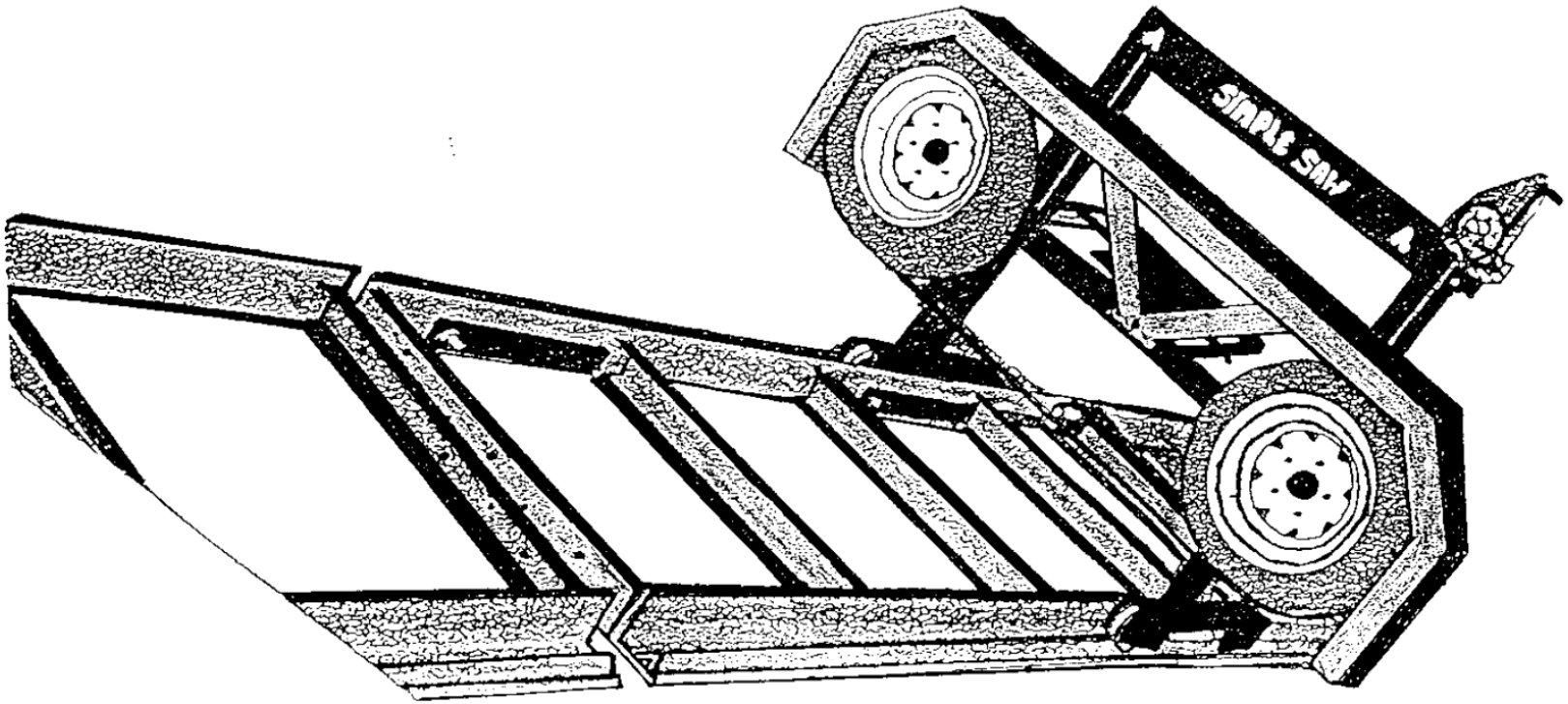

©TimberJacks Inc.

MAJOR STEEL MATERIALS

Track:
2 Pieces angle iron ¼" X 3" X 5" X 20'
2 Pieces angle iron ¼" X 1" X 1" X 20'
12 pieces 3" C-channel 30" long
4 or 5 pieces 1/8" X 1" X 2" X 16" box tube

Saw Head:
3/16" wall X 2 ½" X 2 ½" X 12' square tubing
Cut 2 pieces 37"
1 Piece 37 ½"
1 Piece 32"
2 pieces ¼" X 3" X 3" X 10" box tube
3" C-channel:
2 pieces 24"
1 Piece 20"
¼" X 12" X 12" Plate

Miscellaneous:
1" Box tube 5 ft
1 ¼" box tube 2 ft
3/16" X 2" X 2" angle iron 4 ft
¼" X 1" X 1" angle iron 10 ft

The Tilt-Tension mount bracket shows a ½" angle Iron 4" wide with a 2 ½" or 3" web and a 6" web. This was cut from a ½" X 6" X 6" angle
A 6" piece of 4" C-channel works very well also.

