rear" when he faces in the same direction as the machine will travel.

TRANSPORT SPRING TOOTH HARROW SPECIFICATIONS

Model No.	Overall Width	No. of Teeth	Weight (Approx.)
HSD-272	22'8"	67 (4" spacing) 45 (6" spacing)	2575# 2395#
HSD-296	24'8"	73 (4" Spacing) 49 (6" spacing)	2860# 2663#
HSDS-272	22'8"	67 (4" spacing) 45 (6" spacing)	2522# 2177#
HSDS-296	24'8"	73 (4" spacing) 49 (6" spacing)	2802# 2357#

Teeth:	3/8 x 1-3/4 heat treated alloy spring steel
Tooth Spacings:	4" and 6"
Working Depth:	1" to 6" - controlled by hydraulic cylinder from tractor and wing gage wheel adjustment
Transport Clearance:	9"
Transport Wheels:	15" - 5 bolt (standard); 14" - 5 bolt (optional)
Wing Gage Wheels:	15" - 4 bolt (standard); 14" - 4 bolt (optional)
Wheel Bearings	Tapered Roller



SAFETY SUGGESTIONS

Investigation of farm accidents shows that nearly 1/3 of all farm accidents are caused by careless use of farm machinery. You can do your part in making your farm and community safer by following the safety suggestions. Insist that all people working with you or for you abide by these suggestions.

Do not stand between tractor and implement when attaching or detaching implement unless both tractor and implement are not moving.

Do not make adjustments or lubricate machine while it is in motion.

Do not allow anyone to ride on tractor or machine.

Always use transport pins while transporting machine. This model machine has two transport pins and both should be used.

Relieve pressure in hydraulic lines before uncoupling hydraulic hoses from tractor.

When not in use, lower machine to ground.

Block machine so that it will not roll when disconnected from tractor.

Do not transport at speeds over 20 MPH.

Your Brillion Hydra-Lift Harrow is shipped in assemblies and shipping bundles. Before starting to assemble the harrow, separate the various bundles and take care not to lose any of the parts or hardware.

Assembly Name	No. Used - Common to all Models
Center Frame Assembly	1
Axle Assembly	1
Wing Assembly - R. H.	1
Wing Assembly - L. H.	1
Gage Wheel Assembly - R. H.	1
Gage Wheel Assembly - L. H.	1
Lift Arm Bundle	1
Hydraulic Lift Cross Frame	1
Tongue Assembly	1
Truss Brace Bundle	1
Wing Lift Support Bundle	1
Lift Arm Bundle	1
Hinge Brace & Travel Link Bundle	1
Wing Lift Strap Bundle	1
Hitch Plate Bundle	1
Tongue Brace Bundle	1
Inner Tongue Brace	1
Drawbar Jack Assembly	1
Jack Mounting Brace	1
Box Assembly - Basic	1
Wheel (4 bolt - gage wheel)	2
Wheel (5 bolt - transport axle)	4
Box Assembly (tooth fasteners)	2
Spring Teeth	
HSD-272, HSDS-272	67
HSD-272-1, HSDS-272-1	45
HSD-296, HSDS-296	73
HSD-296-1, HSDS-296-1	49

NOTE: Refer to the figures indicated in the repair parts catalog. These figures will demonstrate the relationship of the parts put together and also identify the fasteners to use for attaching these parts.

FRAME ASSEMBLY

To begin assembly, block up the center section to provide adequate space to install the transport axle in position. Then place the transport axle in position and secure it to the frame using the 1" clevis pins found in the box assembly (see figure 1). Next position the cross frame on the center section and secure it using (4) 5/8 x 2" long capscrews. The mounting holes are indicated on figure 1.

