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SAWMILLING OF WOOD



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Sawing - longitudinal cut

- longitudinal cut is a complex technological operation by which we process specified saw cuts by longitudinally dividing them into lumber
- the longitudinal cut is made on the main sawing machines





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Sawing - longitudinal cut

Division:

according to the number of saw tools working simultaneously in the saw machine, we distinguish two basic types of cut:

- individual
- multiple

according to the direction of the annual rings, we distinguish the cut:

- radial
- tangential
- semi-radial

according to the position of the longitudinal axis of the cutout:

- parallel to the axis of the cutout
- parallel to the cutout surface



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Sawing - longitudinal cut

Individual cut:

During individual cutting, one saw tool divides the cut-out lengthwise - one piece of lumber is gradually cut from the cut-out.

It is performed on log band saws, log circular saws and horizontal frame saws





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Sawing - longitudinal cut

Multiple cut:

In a group cut, a group of saw tools divides the cutout lengthwise at the same time.

The set of saw tools is created according to the necessary dimensions of the lumber.

It is carried out on frame saws, log multi-disc saws and sawmill aggregates.





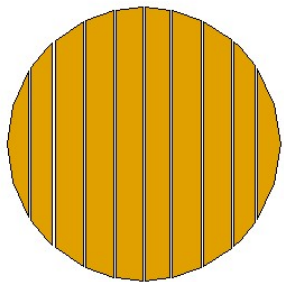
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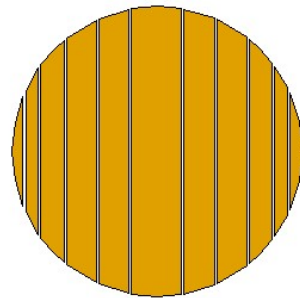
Basic methods of cutting - Sharp cutting

Principle:

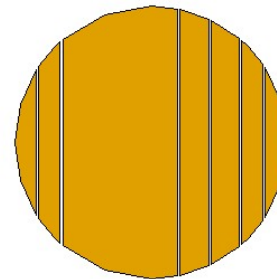
with one pass through the main machine (frame saw), we divide the cutouts into
lumber of the required thickness



sharp cut - even
symmetrical



Sharp cut - odd
symmetrical



sharp cut-
asymmetric



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Basic methods of cutting - Sharp cutting

It can be done by direct production of unplastered lumber (especially for hardwood trees) or with additional plastering.

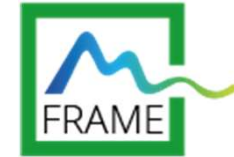
Cutting without plastering provides a higher quantitative yield.

By sawing with plastering, lumber is produced from lower-quality raw materials in order to eliminate cutting errors, especially in the edge zone, the disadvantage is more expensive production without a fundamental effect on the yield, and a large dispersion of widths is created.

Due to the larger number of saw blades, this cut requires lower displacements and leads to a lower stability of the cut (it does not lie in the cut as firmly as a prism)



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Basic methods of cutting - Prism cutting

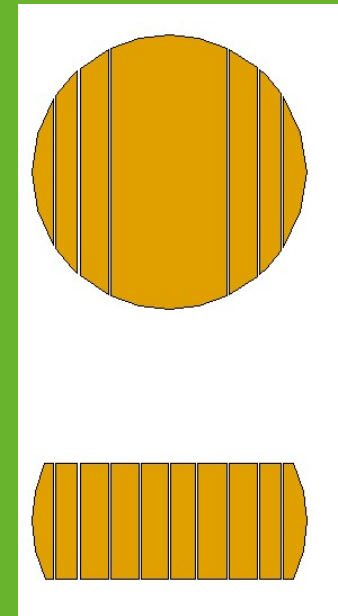
Prism cutting is the most used method of cutting softwood on a frame saw.

The first cut produces a prism and from the side a so-called converging side lumber (the height of the prism is therefore the future width of the lumber).

With the second cut, the prism is cut into lumber of the required thickness.