NOTICE: The axles are in line with the top of the cross bar and the top half of the tilt bracket is above the slider
This allows for the maximum diameter log to be cut.
Placing it lower will reduce the yield of the log.

BUILDING THE TRACK

Lay out the two pieces of ¼" X 3" X 5" X 20' angle Iron.
Beside them on a flat surface lay out the ¼" X 1" x 1" X 20' angle Iron upside down V
On top of the 1" angle lay out the 3" X 30" C-channel
This allows the 3" channel to set 1 ¼" below the top of the 5" angle web.
This 1 ¼" will be the fence that holds the squared log for cutting.
Set the 3" channel with the webs facing away from the saw head end. This allows for clamping of the log dogs.
Except for the end piece whose webs face the saw.
This is so you can bolt a track extension flush.
When welding in the cross pieces.
DO NOT weld the top on the side that will be the fence.
Tack the cross pieces in at each end of the track, then the center, then alternate from the center to each end.
Do the same when welding them in. This will keep the track straight. Do the same when welding on the 1" angle guide rails.
If you start at one end and install the cross pieces working toward the opposite end the track will bow in an arc
Next place the 1" X 1" angle on top of the 3" web at the outer edge and weld on using a 1" intermittent chain weld every 12 to 16 inches.
The above is for a 20' track section
To make a portable (On Wheels) You need to add two 4" channel rails under the track and attach an axle and tongue.
When building 8' and 12' track sections.
The 4" channel rails are not needed.
Build as the 20' but at the 8' mark place two 3" channel pieces back to back with a 1/8" gap between.
After completing the track drill four ½" holes through the back to back pieces. Then cut the track at the 1/8" gap. This allows you to bolt the sections together in alignment.

LOG STOPS

When making the first two cuts to get the log square you need the log stops.
They are 4 or 5 pieces of 1" X 2" X 16" box tube.
Placed on the fence side of the track.
They are drilled and bolted with a ½" bolt and placed so they can be pulled up to hold the log for the first two cuts.
When down they should be below the 30" cross channel.
When up they should be set below the level of the first cut so you do not run into them with the blade.
A common mistake so PAY ATTENTION
After the first two cuts you can push them down and the squared log will lay tight against the fence.
Provided you did not put a weld there. A common mistake so PAY ATTENTION.
When making them I cut a slice of pipe or box tube ¾" long and tack it inside the tube around the ½" mount hole.
This keeps the tube from collapsing when the bolt is tightened.
I use a self locking nut and a flat washer to mount them so they will be a friction fit and remain at any height they are set.

SLIDERS

Take the two ¼" X 3" X 10" box tube sliders and file or grind out the inside welds so the will slide freely on the legs of the head. A new 12" file will accomplish this in about 15 minutes. Because I was building many saws I built a 1" belt sander to do the job. It still took about 15 minutes.
Sometimes the tubing will be square enough to slide over the legs. Sometimes you may have to belt sand the legs to get a good fit.
Using 3/16" wall tube will work without filing the weld but the fit will be less than desirable. You can place a brass shim inside the slider to take up the slop.

FEET

Take the two pieces of 3" X 24" channel. Set the webs up.
Set the V-groove rollers on a 1/8" shim inside the channel. Take the ¼ X 2" X 4" flat pieces and place on the web of the channel. Mark the center of the axle on the flats and drill the holes for the axle.
Install the flats on the roller, set on the channel, tack into place. Remove the roller and weld the flats into place. Reinstall the rollers.

BUILDING THE HEAD

(Caution the top rail is 37 ½ inches DO NOT use it in place of one leg)
Take the two 37 inch legs and fit the sliders. Sometimes just turning them will make a nice fit other times you may have to belt sand the legs.
Now lay out the 32 inch cross tube with the sliders on the ends leave ¼ inch of slider above cross tube for weld, also space cross tube to width center of sliders.
Square Clamp and tack, then double check for square.
Weld sliders to tube.
Check for weld splatter on inside of sliders.
Insert legs set up and clamp so you can move slider.
Place top tube square and clamp.
Move slider to within 2 inches of top of legs.
Place a good tack on the outside of top-legs.
Move slider to bottom of legs.
Recheck square and clamp.
Place good tack on inside joint of legs and top tube.
Weld front and back joints legs to top Double check slider.
Weld inside and outside welds top to legs.
Slider should move freely from top to bottom.
Welding pulls metal. Sometimes you may have to strike a weld with a solid hammer blow to relieve the stress.
DO NOT BEAT IT.
Other times you may need to belt sand a little.
If you were careful with clamping and tacking it will work nicely.
FROM this point on Be EXTRA careful to clamp the ground on the part you are welding. IF you strike an arc through the slider you will have big problems, as the sliders will weld to the legs on the inside. THINK:
Take the 24 inch channel feet with the V-Groove rollers and set them on the track. Place the head 5 ½ inches back from the front. Square and tack the legs in place.
Double check alignment and Sliders then weld in place
Continue adding parts to the head Being VERY careful to check location of ground before striking arc.

