HOW-TO BOOKLET #3083

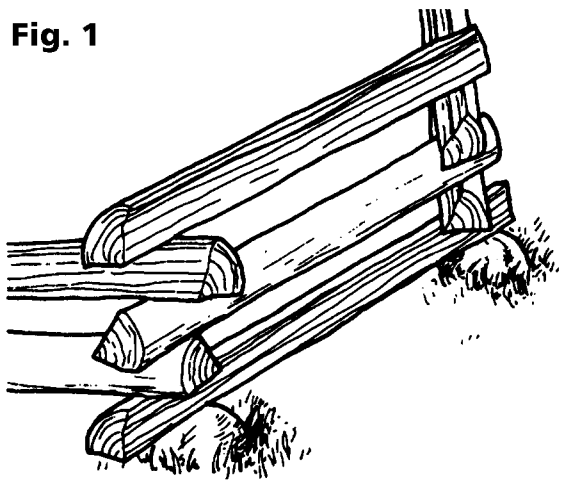
RAIL FENCES

TOOL & MATERIAL CHECKLIST

- ❑ Fence Posts
- ❑ T-Plates or Fence Brackets
- ❑ Line Level
- ❑ Cement Mix
- ❑ Galvanized Nails
- ❑ Fence Rails
- ❑ Post-hole Digger
- ❑ String
- ❑ Water Bucket
- ❑ Paint or Stain and Finishing Tools

Read This Entire How-To Booklet for Specific Tools and Materials Not Noted in the Basics Listed Above.

Fig. 1



This dimensional rail fence uses timbers stacked end to end in a zigzag pattern and resting on stones.

Because of material costs, the rail fences of Abraham Lincoln's day have been modified considerably. However, the modifications have improved the originals, if not in aesthetics, certainly in efficiency. Today's designs utilize posts that are pre-mortised to accept the rails. You simply assemble the units—no trees to fell, no rails to split.

Rail fences are an excellent choice for ranch style homes, although they are pleasing when used with almost any style architecture. A low rail fence, for example, works wonderfully well as a definition fence for a front yard to block foot traffic across a lawn or plantings. The openness of the fence design doesn't block the view and isn't offensive to neighbors.

Before you buy any fencing materials, check the building codes in your community. Some municipalities place limits on the type and height of fencing. We also suggest that you inform your neighbors about your fence-building plans. Good fences make good neighbors in more ways than one.

FENCE TYPES AND MATERIALS

There are six rail fence types, classified by construction, plus one design called a post and rail fence, included in the rail fence family.

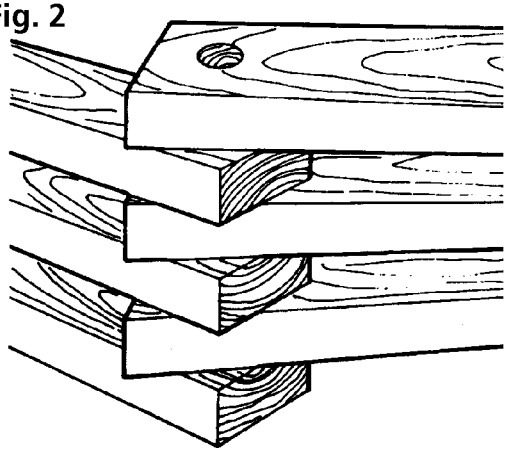
They are:

- Rail fences with mortised joints
- Rail fences with lap joints
- Rail fences with butt joints
- Rail fences with slotted joints
- Rail fences with grooved joints
- Dimensional rail fences
- Post and rail fences

If you have lots of trees on your property and you don't mind cutting some of them down, you can make a zigzag rail fence similar to those built in the 1700s and 1800s. The rails are overlapped at each end, and a rock, brick, or block can keep the bottom rails off the ground (**Fig. 1**). The lengths of zigzag rail fences are usually about 8'. The rails, after they are stacked, can be spiked to add strength (**Fig. 2**).

Most common rail fence materials are woods or peeler core rails (**Fig. 3**) with matching posts that you can buy at most home center and building supply outlets. Some garden centers also inventory these items.

Fig. 2



Traditional zigzag rail fence features stacked and spiked split rails from felled trees. Pre-drill holes for the dowel.

You'll find illustrations and construction details for these fences in this How-To Booklet.