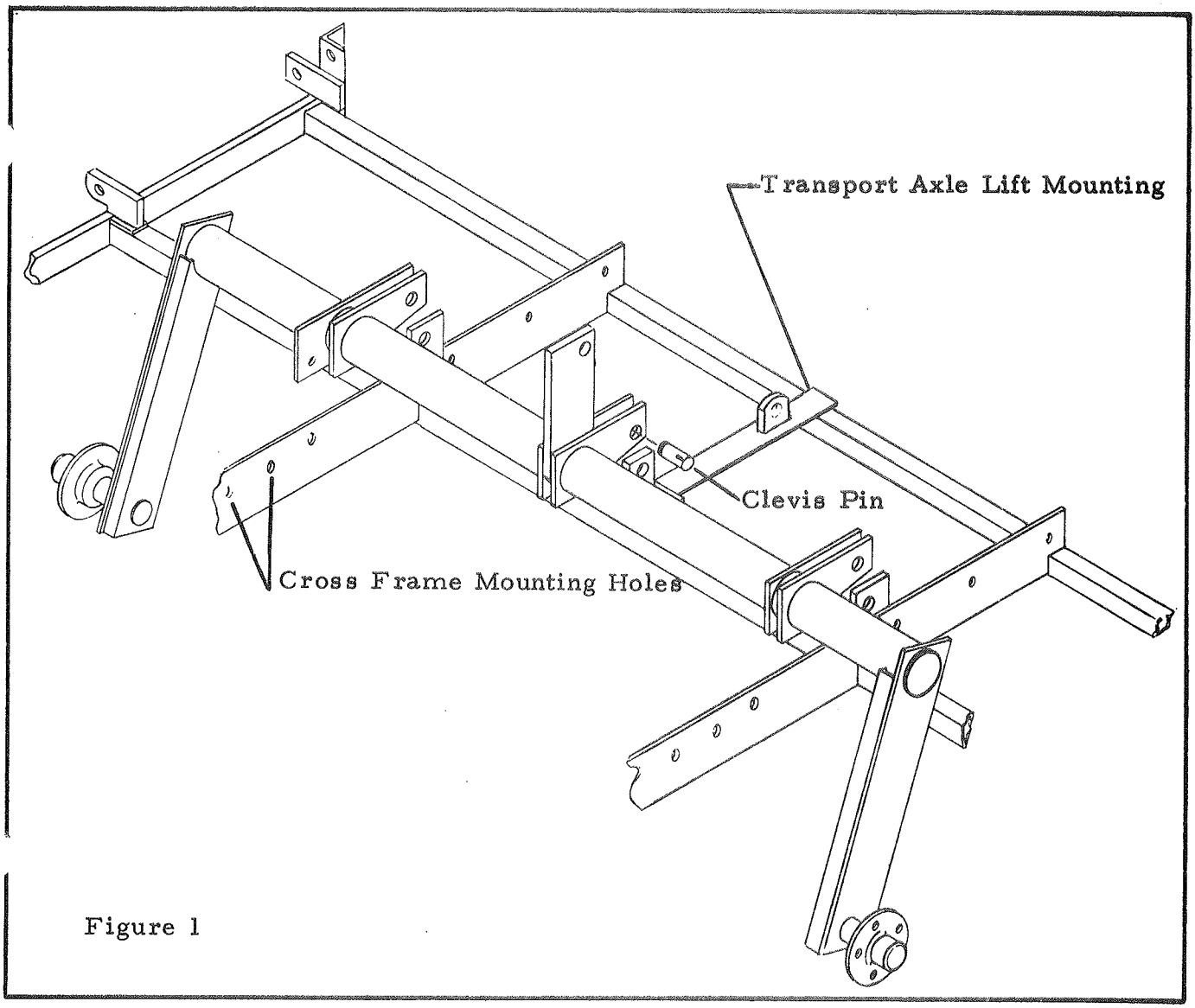


Figure 1

ASSEMBLY OF THE DRAWBAR -- Refer to Figure 1 of Repair Parts Catalog

Position the drawbar on the center section frame, using the center pivot arm of the transport axle as a guide to center the drawbar. The two angles that are welded to the bottom of the drawbar straddle the front tooth bar. Now place the transport axle lift mount on the drawbar and insert the 1" clevis pin, attaching the axle pivot arm to the lug. Fasten the lug assembly to the drawbar using the parts and the fasteners shown in their respective positions in figure 1 of the repair parts catalog. DO NOT completely draw up the fasteners until the drawbar is completely assembled. Position the vertical brace support against the front side of the tooth bar. Use the fasteners shown in figure 1 of the repair parts catalog, but do not tighten them until the drawbar and braces are completely assembled. Next attach the inner drawbar braces to the outside of the front-to-rear members of the center section frame. Refer to figure 1 for the mounting hole locations and the fasteners to use. Now slide the tongue brace over the drawbar tube (note the top side of the tongue brace has two holes for mounting the hydraulic hose holders). Align the holes in the inner drawbar braces and the tongue brace. Complete the assembly of the drawbar braces by attaching the outer drawbar brace to the frame using 3/4 x 3" long capscrews. Attach the opposite end to the tongue brace and the inner drawbar brace using the 5/8 x 3" long capscrew. Complete the drawbar assembly by attaching the hitch plates and inner drawbar braces to the drawbar. Install the hitch clevis in the hitch plates (refer to repair parts catalog figure 1 for identification and fasteners used). At this point, all fasteners should be drawn up tight.

MOUNTING THE WINGS

Mount the wings to the center section using hardware shown (see figure 2 of the repair parts catalog). Attach the lift strap to the lift support using a 3/4 x 3" capscrew, do not draw up tight. Attach the opposite end of the lift strap to the wing frame see figure 6. Insert the stop (to identify see figure 2) between the lift supports, but do not fasten tightly - the stop will be set in position after the machine is completely assembled and the wings can be raised and lowered.

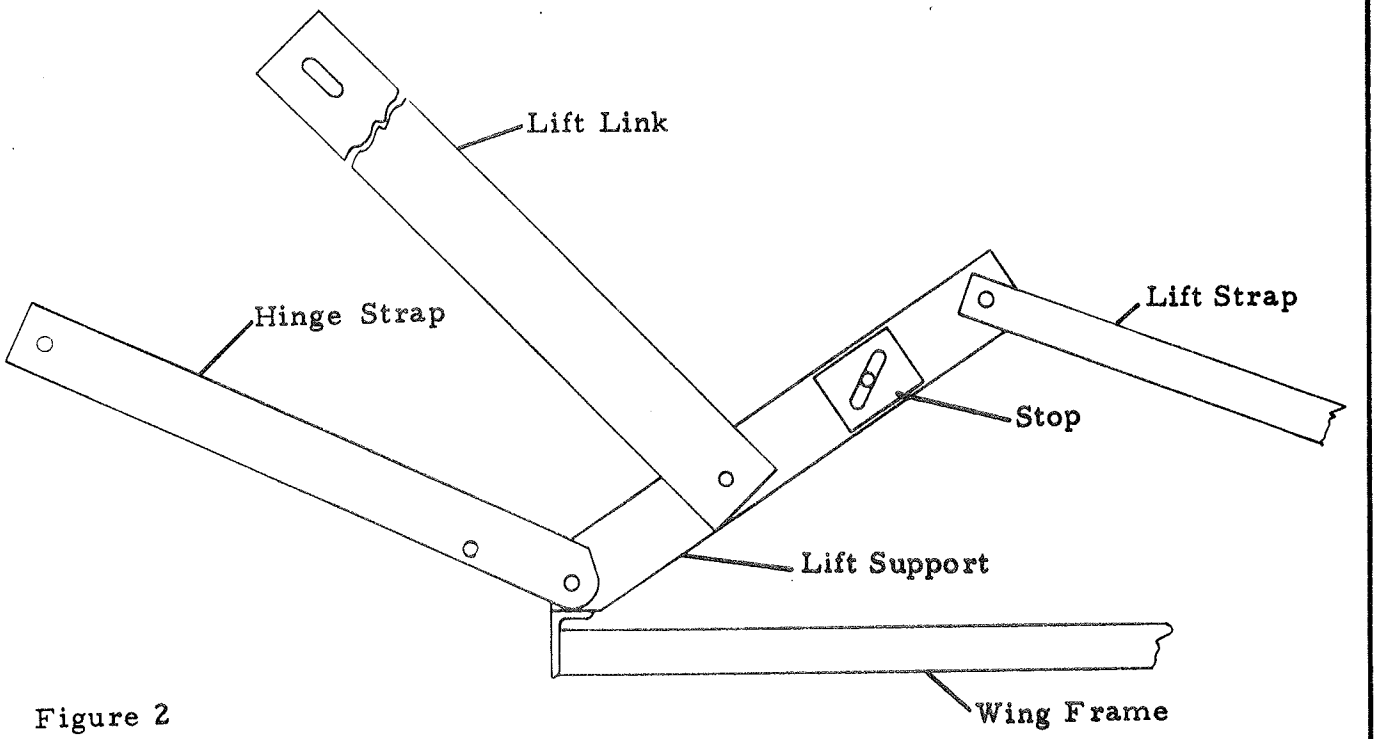
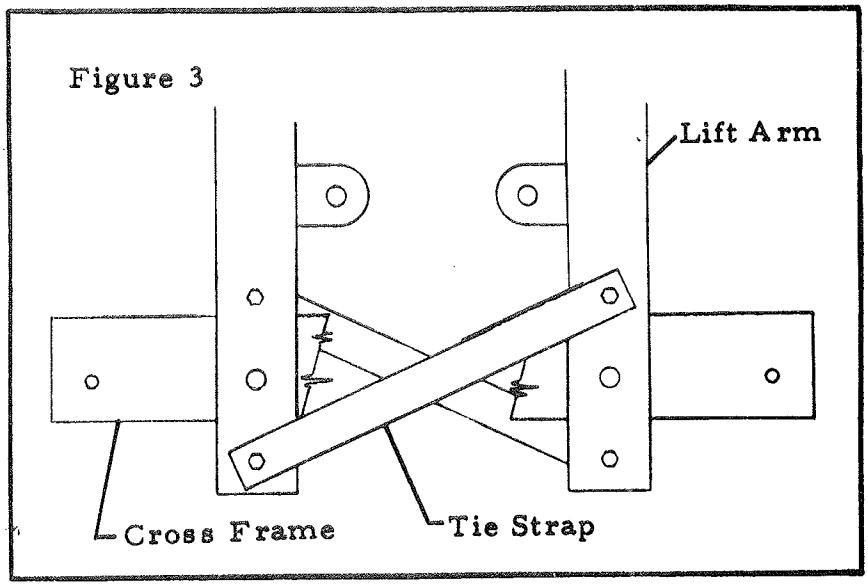


