Quick Hitch

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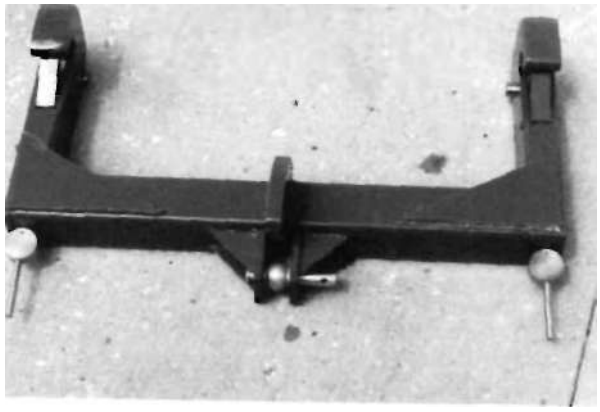
Bill of Materials

4 - 7-1/8" x 18-1/4" x 1/2 steel plate
4 - 6-7/16" x 10-3/4" x 3/16 steel plate
1 - 4" x 4" x 37-3/8 steel tubing
Gussets & braces (scrap metal)
Clevis pins & rods
Top pin & ball
One pint - green paint



Building a Quick Hitch

1.) To start to build the quick hitch, the following metal is needed:

1 - 4" x 4" x 1/4" x 37-3/8" steel tubing (outside frame)
4 - 7-1/8" x 18-1/4" x 1/2" steel plate (the hooks)
2 - 6-1/2" x 10-3/4" x 3/16" steel plate (frame braces)
1 - 6" x 8" x 1" steel plate (top hooks)

2.) Using cardboard, cut a template to make the four hooks.

3.) Lay the template on the 4 - 7-1/8" x 18-1/4" x 1/2" steel plate, trace the template, center punch on the lines and cut out a section 2-7/8" from one side so that the metal will fit the vise of a milling machine.

4.) To make the hooks identical, bore a 1-5/8" hole in each hook. Use a file to remove the remaining sharp edges.

5.) Rough grind each hook down, relatively close in size. Grind two of the hooks at a time, down to where they are a perfect match. Repeat this procedure for the other two hooks.

6.) Grind a bevel around the top of the 4" x 4" rectangular tubing so it will leave a slight gap for good penetration.

7.) Drill a 1/2" hole on the top side of the rectangular tubing. Turn the piece over and drill a series of 3-1/2" holes.

8.) Cut two sets of triangles 6-1/2" x 10-3/4" x 3/16" for front and back frame braces.

9.) On each hook, measure down from the top 14-7/16". Come in from the left side 5/8" and from the right side 2-3/16" and center punch this mark. Bore a 1-1/32" hole so the 1" pin will fit properly.

10.) Make the \" pin on a metal lathe.

11.) Drill a 1/2" hole in each hook 9-11/16" down from the top; 5/16" from the left side and 3-3/16" from the right side.

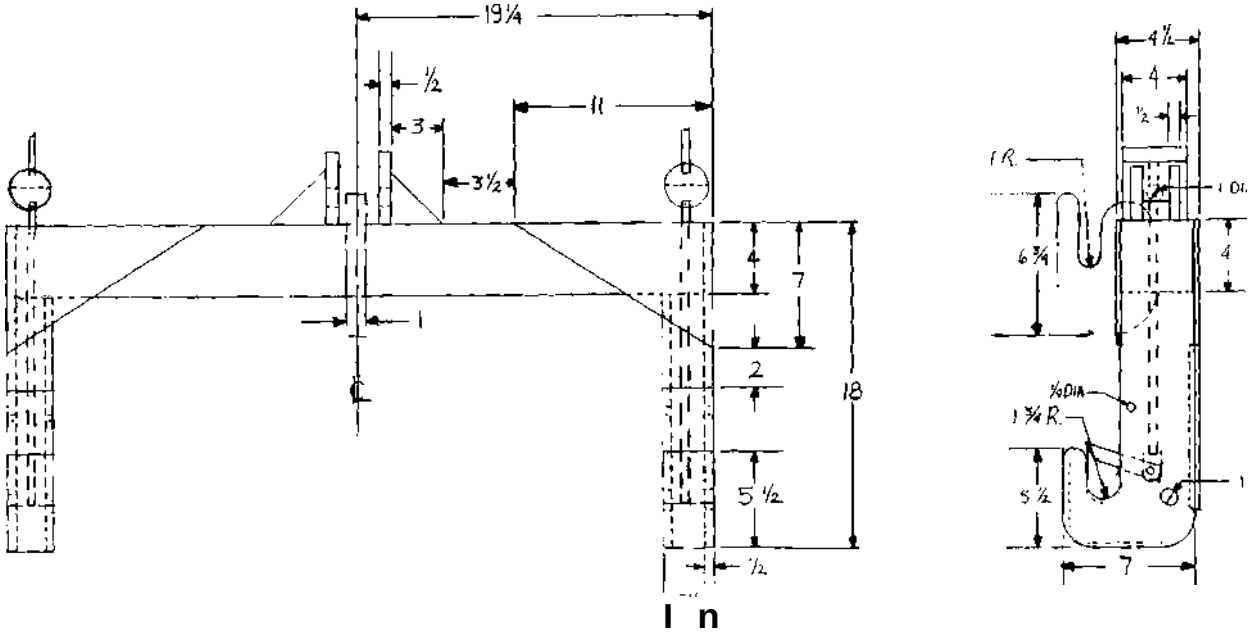
12.) Remove 1/32" from a 1/2" steel rod on a lathe. This will allow it to turn freely. Cut each piece 3-1/2" long. One pin goes through both hooks.

