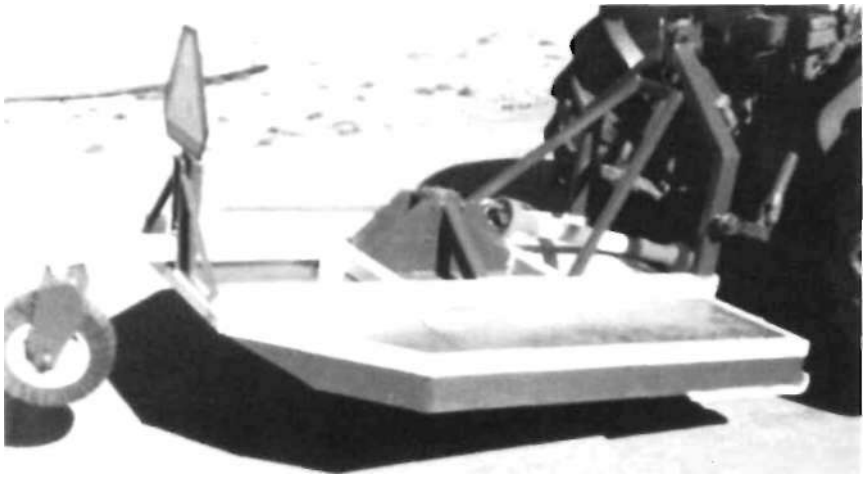
Rotary Mower

Author: *Alex Hernandez*
Instructor: *Dennis J. Bentzinger*
School: *N. W. Kansas Area Voc. Tech School*



This rotary mower was manufactured entirely from scratch. Only the drive line, gear box, and rear adjustment wheel were bought at an implement store.

1.) The dimensions of this rotary mower are 6'x 6'.

The project was first started by using two sheets of metal 4'x 6'x 3/16". An entire sheet of 4'x 6' was used, and to complete the desired measurements, 2' were cut off the second sheet. The two pieces were properly fitted, then tacked. After tacking it, it was welded.

The rear end of the frame was tapered to provide better turning in sharp corners or around posts. After the desired design was completed it was reinforced by welding 2"x 2"x 3/16" angle iron on the entire edge.

2.) Build a sturdy frame using a 2"x 3"x 3/16" rectangular tube.

Two pieces were cut 6' each, then two pieces were cut at 30" each. These 30" pieces were placed at 23" from either end of the 6' pieces of rectangular tube and leaving a center space of 23" inside measurement, the rectangular tube was tacked, then welded together.

After the frame was placed in the exact center of the plate metal, it was welded to the plate metal. Then a 79" long flat iron 6"x 1 /4" was tacked and welded to both sides of the frame.

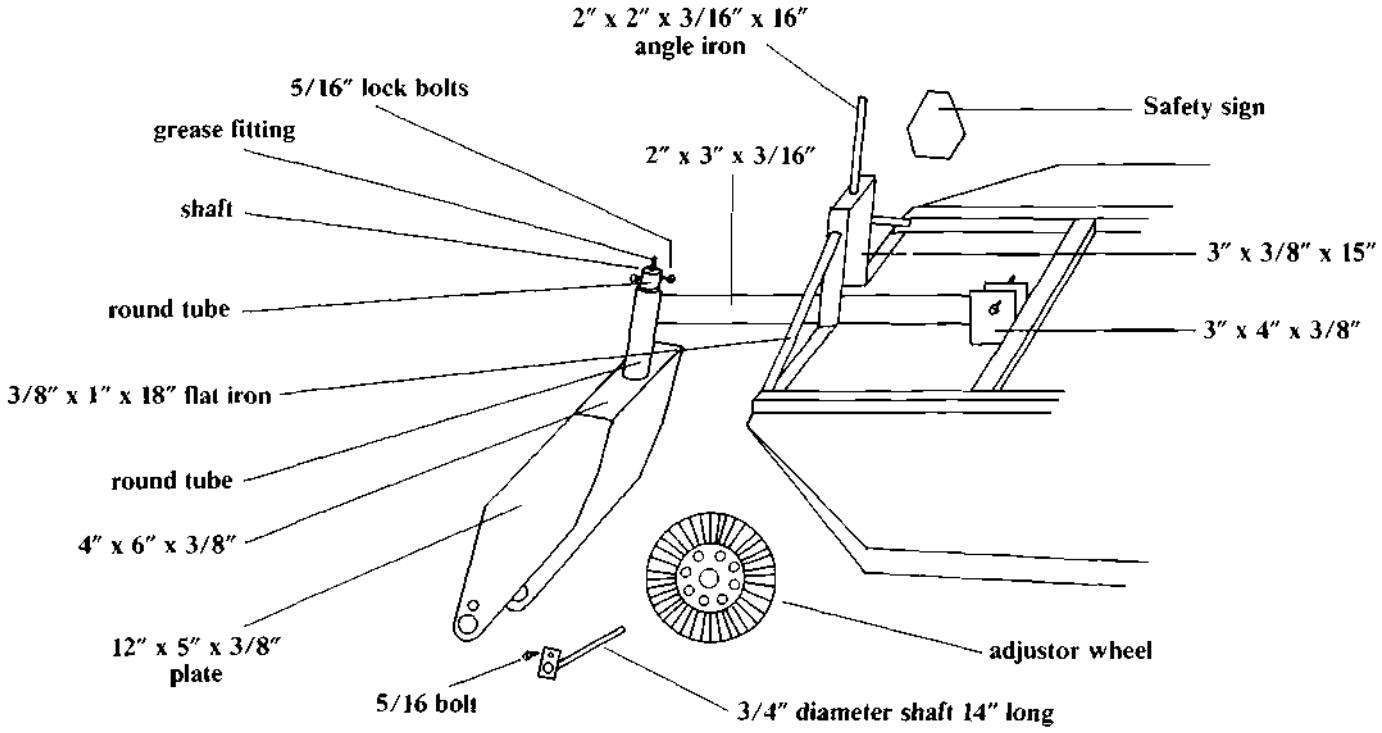
3.) After finding the center of the frame a circle was cut 1-1 /2" in diameter. These holes were cut for the gear box shaft that powers the blades. Then a frame to hold the gear box was built using 3/8" flat iron; two pieces were cut 8"x 10"x 3/8" and placed 2-3/16" from the center point of the bush hog frame plate and tack welded to the plate frame 5-5/8" apart.