Figure 2

ASSEMBLY OF THE LIFT MECHANISM

Attach the lift arms to the cross frame (see figure 4 of the repair parts manual) using the 1" clevis pin provided. Then assemble the tie straps to the lift arms (see figure 3 for relative position) using 3/4 x 3-1/2 long capscrews. Next attach the hinge straps to the cross frame using 3/4 x 2-1/2 long capscrew, to the center section frame using a 5/8 x 2 long capscrew, and to wing lift support using a 3/4 x 3 long capscrew. To complete the assembly of the lift mechanism, attach the lift links (the slotted end) to the lift arms and to the wing lift supports using 3/4 x 3 capscrews.

Figure 3



ASSEMBLY OF THE REMAINING PARTS

Mount the gage wheel brackets to the wings (see figure 2 of the repair parts catalog). The wheel bolts for mounting the wheel to the hub will be found in the box assembly. Also attach the wing extension shown in this figure.

Attach the hose holders to the top of the tongue brace using 5/8 x 2 long capscrews. Next attach the support jack to the drawbar. The retaining ring is found in place on the drawbar. Remove the ring, mount the jack in place and replace the ring.

Next attach the wing travel link components to the lift arms. See figure 5 of this manual and figure 4 of the repair part catalog for proper identification. Then attach the transport axle travel link to the left axle pivot arm (see figure 3 of the repair parts catalog). Two straps are used - one on each side of the axle pivot arm with a 5/8 flat washer inserted between each strap and the axle pivot arm. The washers are necessary to allow ample clearance with the frame member when the machine is raised.

In the basic box assembly, a restrictor valve is found in a small bag. This valve should be fitted into the rod end port of the hydraulic cylinder to be used to lift the wings. This valve is a flow restrictor and necessary to protect the wings from lowering too fast. DO NOT operate the wings without this valve in the system.

ATTACHING THE TEETH (OR TINES)

See figure 4 for the illustration showing how the spring teeth are attached to the tooth bars, and figure 4a showing how the spring tines are attached to the tooth bars. Figures 8 and 9 show the positions and the order of attaching the teeth for 6 inch spacing. Figures 10 and 11 show the spacings for 4 inches. The assembly should begin with the center section. Locate the center of the machine and then attach the first tooth to the rear tooth bar with the tooth center located on the machine center line as shown. Each successive tooth (or tine) on the same bar should be equally spaced. To assemble the teeth (or tines) to the wing, begin with the outermost tooth on the front bar, and locate the teeth (or tines) from this to tooth as shown. The teeth located near the hinge may have to be less than the indicated dimension to compensate for the hinge.

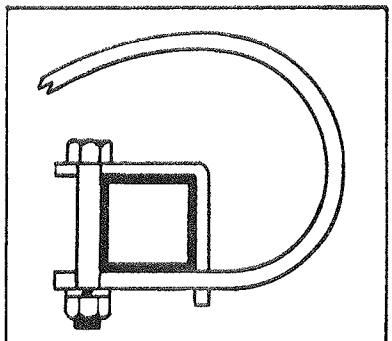


Figure 4

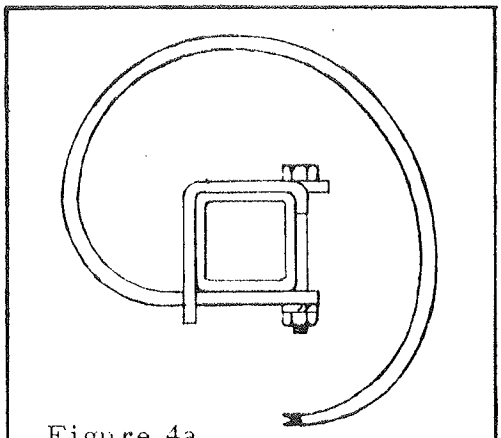


Figure 4a

ADJUSTING THE WING LIFT MECHANISM

The recommended hydraulic cylinder to operate the wings is a 4" bore, 8 inch stroke, double-acting agricultural cylinder.

Raise the wings until the cylinder is fully retracted. Then stand at the rear of the machine and note the position of the wings. Both wings should be in the same relative position from their horizontal position. After the wings are corrected, hold them in this position and set the stops, which were left loose in the wing lift supports, against the lift links. Fasten the stops in this position. This will cause the wings to raise to this position and will minimize wing sway while transporting the harrow.

OPERATING INSTRUCTIONS

TRANSPORTING THE HARROW

A standard 8" stroke agricultural cylinder is required for lifting the harrow for transport.

