Chapter 10—Hanging an Ax

Hanging an ax is the process of fitting the head to the handle. Some axmen hang the ax after shaping the handle but before sharpening the head; they use the handle to help secure the ax to the workbench. Other axmen prefer to sharpen the head before fitting it to the handle. Either method works fine.

When fitting an ax head to its handle, take the time to do the job properly. Joining an ax head to a handle is a key step in making a safe and efficient ax.

Properly Fitting an Ax Head to Its Handle

A properly hung ax must meet three key criteria:

- The head must securely affix to the handle.
- The head must be in line with the handle.
- The angle of the head must align vertically with the handle.

The ax head must securely affix to the handle. An ill-fitting head is dangerous; it could become loose and separate from the handle, potentially injuring you or another person. The handle must fit the eye tightly and you must secure it with a wooden wedge. Competition choppers, as well as many experienced ax users, pin their ax heads through the handle (figure 10–1).

Figure 10–1—An ax head pinned to a handle.

You can pin the head by drilling a small hole through the head and handle and driving a roll pin through the hole (figure 10–2). Typical roll pin sizes are 5⁄32 inch or 3⁄16 inch. Place the pin about one-fifth of the way up from the bottom of the head, centered on the handle and below the wooden wedge in the kerf. This secures the head to the handle and prevents the head from flying off, even if it is loose. Forest Service employees should pin their ax heads to their handles. Pinning an ax head is generally the last step in hanging an ax.

Figure 10–2—Using a center punch to mark an ax head to insert a pin (right), drilling a small hole through the ax head and handle (below and facing page, top), and driving a roll pin through the hole (facing page, bottom).

The ax head must be in line with the ax handle. Assuming the handle is not bent or warped, you can sight directly down the cutting edge of the ax to ensure that it lines up with the center of the knob at the end of the ax handle (figure 10–3). Properly aligning the head with the handle is important for accuracy when chopping.

Vertical alignment helps prevent over reaching or under reaching while chopping and ensures the head is not hung too open or too closed. This enables the entire length of the cutting edge to efficiently sever fibers. Using a flat surface, such as a workbench, place the ax so that only the cutting edge and knob touch the surface. A properly aligned ax will touch the workbench somewhere between the midsection of the cutting edge or slightly lower on the heel of the cutting edge's curvature, as shown in figure 10–4.

Figure 10–3—Sighting down the midpoint of the heel of the cutting edge to ensure that it aligns with the center of the knob on the handle.

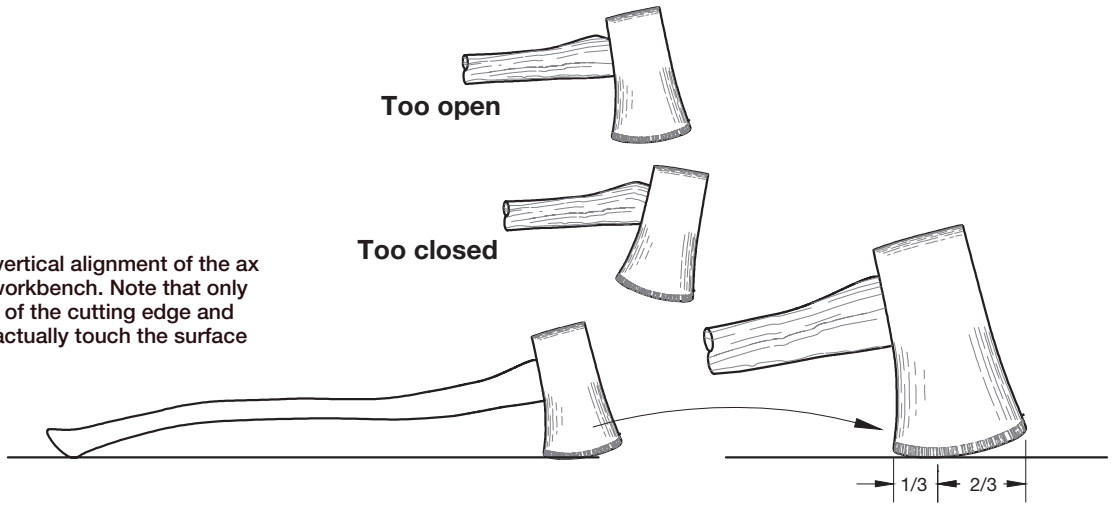


Figure 10–4—Ensuring vertical alignment of the ax by placing the ax on a workbench. Note that only the midpoint of the heel of the cutting edge and the knob of the handle actually touch the surface of the workbench.

