



Tool Tip...

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Hideaway Match Making Frame

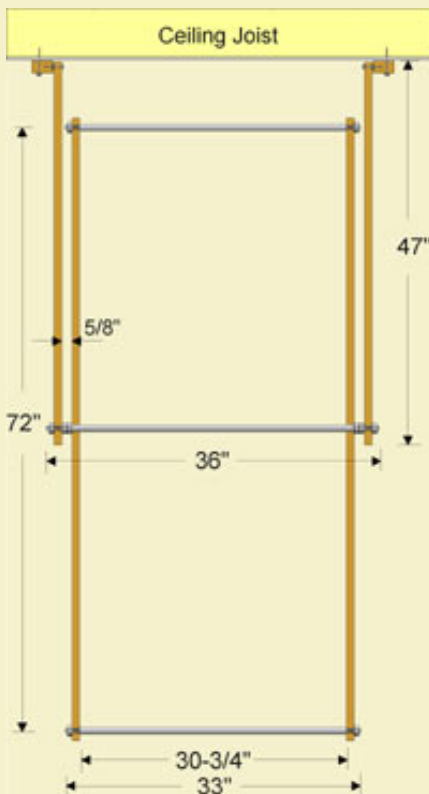


Figure 1: Match frame dimensions.

Introduction:

Match making frames are large rotating looms that are used to roll up and dry black match as it is manufactured. The larger the frame is, the more black match you will be able to produce at one time. The taller the frame is, the longer your lengths of continuous match will be. But lets face it, the last thing any of us need is another big contraption taking up valuable space in our pyro shops!

This simple match frame was designed for both maximum output as well as minimal space consumption. Many typical match frames rotate between two supports that rest on the ground. While this allows them to be moved around, they tend to take up a lot of space both during use and during storage. The design shown here is suspended from the ceiling of your shop or garage and folds up out of the way when not in use. You only need enough space to spin the frame when it is lowered down into it's operating position. When not in use, the frame is clamped flat against the ceiling where it will not get in the way.

The dimensions shown here will make six foot lengths of black match, producing about 300 feet of match when fully loaded. Most builders will only need to run one full batch per year to meet all their black match needs!

You can walk into almost any home improvement store and get all the parts you need to make this tool with only a minimal amount of labor in assembling it. No special tools or wood working skills are required.

Materials:

- ▶ (2) 30-3/4" long 1/2" O.D. aluminum tubing
- ▶ (1) 32-1/4" long 1/2" O.D. aluminum tubing
- ▶ (2) 33" long 3/8" threaded rod
- ▶ (1) 36" long 3/8" threaded rod
- ▶ (4) 3/8" hex nuts
- ▶ (6) 3/8" lock nuts
- ▶ (4) 3/8" washers
- ▶ (2) 76" long 1x2 lumber
- ▶ (2) 47" long 1x2 lumber
- ▶ (8) 1/4" washers
- ▶ (4) 3-1/2" long 1/4" lag screws
- ▶ (2) 2" long 1/4" lag screws
- ▶ (2) 4" long 1/4" lag screws

Tools:

- ▶ Electric Drill
- ▶ 1/2" and 3/8" drill bits
- ▶ Wood saw (power or hand)
- ▶ 3/8" wrench
- ▶ vice grips
- ▶ Hack saw

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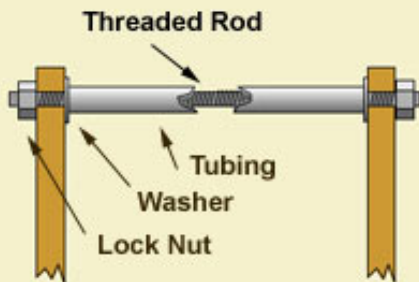


Figure 2: Tie rods holding frame together at both ends.

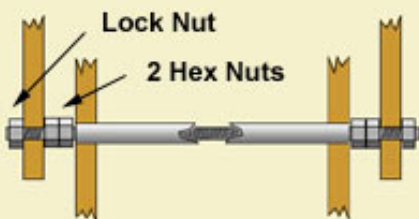


Figure 3: Center tie rod allows frame to pivot.