The following sequence is recommended in preparation for transporting the machine. Raise the wings to their fully raised position, followed by raising the machine to its maximum height. Then insert the transport pins in the wing travel link and in the transport axle travel link. See figure 5 and 5a. Then lower the machine until it is held by the travel link.

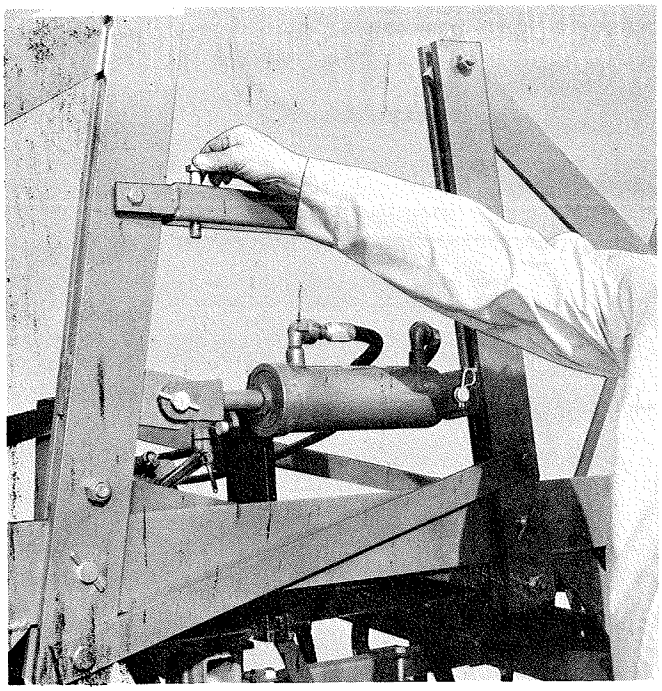


Figure 5

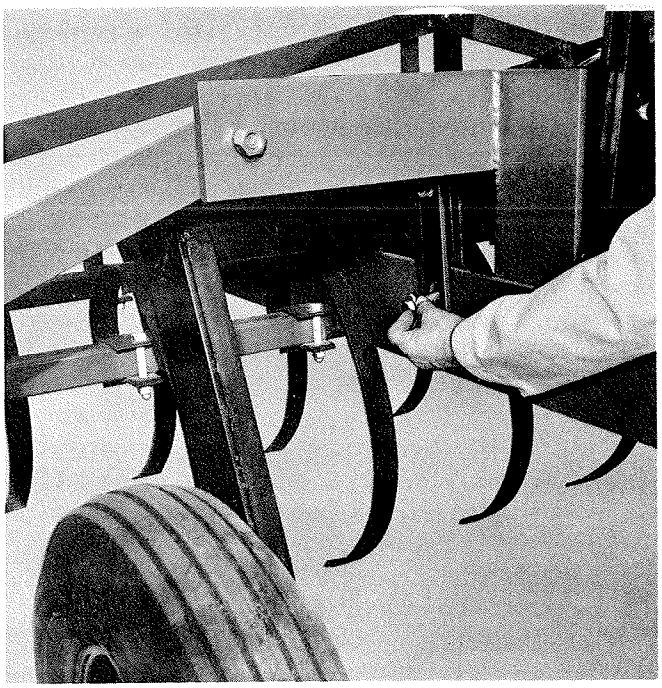


Figure 5a

DEPTH CONTROL

Working depth is controlled by setting the control on the transport axle cylinder and adjusting the gauge wheels on the wings (see figure 6). Once the working depth is determined, the harrow is leveled by adjusting the drawbar clevis in the drawbar hitch.

OPERATING

The harrow should be raised when making sharp turns, such as at the ends of the field. Failure to raise the harrow out of the ground when turning short, places excessive strain on the machine.

Attention should be given to the relative position of the machine with respect to working ridges or deep furrows. If the machine is not in proper position, some teeth may be overloaded and be deformed.

SAFETY NOTE

KEEP ALL BYSTANDERS AWAY FROM THE MACHINE WHEN RAISING AND LOWERING THE WINGS OR THE MACHINE. REMEMBER: "A MACHINE IS AS SAFE AS THE OPERATOR". DON'T TAKE CHANCES.