Proper hang for a large, single-bit ax

Steps for Hanging an Ax

Joining an ax head to a handle is relatively easy, but it is not necessarily a quick procedure. You may have to fit, remove, adjust, and refit the handle numerous times to achieve a proper fit. If necessary, use a drift pin (see figure 9–3) to help remove the handle from the ax head. Using a drift pin to ease the handle out protects both the ax head and handle from damage. Using a simple wooden jig to hold the ax head steady makes the job easier and helps protect the head from damage (figure 10–5). Never pound an ax head with a metal hammer or mallet to loosen or remove the head from the handle.

Before fitting the handle, position it on top of or alongside the ax head to get an idea of how much excess handle will protrude from the top. Place the ax head at the shoulder of the handle (figure 10–6). Cut some wood off the top of the handle if several inches or more protrude above the head, but be careful not to remove too much. You want at least ½ inch of wood to stick out above the top of the ax head after hanging the ax. To end up with ½ inch of wood, start with 1 to 1½ inches to allow for some damage to the top of the handle when you secure the ax head.

Figure 10–5—A jig, drift, and wooden mallet.

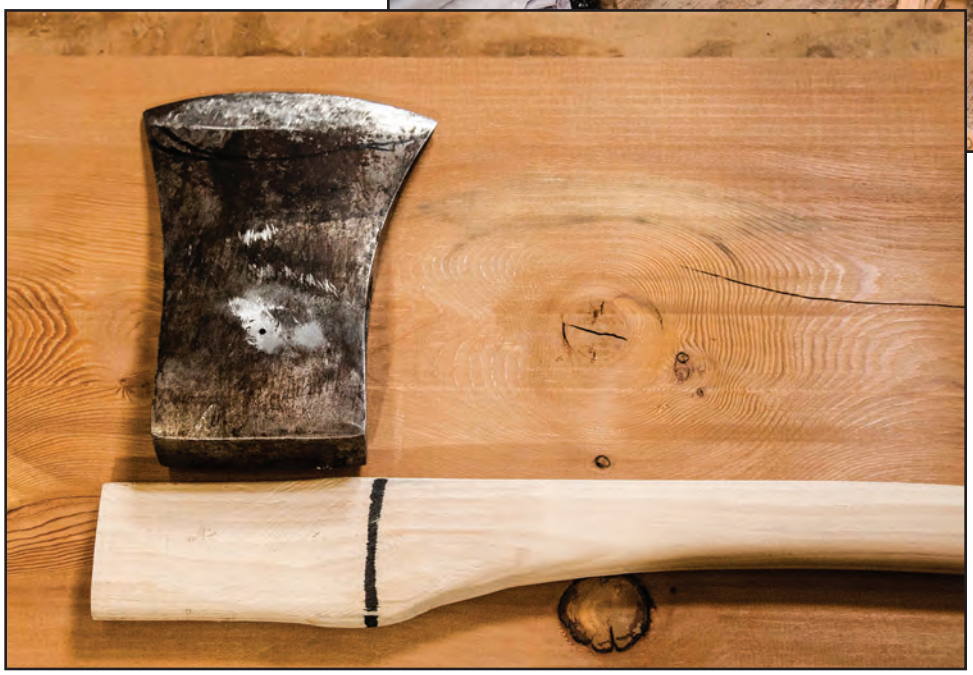
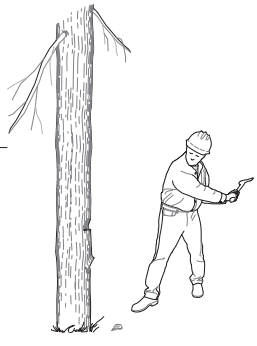


Figure 10–6—An ax head resting beside the shoulder of a handle.



