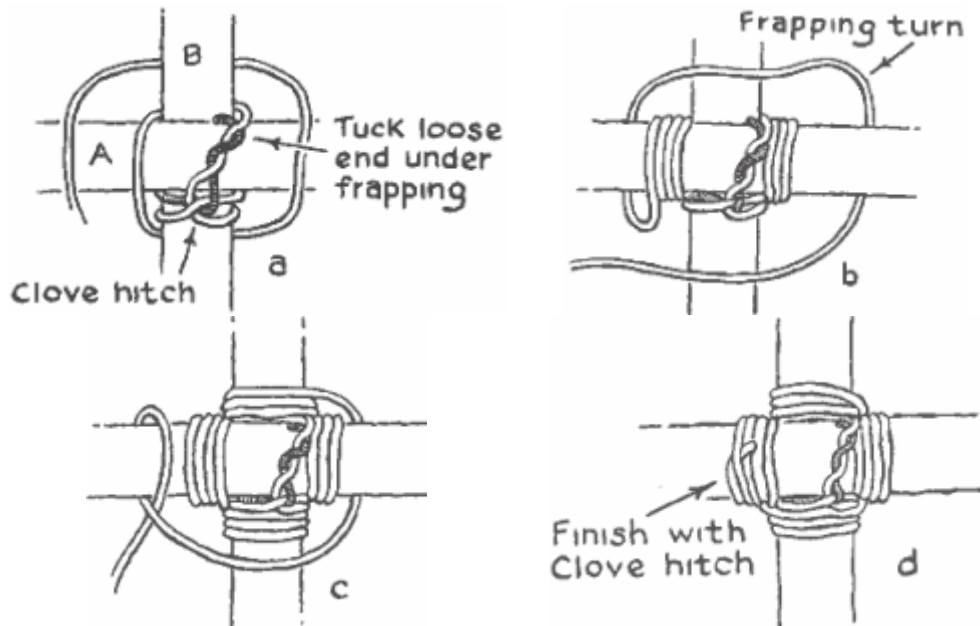


Square Lashing

Step by step:

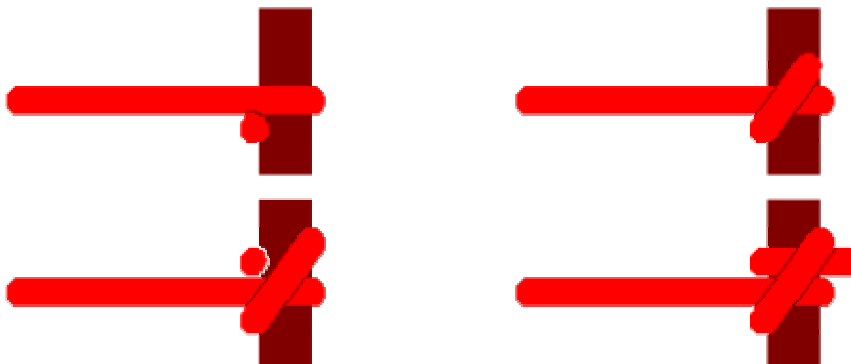


Comments:

- Used to fasten two spars or poles together.
- Start by crossing the two sticks or dowels at perpendicular or 90 degree angles.
- Make a Clove Hitch on the vertical stick or dowel near the point where the two sticks cross. This fastens the rope to the stick.
- Weave the rope under and over the crossed sticks alternately. To do this, run the rope over the horizontal bar, around behind the vertical bar, then back over the face of the horizontal bar on the left. Tighten snugly, then bring the rope behind the vertical bar and up the right front side of the horizontal bar. Repeat this three or four times, keeping the rope tight.
- When you have finished weaving the lashing, then "FRAP" it by wrapping the rope between the poles (in front of the back stick and in back of the front stick), pulling tightly. This tightens the connected poles.
- Finish your lashing with another Clove Hitch.

Clove Hitch

Step by step:

