

STEPS IN MAKING A FIRE

- Clean the surrounding area of any flammable material and watch for overhanging trees.
- A source of a flame, a spark, or other heat source. Start with a material that is easy to burn as grass, twigs, and other materials listed under tinder and kindling.
- Build a fire step by step taking all the factors listed below into account and you will succeed on your first try. Do not build a fire that is too large as it will be too hot to use for cooking and consume much fuel.

1 Tinder

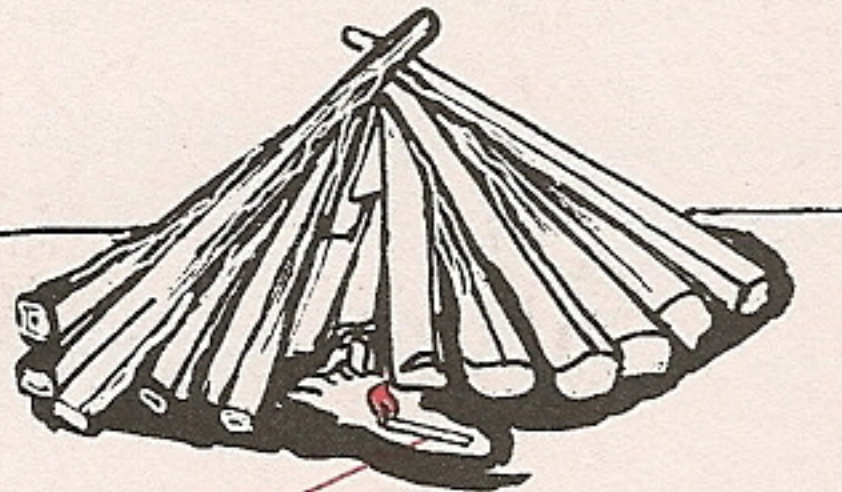
Used to start a fire when no flame or matches are available.



2 Kindling

Small sticks and leaves that will catch fire from the tinder or a match are placed in a teepee fashion. Leave one side open for the tinder and/or match.

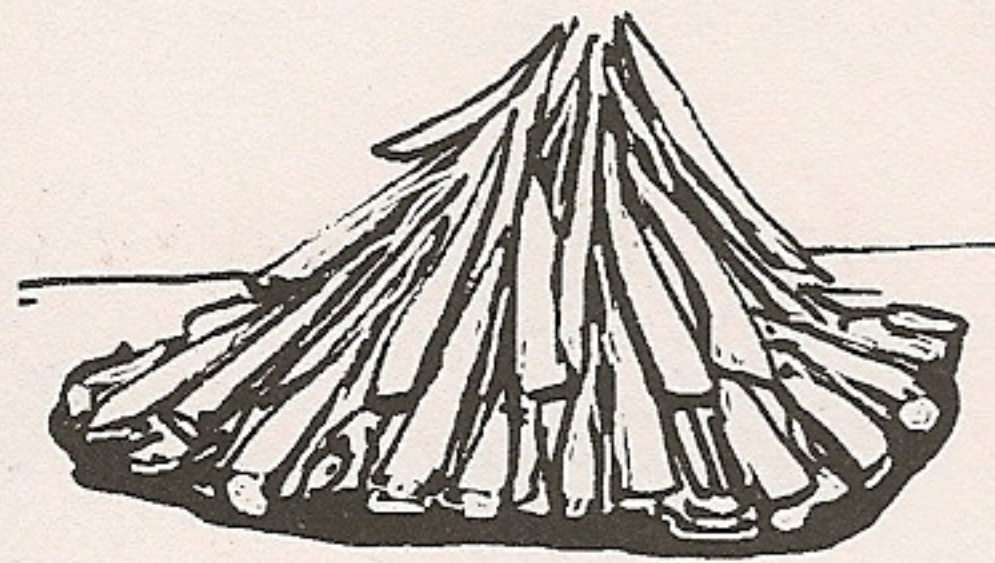
Kindling stacked in the form of a teepee



Match and/or tinder at the opening

3 Wood Fuel

Wood is gradually added not too much to smother the fire. The first pieces should be finger thin and then when the fire is hot enough add larger pieces.



4 Fire Burning to Coals and Ashes

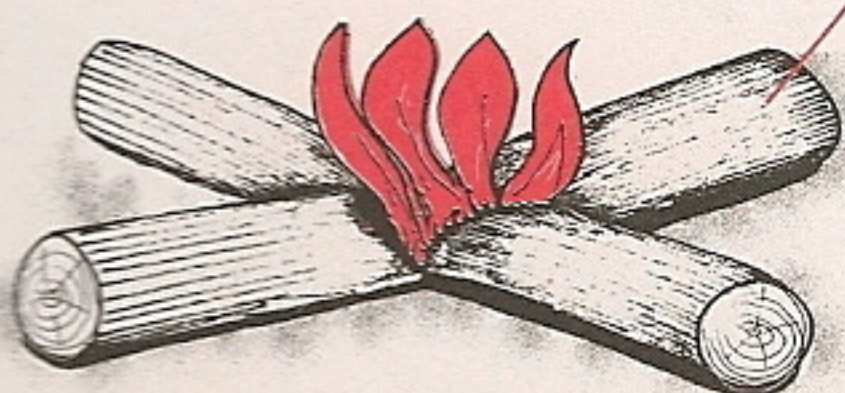
Once the fire is at the coal stage it can be used for cooking as the heat will be fairly constant. Two stones or greenwood supports can be added to each side of the fire to support a frying pan.



5 Heavy Log Star Fire

If the cooking fire is to be used as a heating fire for the night large logs can be butted together as a star. The log tips are gradually pushed into the fire. The advantage of this is that the logs do not have to be cut. A long heavy log can be placed across the fire and be burnt in half. Green wood can be used selectively to retard the burning.

Advance logs to increase size of fire.



Star Shaped Fire for Heating

TINDER

Prepare some extremely dry tinder before attempting to start a fire without matches. Once prepared, shelter this tinder from wind and dampness.

Some tinder is:

- Birch bark, resin shavings, and pitch or fat from coniferous trees (described below). They burn even when wet.
- Punk (the dry insides of rotten trunks of trees), lint from cloth, rope or twine, dead palm frond, finely shredded dry bark, dry moss, powdered dry bat droppings, dry powdered wood, bird nests, shelf mushrooms growing on tree trunks, wooly material from plants (pussy willow, cat tail), dry grass, dry crushed leaves, and wood dust produced by insects and often found under the bark of dead trees.
- These can be saturated with light oil, gasoline, or alcohol based insect repellants.

To prepare the tinder for use break it, roll it in your hands, or cut it into small powdery pieces to minimize the surface area that the sparks or hot wood have to heat to ignite and smoke.

To save tinder for future use, store it in a waterproof container.