Then 2 pieces were cut 7-1 /2"x 10"x 3/8" and cut diagonally into 2 pieces each, placed on either side of the 8"x 10" center plates and tacked. The gear box was then placed between the two 8"x 10" plates and the 4 holes on both sides were marked. Then the plates were taken off and after tacking the two plates together the holes were drilled. Next the gear box was placed between the two plates and fastened to the plates with 1 /2" bolts. The plates were then tacked to the frame and after taking the gear box off the plates, the plates were welded solid to the frame. To brace these plates two pieces were cut 12" each and tacked on the plates and to the 2"x 3"x 3/16" tube centered on the middle plate and welded. These made the gearbox plate stronger.

4.) The next step was to make a 3-point hitch, in this case, a detachable 3-point hitch. The material used is 2"x 3"x 3/16" tubing, 2"x 2"x 3/16" angle iron. This hitch will fit on the rectangular tube frame and will be fastened to the frame by using 8 1/2" bolts.

First two lengths of 2"x 3"x 3/16", 37" long were cut. The pieces were then inserted at a 45° angle to either side of a 90° line perpendicular in relation to the tube, then bent to form a 45° angle. The two formed pieces were then tacked to the angle frame pieces. The two pieces were then braced at the top using a piece 16" long of 2"x 3"x 3/16".

The piece was properly fitted and tacked, then two more braces were added to strengthen the hitch, 1-1/2"x 1-1/2"x 3/16" tube was used. Two pieces were cut 34" long, tacked to the



outer edge of the 2"x 3"x 3/16" cross brace at one end, and to the angle iron, 25" from the front end.

Two 1/2" plates 3"x 5" were prepared by first tacking them together and then drilling a hole 1" in diameter. Afterwards they were separated and tacked onto the tube to hold the ball and pin assembly where the adjustment bar goes. 1/2" holes were drilled through the angle iron and the tube 9" apart. Bolts were used to fasten the 3-point hitch to the tube frame. Two pins 6-1/2" long were machined and fitted into holes 1-1/8" in diameter at a point 8-1/2" from the base of the tubing to the center of the pin and then tacked. After checking all measurements, all the points tacked were then welded.

5.) An adjustment wheel assembly was built by cutting two 3/8" plates 3"x 2". A 3/8" hole was drilled, then the plates were welded to the frame next to and centered on the tube frame.

Next a 37" long piece of 2"x 3"x 3/16" tube was prepared by drilling a 3/8" hole centered and at one end of the tube. The tubing was capped for strength. The tube piece was fastened with a 3/8" bolt 3-1/2" long, then two plates 26" long of 5"x 3/8" flat were tacked to the frame on either side of the tube. A 7/16" hole was drilled through both plates and the tube. Then one of the plates was taken off and 7 more holes 1" apart were marked with a center punch The plates were then tacked together and the holes were drilled through both plates.

A wheel carrier frame was then built. The wheel was put together measuring widthwise 6" and the diameter of the wheel itself was 15". With these measurements, two pieces were prepared 11" long, 5-1/2"x 3/8", tacked together and a 3/4" hole was drilled through both plates. They were then spaced to fit the wheel and joined using a 6"x 4"x 3/8" plate. After this was done, a round tube 4" long x 1-1/4" I.D. was cut and then a 6" shaft 1-1/4" O.D. was cut and tacked to the top plate on the center of it. Next a 2" round tube was cut and two 5/16" holes were drilled and threaded in order to hold the swivel assembly together.

A hole was then drilled on to the shaft, and two holes drilled across the shaft for greasing purposes. A grease fitting was screwed onto the previously tapped hole. Next a 3/4" shaft 8" long was prepared to hold the wheel. A 3/16" plate was cut 2-1/2"x 2" and then the shaft was welded to the plate. A 5/16" hole was drilled on the 3/16" plate and also on the 3/8" plate above the 3/4" holes. Then threads were tapped in order to fasten the shaft to the frame.

Next the blade assembly was built. First step was to cut a shaft to 1-1/4" inside diameter. The keyway was then milled. Since the blade carrier plate was 1" thickness, the shaft was machined on the bottom side 1" O.D. and 1" long.

After this part was done the blade carrier plate was cut 32"x 3"x 1". A 2" diameter hole was cut using a pattern circle cutter. Two more 1-1/4" holes were cut on either side of the plate. The first part (shaft bored to 1-1/4" diameter) was then tacked to and welded to the blade carrier plate. Then the blades were attached to the plate. The total length of the blade assembly is 70".