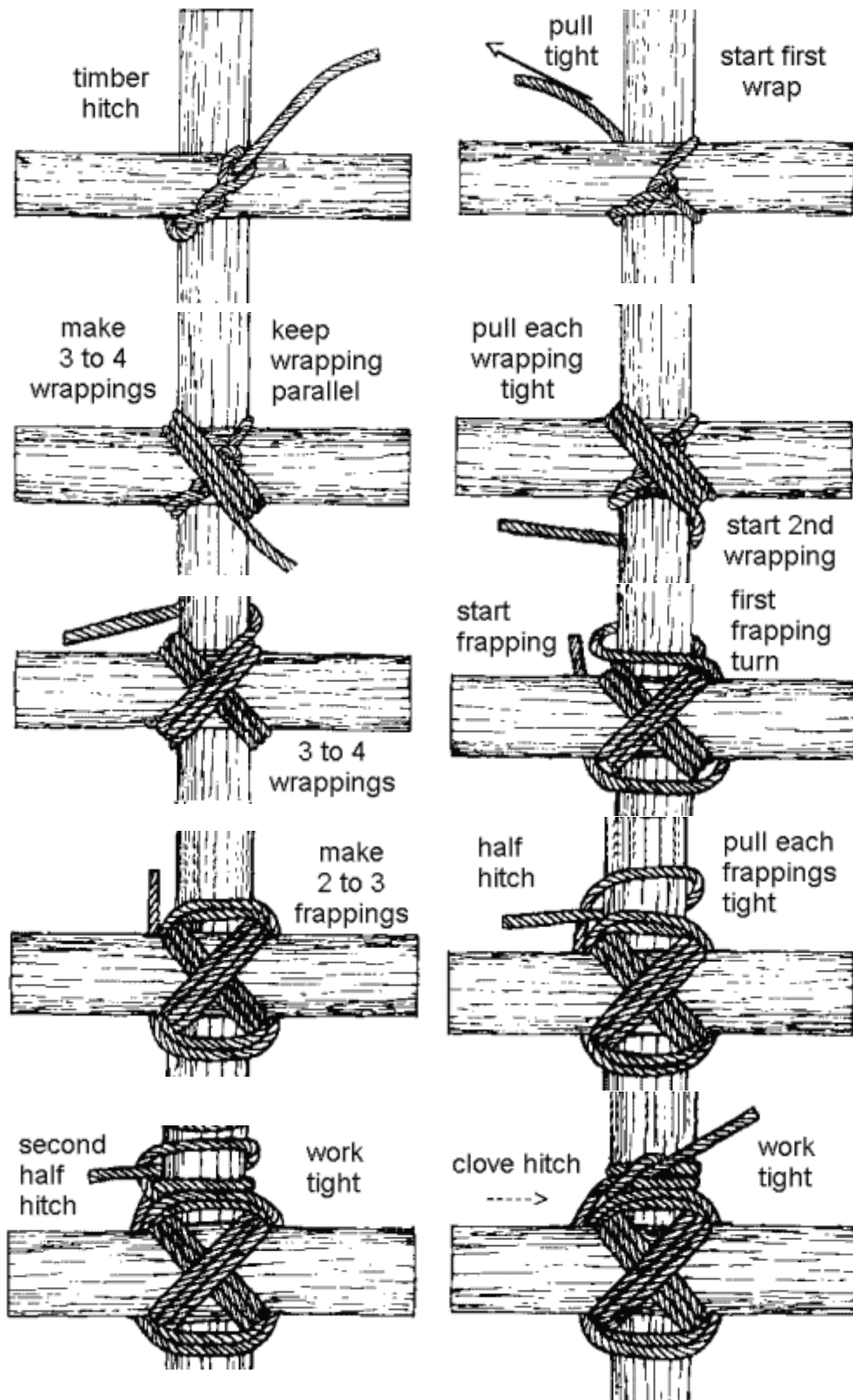


Comments:

- Use to attach a rope to a pole, this knot provide a quick and secure result. It rarely jams, and can in fact suffer from the hitch unrolling under tension if the pole can turn. Often used to start and finish lashings.
- With practice, this can be easily tied with one hand - especially useful for sailors!
- Tip. If you are in a situation where the clove hitch may unroll, add a couple of half hitches with the running end to the standing end of the knot, turning it into a "Clove Hitch and Two Half Hitches"!
- Tip. When pioneering, use the Round turn and two half hitches to start and finish your lashings instead of the Clove Hitch. It won't unroll, and is easier to finish tying off. It just does not look so neat!

Diagonal Lashing

Step by step:



Use

Diagonal lashing is used to bind poles together that cross each other but do not touch when their ends are lashed in place in a structure.

Comments

The diagonal lashing gets its name from the fact that the wrapping turns cross the poles diagonally. The diagonal lashing can be used to bind poles that cross each other from 90° to 45°. If the angle between the poles is less than 45° a shear lashing should be used. The diagonal lashing makes use of the timber hitch to pull poles together that are not touching each other. The timber hitch allows the poles to be drawn together without changing the relative positions of the poles. [NOTE] If a square lashing were used to bind poles that do not touch, the beginning clove hitch would pull the cross pole toward the clove hitch causing unnecessary bowing of the cross pole and could also produce a force that would act along the length of the pole to which the clove hitch is tied. These additional forces, if strong enough, can place unnecessary strain on other lashing within the structure causing the structure to twist and fail.

Narration

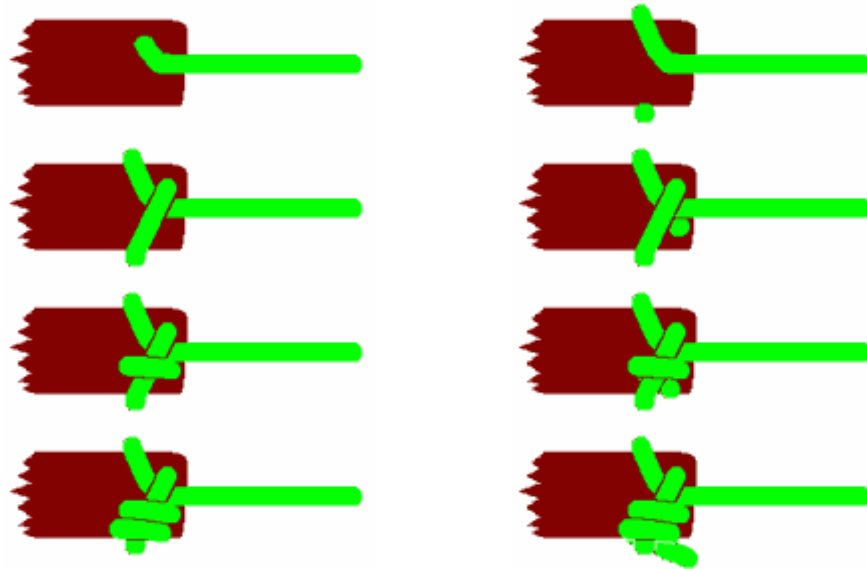
1. Tie a timber hitch diagonally around both poles.
2. Start the wrapping turns on the opposite diagonal to the timber hitch, by pulling the rope tight so that the poles contact each other.
3. Take 3 to 4 wrapping turns; keep the wrapping turns parallel; pull each wrapping turn tight. [NOTE] If the wrapping turns are allowed to cross, the increased friction between the strands of the rope will make it difficult to tighten the wrapping turns.
4. Start the second set of wrapping turns by going past and around the vertical pole. [NOTE] Going around the pole the rope allows the direction of the rope to be changed without crossing the first set of wrapping diagonally.
5. Take 3 to 4 wrapping turns; be sure to keep the wrapping turns parallel; pull each wrapping turn tight.
6. Start the frapping turns by going past and around one of the poles. [NOTE] Going around the pole with the rope allows the direction of the rope to be changed without crossing the wrapping turns diagonally.
7. Take 2 to 3 frapping turns; keep the frapping turns parallel. Be sure to pull each turn tight.
8. End the lashing with a clove hitch. Take the first half hitch of the clove hitch by going past and then around one of the poles. Lock the half hitch tight against the lashing by working it tight.
9. Take a second half hitch around the pole.
10. Work the second half hitch tight against the first half hitch so that the clove hitch is locked against the lashing.

Note

If very smooth rope is used, the lashing can be made more secure by adding a third or fourth half hitch to the clove hitch.