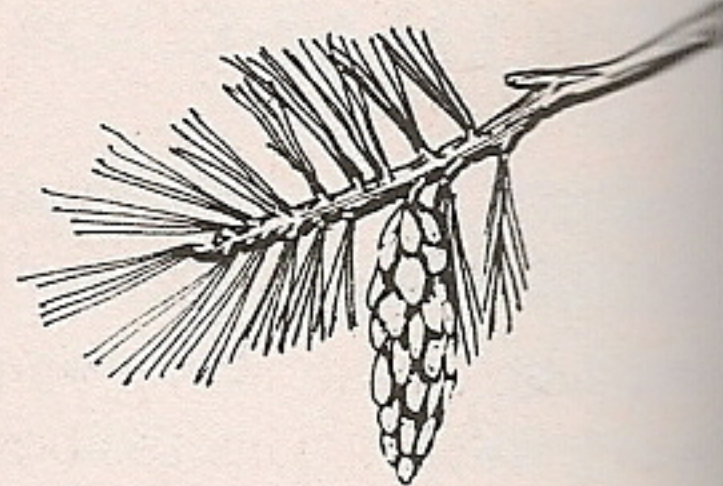
KINDLING

Kindling is material that also is used to start a fire. It is a step up from tinder, which is used to start a fire in very difficult situations i.e. having no matches or starter fire.

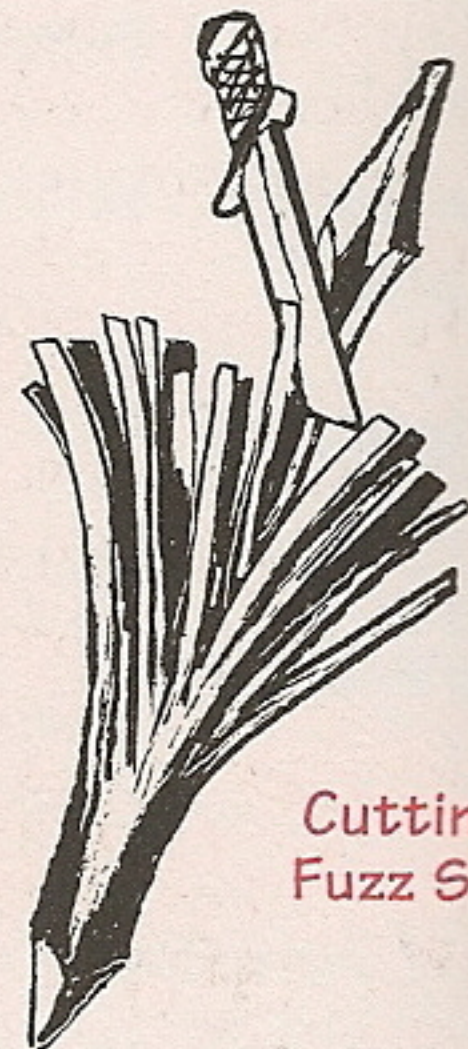
- Kindling can be small strips of dry wood, pine knots, bark, twigs, palm leaves, pine needles, dead upright grass, ground lichens, ferns, plant and bird down, and the dry, spongy threads of the giant puffball, which by the way are edible.
- Cut your dry wood into shaving before attempting to set it on fire.
- One of the best and most commonly found kindling material is punk as described under tinder. Dry punk can be found even in wet weather by knocking away the soggy outer portions with a knife, stick, or even your hands.
- Paper or gasoline may be used as tinder.
- Even when wet the resinous pitch (fat) in pine knots or dried stumps readily ignites. *See article below.*
- Loose bark of the birch tree also contains a resinous oil which ignites well.
- Arrange the kindling in a wigwam or log cabin pile to maximize the air flow.

Pitch, Fat, or "Pine-Gum"

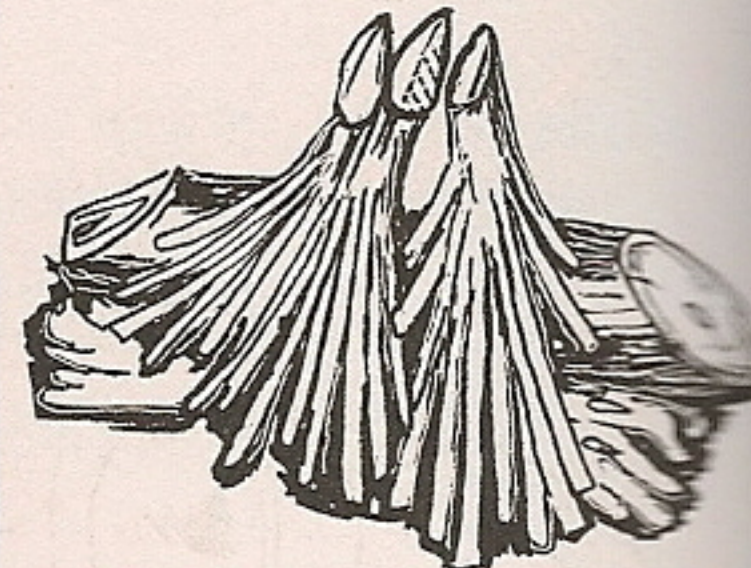
Is the resinous deposit found in old coniferous tree stumps or butt cuts on pine trees especially trees that died on the stump. The resin will have flowed down and collected at the bottom part of the tree. Old-timers and Indians swear by its use in fire making. A few shavings of pitch can start a fire at the touch of a match. Whenever you see some collect a few pieces for future use. Find pitch in the debris of rotting logs. It is yellowish in color and looks like a resin wood lamination on old stumps. Watch for old stumps that look yellowish as they might contain pitch. If the stump is gray it probably is rotten, old and soggy and contains no pitch.



Pine Needle Tinder



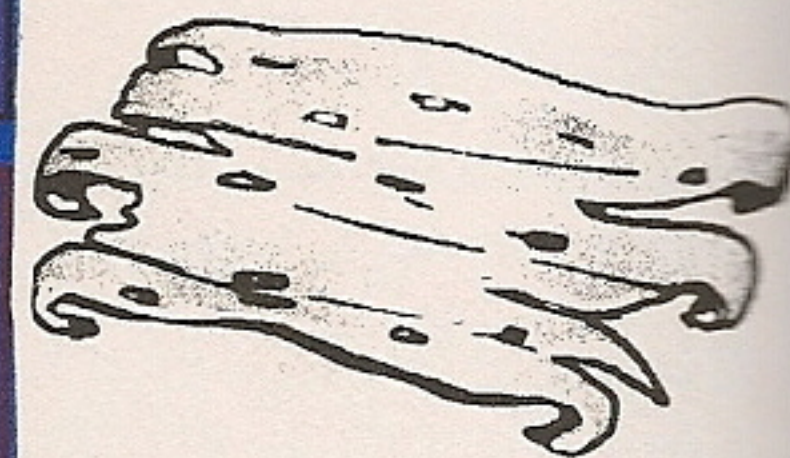
Cutting a Fuzz Stick



Placing Fuzz Sticks

Fuzz Sticks

Cut a dry soft wood stick making sure that the shavings do not fall off the stick. These sticks can be piled, into a teepee shape on some curls of birch bark. Light the fuzz and you will have a good blaze in a few minutes. Have heavier wood ready to add to the fire.