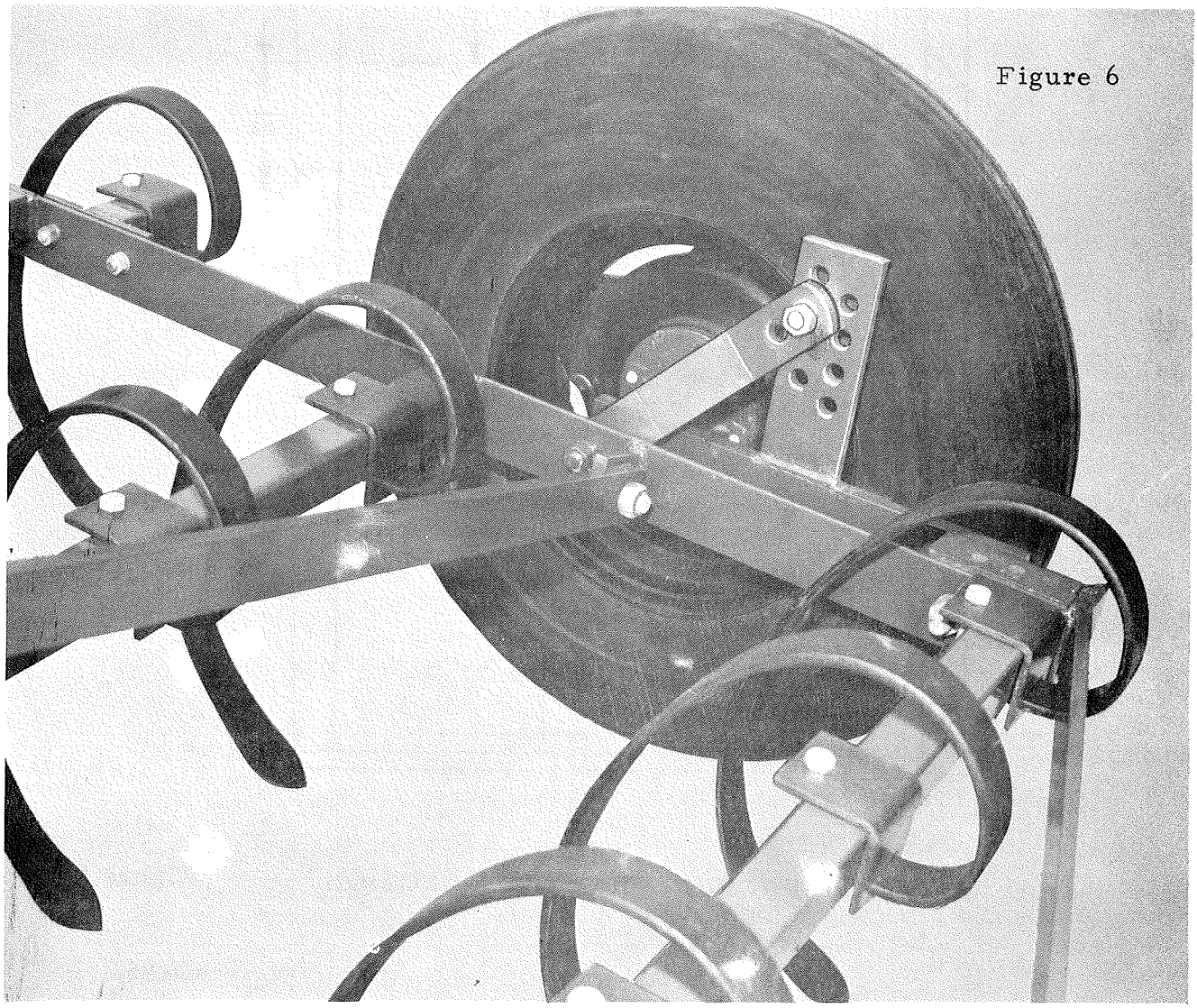
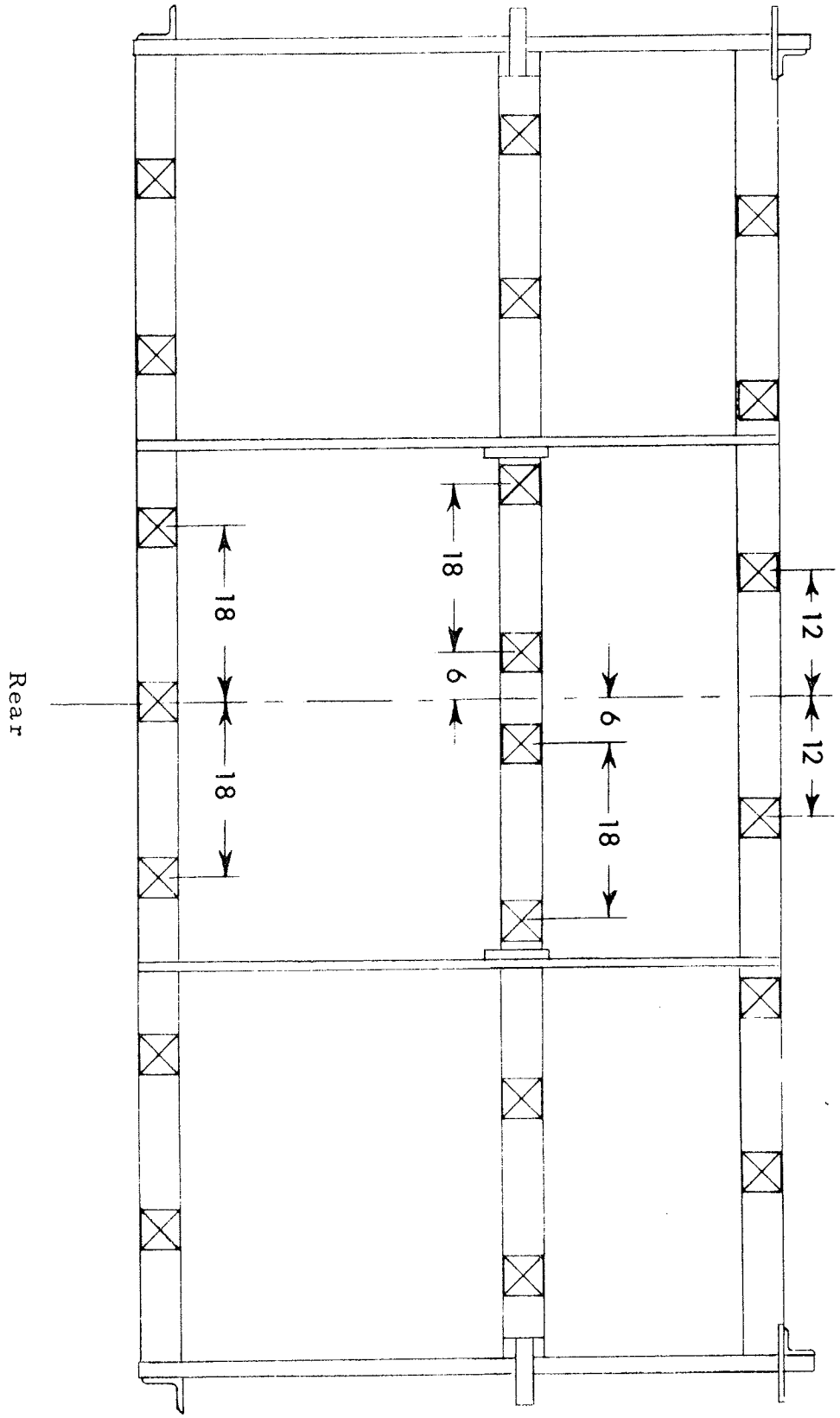