Advantages:

- Prismatic cutting allows you to get the maximum of dimensionally specified lumber.
- The advantage of this method of cutting is that the lumber has balanced quality features (separate side band from central band)





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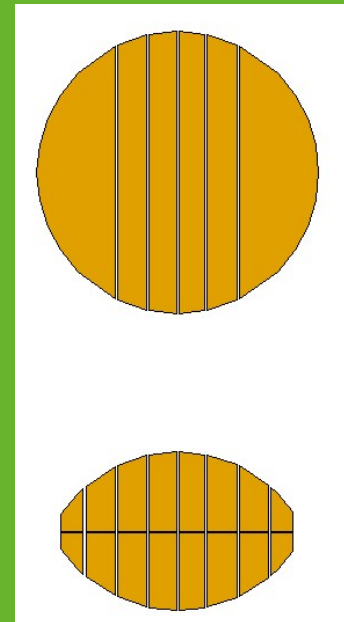


Basic methods of cutting – Segment cutting

It is used to increase the quality yield when processing hardwoods.

With a segmental cut, the cut is divided into two phases:

1. Phase - the cutout is divided by cutting two to three radial plates with a thickness of 25 to 45 mm from the central part => two segments are created.
2. Phase - segments are cut into radial and semi-radial lumber.





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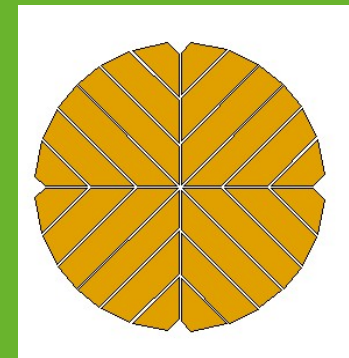
Special cutting methods - Quarter cutting method

The quarter cut is close to the theoretical cutting in the radial direction and gives the maximum number of radial sawn timber.

It is mainly used for high-quality cut-outs and for trees with visible pith canals (mirrors).

Advantages: when drying, the lumber does not break to the same extent as sawn lumber.

Disadvantages: requires a special clamping device.





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Special cutting methods - Moreau cutting method

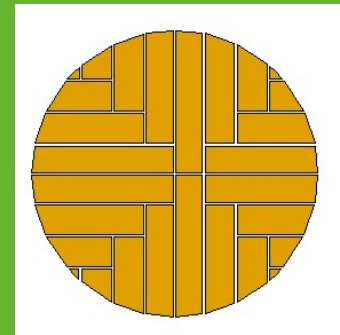
Each quarter is processed separately, in such a way that the boards are alternately cut one after the other, always from the other side.

The Moreau cut produces pulpless lumber.

Commonly used in France for cutting oak wood.

Advantages: reduces waste losses.

Disadvantages: requires difficult handling when constantly turning and clamping the cutout.





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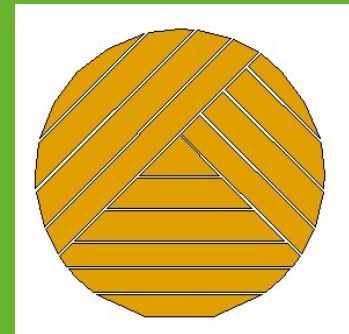
Special cutting methods - Cantabay cutting method

This method is mainly used when cutting exotic woods and rare woods (e.g. maple) and shows minimal losses during plastering.

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Obtaining wide lumber and favorable flaring - lumber of tangential surface.

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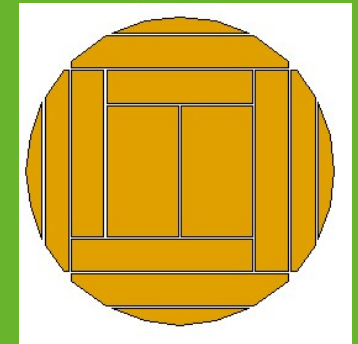


Special cutting methods - Circular cutting method

Side lumber is made from the side converging parts of the cutouts. The square cross-section prism is then divided into sharp-edged lumber by successive rotations of 90 degrees.

Advantages: obtaining sharp-edged lumber from the central part.

Disadvantages: a lot of work when turning and clamping the cutout.