Timber Hitch

Step by step:

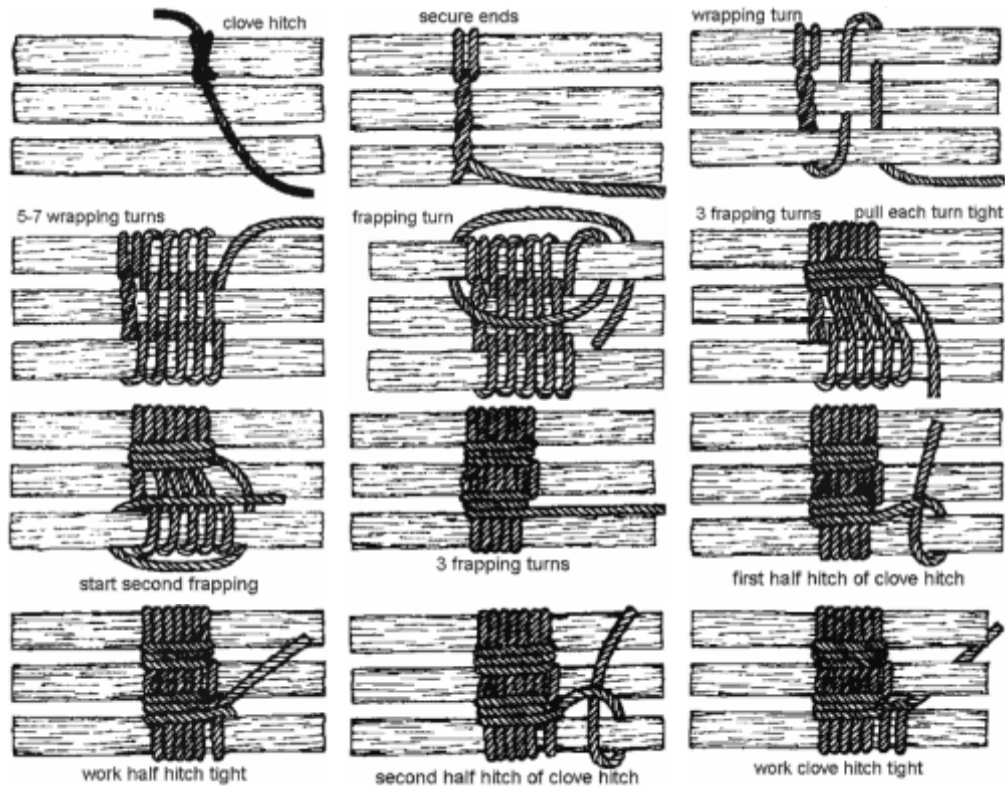


Comments:

- Used to attach a rope to a log, or where security is not an issue. This knot tightens under strain, but comes undone extremely easily when the rope is slack.
- Wrap the rope around the log, then pass the running end around the standing part of the rope. Finally twist the running end around itself three or four times. (Note: this is only shown twice above.)
- Tip: Jolly useful for dragging logs back to the camp fire!

Tripod Lashing

Step by step:



Description

A shear lashing around 3 poles.

Use

To bind three poles together, for the construction of a tripod. To bind three poles together that contact at the same point in a structure.

Comments

The tripod lashing is a shear lashing that binds three poles together at the same point. The tripod lashing gets its name from the fact that its most common use is the construction of a tripod. The tripod lashing can be used just about anywhere in a structure that three poles cross each other at the same point and at the same time in the sequence of construction. Tripod lashing takes two main forms; with racked wrapping turns (the rope is woven between the poles) and with plain wrapping turns (the rope is wrapped around the poles without weaving the rope between the poles). When the lashing is made with racking turns, the rope contacts each pole around its entire circumference; this contact makes the tripod lashing with racking turns the most secure form of tripod lashing; therefore tripod lashing with racking turns should be used when safety is important. However, for light structures where there would be no danger if the lashing slipped, the faster to tie tripod lashing with plain wrapping turns may be used.

Laying Out The Poles

For most tripod lashings, lay the pole side by side with the butt ends aligned. The alignment of the butts of the pole insures that the tripod legs are the desired length

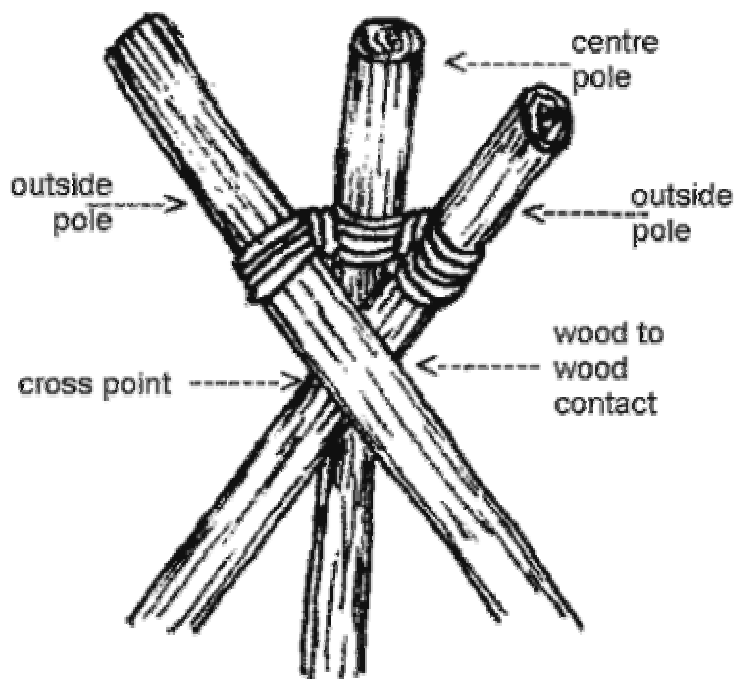


Note

The practice of laying the center pole in the opposite direction to the outside poles creates several problems. When the poles are laid in opposite directions the wrappings must be put on loosely so that when the center pole is rotated to its proper position the lashing is tightened around the poles. If the wrappings are put on too tight, the rope is stretched causing damage to the rope fibers, therefore weakening the lashing. On the other hand, if the rope is wrapped too loosely, the lashing will not tighten enough when the center pole is rotated and the lashing will be able to slip along the length of the pole. Either way, the rope too loose or the rope too tight, a dangerous situation is created.