Figure 6

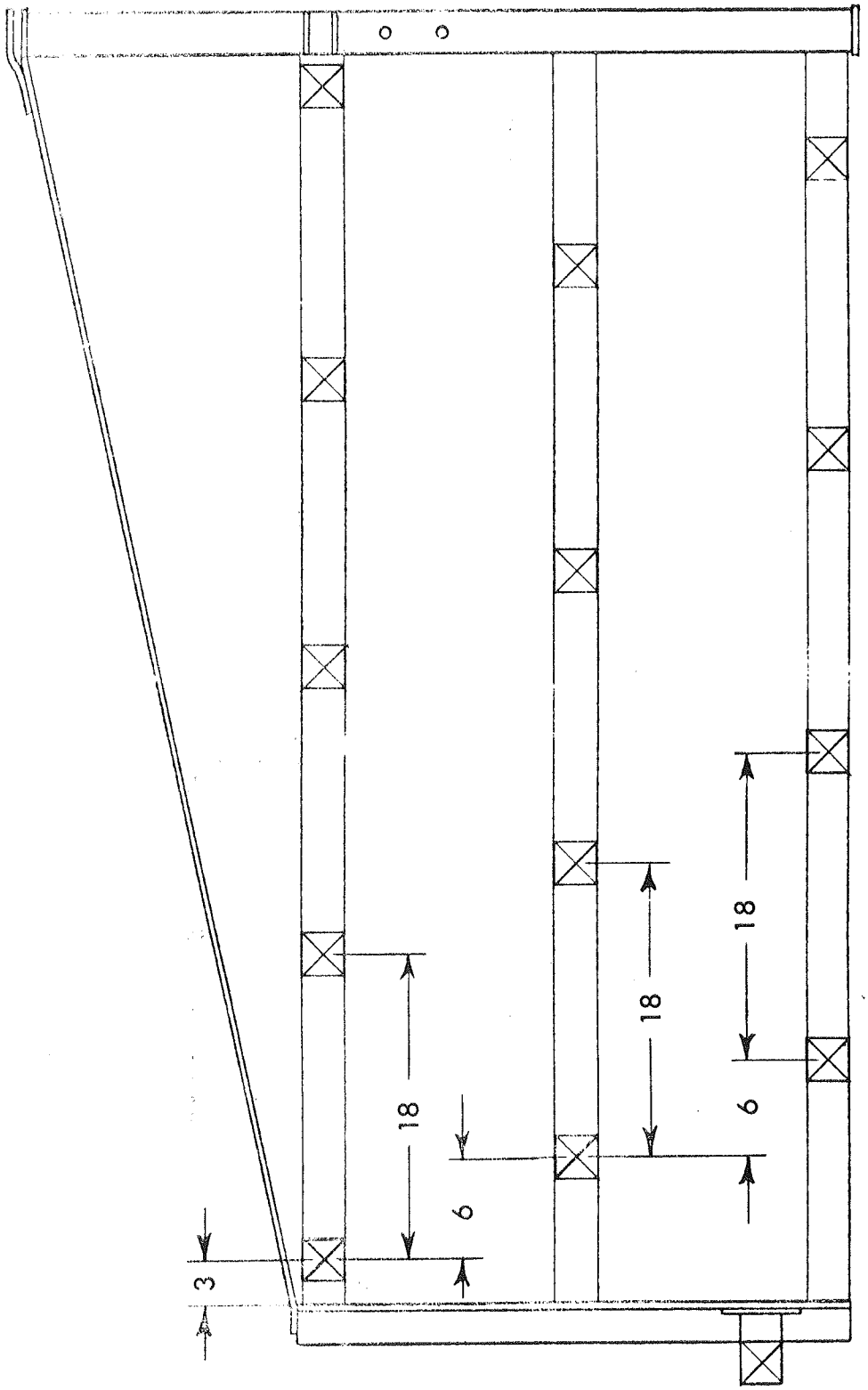


6" TOOTH SPACING FOR CENTER SECTION

Figure 8

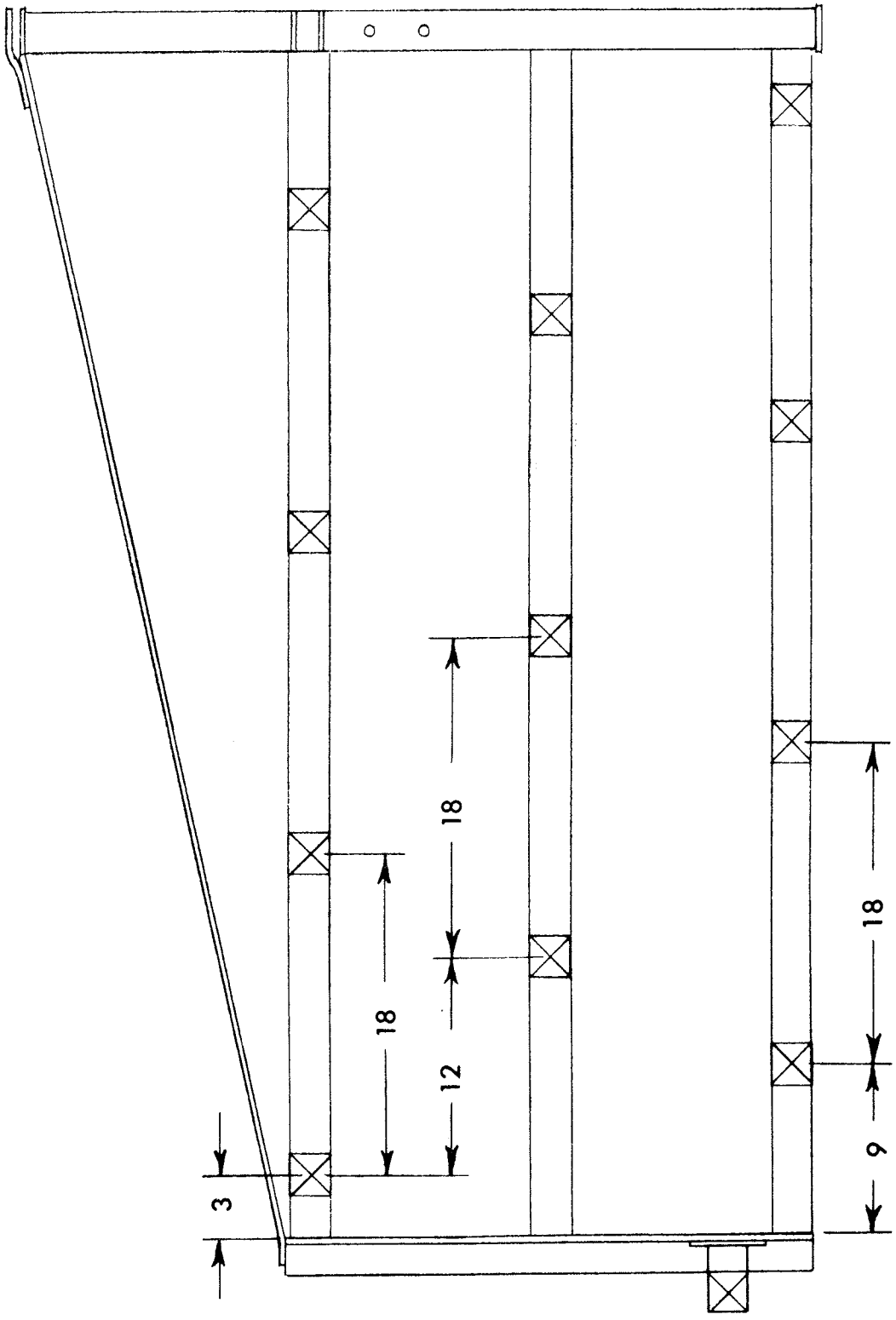
7 Foot Wing With 6 Inch Tooth Spacing

Figure 9