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Horizontal log band saw



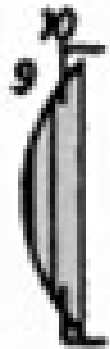
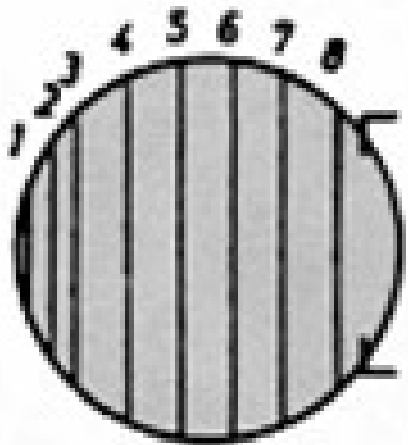


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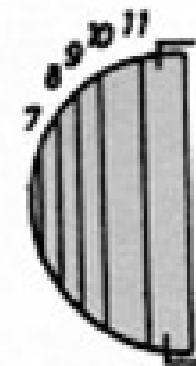
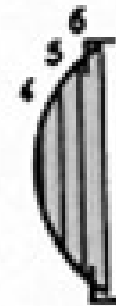
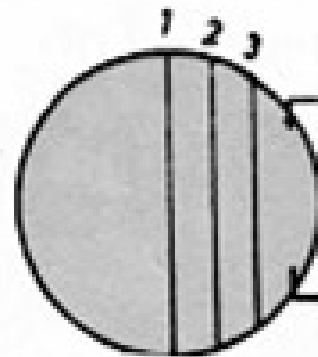


Log Band saw; Log Circular saw

Sharp cut



Sharp cut with
a halved cutout

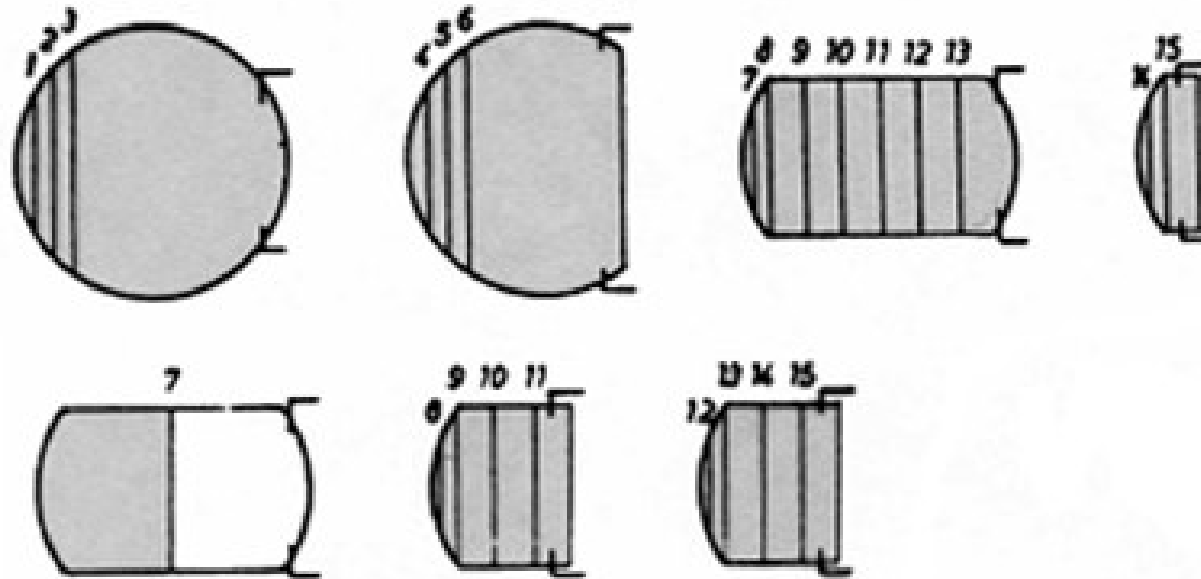




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Log Band saw; Log Circular saw