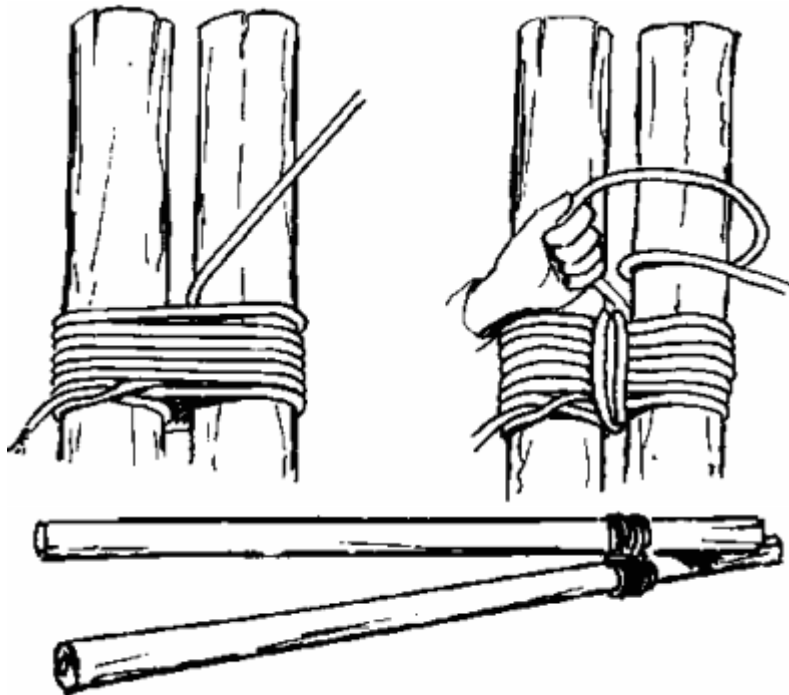
Setting Up A Tripod

Set up the tripod by crossing the outside poles so that the cross point of the poles is under the center pole. Crossing the outside poles under the center pole causes part of the load that is placed on the tripod to be taken up by the wood to wood contact of the poles.



Shear Lashing

Step by step:



Comments:

- A sheer lashing is often used to bind adjacent poles together. It is also a good way to reinforce a broken or weak pole. The frapping turns used to tighten the lashing may be omitted and replaced with wedges inserted between the poles.
- A loose Sheer Lashing made around the ends of two poles will allow the poles to be opened out and used as an A-frame. It can also be used to form a tripod just like the Figure-of-eight lashing.
 1. Lay out the poles. For most lashings you will want to lay the poles side by side with the butt ends aligned (thicker ends).
 2. Tie a clove hitch around one of the outside poles and secure the standing part by wrapping it around the running part (or trap it under the first turns).

Note: If you only lashing two poles together it may be better to simply tie the clove hitch around both poles and pull tight.
 3. Pass the rope around the poles to form a first turn.
 4. Pulling each turn tight made a series of turns until the lashing is at least as long as the combined diameters of the two poles (usually a set of 4 to 6 turns will be sufficient).
 5. Tighten the lashing with a frapping turn by taking the rope down between two poles at one end of the turns. This should be difficult to do if the turns have been pulled tightly (as they should be). Bring the rope back up between the poles at the other end of the lashing and pull tight.

Repeat 2 or 3 times.

6. Start the second set of frapping turns by taking the rope around the centre pole and frapping. Take the second set of frapping turns in the opposite direction to the first set.
7. Repeat for any additional poles.
8. Pass the rope once more between the poles then around one pole and tuck it under itself to form a half hitch. Pull this tight and make a second half hitch forming a clove hitch by taking the rope around the same pole and tucking it under itself.

- **Notes on A-Frame Lashing:**

An A-frame lashing or Sheer Legs is made in the same way as a Sheer Lashing with the lashing and frapping turns made slightly loose so that the poles can be opened out. It is often used to raise a boat mast or to form the legs of a rope bridge. You must take care to ensure that the legs of the frame do not slip.

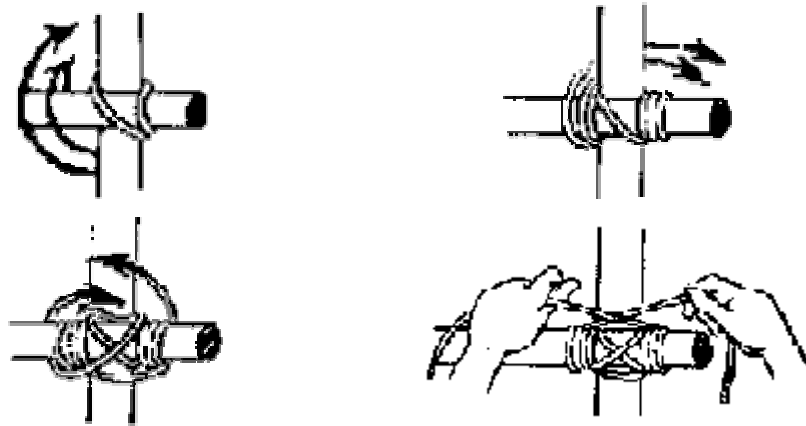
- **Notes on Tripods:**

Make a tripod by using a Figure-of-eight lashing on three poles. Set up the tripod by crossing the outside poles so that the cross point of the poles is under the centre pole. This makes sure that part of the load is taken by the wood in contact.

If a symmetrical arrangement of the poles is needed within a structure the tripod can be set up by rotating the poles around the lashing. This means that the load is supported only by the ropes and the joint becomes flexible and so the tripod may become unstable.

Japanese Square Lashing

Step by step:

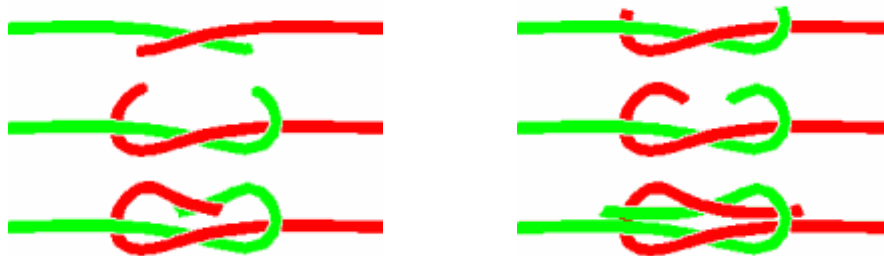


Comments:

- A lashing used in lightweight construction work.
- It is equivalent to a Square Lashing. and when done correctly should be just as strong.
- Much quicker to do than a Square Lashing.
- The knot is finished off with a Reef Knot.
- A shear lashing around 3 poles.