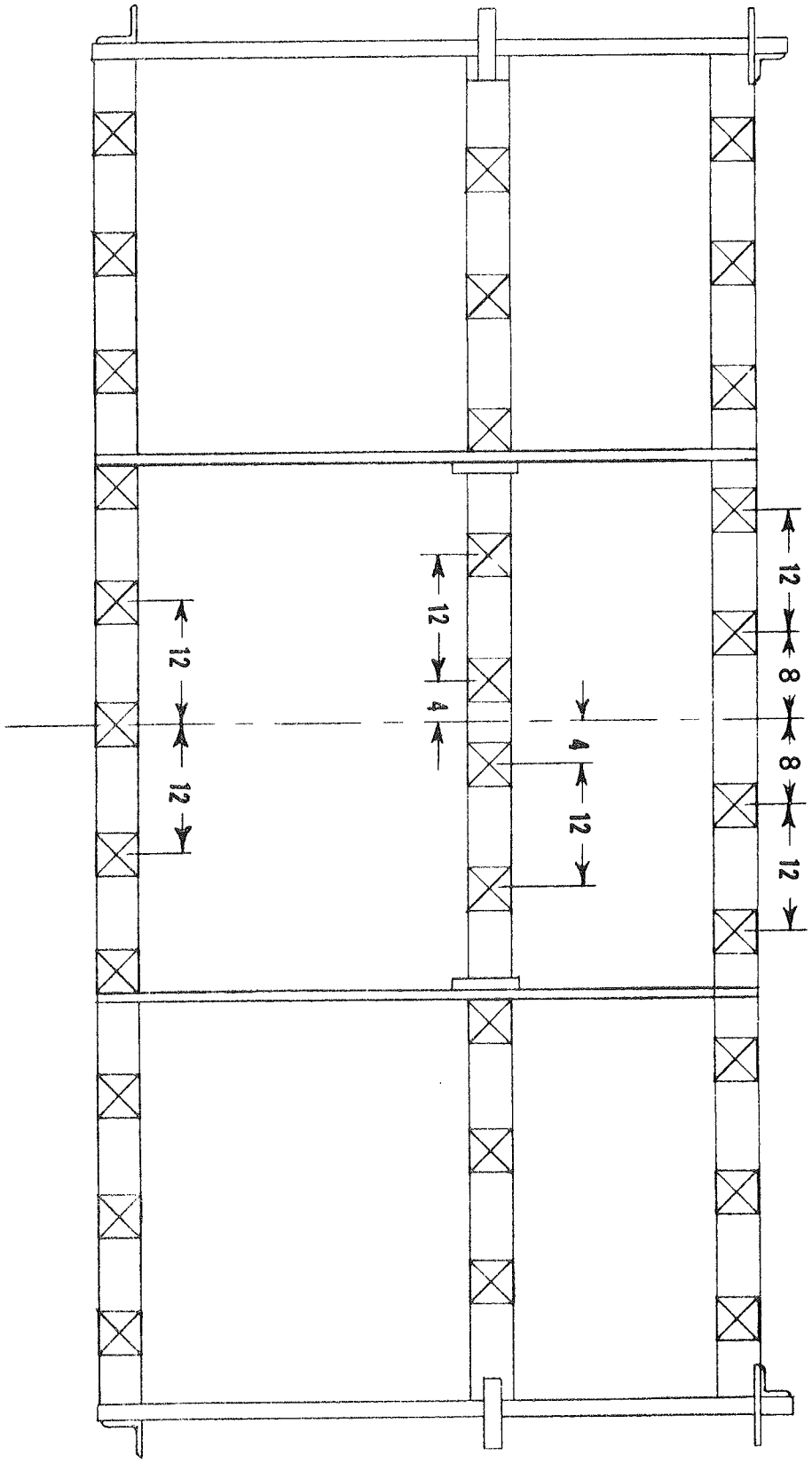
6 Foot Wing With 6 Inch Tooth Spacing

Figure 9A



4" TOOTH SPACING FOR CENTER SECTION

Figure 10



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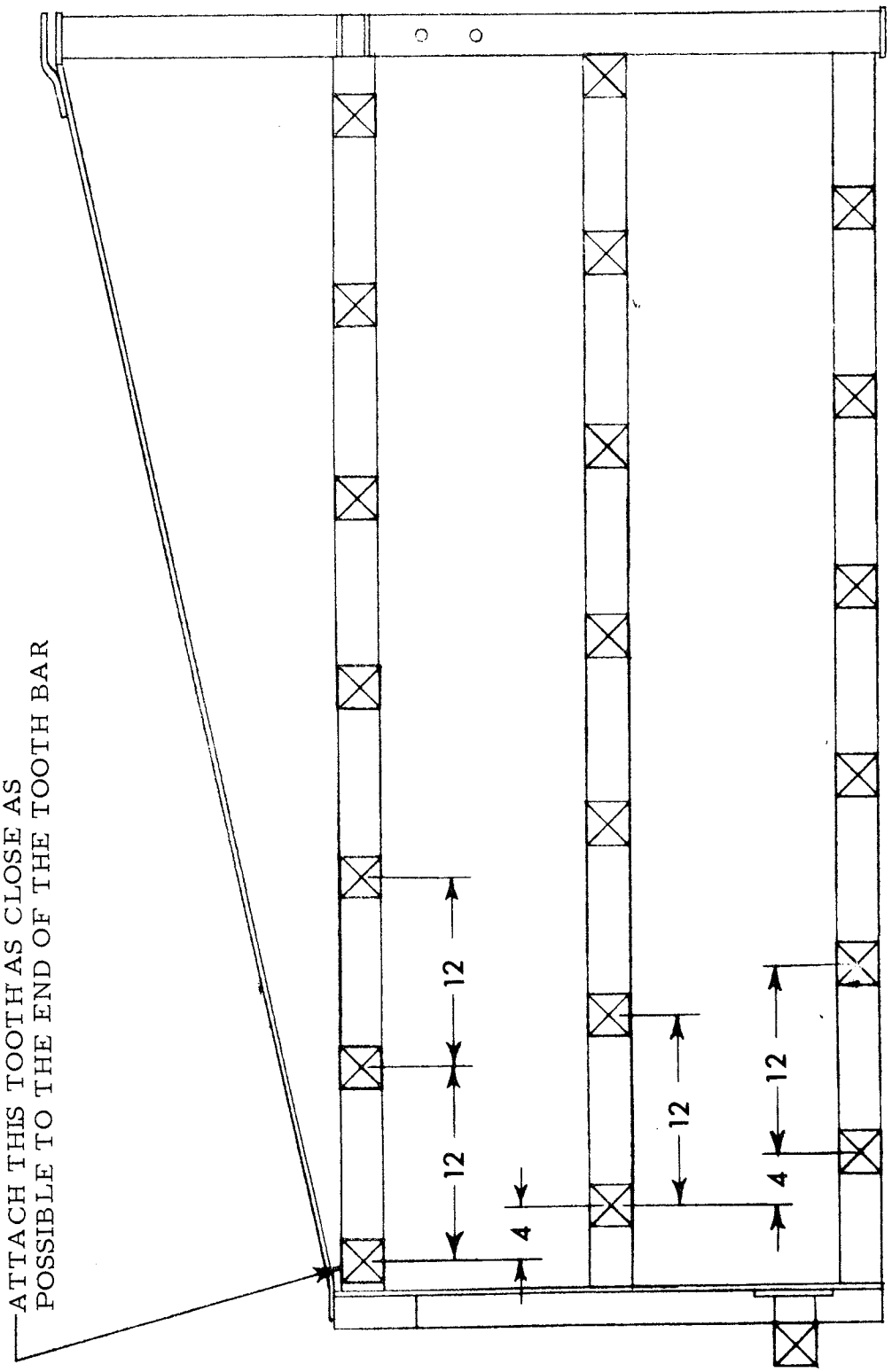