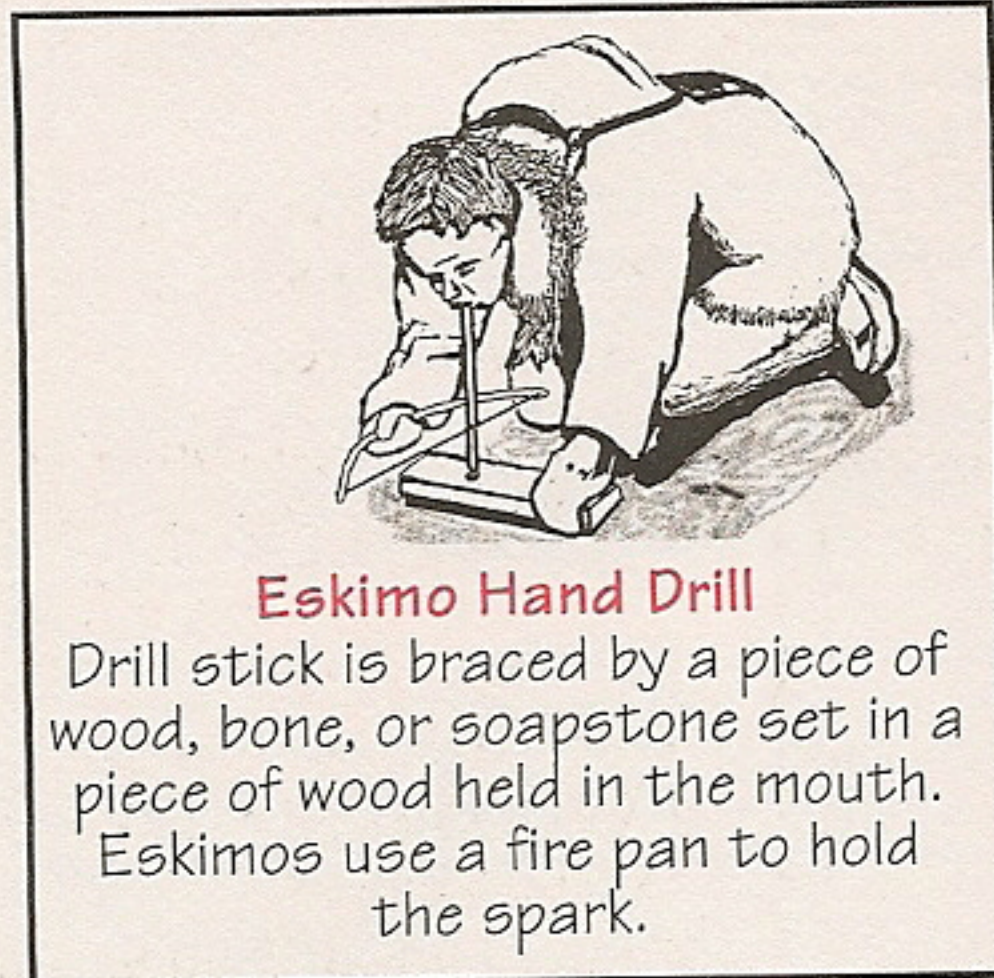
Birch Bark Kindling

Bark of all species of birch, especially the Paper Birch, is excellent for kindling and torches. It is full of resinous oil which blazes up and will burn in the wind.

BOW & DRILL FIRE

BOW AND DRILL ACTION

Make a bow strung with a shoelace, string or leather thong. Use the bow to spin a dry, soft drill stick pushed by a small bearing block of hardwood which is cupped in your left hand. The rotation and pressure of the drill, grinding on the base board, heats the wood which ignites and a hot black powder falls through the groove-hole onto the tinder. The tinder gradually starts to smolder and smoke. When there is much smoke remove the base board and gently blow on the tinder which will burst into flame. Add tinder or some light kindling to get a larger flame.