Reef Knot

Step by step:



Comments:

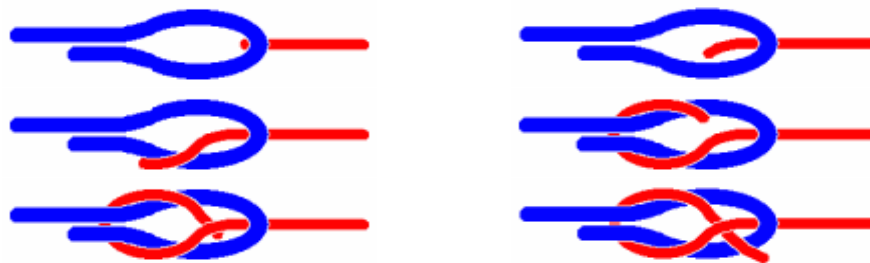
- Also known as the Square Knot
- An excellent general purpose knot for tying two pieces of string or twine together, the reef knot is possibly the most commonly used knot for the job, and is easy to learn. However, it cannot be overly

stressed that the Reef knot is not a long term or secure knot, and it should only be used to finish parcels or bindings. In other cases, use a more secure method of bending two ropes together, such as a Sheetbend, a Double Sheetbend, or a Fisherman's Knot.

- Unfortunately, the Reef knot can easily change into a slipping Lark's Head (see below), so it should never be used where life or limb are at risk.
- Holding one end of each rope in each hand, pass the left rope over the right, and tuck under. Then pass the same rope, now in the right hand, over the left rope, and tuck under.
- It is common to chant "Left over Right and Under, Right over Left and Under" when tying the knot. (This can also be performed as "Right over Left and Under, Left over Right and Under".)
- The reef knot can easily be undone by gripping one loose end, and pulling it back over the knot, in the opposite direction, thus straightening the rope which is pulled. The other rope forms a Lark's Head knot, and slips off the tugged rope.
- The knot gets its name from its use on sailing ships, when the sails were "reefed" - rolled up and tied to the cross spar with a reef knot. To release the sail, the sailors would climb the rigging, and work their way along the cross spar, pulling the top end of the reef knot down. They only had to use one hand, holding on with the other. The weight of the sail would cause the reef knot to slip, and the sail would be released.
- Tip. If you want to tie two ropes together of similar thickness then never use a Reef knot. Only use it with string and twine when tying parcels, whippings and bindings.
- Tip. Never use this knot to join ropes of two different thicknesses.

Sheet Bend

Step by step:



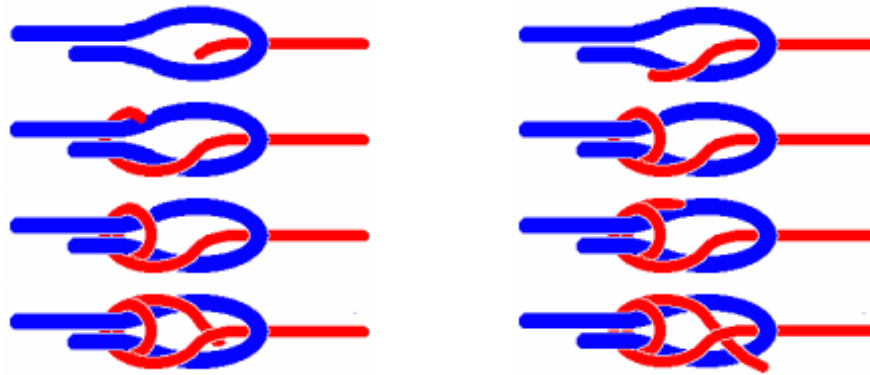
Comments:

- The Sheet Bend is commonly used to tie two ropes of unequal thickness together. The thicker rope of the two is used to form a bight, and the thinner rope is passed up through the bight, around the back of the bight, and then tucked under itself.
- The knot should be tied with both ends coming off the same side of the bend, as illustrated here. However it can easily be accidentally tied with the ends coming off opposite sides of the bend, when it is known as the Left Handed Sheet Bend. The Left Handed Sheet Bend is to be avoided as it is less secure.

- Tip. If the ropes are of very unequal thickness, or placed under a lot of tension, use a Double Sheet Bend.

Double Sheet Bend

Step by step:

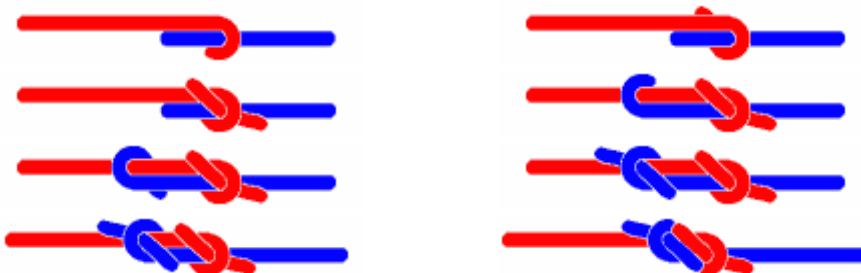


Comments:

- The Double Sheetbend is a more secure form of the Sheetbend.
- The thicker rope of the two is used to form a bight, and the thinner rope is passed up through the bight, around the back of the bight, around again before tucking under itself.
- Tip. It is particularly useful when the thickness of the two ropes varies considerably, or when a more secure Sheetbend is required.

Fisherman's Knot

Step by step:



Comments:

- Also known as the Angler's knot, English knot, Englishman's bend, Halibut knot, True Lover's bend and Waterman's knot
- The Fisherman's knot is used to tie two ropes of equal thickness together. It is used by fishermen to join fishing line, and is very effective with small diameter

strings and twines.

- Tie a Thumb knot, in the running end of the first rope around the second rope. Then tie a thumb knot in the second rope, around the first rope. Note the Thumb knots are tied such they lie snugly against each other when the standing ends are pulled.
- When tying knots in monofilament line, moisten the line before pulling the knot tight. This helps to stop the line heating up with friction, which weakens it.

Lark's Head

Step by step:

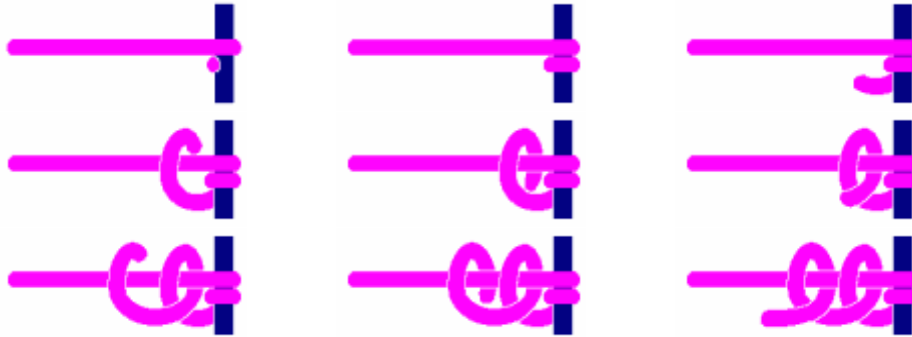


Comments:

- Also known as the Cow Hitch and Lanyard Hitch
- The Lark's Head knot is used to loosely attach a rope to a spar or ring. The knot has two redeeming features, it is easy to tie, and it does not jam. However, it will slip fairly easily along the spar, and may slip undone when tied using man made fibre ropes.
- Tip. This is a knot to be avoided when a secure attachment is required. The Round turn and two half hitches, and the Clove hitch are far more secure.

