Cleaving

Cleaving is the technique we use to make the ship's wooden planks out of tree trunks by splitting logs lengthways. We use mallets to hammer wedges along the length of the tree trunk which splits the fibres of the log apart. This results in segments of wood which are then hewn down into smooth planks of varying lengths with axes and chisels.

The Anglo Saxons didn't use saws, and cleaving was the principal method of producing planks for the construction of ships and buildings during this period, until the pit saw was introduced in the twelfth century. Cleaving resulted in strong planks of wood, which were resistant to splitting and distortion; very important for ships which would inevitably be exposed to extreme weathering.

CLEAVING A LOG TO PRODUCE PLANKS FOR THE SHIP

Preparing the tree trunk

The planks are made from the long straight trunks of oak trees. We use green, freshly cut oak, which makes the wood softer for axes and chisels to cut through. Once a trunk has been felled, the ends of the trunk are trimmed square and the trunk is laid lengthways on the ground. Both sides of the log are wedged and supported off the ground to ensure that it is stable.

The cleaving begins
The cleaving begins by cutting a vertical notch into the flat end of the log using an axe and a mallet. This creates a space for the first of the wedges to be hammered into the end of the log.

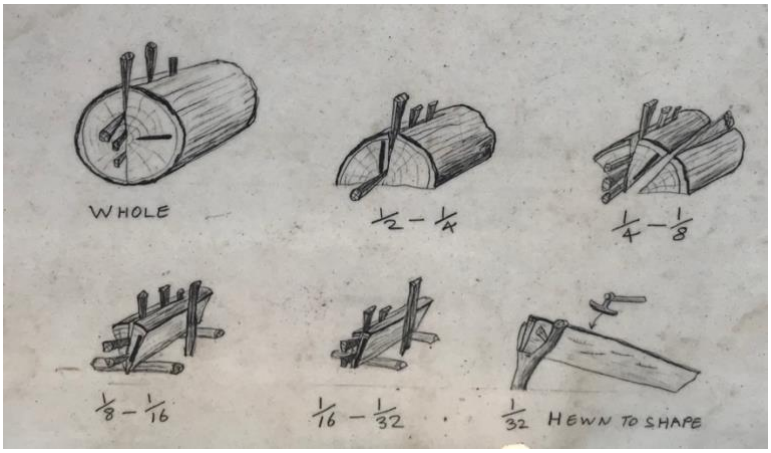
Thin wedges are hammered into the end of the log to open up a split
Using a wooden mallet, a thin seasoned oak or metal wedge is hammered into the notch in the end of the trunk. Additional wedges are then hammered into the end of the trunk, creating a row of wedges across the end of the trunk which will start to create a split along the top, or length, of the log.

Extending the split along the length of the log
More wedges are then hammered into the split that has begun to open up along the length of the log. The wedges are hammered in following the grain of the wood, encouraging the split to widen along the length of the log.

Keeping the log apart using thicker wooden wedges in the split along the length of the log
As the split opens and widens along the length of the log, the thin wedges come loose and are replaced by increasingly wide wooden wedges which help to keep the log apart. Metal wedges can be used at the leading end of the split, with the increasingly wider wooden wedges being used behind to keep pressure moving along the log, until the two halves of the log fall apart.

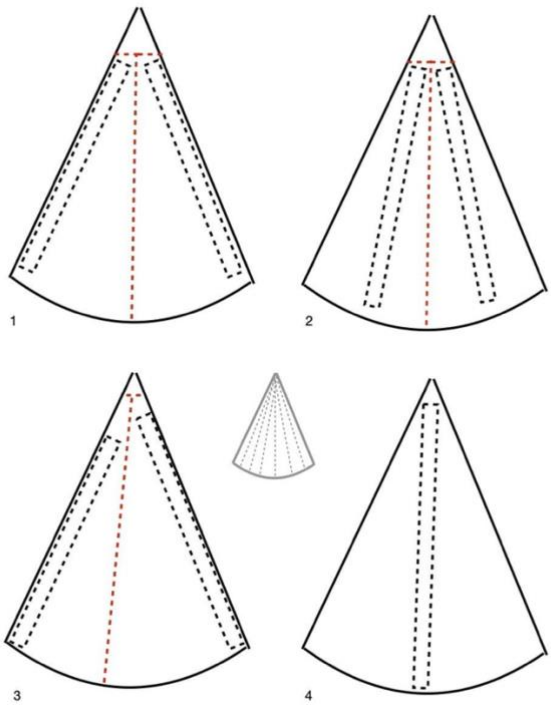
How many planks can be obtained from one tree trunk?

The initial cleaving results in two halves of a log, but the process can be repeated to give quarters, eighths, sixteenths, etc., depending on the size of the tree trunk, any imperfections in the wood and the desired size of the planks. The main limiting factors are the thickness, and more importantly, the width of plank required – each time a section is cleaved, available width is reduced.



Trimming the planks down to size

The cleaving leaves us with quite long pieces of wood with a triangular cross section, from which we need to produce smooth planks of wood which are approximately one inch thick. We use axes to trim the excess wood to produce one, or possibly two, planks from each triangular section.



These images show the different ways of obtaining one or two planks from eighth sections. The black dashed lines indicate the possible plank positions, while the cleaving lines are shown in red.

Giving the planks a smooth finish

The roughly cleaved planks are hewn to shape with a tee-axe, which, due to its long blade and extremely sharp edges, is able to produce a smooth, scalloped finish to the wood.

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