

*Retying Straw Bales with a Baling  
Needle from Straw Bale  
Innovations, LLC*



*Tips of the Trade from Andrew Morrison*

[www.StrawBale.com](http://www.StrawBale.com)

## **Why Use a Baling Needle?**

When creating a straw bale structure of any kind, you will need to use straw bale needles to retie bales. Buildings never work out perfectly in regards to wall size versus bale size and so resizing bales is a must. Bales also need to be resized around windows and doors and other openings that require bales to stop short of their full length. In a typical 2100 square foot home, you can expect to retie 200 bales or more. Having a quality needle and an understanding of how to use it is important. I have outlined below the basic steps to retie a bale. There is always more to know and I am sure you will find tricks of your own to customize and speed up the process on your site. I believe that knowing the following steps will help you build your structure with more confidence and skill.



## Understanding the Notch Design

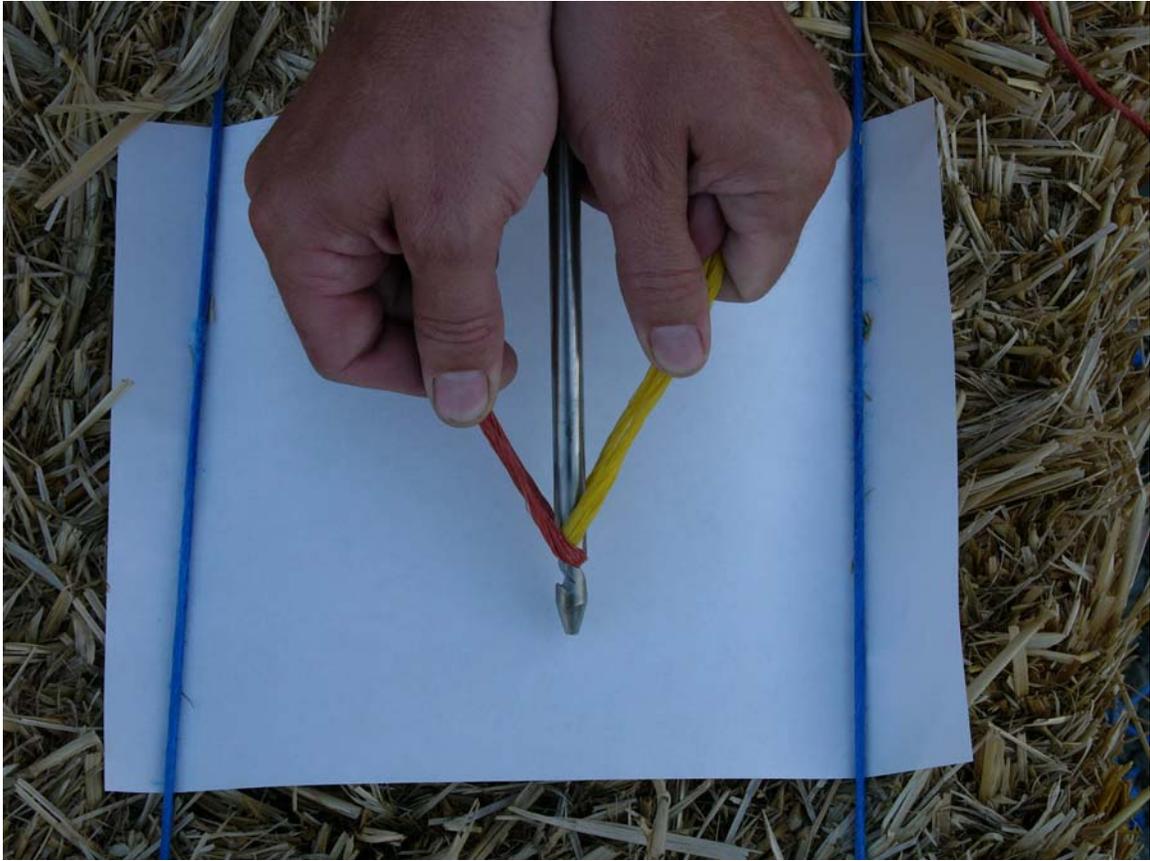


There are three notches at the bottom of the needle designed to hold twine. They each have their own purpose. Two notches, located on opposite sides of the needle point, face the same direction. These notches are for pushing twine through a bale. If you load just one of the notches with twine, as shown here, you can push it through a bale when sewing mesh to walls or retying one section of bale. I only retie one section of bale when the off cut, that portion not used in the retying, is too short to warrant the time to tie it up as a new bale. In general, anything less than 12" is not worth tying as a new bale. Material that small can be used as stuffing or can be tied after it is loose from the original bale.

