How to Build Your Own Flour Mill and Sifter

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BASE

1.

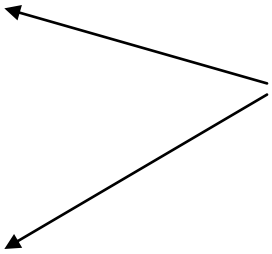
1- 1 ½ ”x1 ½ ”x 14”x ¼” angle iron

1- 2”x2”x14”x¼” square tubing

2- 2”x2”x26”x¼” square tubing

Weld square and plumb

2.



2- 2”x2”x26”x¼” square tubing

Weld on inside corner opposite angle iron.

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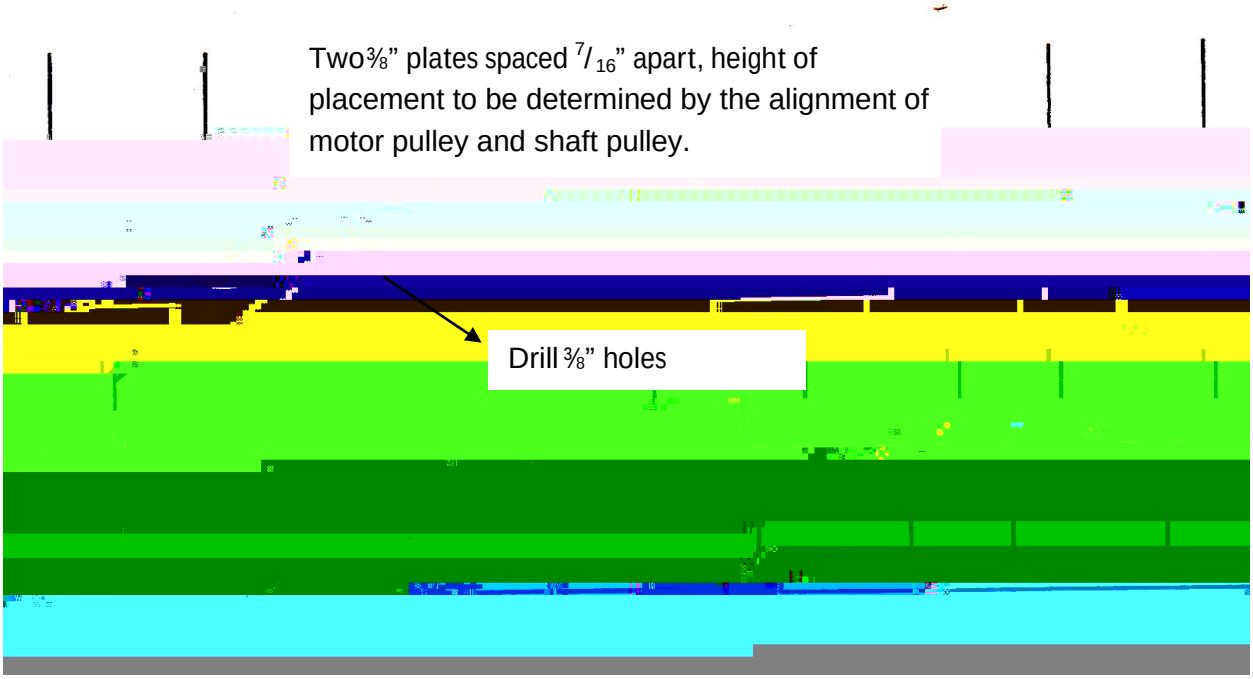
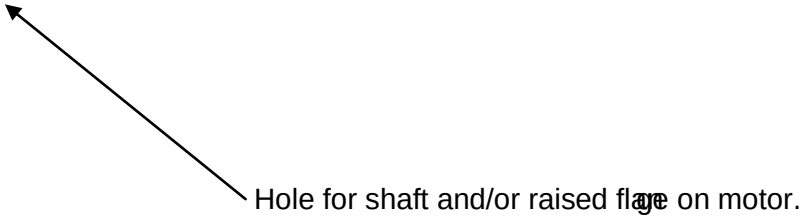
6. Build mounting bracket for electric motor. This procedure will vary depending on brand and size of motor used.



MOTOR BRACKET

7. Use ⅜" plate, cut to accommodate motor.



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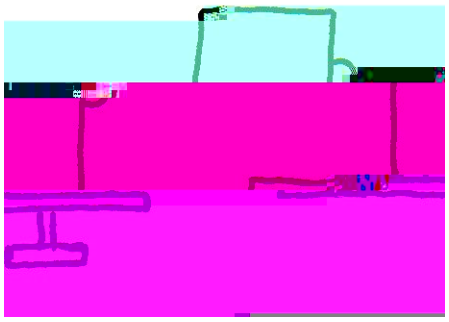
8. Fit motor to plate.