Fit the handle into the bottom of the ax head eye for a trial fit. Some ax head patterns are relatively symmetrical. If you are unsure which is the top and which is the bottom of the ax head, look at the eye; it is slightly larger at the top to accept the wedge (figure 10–7). However, there are exceptions. For example, the eye of the full peeling ax, which is fully reversible, is symmetrical all the way through.

You may have to use a rasp to remove some wood to allow the ax handle to seat into the eye (figure 10–8). Again, be careful not to remove too much wood.

When shaping the section of the handle that fits into the eye, you must remove enough wood to properly align and fit the handle. The fit may actually be slightly loose. At this stage, being able to insert and

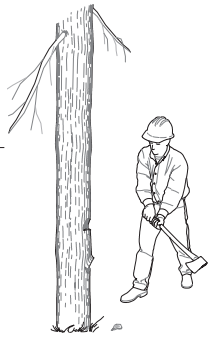
Figure 10–7—Looking through the top eye of an ax head. Note that the top of the eye is slightly larger than the bottom to allow for the placement of the wedge.

Figure 10–8—Using a rasp to remove wood from an ax handle.

remove the handle with minimal effort is acceptable and makes it easier to align the head properly. The goal is to achieve proper alignment and fit before the final step, which is driving the wedge into the kerf (slot) at the top of the handle to tighten and secure the head to the handle. As noted earlier, you can pin the head to the handle to ensure that the head does not fly off if it becomes loose. The handle must be secure and fit tightly into the head at the final fitting.

Once the ax head begins to accept the handle, use a wooden or rubber mallet (or a dead-blow hammer) to try seating the handle. Strike the handle on the heel to draw the head up onto the handle (figure 10–9). Strike with enough force to gain movement, but not so much force that you cannot easily remove the head.

Figure 10–9—Strike the heel of the ax handle to draw the ax head onto the handle. Note that the fawn's foot on this handle has a flat bottom.



The bottom of the heel on double-bit handles is flat. The bottom of the heel on some single-bit handles may be at an angle. Striking a handle at an angle could damage the handle's edges. It is best to cut about ½ inch off the bottom of the sloping handle before seating the head to provide a flat place to strike (figure 10–10).

Figure 10–10—Repairing a curved, single-bit handle with a damaged heel (left) by removing about ½ inch of the handle (below) and smoothing the heel using sandpaper (facing page, top).

Continue rasping and seating the handle until the head fits snuggly on the shoulder. Each time you place the ax head, sight down the cutting edge to ensure that it stays laterally aligned with the knob of the handle (see figure 10–3). If the alignment is to the right, remove wood from the right side of the handle that sits inside the eye (figure 10–11). If the alignment is to the left, remove wood from the left side of the handle that sits inside the eye. To align the handle, you may have to remove wood equally from both sides. Note: do not remove wood from the entire length of the handle, but only from the portion that sits inside the eye.

Figure 10–11—Ensuring the lateral alignment of the ax head with the ax handle by removing wood from the handle where it sits inside the ax head eye.

Along with checking the lateral alignment between the cutting edge and the center of the knob on the handle, pay attention to the vertical alignment between the cutting edge and the knob of the handle (see figure 10–4). To adjust the angle at which the cutting edge strikes, remove wood from either the leading edge or back edge of the handle where it sits inside the eye. If the lower portion of the cutting edge rests on the counter surface, remove wood from the leading edge (figure 10–12). If the upper portion of the cutting edge rests on the counter surface, remove wood from the back edge. Note: do not remove wood from the entire length of the handle, but only from the portion that sits inside the eye. Be careful not to remove too much wood. A rasp may be too aggressive for this procedure and may damage the edges of the handle. Use a scraper, knife, or sandpaper.

When you are satisfied with the fit between the ax head and handle, you are ready to join them together and secure them. Use a wedge that is about 3 inches long, depending on the depth of the ax eye. The wedge should reach into the handle kerf about one-half to three-quarters of the depth of the head (figure 10–13). A wedge this deep allows sufficient depth for holding power and allows you to saw off any portion of

Figure 10–12—Removing wood from the leading edge of the handle where it sits inside the eye of the ax head.