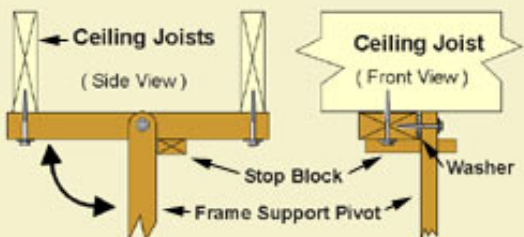


Figure 4: Details of swivel mount connected to ceiling.

Construction:

The first step is to get the frame assembled, which is fairly simple. Use a hacksaw to get the threaded rods and aluminum tubing cut to size, then cut the two 1x2s to a length of 76". A 3/8" hole is drilled on center one inch from each end of these boards, which is easiest to do by clamping them together and drilling through both of them at once. A 1/2" hole is drilled on center at the midpoint of the boards, which will be the pivot point.

The frame is now assembled by putting a lock nut onto one end of the two shorter pieces of threaded rod and feeding them both through the top and bottom of one frame board. A washer is now slipped onto each threaded rod, followed by the shorter 1/2" tubes, another washer, the other frame board and finally another lock nut. After the lock nuts are tightened snugly, both ends of the frame should look like Figure 2.

Before placing the second frame board onto the threaded rods as mentioned above, it is a good idea to insert the longer 1/2" tube into the center hole of one board so that it will fall into place when the two halves are put together. Otherwise the center tube will have to be slid into the side of the frame once it is assembled.

At this point the frame is complete. Now cut the other two 1x2s to a length of 47", which will be the suspension arms the frame hangs from. A 3/8" hole is drilled 1" from the end of each board, while a 1/4" hole is drilled through the other end of both boards. Again, stacking them and drilling both at once is the way to go. The ends of the boards with the 1/4" hole should be rounded off in a half circle so that it can rotate without the corners hitting the ceiling (see Figure 4).

Attach the suspension arms to the frame by inserting the 36" threaded rod through the center tube of the frame and spinning two hex nuts onto each end, which will serve as spacers between the frame and the suspension arms. The hex nuts should not contact the frame, leaving a small gap for the frame to spin. These nuts are tightened against each other using two wrenches so that they will not spin out of place. The end of the suspension arm boards with the 3/8" hole are now slipped onto the center rod and secured with a lock nut on each end. It may be necessary to hold the threaded rod with a pair of vice grips while spinning the first lock nut on. Be sure to select a spot where damage to the threads will not prevent the second lock not from going on. The lock nuts are tightened so that the suspension arm is pinned between the lock nut and the two hex nuts.

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Figure 5: Clamps holding frame against the ceiling.



Figure 6: Match frame when not in use.



Figure 8: Frame folded down and ready for action.

Next you will need to make your ceiling brackets that the frame will be hung from. This can simply be two segments of 2x4s that span the distance between two ceiling joists, as shown in Figure 4. They can be held in place with 1/4" lag screws that are long enough to go through the 2x4, any drywall that might be present and finally at least 1" into the joist. Make sure these brackets are placed so that there is room on the ceiling to accommodate the frame when it is folded up, as well as room to spin the frame when it is dropped down. Measure the distance between the outside edges of the suspension arms while they are attached to the center frame, then add 1/4" to determine the spacing required between the inside edges of your ceiling brackets.

With the ceiling brackets secured and parallel to each other, remove the suspension arms from the frame and fasten them to the center point of the ceiling brackets with a 1/4" lag screw. A washer is placed between the arm and the bracket as a spacer, and the lag screw is not tightened to the point of binding the arms.

Once the arms are hanging in place, the frame is inserted back in its place and secured with the lock nuts again.

With the frame hanging straight down, fasten a stop block to the ceiling bracket just behind each arm on the side opposite to where you will be standing when operating the frame (see Figure 4). These blocks allow the frame to swing in one direction only, which helps to stabilize it when in use.

Finally you will need to make the clamps that hold the frame against the ceiling when not in use, as seen in Figure 5. These are made by attaching a small piece of 2x4 on each side of the suspension arms close to the middle of the frame. There must be a ceiling joist to anchor into, but get as close to the center as you can. Small tabs are loosely held in place by another 1/4" lag screw, such that the tabs can be rotated to clamp the frame against the ceiling and rotated out of the way to let the frame drop.

The aluminum cross tubes that hold the match have the advantage of easy cleanup and the dried match does not stick to them easily. Best of all, your valuable floor space is preserved for other pyro contraptions! 🔥