DRIVE HUB-AXLE

There are several ways to make the drive hub.
The first ones I made used the rear hub from junk lawn tractors.
The 3 bolt or the 5 bolt are the same 4 ½" bolt pattern and will work on the 5 bolt 12" trailer wheel.
They are 1" or 1 1/8th inch keyed bore.
If using one of these you must mount the bearing against the hub to prevent flex and breakage of the axle.

The second method I used was to turn down a rear axle from a Dodge, Ford or AMC.
For this you must have access to a lathe and good carbide-cutting tool.

The third method is to use a trailer hub.
Remove the bearings and races and replace with bushings. Sometimes if you are lucky you can find one that fits at a tractor supply store. They come with keyed bores for inserting in universal pulleys and sprockets. Other wise you need to turn them on a lathe.
You can pin, bolt or weld them into the hub.

Some people have (I have never tried it) used a car axle and used two different sizes of bearings without turning the axle. Most axles have a step in them.

WINCH

Enlarging the boat winch drum allows the cable to wrap only once and therefore not change the amount it lifts each cycle.
Using a worm drive winch allows you to stop and hold anywhere but it is slow both directions.
Using the ratchet winch allows you to raise the head fast.
Some winches will ratchet at 1/8 inch per click with a 2-inch diameter drum. Just luck.
However I have removed the ratchet and installed a thumbscrew brake to hold anywhere.
BUT I found that just using the ratchet clicker was good enough for me. The boards were usually the same thickness Sometimes not exactly on the 1-inch mark.

SCALE

The pictures show using a scale {Rule} to set the saw.
This does not compensate for blade kerf
The best way I found was to scribe the leg {Post} at the top of the slider using a small disc cutter or file then paint the slot with white paint. This takes a little experimenting with a log and the winch but when done it works great.

TENSION

Some people have put to much tension on the blade and have broken axles. All of these had a gap between the hub and bearing. I mount the bearing against the hub. If the blade is properly sharpened and set, very little tension is needed to cut.
Wavy boards or dipping of the blade is not a tension problem. The problem is the blade condition Dull.
OR feeding the blade too fast. MY Recommended blade speed is 3000 to 4000 ft per minute. Tire speed will be 35 to 45 Miles per Hour

TRACKING

When setting up the saw for tracking the first time.
You may have to shim one of the axle bearings in or out to get the blade to track on the center of the tire.
After getting the setting correct on the drive tire you should have no problems when changing blades.
The tracking adjuster screw on the tilt tension should bring the new blade back to the center of the drive tire.

BLADE SPEED

Suffolk Machine. The blade experts recommend blade speed around 6000 ft per minute.
I run the blades 3000 to 4000 ft per minute.
At this speed the tires are running 35 to 45 miles per hour.
At 6000 FPM they are running over 70 miles per hour.
I have had no problems running the blades at the slower speed. You just cannot feed the blade as fast but then this is a Simple Saw not a competition for $20,000 production saws.
You should be able to cut through a 16-inch diameter red oak log 8 ft long in about 40 seconds.
Running the drive axle at 650 to 750 RPM will put it in the ballpark for Feet per minute.

V-GROOVE ROLLERS

The ones I used were Colson but there are many other brands.
They need to be at least 250# capacity (Mine were 800#).
They need to be 4" in diameter and have either a one piece roller bearing with axle or two sealed bearings with ½" axle.
I have made them on a lathe and others have had them made.
I have found them at salvage yards for $5 each and bought them new at bearing supply stores for less than $22 ea.

BLADE GUARDS

There are many ways to guard the blade.
A very popular method is to get a fender from a tandem utility trailer and modify it to fit.
I built guards from materials I had left over from steel buildings.
Purlins light gauge angle and expanded metal
Some people have used plywood.
There are many options here.
THINK: Look around.

POWER

I personally preferred the 3 hp industrial electric motor.
Many people start off with the gasoline engine and then switch to 5 hp electric. Finding it is quiet and cheaper to operate.
A 5 hp gasoline will cut logs 18 inches in diameter but a 10 hp does it faster. Anything over 14 hp seems to be waste.

LOG DOGS

I hear from many people who recommend different styles of log dogs. Believe me I have already tried most of them.
I spent 16 years playing with saws before I put out this information.
I believe the vice grip dogs are the simplest and work the best.
You are under no obligation to use any of my ideas.

GUIDE ROLLERS

I hear from people who suggest placing rollers on the bottom of the guides. I already did that. What happens is the last board is over 2 ½ inches thick unless you shim the cant. With the rub block you can get down to 1½ inches.