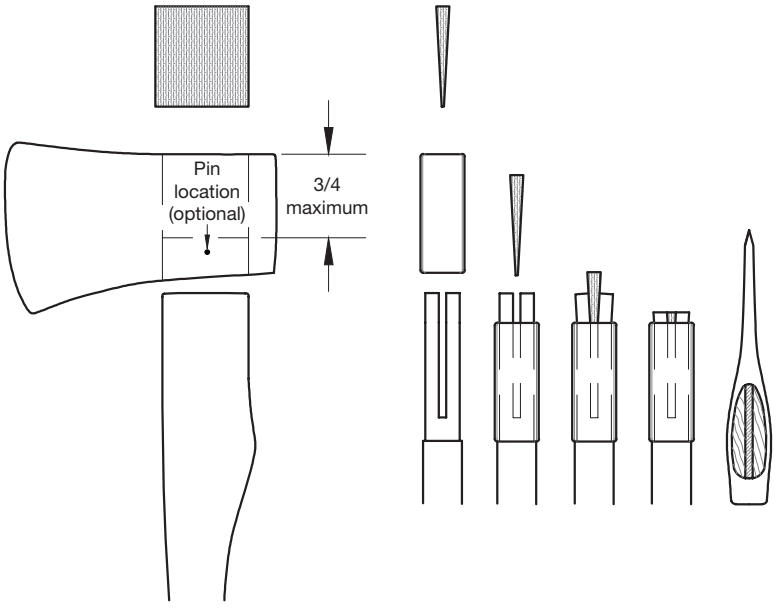


Figure 10–13—The proper depth of the wedge in the kerf.

the top of the wedge that you damage while fitting the head and handle. You can mark the handle to indicate the depth of the wedge (figure 10–14). Before joining the head and handle together, check the kerf on top of the handle. Is the kerf deep enough to accept the wooden wedge? If necessary, use a handsaw to deepen the wedge kerf to accept a wedge (figure 10–15).

Seat the handle into the ax head for the final time using the same process you used to fit the handle to the head (that is, strike firmly with a wooden or rubber mallet from the bottom of the ax handle to draw the head up). The ax head should rest against the top of the handle's shoulder.

Figure 10–14—Marking the depth of the wedge to indicate how far it will reach into the kerf.

Figure 10–15—Using a handsaw to make the ax handle kerf deeper.

Ideally, ¾ to 1 inch of the handle should protrude above the top of the eye. Using a fine-toothed saw, trim only enough off the top of the handle to create a clean, flat area for inserting the wedge. Use a good quality, properly sized wooden wedge to fit the handle. The wedge should extend the length of the ax head eye from front to back and about three quarters of the ax head depth from top to bottom.

Before driving in the wedge, coat its sides with dipropylene glycol (commonly known by the brand name "Swell-Lock"). Dipropylene glycol is a chemical that causes the wooden wedge to expand for a tighter fit. If you do not have dipropylene glycol, the bare wood is fine. Do not use linseed oil, which may act as a lubricant and cause the wedge to slip out of the kerf.

Drive the wooden wedge firmly and evenly into the kerf as far as it will go (figure 10–16). The wedge expands this top portion of the handle to grip the top sides of the eye (figure 10–17). This provides added

Figure 10–16—Using a wooden mallet to drive the wedge into the ax handle kerf.

Figure 10–17—The wedge expands the top portion of the ax handle to grip the sides of the ax head eye.

protection to prevent the head from becoming loose. If the head does become loose, you can simply drive the wooden wedge farther down. Saw the excess wedge off, but do not saw the top of the handle flush with the ax head. Leave about ¼ to ½ inch of handle protruding from the top of the ax head (figure 10–18).

Do not use metal crosstie wedges to secure the head. Although metal crosstie wedges are common in many commercially available axes, they crush wood fibers and could cause the handle to split. They can also make removing the handle more difficult.