Round turn and two half hitches

Step by step:

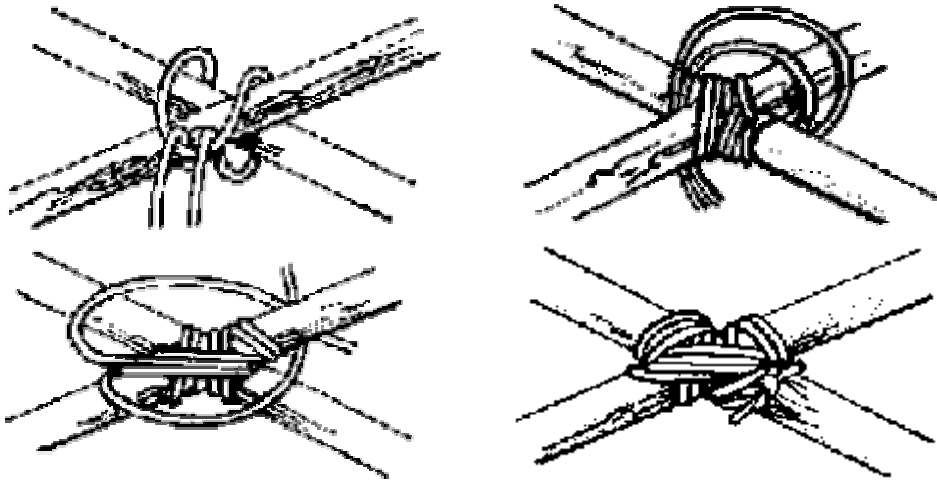


Comments:

- Used to secure a rope to a pole, or to start or finish a lashing. Pass the running end of the rope over the pole twice. Then pass the running end over the standing part of rope, and tuck it back up and under itself, forming a half hitch. Repeat this for a second half hitch.
- This knot has a redeeming feature - it rarely jams!
- Tip. Superior to a Clove Hitch for starting and finishing a lashing as the half hitches prevent this knot from unrolling, as they have the effect of locking the knot. The Clove Hitch looks neater (!) but it has a tendency to unroll, and can be difficult to tie tightly when tying off.

Filipino Diagonal Lashing

Step by step:

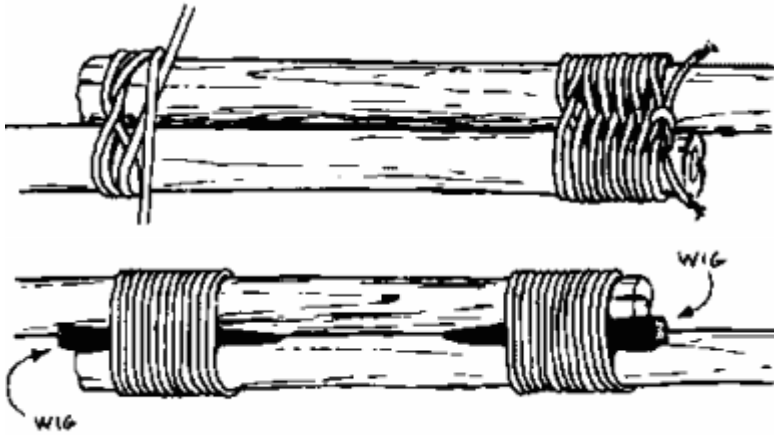


Comments:

- A lashing used in lightweight construction work.
- Start with the middle of the rope, tucking the running ends through the middle "loop" after going round both spars. Use the "loop" to pull the spars together.
- Now proceed as for a diagonal lashing taking the running end round both spars, keeping both ends together.
- Separate the ends and take frapping turns between the spars, pulling the rope tight as you do so.
- Complete the frapping turns and finish off with a reef (square) knot.

Round Lashing

Step by step:

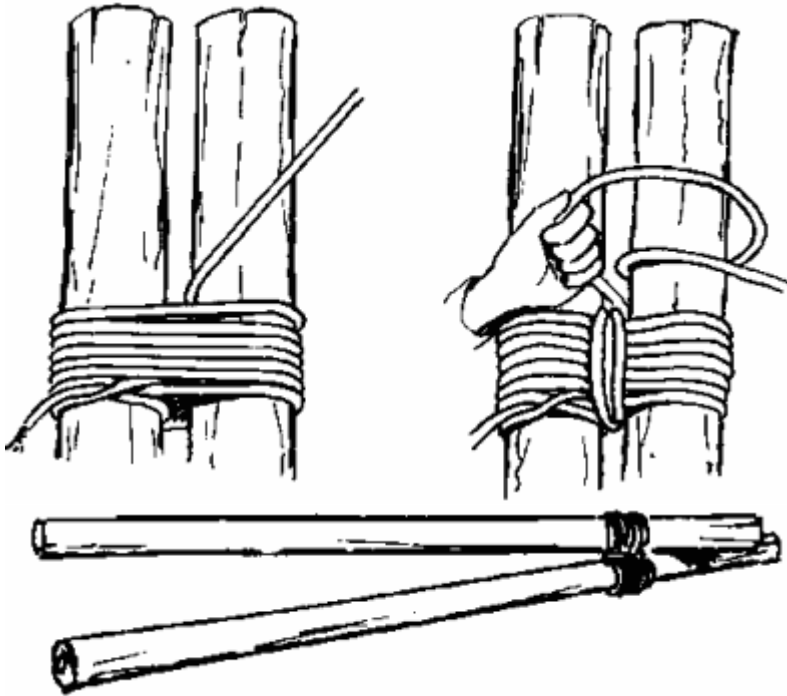


Comments:

- Used to lash two poles together (constructing a flagpole).
- Tie a clove hitch round the bottom pole.
- Wind the rope around both six or seven times.
- Finish with two half hitches round both poles.
- The lashing can be tightened by driving a small wooden peg between the poles.
- If possible force a wedge under the lashings to make them really tight. If the spars are vertical, bang the wedge in downwards.