Install 3" pulley. Hold assembly so that it lines up with shaft pulley and make mark.

9. Weld two ⅜" plates with ⅜" holes drilled to left upright as shown in step 6. Make sure there is enough clearance to allow for movement when adjusting belt tension.

10. Build sifting rack and support legs.

The frame for the sifting table needs to be rigid because it is exposed to a high level of vibrations. Steel is recommended because the welds and the material will stand up to these vibrations.

Take (2) 1½" X 1½" X 15¼ " angle iron, (1) 1½" X 1½" X 21½" angle iron and (1) 1 ½" x 15 ½' flat stock. Cut notches out of the 15 ½" angle iron piece so that the longer pieces fit properly.

Angle Iron

Angle iron

Flat Stock

11. Weld frame plumb and square. Take two ⅜" bolts 1½" long and weld them to the frame about 2" back from the flat stack end and in the center of the angle iron.

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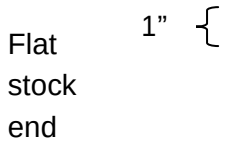
Take the remaining pillow box and bearing assembly. Center pillow box and mark holes on angle iron end. Drill ⅜" holes. Install bearing assembly slide on offset shaft. Make sure there is enough clearance between plate welded on shaft and table. Once this is done, determine length of the support legs, keeping in mind that the table should be out of level by about 1" towards the flat stock end.



12. The length of the legs or batter boards should be 24" depending on where you installed the bearing assembly on the shaft.

You will have to make two holding plates to hold the bottom bolts for the legs.

Take ⅜" flat stock

Cut two rectangles 4" x 2" each. Drill three holes in each about 1" elevation and ¾" apart. This will allow for an angle. The steeper the angle the faster the flour will pass through the table. But it will not be separated from the grain as effectively as on a shallower angle.

The use of bolts in this case is not ideal because a certain wear will occur at very frequent intervals. It may be possible to use bushings or bearings to reduce that wear.

Once the holding plates are done, weld them on the support frame directly under the bolts that are welded on the sifting table.

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Cut the legs at the desired height and attach to the sifting frame and support table.

At this point you can turn the motor on and see if any components give you problems. It is better if you rotate the shaft by hand a few turns to make sure nothing is interfering with its full rotation.

Sifting Box

13. The sifting box was constructed of Aluminum. Other materials may be substituted.

The exact shape of the hood will depend on what you use for a mill. If you decide to grind your flour ahead of time and sift it after, you can simply funnel the flour into the sifting box by hand or with a hopper. This plan includes special directions for the ball system and fabric holder.

14. Take note of the exact inside dimensions of the sifting frame. It should be 15 ½" by 21½". The sifting box needs to fit in that frame so we can make the box at 15¼" X 21¼".

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The box needs to be 4" high. If you are using aluminum or a similar material, cut 4" strips out of the 4' X 8' sheet. Layout all the pieces to be cut on the sheet. This way you can see how you can best utilize the random gaps you end up with.

Lay out (2) 4" by 21¼" and (2) 4" X 15¼" strips. The bottom sheet needs to measure 15¼" x 18½". You will also need ¾" strips that you can cut out of the other end of the sheet.

Once all the pieces are laid out. Cut and fit, you should end up with this.

15 ¼"

15 ¼" X 18"

21 ¼"

bottom

← Hole for funnels

FUNNELS

15. The shape and length of the funnels will depend on what you sift your flour into (bags, pails, etc.).

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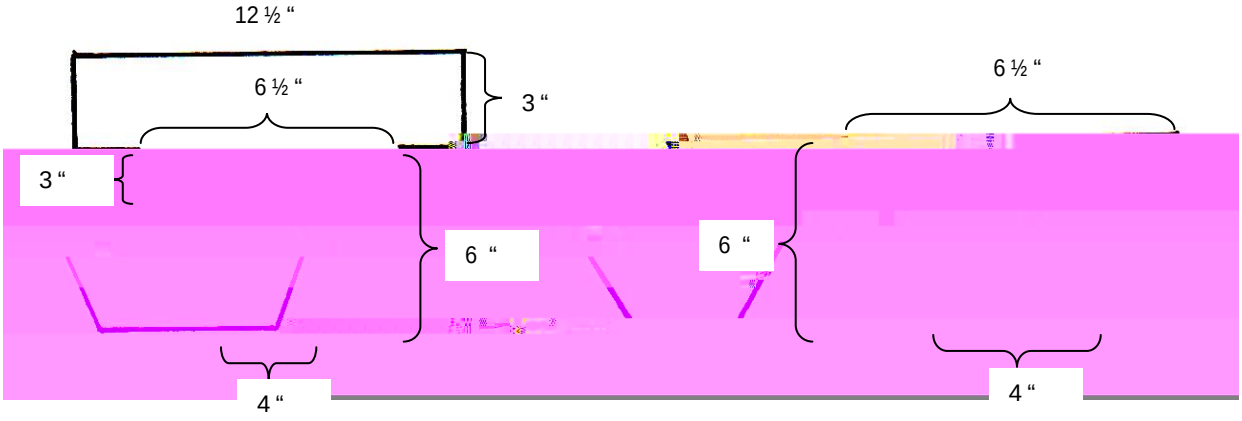
You can lay out these pieces on the sheet.