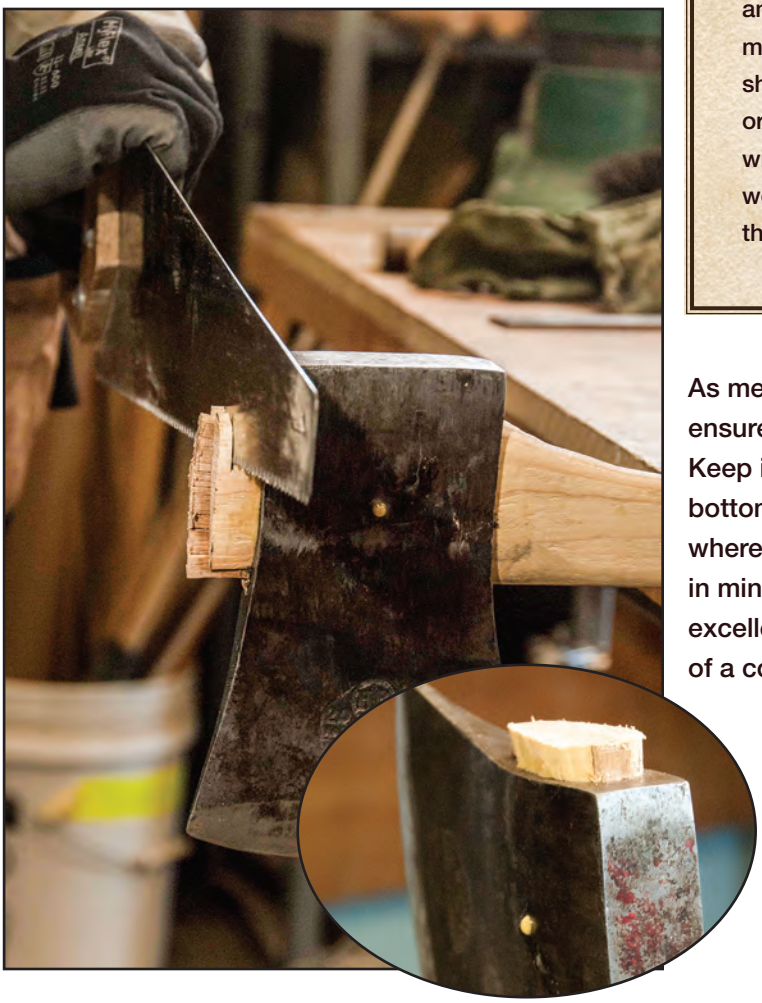
The majority of ax manufacturers today cut the handles flush with the top of the ax head, but leaving a little bit of handle protruding provides added security for keeping the head tight.

The Ax Head Wedge

Wedges used for securing an ax head to a handle come in many different styles, shapes, and sizes. Not all wedges are alike; some are metal, some are synthetic, some are softwood and others are hardwood, some have ridged sides, some are single tapered and others are double tapered.

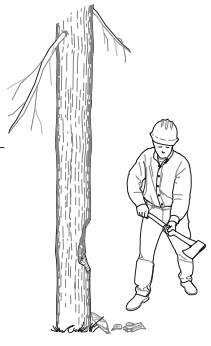
The author only uses double-tapered wooden wedges and prefers softwood instead of hardwood wedges because softwood wedges more readily expand and contract with the weather and relative humidity, keeping the ax head and handle tight. However, hardwood wedges are also acceptable.

You can shape and size wooden wedges to fit an ax head. Synthetic or metal wedges are not meant to be reshaped and many of them are too short to properly secure an ax head. Synthetic or metal wedges also do not expand or contract with changes in the weather or humidity. The wedge should extend one-half to three-quarters the depth of the ax head.



As mentioned earlier, pinning is the best way to ensure that an ax head stays secured to its handle. Keep in mind that the best location for a pin is in the bottom fifth of the head, below the wedge and kerf, where you can place the pin in solid wood. Also keep in mind that pinning the head to the handle is an excellent idea for a work ax, but will lower the value of a collectable ax.

Figure 10–18—Sawing off the top of the ax handle and wedge. Retain about ¼ to ½ inch of handle above the ax head to provide added security for keeping the ax head tight (inset).



To Crosstie or Not to Crosstie?

The author does not use the small metal crosstie wedges that come standard with most store-bought axes. These crosstie wedges serve little purpose in a properly fitted handle. Many people believe that crosstie wedges help spread out the wood of the handle from the front to the back of the ax eye. Being short and narrow, crosstie wedges do not have a lot of wedging power. Their primary purpose is to hold the main wedge in place. Using crosstie wedges has potential drawbacks. You place the main kerf wedge into a slot cut to the proper depth. That wedge spreads out the handle in the ax head eye. It should not split the handle when driven to its seated depth. When you use metal crosstie wedges, you drive them directly into the wood and not into a precut slot. The metal crosstie wedges crush the wood fibers and force them apart, which could cause the wooden wedge, and possibly the handle, to develop splits or cracks (figure 10–19).