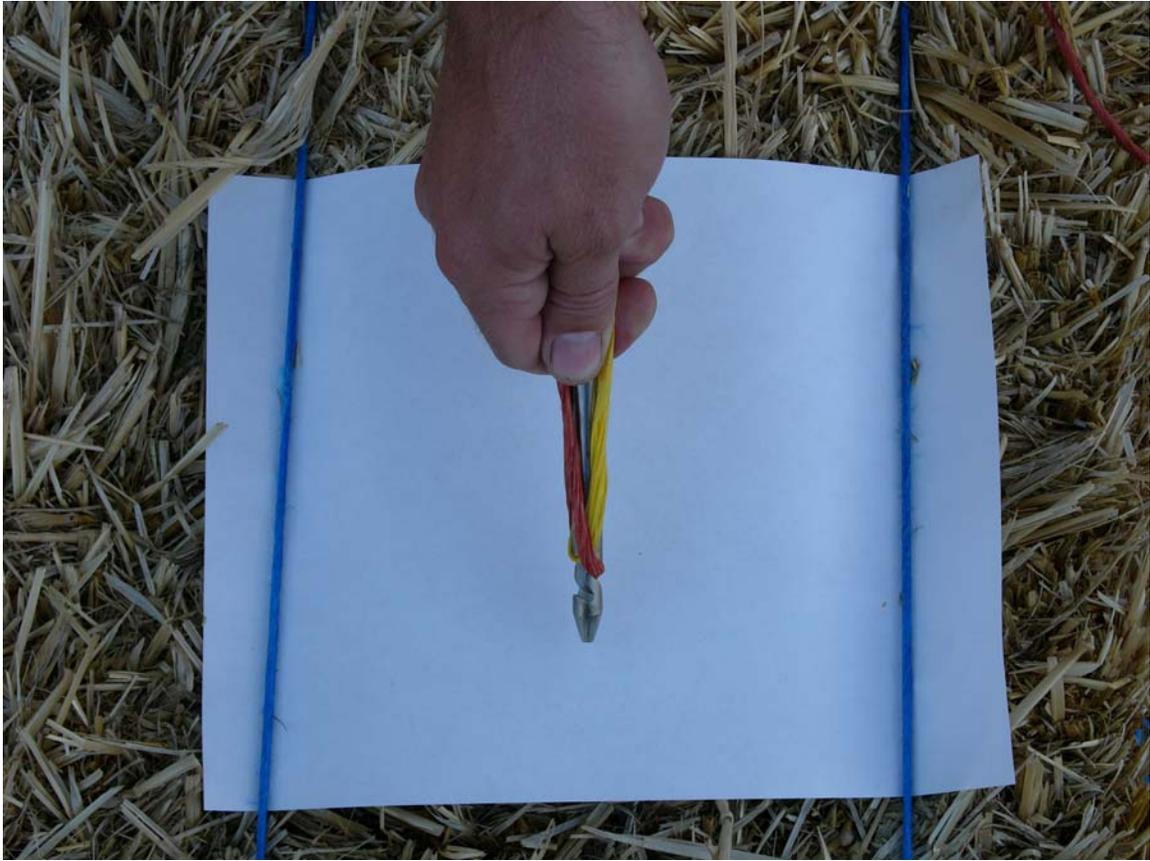
Although not shown here, this notch can also be used to push electrical wires through a bale wall to an outside receptacle or light.



The pull notch, shown here, is used to pull twine through a bale wall when sewing mesh to the face of the bales. The twine is pushed through the bale wall using the push notch, is then either wrapped around a bamboo pin (if required by code) or stretched across several inches of mesh and then sent back through the wall to the original side and tied off. The twine can be pulled through the wall using the pull notch as shown here if you are working alone; however, a better use of time is to use two needles with one operator on either side of the wall.



For most retying applications, I use two pieces of twine at once. This allows me to retie both the long section of bale and the short cut off at the same time. Using two different color twines is very important as it helps identify which twine runs which direction, thus cutting back on the number of times you will tie your two new bales together by mistake. Whether you use the one push notch or both, always loop the twine so it reaches across the face of the needle, as shown here. This makes it easier to hold the twine in place.



By placing the twine across the face of the needle, it can be held in place with one hand as it is pushed through the bale. This is important as you may need to hold a measuring tape in the other hand or simply need a free hand to help in the alignment of the needle.