Shear Lashing

Step by step:



Comments:

- A sheer lashing is often used to bind adjacent poles together. It is also a good way to reinforce a broken or weak pole. The frapping turns used to tighten the lashing may be omitted and replaced with wedges inserted between the poles.
- A loose Sheer Lashing made around the ends of two poles will allow the poles to be opened out and used as an A-frame. It can also be used to form a tripod just like the Figure-of-eight lashing.
 1. Lay out the poles. For most lashings you will want to lay the poles side by side with the butt ends aligned (thicker ends).
 2. Tie a clove hitch around one of the outside poles and secure the standing part by wrapping it around the running part (or trap it under the first turns).

Note: If you only lashing two poles together it may be better to simply tie the clove hitch around both poles and pull tight.
 3. Pass the rope around the poles to form a first turn.
 4. Pulling each turn tight made a series of turns until the lashing is at least as long as the combined diameters of the two poles (usually a set of 4 to 6 turns will be sufficient).
 5. Tighten the lashing with a frapping turn by taking the rope down between two poles at one end of the turns. This should be difficult to do if the turns have been pulled tightly (as they should be). Bring the rope back up between the poles at the other end of the lashing and pull tight.

Repeat 2 or 3 times.

6. Start the second set of frapping turns by taking the rope around the centre pole and frapping. Take the second set of frapping turns in the opposite direction to the first set.
7. Repeat for any additional poles.
8. Pass the rope once more between the poles then around one pole and tuck it under itself to form a half hitch. Pull this tight and make a second half hitch forming a clove hitch by taking the rope around the same pole and tucking it under itself.

- **Notes on A-Frame Lashing:**

An A-frame lashing or Sheer Legs is made in the same way as a Sheer Lashing with the lashing and frapping turns made slightly loose so that the poles can be opened out. It is often used to raise a boat mast or to form the legs of a rope bridge. You must take care to ensure that the legs of the frame do not slip.

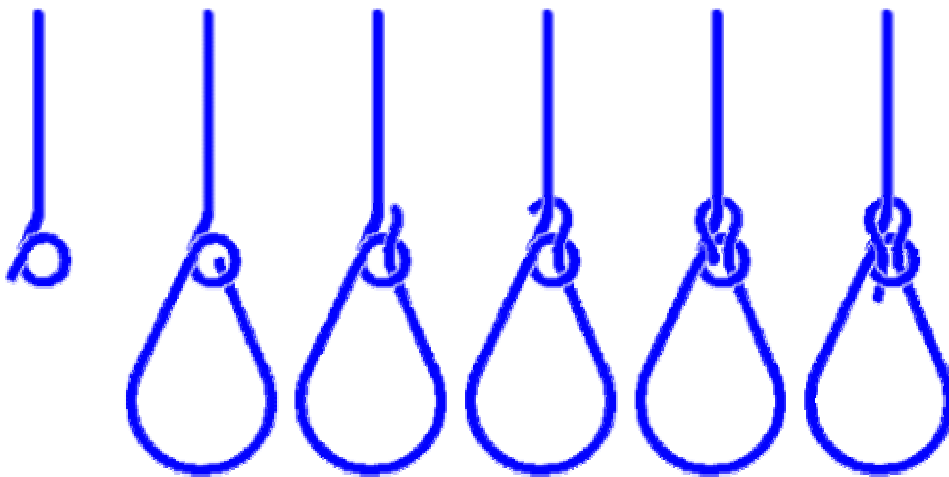
- **Notes on Tripods:**

Make a tripod by using a Figure-of-eight lashing on three poles. Set up the tripod by crossing the outside poles so that the cross point of the poles is under the centre pole. This makes sure that part of the load is taken by the wood in contact.

If a symmetrical arrangement of the poles is needed within a structure the tripod can be set up by rotating the poles around the lashing. This means that the load is supported only by the ropes and the joint becomes flexible and so the tripod may become unstable.

Bowline

Step by step:



Comments:

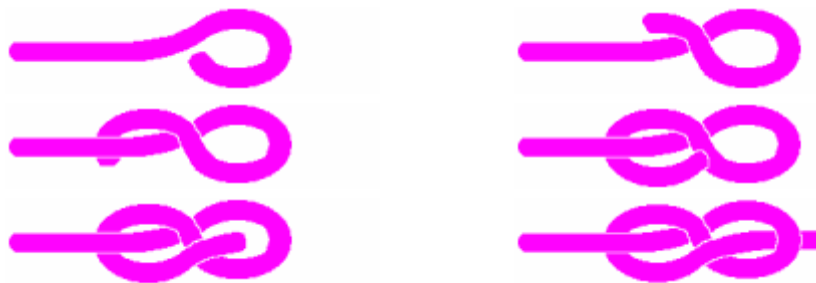
- A commonly used knot to tie a loop in the end of a rope. It has the advantage of not jamming, compared to some other loop forming knots (for example when

using an overhand knot on a large bight to form a loop).

- Form a small loop (the direction is important), and pass the free end of the knot up through the loop, around behind the standing part of the rope, and back down through the loop.
- A chant used by many to remember this knot is "The rabbit comes out of the hole, round the tree, and back down the hole again", where the hole is the small loop, and the rabbit is the running end of the rope.
- In the same way that a Left Handed Sheet bend is a Sheet bend that has the running end of the rope coming out of the wrong side of the knot, a cowboy bowline is a bowline that also has the running end of the rope coming out of the wrong side of the knot. It suffers the same problems as the left handed sheet bend.
- Tip. Don't be afraid to use this knot to form a loop of any size in rope.
- Tip. To quickly identify if you have tied the Bowline normal or left handed, check to see that the running end exits the knot on the inside of the loop
- Tip. For added security, finish the knot with a stop knot such as a Figure of Eight knot to remove any possibility of the Bowline slipping.
- Tip. If you use this knot in a man carrying situation - perhaps a rescue where a harness is unavailable - then you **MUST** use a stop knot as mentioned above.

Figure of Eight

Step by step:



Comments:

- Also known as the Flemish knot or Savoy knot
- A useful "Stop" knot to temporarily bulk out the end of a rope or cord, the finished knot looks like its name. It is superior to using a Thumb Knot, because it does not jam so easily.
- Tip: The Figure of Eight is useful to temporarily stop the ends of a rope fraying, before it is whipped.