FENCE-BUILDING BASICS

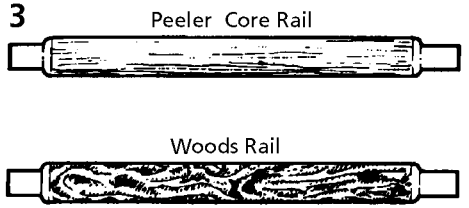
There are four parts to a rail fence:

Posts. Posts can be woods or peeler core rails, or you can use 4X4s or 4X6s. If you build a post-and-rail fence, the posts are 2X4s — two pieces at each post location (**Fig. 4**). If you build a dimensional fence, posts are not used. Posts are set in postholes you dig in the ground. The standard depth for a rail fence is 2'.

Rails. Rails span the posts horizontally. Rails are fastened to posts using various joints and fastening methods (**Figs. 5 and 6**). There are normally two rails in rail fences—sometimes more depending on the design.

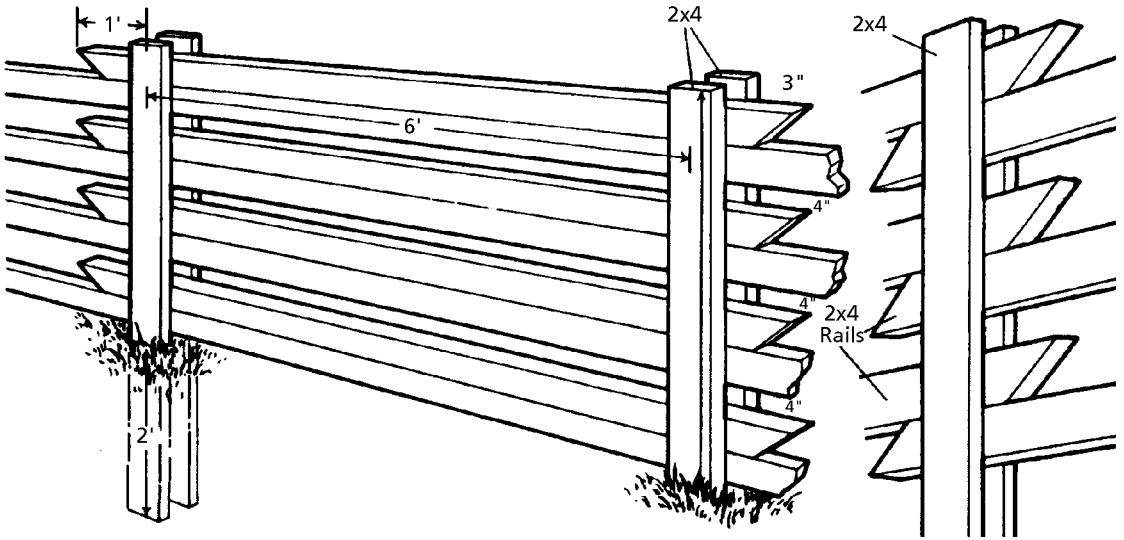
Footing. These are the materials placed under and around posts to support them. You can set the post directly into the ground and support it with gravel and dirt. Or, you can set the post into the hole and support the post with concrete. The concrete footing, as you would guess, is the best in areas prone to extreme frost heave.

Fig. 3



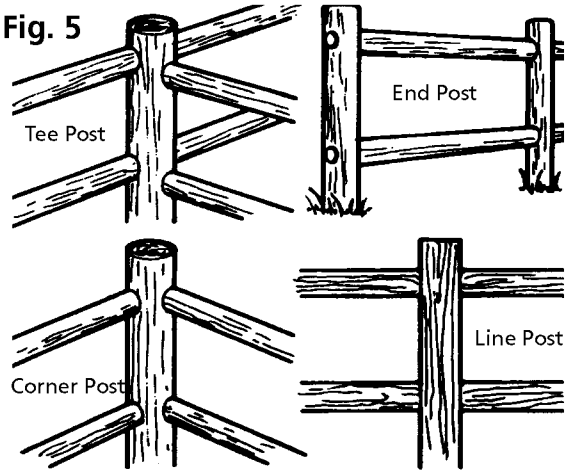
Two types of logs are available. Woods rails have some bark left on logs; peeler core rails have the bark removed. Ends of both are pre-cut.

