

**Fire without  
matches or metal**

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## **Intro: Fire without matches or metal**

Fire is one of man's greatest multitools. Think about it. Without it, we would have next to nothing. Tools, food, water, clothes, and warmth among other things have come from it. Well, now you can make it yourself, the way native americans once made it. I know it as the bow drill, but I've also heard it called fire bow, fire drill, fire by friction, and rubbing two sticks together. It basically works by spinning a piece of wood in a socket of another piece of wood. This creates an extremely small coal, which, with the utmost care, can be blown into flame. There are many other forms of making fire by friction, and even more beyond that which involve percussion, metals, and chemicals.

However, this is, in my opinion the easiest way of fire without matches. It may involve lots of work, time, and effort before you get a good coal. So please enjoy this primitive method of fire starting.



## **Step 1: What wood you should use**

Preferably, for the fireboard, you should use a wood of medium-hardness, like cottonwood, willow, aspen, tamarack, cedar, sassafras, sycamore, and poplar, which are the very best. For the spindle, you should use either the same wood or harder wood. I find that an aspen fireboard and a yucca spindle work well. Remember, use a dead, very dry branch for the spindle and fireboard. Green wood is too wet and won't start well. It has to be the driest possible. For the

handhold, use a piece of hardwood or a rock with an indent in one side that fits in your palm comfortably. The bow should be a flexible, slightly curved piece of wood about as long as your arm.

Tie a piece of paracord on the bottom with a fairly permanent knot, then tie it loosely (not too much slack, but some) to the top with an easily adjustable knot.



## Step 2: The spindle

The spindle will be the spinning piece of wood. It is about  $\frac{3}{4}$  of an inch in diameter, 8-12 inches long, and round. It should be made out of a piece of wood about the same hardness or harder as the fireboard. On one end, the top end, it should taper down to a point, then the point ground off slightly to dull it. On the other end, the bottom, it should be pointed also, but not tapered down, more rounded. Also ground this point off.



**Image Notes**

1. Top end.
2. Bottom end.

### Step 3: The fireboard

The fireboard will be medium-hard wood about 1/2 to 3/4 of an inch thick, at least twice as wide as your spindle, and as long as you want. This should be dead wood and extremely dry. On one end, make an indentation by putting the tip of your knife on the board (about one spindle away from the edge) and twisting to make a shallow hole.



## Step 4: The handhold and bow

This is a piece of hardwood that can fit comfortably in your left hand (lefties reverse from now on). Carve a hole in one end like in the fireboard. You can also use a stone with a depression in it. Just make sure it's big enough to keep your fingers from going under-it gets hot down there! The bow should be a stick about as long as your arm and as thick as your thumb at the base. It should be flexible and slightly curved. Tie a strong string at the bottom using a permanent knot of your choice. Now bend the bow and tie the string at the top in an easily adjustable knot, since you will be adjusting it very often. Make sure the string is slack enough for your spindle to be twisted in it, but tight enough for it not to slip around it.



**Image Notes**  
1. Bottom view of handhold.



**Image Notes**  
1. Top view of handhold.



## Step 5: Drilling it in

In this step, you will drill the holes in the handhold and the fireboard so that the spindle won't slip out. Begin by putting your left foot to the left of the notch you carved out in your fireboard. Put your right knee down a comfortable distance behind your left foot. Now twist the spindle in this way: hold the bow under your right arm, pinned against your side, so that both hands are free. The thick end should be the one pinned under your arm, and the string should be on top, over the bow. Put the spindle in so that the bottom end, the one that is more rounded and will be in the fireboard, is on the right. Make sure that the string is resting on the middle of the spindle. Now reverse your hands so that you're grabbing the left of the spindle with your right hand and the right with your left. Twist the spindle clockwise, pulling it up slightly, so that the string twists with it. You can release the bow with your arm, as long as the spindle stays in place. So, to check: The spindle is twisted in the bowstring, on the outside.