Think about what happens to a round of firewood when you drive a metal wedge in using a maul. Driving in a crosstie wedge is essentially the same thing, but on a smaller scale. Another common practice is to use two metal crosstie wedges in the ax handle. This is counterproductive because the wood fibers between the crosstie wedges are compressed.

Using crosstie wedges also makes it more difficult to remove and replace the ax handle. If you use a crosstie wedge, round, metal ferrules may be best because they evenly distribute forces in a circular pattern across the handle.

In a field situation, if your ax head becomes loose and you must use metal crosstie wedges, drive one along each side of the wooden wedge, not across it. These wedges will be in the same kerf as the wooden wedge and are less likely to split the handle.

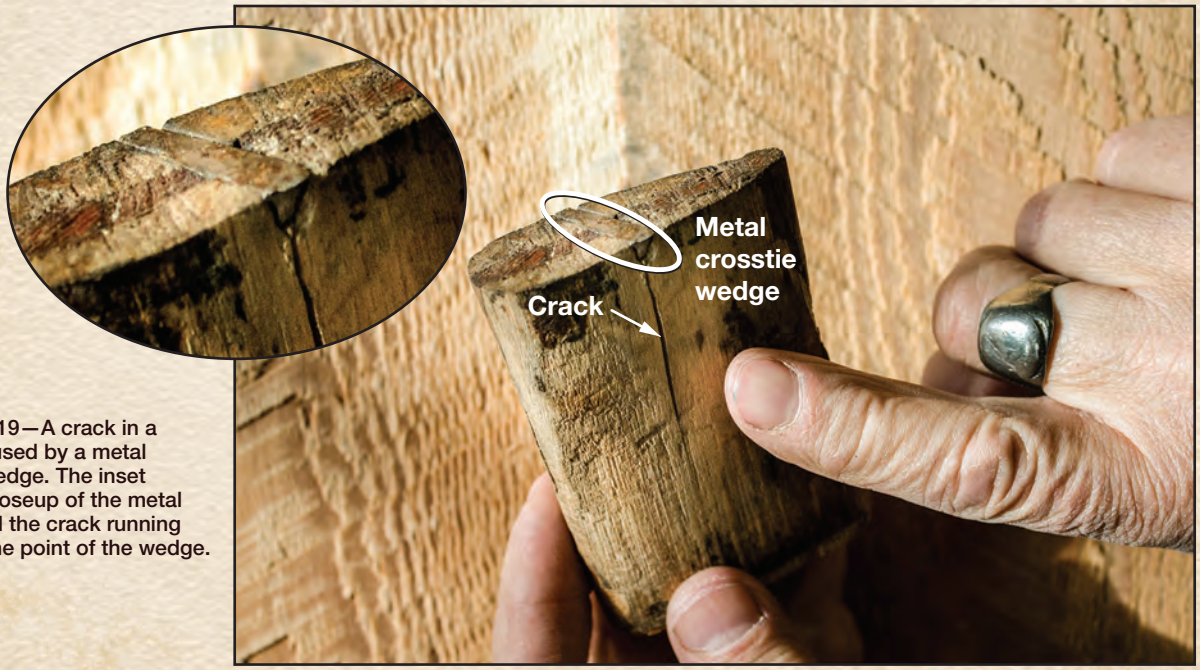


Figure 10–19—A crack in a handle caused by a metal crosstie wedge. The inset shows a closeup of the metal wedge and the crack running out from the point of the wedge.

After hanging the handle and pinning the ax head, recoat the handle with boiled or raw linseed oil as the final step in finishing the handle (several thin coasts are preferable to one heavy coat). You can soak the handle, as described in the "Finishing an Ax Handle" section of chapter 9, or simply use a rag to rub oil into the handle. The ax head can be useful in both situations; you can use it to keep the handle from dropping too far into the oil in the PVC tube, or you can hold it while you wipe excess oil from the handle.