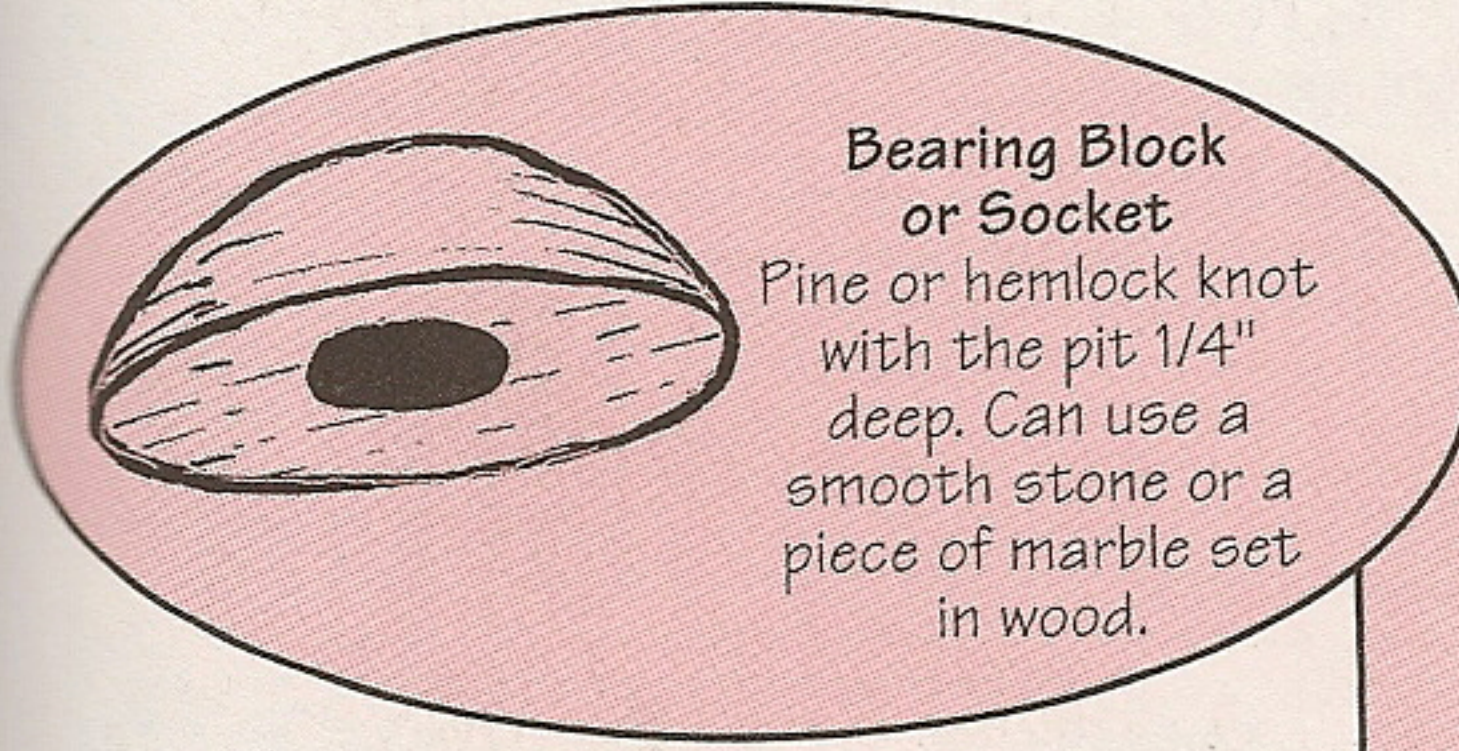
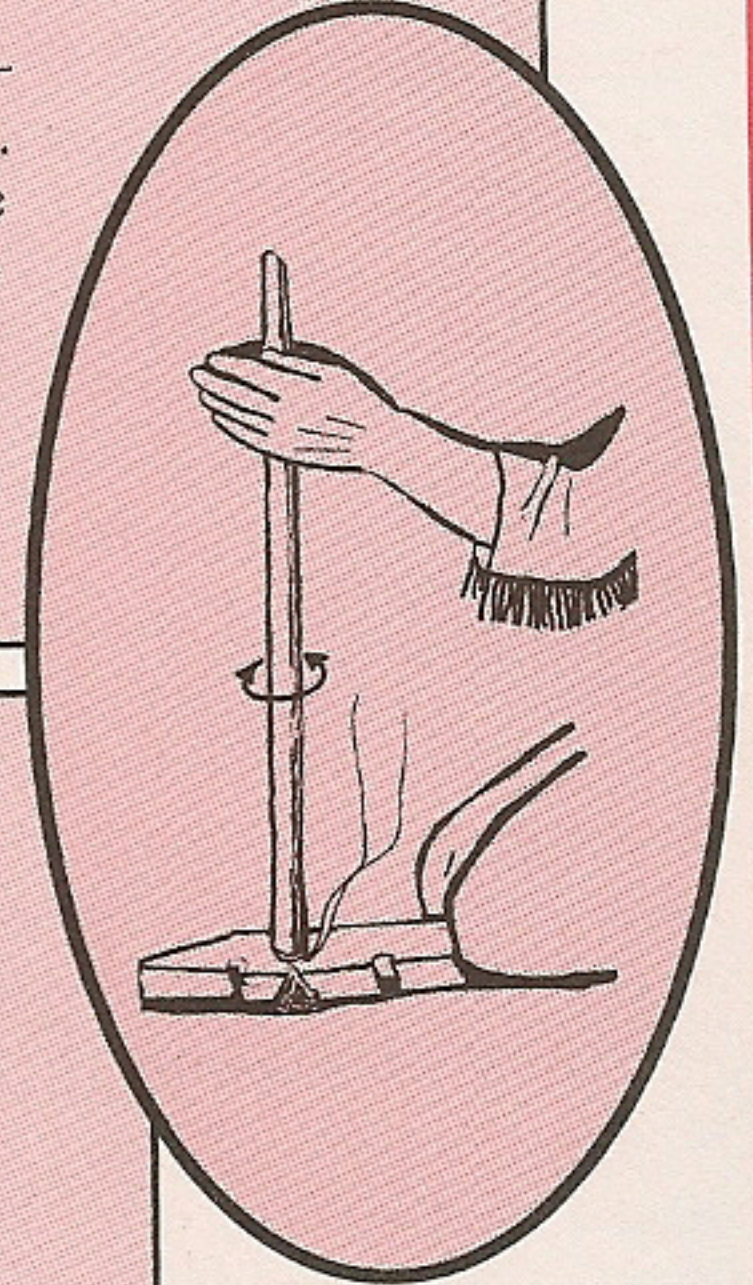
Eskimo Hand Drill

Drill stick is braced by a piece of wood, bone, or soapstone set in a piece of wood held in the mouth. Eskimos use a fire pan to hold the spark.

Navajo Hand Drill

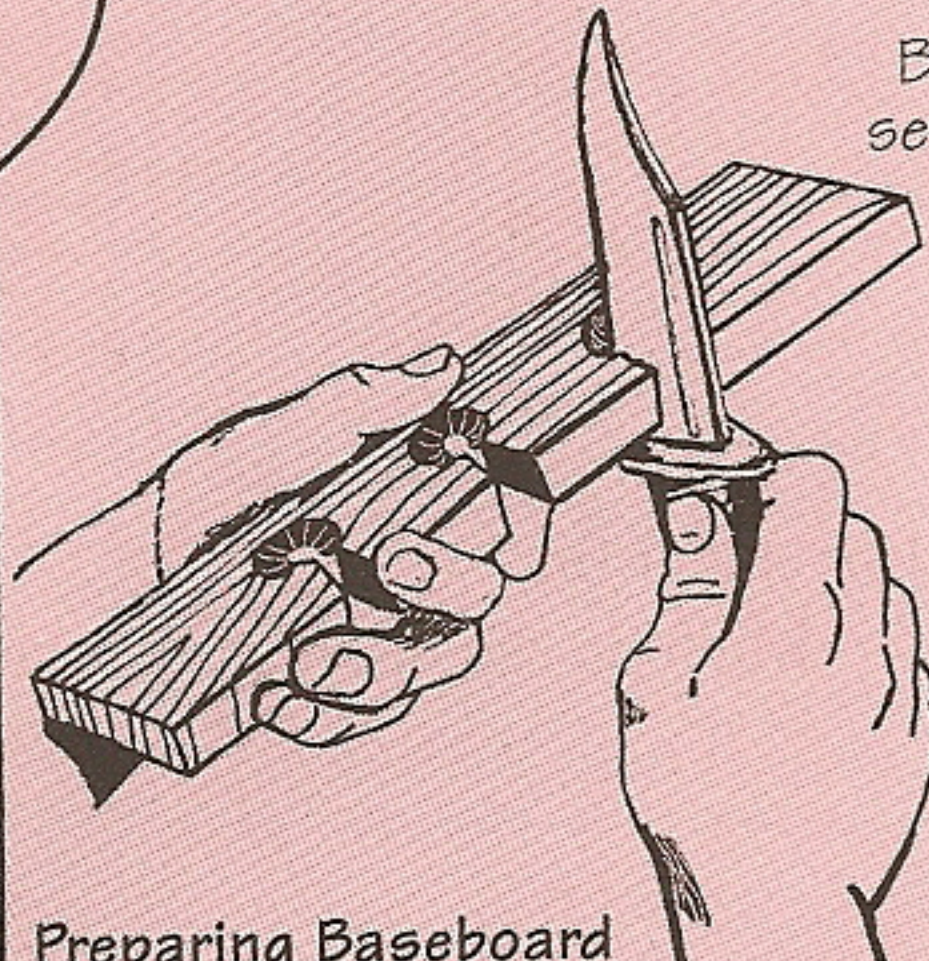
This is a simpler method than the bow drill. Because of the lower rate of rotation, between the hands, it is used in hot dry climates where the wood is very dry. The wood usually used is yucca. Sun dried manure might be used as tinder. Indians carried their fire sticks in the quiver with their arrows.

