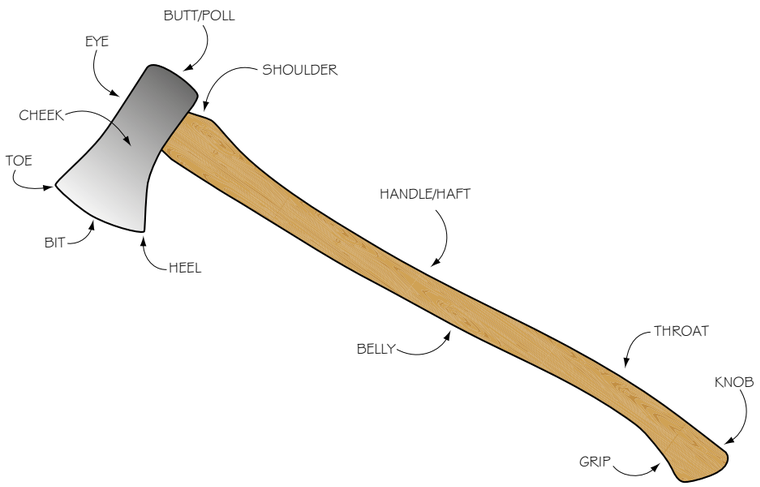
Making a Felling axe

Michael T Collins gives us a slice of timber-felling history while making a new axe handle

Humans have been using hand-held, rudimentary stone implements for some 2.5 million years, but it wasn't until around 11,000 years ago that humans began to develop their tool production skills. Instead of simple, cone-shaped chipped stones, tools became highly polished axe-shaped implements, ideal for a hunter-gatherer life style. This was the beginning of the Stone Age, the period in human history that marks the advent of tool production. The name comes from the fact that most of the period's cutting tools are made from stone. ➤

This stone axe, from the Neolithic period, has been in my family for several generations – how we acquired it is a mystery

PHOTOGRAPHS BY MICHAEL T COLLINS



Here you can see the parts of a traditional 4lb, 36in North American felling axe.

A felling axe cuts across the grain of wood, as in the felling of trees. The 'bit' of a felling axe needs to be very sharp to be able to efficiently cut the fibres.

It is such a graceful design, from the neck following the elegant lines down to the toe. When the first settlers brought their axes to the New World, they were a slightly different design, and by the time Halifax in Nova Scotia was founded in 1749, the axe of the North American continent had acquired its own characteristics. It is said that the reason for the change was Governor Cornwallis, who was concerned with the very slow progress that had been made in tree felling by his settlers with their European axes. To speed up the development, he started to employ men from Massachusetts with their American axes because they were much quicker and more efficient.

Growing up in the scouting movement in the UK, camp was learning one axe skill development after another, chopping firewood and tent pegs being the primary skills learned, but other, less useful things were taught as well, such as lighting a match by splitting the head with an axe – a task that I occasionally achieved more through sheer luck than any skill. I don't remember ever not having an axe and, after we moved to the US, there were plenty of opportunities to swing one…

My trusty axe head snapped off last week – the neck was beginning to show signs of wear, the duct tape was proving useless and I finished it off with a misplaced swing that caught the neck on a piece of hard oak. So, I thought it time to make a new handle.

Removing the old head

First remove the old head. The easiest way that I know of is to burn it off the neck in a fire. However, it's important to bury the cutting edge of the axe in the earth first so that the temper of the blade isn't ruined.

Most axe handles are made from straight-grained hickory (US) and ash (UK). The first step is to source the straightest-grained wood you can find. You want the grain to run the longest length through the handle – this will give the strongest handle.

2-3 Layout the axe profile from the side and from the axe edge.

4 Then, using a bandsaw, remove the bulk of the waste.

Fine tuning

5 With a spokeshave, begin the process of paring away everything that isn't an axe handle shape to reveal the handle inside. I used a couple of different spokeshaves – flat and rounded bottom – that allowed for greater ease in contouring the handles curves.

6 Fine-tune the grip and knob of the axe.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This is a big handle for a big axe, but there are many patterns of axe and axe head designed to do different jobs. You can adapt the techniques shown here to suit whatever axe you own. It helps to have the original handle to copy from, but there are enough images online to find a suitable shape if you only have the head of the axe to work with.

7 To make things easier, I ran a pencil line down the centre of the back and front of the handle and about 10mm along the edges. This gave me the desired oval profile.

8 Using a fine and coarse rasp to remove more of the waste and fine tune the profile further.

9 You may wish to fine-tune the profile further by using a card scraper.

10 Once the handle is pretty much brought down to final shape and size, it is time to work on the 'neck'. Locate the position of the 'head' and 'eye'. The axe head is positioned all the way to the front of the handle – this gives the neck the greatest strength.

11 Now outline the top of the neck through the eye. This needs to be a tight fit, so use a sharp pencil for accuracy.

12 Bring the shoulders down to the lines that you drew in the steps above. At this stage keep paring away until you are almost at the line. Use a rasp to help in this process.

13 Test-fit the head – the end result of burning the head off the old axe was the nice deposit of carbon, which was easily seen when fitting the handle to the head. But rubbing the inside of the eye with pencil lead would have worked just as well. Work at removing the carbon deposit, a little at a time and test again. Repeat this process until the eye of the head snugly fits the end of the handle.

14 Then, holding the handle, with the head down, strike the knob of the handle. Gravity and momentum will start to drive the head on to the handle. Do this a few times, each time observing the wood of the neck to see if more needs to be removed. The aim is to have the axe head seated well on the handle's shoulder and the eye completely filled with wood. ➤


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15 Remove the head of the axe by driving a dowel in through the eye. You will be able to see all the areas that need final cleaning up and remove with sandpaper. You will also see wood that has been 'bruised' near the shoulder. Saw a kerf into the end of the axe so that it goes about two-thirds the depth of the neck.

16 I like to leave about 6mm of wood above the neck once the head is seated on the shoulders. Now repeat the process of hitting the knob of the handle, and allow the head to seat firmly on the shoulders.

17 Take a wedge that is as hard as the handle and, with a mallet, pound it into the kerf. The wedge will force the neck to fill the whole of the eye of the head and will also cause the top of the neck to slightly mushroom over. If you find that the neck does not fill the eye along its length, a steel wedge can be driven in across the narrowest section of the eye.

18 To protect the top of the neck, simply chamfer the end grain. If you want, you can seal the top of the neck with boiled linseed oil.


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19 Chamfer the knob of the axe. This will remove any splintering caused by the head being seated.

20 Lastly, apply a good finish. I like to apply the same finish that I use for my workbench – a mixture of beeswax, boiled linseed oil and turpentine. This mixture will protect the handle and at the same time give some friction to the touch. Clean all the carbon deposit off the head with some emery paper.

21 Now all I needed to do was sharpen the axe and chop all that wood before the winter sets in.

22 The finished axe handle looking mighty fine. ■