## Using the Needle to Retie a Bale



Place the tip of the needle at the measurement for the retying and plunge it into the bale. As soon as the twine has passed into the bale, it will hold itself in place and slide through to the opposite edge of the bale. When retying a bale, it is important to remember that the bale ends will fluff out a bit passed the measurement you tie to. For that reason, it is a good idea to measure an inch or so less than what you need in the wall. You will find, with trial and error, what the right amount of “under measurement” is for your bales.



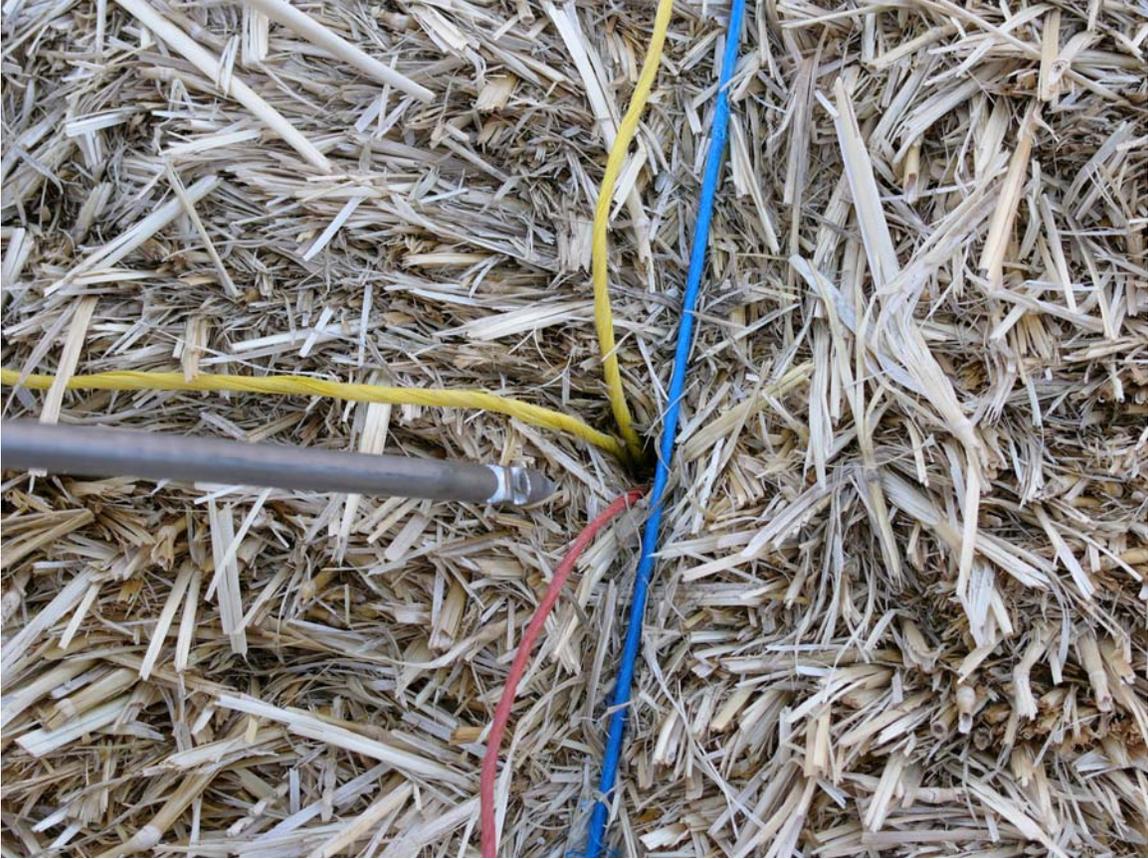
I use two bales as a table to retie on. The height is comfortable and the bales are readily available. This is a good use of the “not so perfect” bales that always end up in my barn! When I line up my bale for retying, I try to land the needle position so that when pushed fully through the bale it ends up in the space between the two bales (the table). If I cannot accomplish this, it will not hurt to push the needle into the “table.”

You can see here why it is important to use two different color twines. The red twine goes to the bottom of the picture and wraps that section of bale while the yellow twine ties the top section of the bale. When I turn this bale over to grab the twine on the bottom (that which was pushed through with the needle) I will know which twine goes which way. It’s very frustrating to retie a bale only to find that the twines got crossed and the two new bales are tied together. This method helps avoid that. Be sure not to twist the needle as you plunge it through the bale.