Push down and rotate in short bursts equal to the length of the hands. The hands gradually slip down the drill. Drill is 2 feet (0.6 m) long.

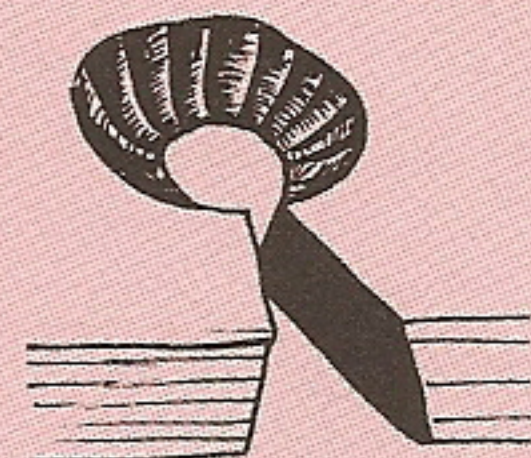


Bearing Block or Socket

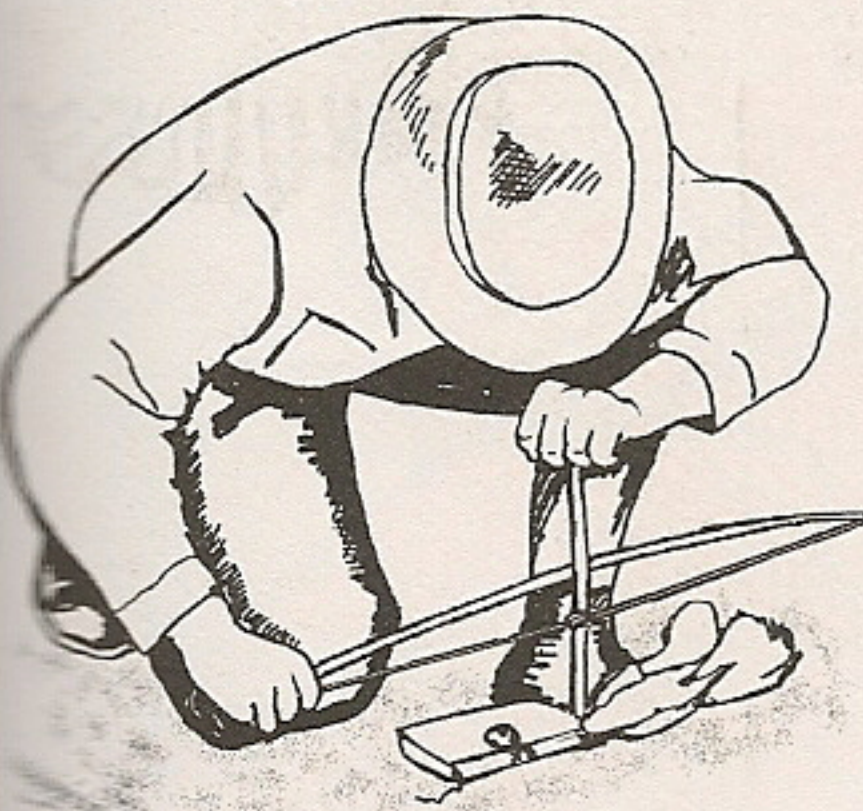
Pine or hemlock knot with the pit 1/4" deep. Can use a smooth stone or a piece of marble set in wood.



Base board with several fire groves.



Grove for tinder that lets the air circulate.

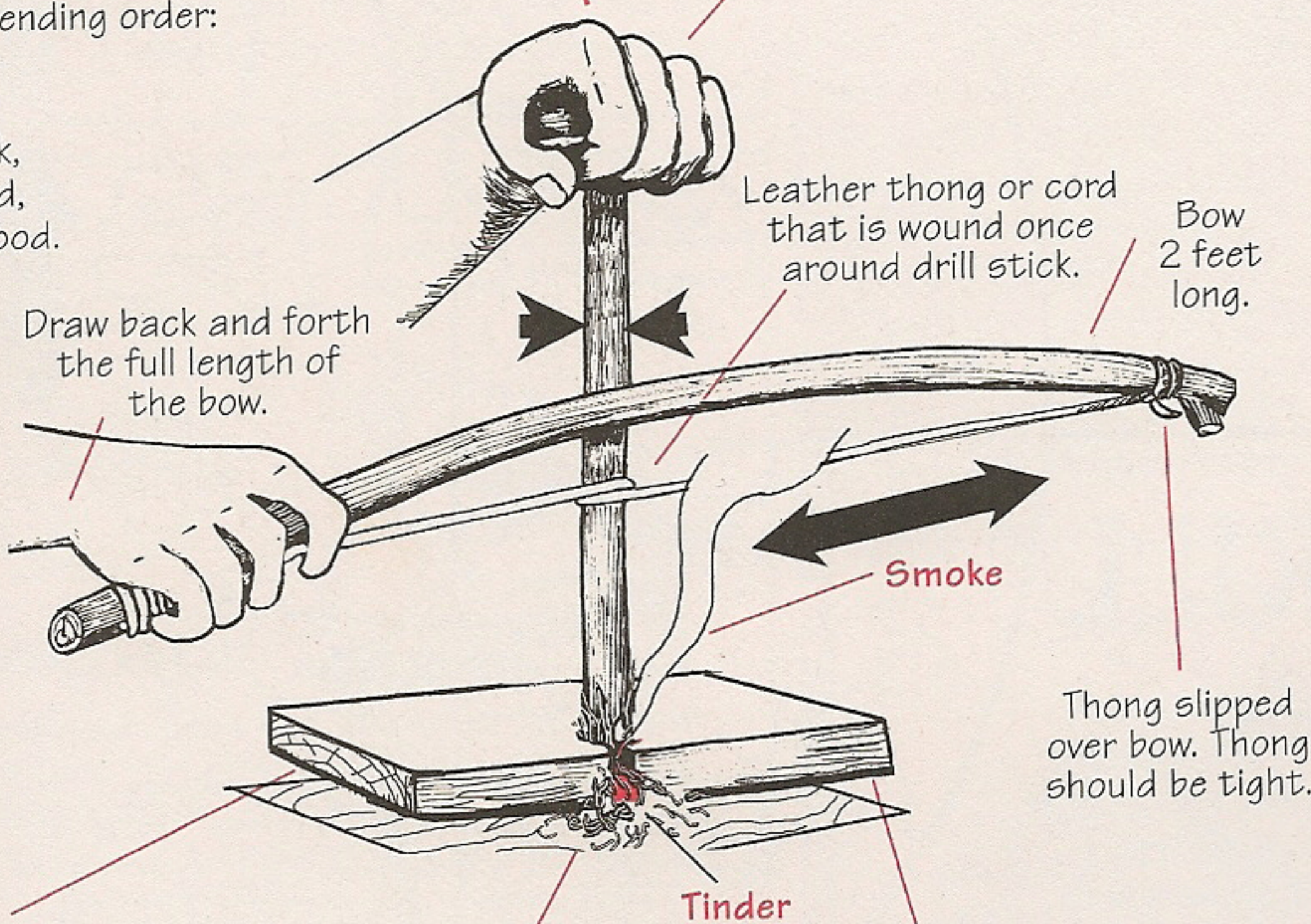


Drill and Baseboard

Dry piece of balsam fir or in descending order:

- cedar,
- cypress,
- tamarack,
- basswood,
- cottonwood.