Fig. 4



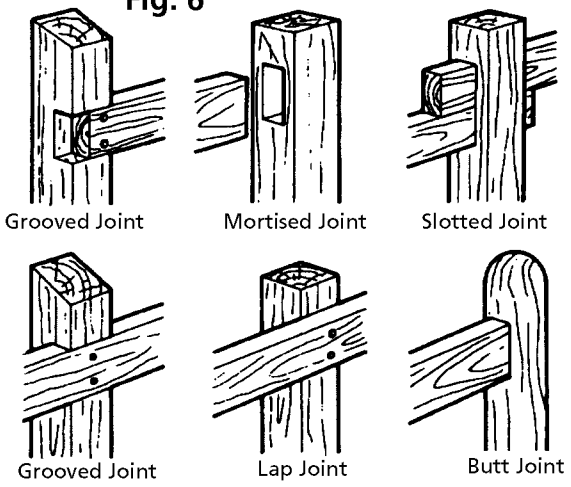
Post-and-rail fences are a different rail design; the fence offers more security if you need to confine large animals. We recommend that you set the post pairs in concrete for strength and use 2X4 spacer blocks in between until the concrete has set. Then install the rails. The ends of the rails can be left square or cut at an angle. Use pressure-treated wood for this fence project; or you can seal it with wood preservative after it is up. Pressure-treated lumber is easier and faster, and the fence may be painted.

Fig. 5



In position, rail fences should look like this at post-and-rail junctions. Rails may be fastened with hangers so you don't have to cut/drill mortises.

Fig. 6



Different rail-to-post joints that you can use. Lap joint is easiest; mortised and slotted joints are traditional; pre-fabs use mortised joints.

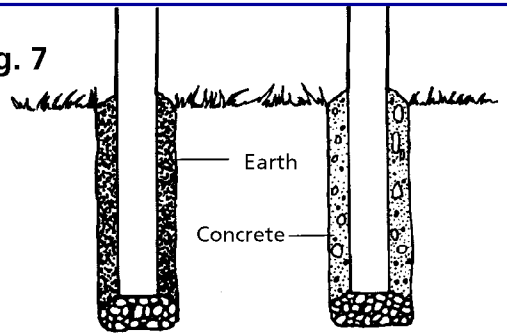
Gate. Gates should have a maximum width of 48". The gate posts should be larger than the fence posts to support the movement of the gate. It is suggested that you set the posts in concrete for stability. Use at least three gate hinges—top, middle, bottom—and buy extra strong or hefty hinges for support.

EXCAVATION

To build a rail fence you should follow a plan for best results. The job will go faster and easier and the finished fence will look very professional.

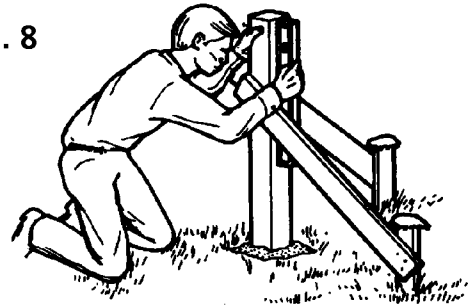
1. Clear a line that the fence will pass through. At least 1' to either side of the line is good enough. Any shrubs, bushes, trees, or stones that are in the line should be moved, or the fence should be laid out to avoid them. You do not have to remove the ground cover. Make sure that buried power lines will not interfere with the posts. Your utility company can provide a site plan free of buried lines. Check with them before you dig.
2. Once the path has been established, position the posts. After you determine the post spacing—5', 6', or 8', on center—measure the distances and stake these points. Continue until you have staked all post centers. The center is that dimension from the center of one post to the center of the adjoining post down the line. Try to keep the fence sections in even feet. If you buy pre-fabricated rail fencing, the length of the rails will determine the post positions. Measure and mark carefully; triple check your measurements before cutting.
3. Digging postholes can be the most difficult part of building a fence. You can rent a manual digger: clamshell or auger. The auger type may be a tad less trouble than the clamshell. You also can rent a power post-hole digger, and if you have lots of postholes to dig, we recommend it. The cost is not prohibitive and it will save you hours of time

Fig. 7



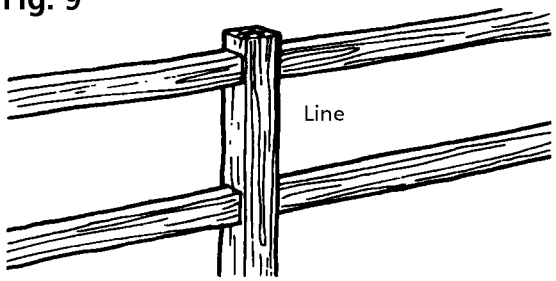
Fill the bottom of hole with several handfuls of coarse gravel. This promotes drainage and deters wood rot. Crown fill or concrete at ground level so water will tend to run away from the posts.

Fig. 8



Plumb each post on two sides. Then hold with temporary stakes until post is set in hole with earth or concrete. Always set one post at a time, and finish the section between posts before you continue.