It should be up and down in the notch of the fireboard, and the wood part of the bow is on the right of the spindle. Put the handhold on the top of the spindle, the notch on the tip, and hold it with your left hand. Make sure to steady your wrist on your left shin. Hold the end of the bow with your right hand, and start drilling slowly, moving the bow toward you and then away from you. Don't worry about speed right now, just work on getting the motion down. Push down with your left hand, not too hard, but just hard enough so that the spindle doesn't pop out. If it does, carve the notches deeper in the fireboard and the handhold. Now start to drill faster, and push down harder, remembering to use the entire bowstring and to keep your bowing arm straight. Keep going, until you see smoke, and even then keep going until you can't.





#### Image Notes

1. My wrist is steadied on my shin.

### Step 6: The air notch

When it's all drilled in, take the spindle out and let it untwist. Wait for it to cool down, and then rub the tip of the top, the one that was and will be in the handhold, in some grease or oil or soap to minimize friction in the socket. If you're in the wilderness and without grease, rub it in your hair and on the sides of your nose. Just remember not to get them mixed up from now on, or else the socket in the fireboard will get grease in it, and that will get rid of valuable friction. Now, carve a triangular notch in the socket in the fireboard. This is where the coal will form. It should go almost to the middle, but not quite, and should be a little less than  $1/8$  of a pie. Just experiment, because if it's too small, the coal won't have enough oxygen, but if it's too big, the spindle will fly out, and believe

me, it hurts. Carve it out a little on the bottom, just for a little extra oxygen. Put bark or a thin piece of wood underneath it to catch the coal.



**Image Notes**

1. Before the notch.



**Image Notes**

1. I accidentally carved this out too wide on the end. It would preferably come to a point.



**Image Notes**

1. I used the saw on my swiss army knife to cut the notch.
2. Spindle.
3. Handhold
4. Bow.
5. My personal favorite type of knife, the Mora knife.
6. Fireboard.
7. Bark to catch the coal.



## Step 7: Tinder

Tinder is fine material to expand the coal and blow it into flame. To make it, take a dry, fibrous, fluffy material (inner bark of various plants-again, experiment! You can also use certain mosses, cattail fluff, dandelion fluff, and thistle fluff.) and soften it by rubbing it together in between your palms so that it's fluffy but still won't fall apart.

Make it into a nest, bigger than your fist, and in the middle make a hole for the coal. Put super fluffed, shredded material in here.



### Image Notes

1. I made this nest out of inner bark of cedar and aspen.

## Step 8: Put it all together

It was a lot of work, but now we will succeed. Drill it exactly like you did in step 5, only now it has a notch, so put a piece of bark or a thin piece of wood underneath to catch the coal. Proper form is imperative. Keep a straight back and bowing arm, and keep the bow flat and level. Again, start slowly, and remember that the important thing is not speed, but using the whole bowstring. Apply more and more weight on the handhold, increasing weight in relation to speed. Keep going until your arm aches and feels like it will fall off, and then do 10 more strokes. It is better to take the spindle off itself than to let it launch out, but what happens, happens. Look at the black dust in the notch that has formed while you were

bowing. If it continues to smoke, that means that you may have a coal. Poke it out with your knife tip or a toothpick sized twig. Fan it with your hand. If it holds together in a clump and continues to smoke, keep fanning it. If it is a true coal, it will eventually start glowing red. Remove the fireboard from the bark and sprinkle extra powder, which will have built up around the notch, on the coal to keep it going. Now put your tinder bundle on the coal, and in a quick motion turn it over to get the coal in it. Softly bunch the bundle around the coal, hold it above your head and blow it, softly at first, into flame. Remember, long, sustained breaths are better than short ones. When it bursts into flame, don't be afraid of burning your fingers. Put it in your fire lay (teepee, lean-to, etc.) and let it catch on the kindling.



## **Step 9: Practice**

This activity involves a lot of practice. One recommended way to learn this is to actually use bad wood. Use oak or some other hardwood, and practice every spare minute you get. Doing this will force you to perfect your form, although you won't get a coal. Practice with bad wood for a whole summer, or even a whole year. Then, when you feel ready, switch to cottonwood, or some other good wood, and you may be surprised. I once practiced 6 hours, 5 days a week, sometimes 7, for an entire summer.

Good luck.