Start by pressing bearing block lightly and then heavily when there is smoke.



Draw back and forth the full length of the bow.

Leather thong or cord that is wound once around drill stick.

Bow 2 feet long.

Smoke

Thong slipped over bow. Thong should be tight.

Tinder

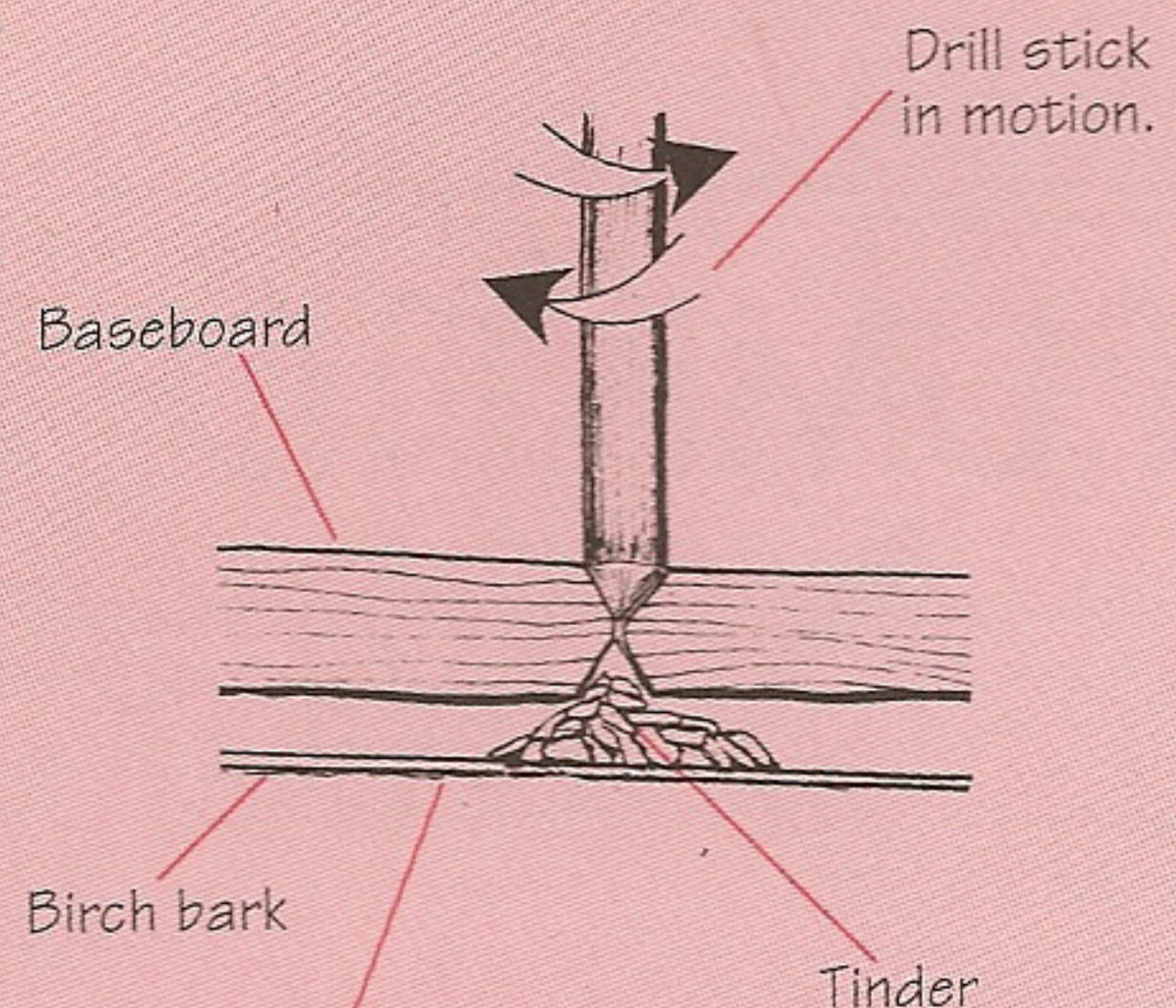
Base board is held down with the foot, knee or wedged with a stone.

Deep brown powder from the friction of the drill and base will drop onto the tinder to ignite it.

Base Board
2" wide,
8" long,
3/4" thick.

Drill Stick

3/4" thick, 12"-15" long. Top rounded and greased or wet to reduce friction, abrasion and heat. Bottom of drill is pointed. When drilling the stick is kept upright and maintain a steady drilling motion. Begin by lightly pressing the bearing block while drilling lightly and slowly. Increase the pressure on the bearing block and drill faster only after there is smoke.



Baseboard

Birch bark

Tinder

Place baseboard and tinder on a dry piece of birch bark or piece of wood these will help you transport the tinder to your fire wood.