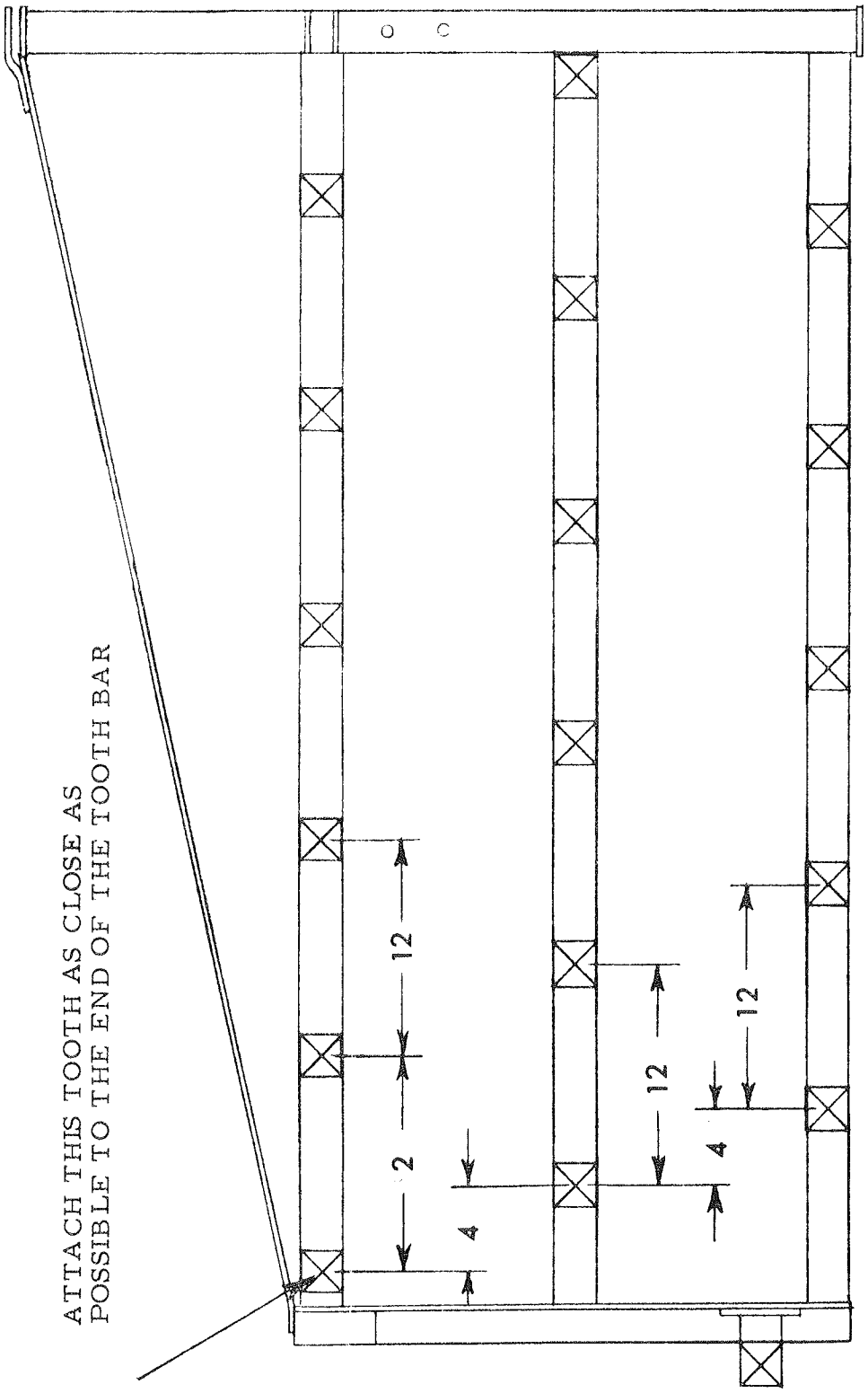
7 Foot Wing With 4 Inch Tooth Spacing Figure 11



6 Foot Wing With 4 Inch Tooth Spacing

Figure 11A



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