Notice that the twine is placed with the needle on the inside of the original twine. This is mostly important if building a post and beam structure as placing the new twine outside the original lines will only reduce the amount of bale that can be notched without risking hitting twine. By keeping the twine to the inside, I can be sure to leave myself enough room for notching.



Once the needle is all the way through, the twines will be tight to the needle and through the bottom of the bale.



Pull the needle back through the top of the bale and the twine will be left in place. You do not have to turn the bale over to hold the twine while you pull the needle out. The friction of the straw will hold the twine in place and the notches are designed to release the twine in place. Keep in mind that if you pull back on the needle before the twine is all the way through the bale, you will “let go” of the twine prematurely and you will need to start over. Be sure the needle is all the way through the bale before you pull it out.

## Tying a Miller's Knot



With the new twine in place through and around the bale, you will need to tie a Miller's Knot to secure the new sections of bales. Hold the end of the twine that was plunged through the bale in your right hand and fold it back over the top of your hand as shown above. This piece of twine will stay pinched in your right hand and will not change position until the very end when tightening the entire knot down.



Use your left hand to lay the end of the twine that was wrapped around the bale parallel to the first piece of twine in your right hand.



Pinch the two pieces of twine together and twist them counter-clockwise around themselves so that the piece from your left hand is now facing 180 degrees away from the end that is in your right hand. In other words, the two ends of the twine should no longer be pointed the same direction, but rather should be facing away from each other. Be sure to keep track of which twine is which. Remember that the twine that was originally in your right hand should stay in that hand throughout the creation of this knot.



While holding the twine in the twisted position so that the ends are facing away from each other, pass the twine that was wrapped around the bale and originally placed in your left hand over the top of the main branch of that run of twine. In this way, you are passing the loose end of the twine from your left hand over the portion of that twine that is running around the bale.



Now pass the loose end of the twine over the main branch of the twine running the opposite direction (the piece plunged through the bale). Remember that the loose end of this piece is still in your right hand!



After wrapping the loose end of the twine over the second part of the main twine branches, pull it up underneath the main branch of twine that was plunged into the bale to make a loop as shown above. Do not pull the entire piece of twine through the hole as that will make cinching the knot tight very difficult.



Pull the whole assembly tight enough to hold itself together. **DO NOT** fully tighten the knot at this time as you need to use a special pull to fully tighten the knot. Once this knot is tightened most of the way, it is very difficult to retighten or loosen, so you need to get it right on the first pull.



Finally the piece of twine in your right hand gets its day of glory! Use your left hand to hold the main branch of twine behind the knot so that the whole thing doesn't slide while you tighten the bale. Use your right hand to pull hard on the piece you have been holding there. This will tighten the twine down on the bale. Pull until you are satisfied with the degree of tightness on the bale. It is likely you will tighten the bale further than the original baling machine did!



Once the knot is tight, cut off the extra tails of twine. Tie another Miller's Knot on the other side of the bale and then cut the original pieces of twine right behind the machine made knot. You can reuse the twine from this cut bale to tie off small sections of bales in the future.

## Tying the Second Half of the Bale



Rather than measuring the bale again or measuring both edges of the bale for the same measurement, you can use the needle and the existing retied hole to mark the location of the next knot. Start at the dent created by the newly tied twine on the side of the bale you just retied. Hold the loaded needle in line with the dent (the place where the new twines enter the bale will be marked with a dent from the strength of the retying).

Over time you will find that it is easiest to plunge both sides of the bale in before you turn the bale over. That way you can retie all of the pieces at the same time and only have to turn the bale over once.



Drag the needle back towards yourself along a line parallel with the end of the bale. Apply a little pressure to the top of the bale as you drag. This will allow the needle to push a bit into the surface of the bale.



Dragging from one knot to the other simplifies the process and helps identify the flake to which you are tying. A flake is the section of bale that is created when the baling machine plunges loose straw in to the chamber. If you tie on two different sides of a flake, you will end up with a lot of spill over at the end of the newly cut bales. Once you have located the plunge spot for the second set of knots, push the needle into the bale and repeat the retying process outlined above.



With all sections of the bale retied, cut the original twine to free the new bales. I like to cut right at the original knot so I can use the old twine to retie the short sections of the new bales. This is a good use of materials and cuts back on jobsite waste. Note that this bale has some water damage and would never be used in a building. It is used here for teaching purposes only and found a wonderful home in my wife's garden!



With the right baling needle, you will spend less time messing with bales and will have more time for more relaxing adventures. After all, isn't that what it's all about? Happy Baling!