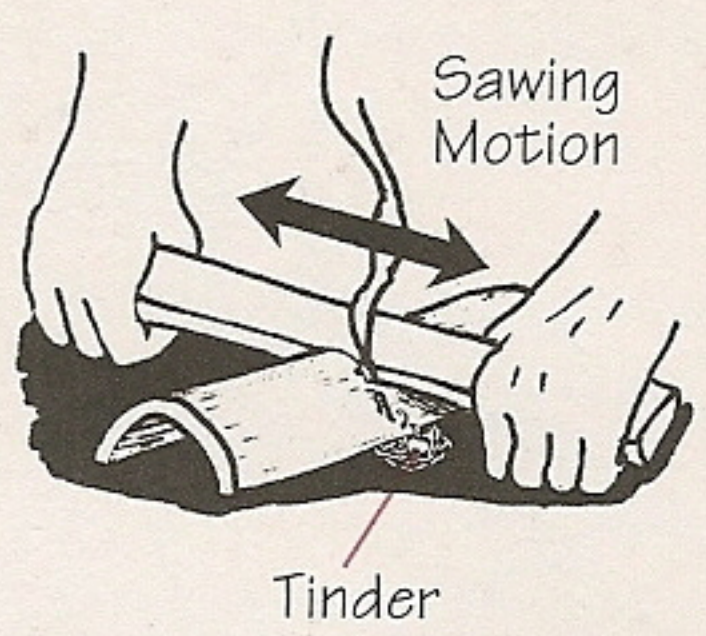
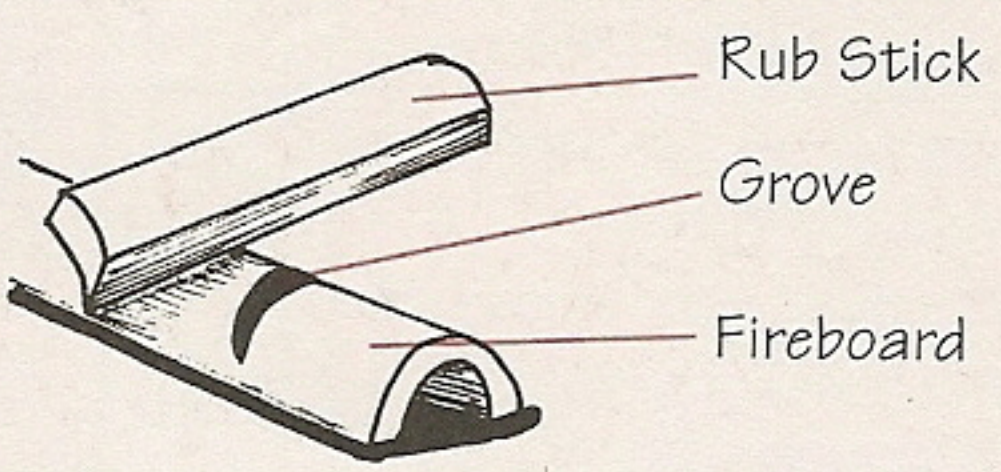
PROBLEMS IN STARTING A FIRE WITH A FIRE DRILL OR FIRE PUMP

Problem
 Kindling gets covered with dark drilled powder.
 Light brown
 Black
 Spindle jumps out of bearing block
 Thong slips on drill stick
 Thong runs up and down drill stick
 Bearing block smokes

Reason or Action
 Dust off the tinder.
 Wood is not under enough pressure or you are not drilling fast enough. Pushing too hard so that the powder burns before it lands on the tinder.
 Hole in block not deep enough or too small for size of the drill stick.
 Thong loose, drill stick too smooth, too much pressure on bearing block.
 Thong should be in middle of drill stick and bow should be perpendicular to drill stick.
 Pushing too hard, wood too soft when compared to hardness of the drill stick add some lubrication (water, oil, grease).

FIRE SAW

The fire saw consists of two pieces of dry wood one of which is rubbed vigorously against the other in a sawing motion.
 This method of starting fires is commonly used in the jungle. Use a split half piece of bamboo as the fireboard and soft wood as a rub stick. A good tinder is the fluffy brown covering of the apiang palm and the dry material found at the base of the coconut leaves.

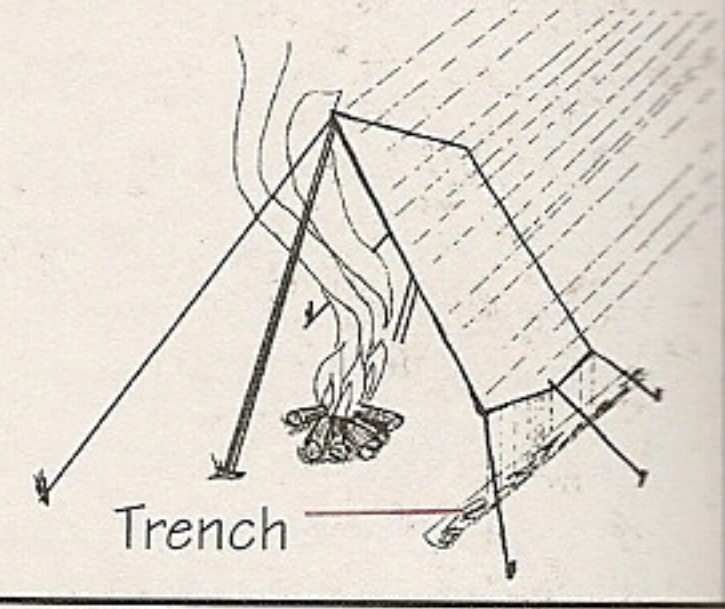


Preparing the Bamboo

On the inside of the fireboard pick and splinter some of the stringy fibers. On the outside opposite the fibers cut a narrow groove in which the sawing will be done.