Fig. 9



Line posts look like this when section of fence is completed. Lower rail is equally spaced between top rail and ground level.

and effort. You might need a helper to operate it, although it is extremely simple to use. If you have an exceptionally high number of postholes to dig, consider hiring a professional. The price will be worth every penny.

As you dig a posthole, make sure that the hole is vertical. This is important when you set the posts. The diameter of the hole can vary from 10" to 12".

SETTING THE POSTS

After driving stakes in line with the post run, stretch a string down the run. Dig the end or corner posthole first, set the post in the hole, align and plumb the post. If the fill will be dirt, pack the dirt taken out of the hole around the post perimeter until the hole is full. Tamp down the dirt firmly (**Fig. 7**).

For posts in concrete, follow this technique:

1. Throw a couple of handfuls of gravel into the bottom of the hole.
2. Set the post in the hole.
3. Align the post and plumb it. Either temporarily stake it plumb or have a helper hold it plumb (**Fig. 8**).
4. Fill the hole about one-third full of pre-mixed cement mix. One 80-lb. sack of this pre-mixed material will yield about 2/3 cubic foot— about enough for one posthole. Add water. Tamp the cement/water mixture with the end of a 1X3 or 1X4.
5. Fill the hole another one-third with cement mix and pour in water. Tamp.
6. Fill the rest of the hole with the mix, pour in the water, and tamp. Then trowel the top of the mix so it slopes from the post to the ground for drainage.

   An alternate way is to mix the concrete mixture in a tub or mortar box and place the mix in the hole around the post. Both techniques work fine.

All other posts will be set from this key corner post. Dig the postholes as you come to them—don't pre-dig them, unless, of course, you hire a pro for this job. If you hire a pro, you must be perfect with your measurements, otherwise you may be in trouble with aligning and plumbing procedures. Following the string and your stakes, locate and dig the next posthole. Double check all measurements, making sure that the posts are on the right centers. As two posts are set, add the rails to this section (**Figs. 9, 10, and 11**). Then continue on with the remaining posts, measuring, marking, aligning, plumbing, and setting as you go.

If fencing along sloped terrain, you can either lay out the fence in steps or follow the natural contours of the land. In general, fences on short, steep slopes look better when they are stepped; if the fence follows the slope, it appears to bulge or lean. Longer or gentler slopes can be followed.

GATE CONSTRUCTION

In rail fence construction, gates often are not used, since the fence is more decorative than functional, i.e., it doesn't confine or secure an area as would a horse fence. If you want gates, the gates should be installed as you come to them. Leave about 1/2" clearance between the post and the gate frame. Also leave about 3" of space at the bottom of the gate so the gate will swing free and easy. For building purposes, consider the gate and the post on which it swings as a single unit.

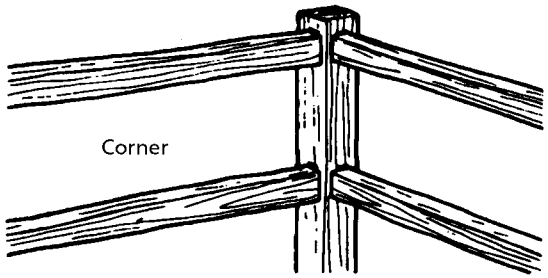
A gate frame is a rectangle of 2X4s butt joined and screwed or nailed together. We recommend a diagonal length of 2X4 between the top of the frame and the bottom of the frame. This diagonal piece helps stabilize and strengthen the gate. Always attach the lower end of the diagonal on the hinge side of the gate; reversing it will cause the gate to sag.

Once the frame has been assembled, hang the frame on three very strong hinges. The center hinge is centered between the top and bottom hinge. Make sure the gate swings freely. Then remove the gate from the hinges (remove the pins) and add the rails which can go either vertically or horizontally on the frame. Then hang the gate once again.

FINISHING

You can finish the rails anyway you want: with paint, stain, and/or wood preservative. Most rail fences are left natural. However, the wood should be sealed with clear preservative or sealer to protect it from the elements.

Fig. 10



Corner posts are mortised on two sides to accept the rails.

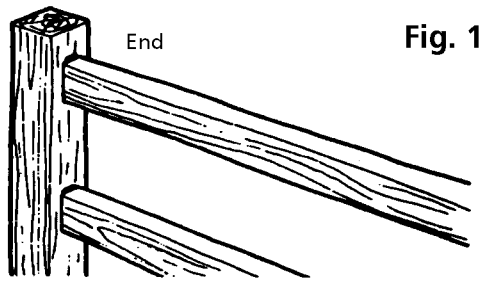


Fig. 11

End posts are mortised on one side to accept the rails. Mortises are cut in pre-fabricated fences.