You can fit these to the sifting box. The piece #1 goes in the center and the other two go on either side.

Lay out pieces to fill the sides of the funnels and on the bottom of the sifting box.

From this point you can adapt the end of the funnels to those round connectors.

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16. Using the ¾" strips cut from the sheet. Build the support shelf for the large screen that holds the balls. That shelf needs to be 2" about the bottom of the box.

Bend the large screen so that you can bolt it to the sifting box. Use ¼" bolt and aluminum plates to secure it.

Use more ¾" strips and make a full shelf that will support the fabric rack. It will be 3" above the bottom of the box. It should match up to the center funnel divider.

Fabric Rack

17. To hold the fabric in place you need to build a wooden frame that will fit tightly in the box. You can use ¾" wood and thin plywood strips to hold the fabric in place. That should add up to 1" in thickness. Cardboard will not hold the fabric tightly enough and will allow some bran to mix with the flour.

Build the frame so that the bran can escape at the end. You will have three sides that will be built out of ¾" wood and one end out of thin plywood. Secure the fabric to this frame. You will also need to attach a diffuser on the end of the frame where the flour enters the sifting box. (to prevent the flow of flour from being concentrated in one area of the fabric). This frame needs to extend to the center funnel divider.

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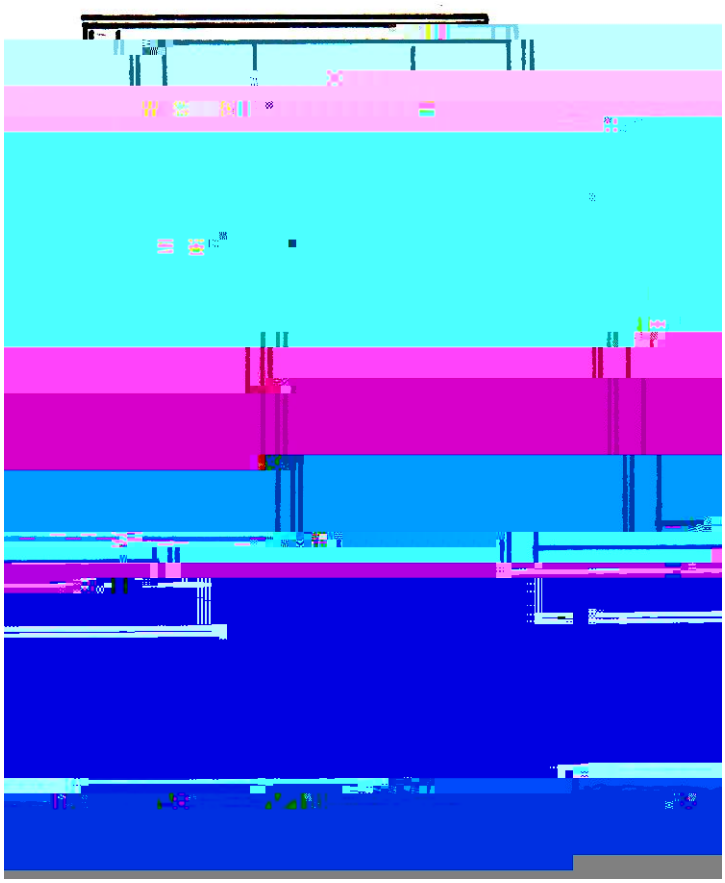

Use thin plywood or luan to fasten fabric to ¾" wood frame.

By wrapping the fabric around the thin plywood or luan (¼" thickness or so) the bran can escape the fabric sifter and flow in the last funnel.

With the fabric frame completed place the balls on the large screen and then secure the fabric rack to the sifting box using ¼" bolts. Two bolts will be sufficient.

The hood for the sifter is subject to change depending on what you decide to use for a flour mill. It is recommended that the sifter be independent from other components so that it does not transmit vibrations to these. You could dump the ground flour into the top hopper and adjust the flow of the flour into the sifting box. If a large flow mill is used it could be placed on a rack above the sifter with a hopper above it to feed the grain.

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Shown at left is a plan that show what the sifter unit looks like with a mill and hopper on a separate frame.

Please contact Hugo Gervais if yo have any questions or require further assistance.

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