13.) Begin welding the end hooks on. Two structural braces were used to hold the hooks in place. Cut off 4" on the inside hooks and allow for the distance of the rectangular tubing.

14.) Make two triangles 1-1/2" x 2" x 5/16". These will be placed on the front of two rectangular pieces of steel that measure 1-3/8" x 4" x 1". Weld these rectangular pieces onto the 3-1/2" x 15/32" diameter, to make a lever effect.

15.) Weld each end hook just on the front and back sides of the rectangular tube. Grind off the fronts and backs of both hooks in order to let the triangles sit flush.

16.) Tack the inside hooks on with the 1" pin in and place the 15/32" diameter rod in place. After the tacking procedure is completed, weld in place.



17.) Cut two pieces 4" x 3-1/4" x 1 /2" to put on the top of the quick hitch. Drill a 1" hole in each piece. A 15/16" pin and ball will be used. Measure in from the left side 17-3/4". Do the same on the right side. Leave a 1-3/4" gap so the ball will have about 1/16" to move. Tack the two pieces in place with the pin and ball in place to cut down on distortion.

18.) Cut four triangles with the measurements of 3" x 3" x 1 /2". These pieces will be tacked, then welded onto the 4" x 3-1/4" x 1/2" pieces made in step 17.

19.) Weld the end hooks on the bottom and the top. Use clamps for squareness.

20.) Between the inside hooks, weld a steel pipe to each. This will hold the two inside hooks in place.

21.) Weld the front and back triangles. Leave a slight gap for good penetration.

22.) Weld the two 4" x 3-1 /4" x 1 /2" pieces in place. Weld the triangles that were tacked to these pieces in place as well. Now the basic frame is completed.

23.) Cut out a piece of steel measuring 10" x 7" x 1". Make a template out of cardboard. Lay the template on the steel plate and trace around it. Center punch the design of the hook on the lines. Cut the piece with a cutting torch.

24.) Grind the back side, file the inside.

25.) The extension piece that fits on the top of the rectangular piece, (the tabs of the top hook that goes on the top, as well as the bottom of the rectangular tube) is tacked in place and then welded on.

26.) Put spacers in between the hooks. Cut two pieces 5" x 1-1/2" x 1/4" to be placed inside the hook circumference. Using a steel pipe with the same circumference, heat the strips and bend them around the pipe. Place them in the right position and tack them in place, then weld. Be careful. If the strips aren't level across the hooks, you will get more pull on one side than the other.

27.) Cut two strips from steel plate at 6-1 /2" x 1-1 /2" x 1 /4" to be placed on the back side. Note: The pieces in steps 26-29 fit in between the hooks. The pieces in steps 30 & 31 fit on top of those in 26- 29 and make them flush on the sides. Tack these pieces in place, then weld.

28.) Cut two strips 3" x 1-1/2" x 1-1/4" to be placed on the front side. The reason why these pieces aren't as long as the back ones in step 27 is because the lever has to have room to move freely. Tack these pieces in place, then weld.

29.) Cut two strips 10" x 1-1/2" x 1/4" to be placed on the bottom of the hooks to make the hooks a solid unit. Tack it by the hook part, heat a small section and bend it a little, then tack it again. Form the strip to the shape of the hook. Once it is in place, weld it. Grind a little to make it appear solid. Do the same for the other side of the quick hitch.

30.) Cut two strips from plate metal that measure 6-1/2" x 2-1/4" x 1/4" to be placed over the strips in step 27.

31.) Cut two strips from plate metal that measure 3" x 2-1 /4" x 1 /4". These pieces are to be placed on the front of the quick hitch. Note: This procedure is for the front and back only, not the bottom.

32.) Unscrew the rod that controls the lever and place a tension spring in there. The spring is heavy duty and is 8" long.

33.) Make the quick hitch handles. These are probably the most unique part on the quick hitch. These allow the driver to stay right in his seat while he disconnects whatever he is carrying. It cuts the time almost in half. Cut two *I"* thick solid steel pipe. Mill half of the center out so the 1 */2"* rod fits in and moves freely. The solid steel pipe is 2-5/16" wide. This piece fits over the rod protruding out of the top of the quick hitch.

34.) Drill a 15/64" hole in the solid steel piece and a 7/32" hole in the steel rod. This makes a tight fit in the solid steel pieces, while allowing a loose fit on the steel rod so the rod can pivot.

35.) Paint the quick hitch.