Rolling Hitch

Step by step:



Comments:

- Also known as the Magner's Hitch and Magnus Hitch
- One of the most underrated knots in Scouting and Guiding, the Rolling hitch is used to attach one rope to a second, in such a manner that the first rope can be easily slid along the second.
- The knot can be considered a Clove hitch with an additional turn.
- When tension is applied and the ropes form a straight line, the rolling hitch will lock onto the first rope. When the tension is released, the hitch can be loosened and slid along the first rope to a new location.
- The tension must be applied on the side of the knot with the extra turn.
- Tip. Use this knot if you have a guy rope with no adjuster. Create a loop on the end of a second rope which is slipped over the peg. Use a rolling hitch to attach the second rope to the guyline. Alternatively, take the guyline around the peg and tie the Rolling hitch back onto the standing part of the guyline, above the peg, thus forming an adjustable loop. This is known as the Tautline Hitch in America.
- Tip. Use this knot when constructing camp gadgets such as a suspended table. A Rolling hitch in each suspension rope will allow easy adjustment and a level table!
- Tip. When adjustments are complete, lock the rolling hitch into place by using a stop knot such as a Figure of Eight in the first rope, below the Rolling hitch, to stop it slipping.

Sheepshank

Step by step:

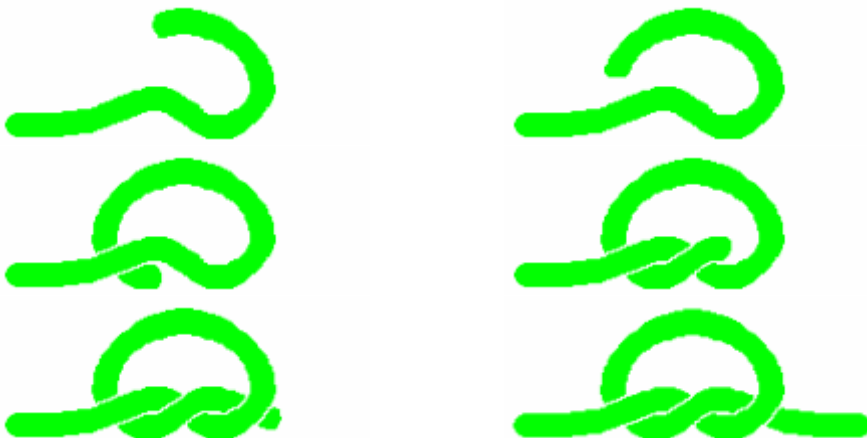


Comments:

- The Sheepshank is a shortening knot, which enables a rope to be shortened non-destructively.
- The knot is only really secure under tension, it will fall apart when slack. (See tip below.)
- Tip. Use up to five half hitches each end of the Sheepshank to make the knot more secure, and for fine tuning the shortening.
- Tip. Never cut ropes to shorten them! Always use a shortening knot such as the Sheepshank, or coil the excess.

Thumb Knot

Step by step:



Comments:

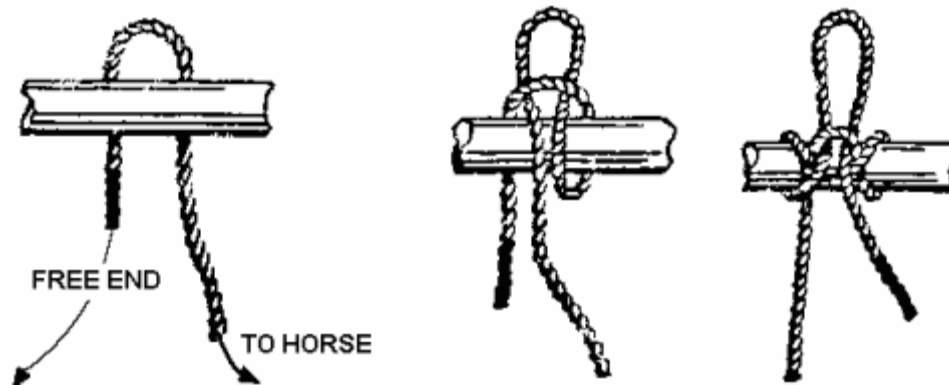
- This is the simplest knot of all. It is commonly used to temporarily "stop" the end

of a fraying rope.

- The overhand knot is commonly tied in a bight formed at the end of a rope, forming the Overhand Loop.
- Tip. The Thumbknot jams easily so it is far better to use a Figure of Eight knot to stop the end of a fraying rope.

Highwayman's Hitch

Step by step:

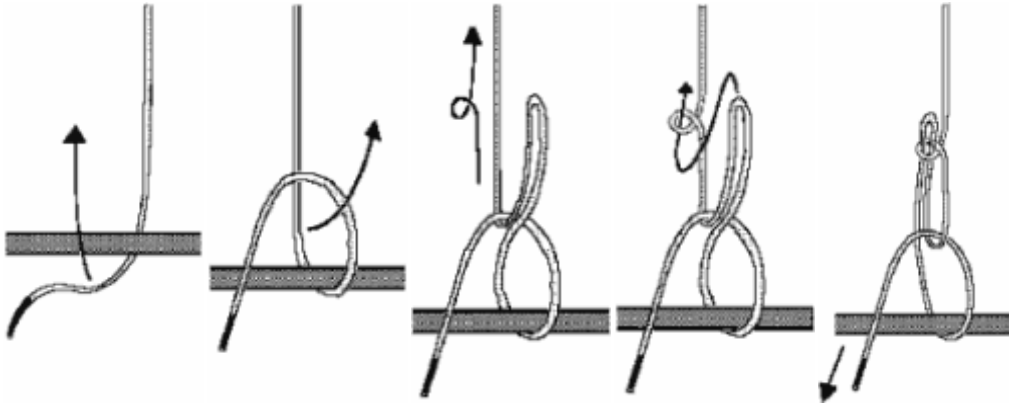


Comments:

- This is a quick release knot which will stand a strain.
- It is useful for attaching a painter to a canoe when under tow. A rolling hitch attaches the painter to the tow line and the highwayman's hitch to the canoe.
- The hitch was named after the Highwaymen who tied up their horses with it for a quick getaway

Harvester Hitch

Step by step:



Comments:

- This is used to tension line. It is useful for tying down boat trailers and works like a pulley.
- You may have used it to tension a rope bridge or flying fox.
- It is named after the truckies who would be lost without it.