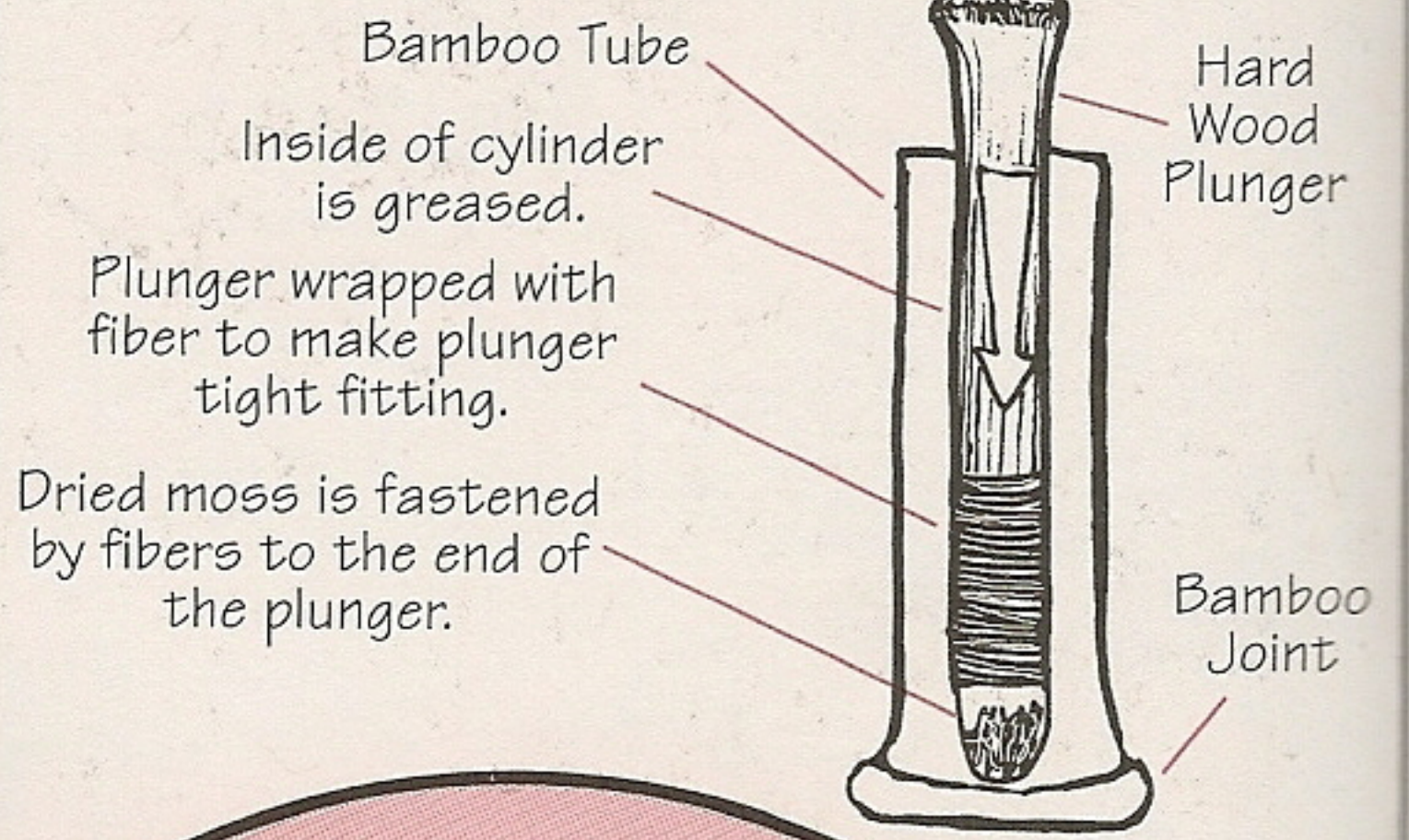
MAKING A FIRE IN THE RAIN

Find a fat pine log and split it open and light a fire from underneath. Dry fuel can be found under rock shelves, in a core of an old stump, the underside of a large fallen log, or look for a dead softwood tree that leans to the south as the wood and bark on the underside will be dry. If the rain is falling from a constant direction a tarpaulin can be used to protect the fire. The tarpaulin has to be placed far enough to accommodate the growing flames.



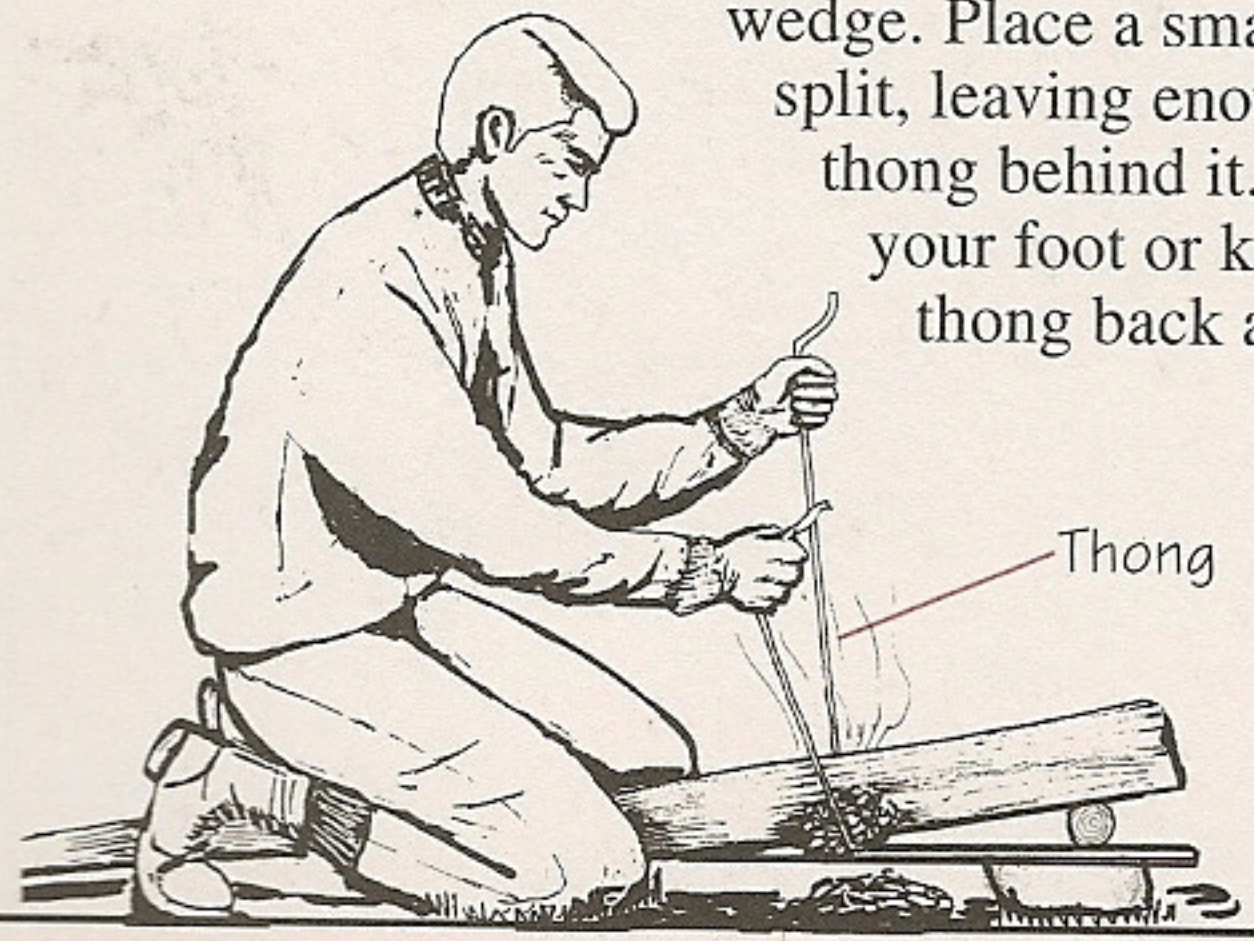
SOUTH SEAS FIRE MAKER

This fire making method was developed by natives of the South Seas. The plunger is hit repeatedly with the palm of the hand. The air inside is so highly compressed that heat is generated igniting the tinder.



FIRE THONG

Use a strip of dry rattan, preferably about 1/4 inch (0.6 cm) in diameter and about two feet long; and a dry stick. Prop this stick off the ground by using a rock. Split the end of the stick. Hold it open with a small wedge. Place a small wad of tinder in the split, leaving enough room to insert the thong behind it. Secure the stick with your foot or knees, and work the thong back and forth.



PUMP FIRE DRILL

The Iroquois Indians had a fire drill that used the principal of the flywheel. The fly wheel was of hardwood with a hole at the centre through which the drill stick is forced and attached. The crossbar of hardwood is attached by a cord or leather thong and slides freely on the drill stick. The drill stick and fireboard use the same woods, dimensions, carved holes, and tinder as the fire drill.
 The pump fire drill works by first winding up the flywheel which pulls up the cross bar. The cross bar is then pushed down and its momentum rewinds it in the opposite direction. The process is repeated until there is black powder and smoke.