Prism cut - two variants

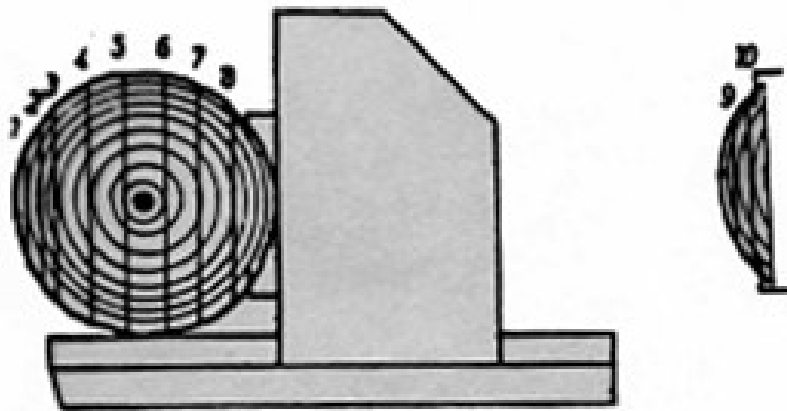


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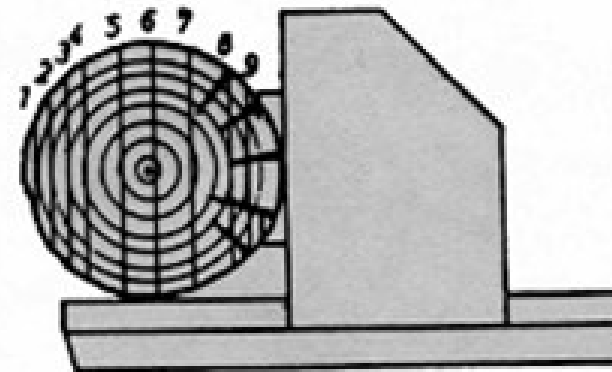


Log Band saw; Log Circular saw

Cut-out of pith



One-side defect



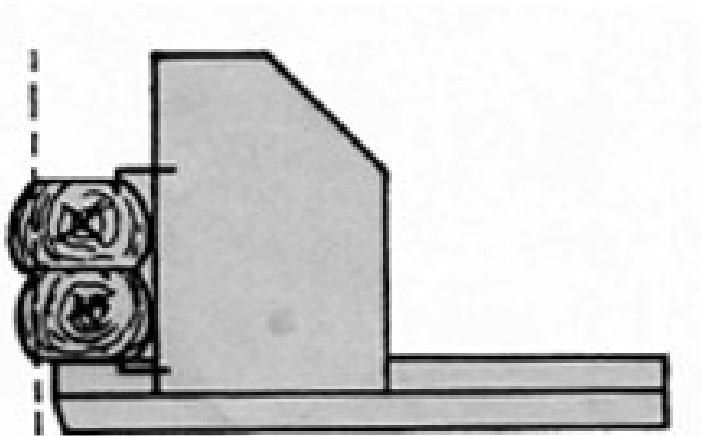


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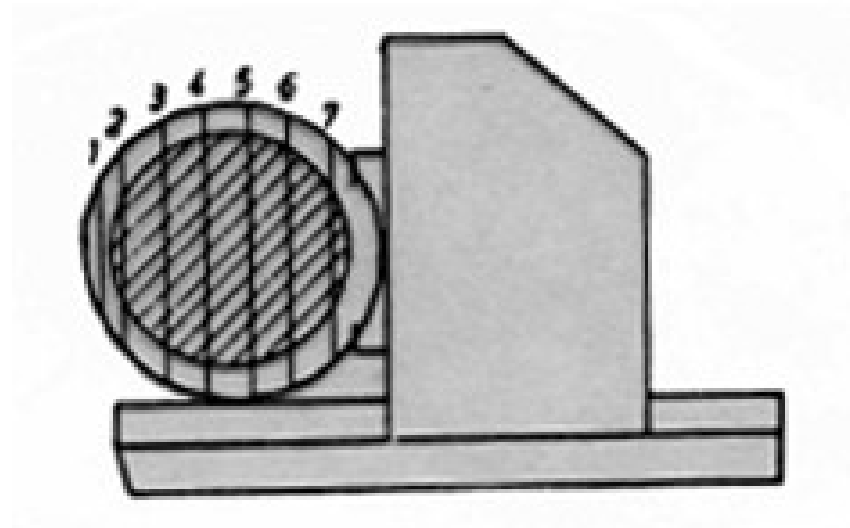


Log Band saw; Log Circular saw

Prizm cut variant



Heartwoods

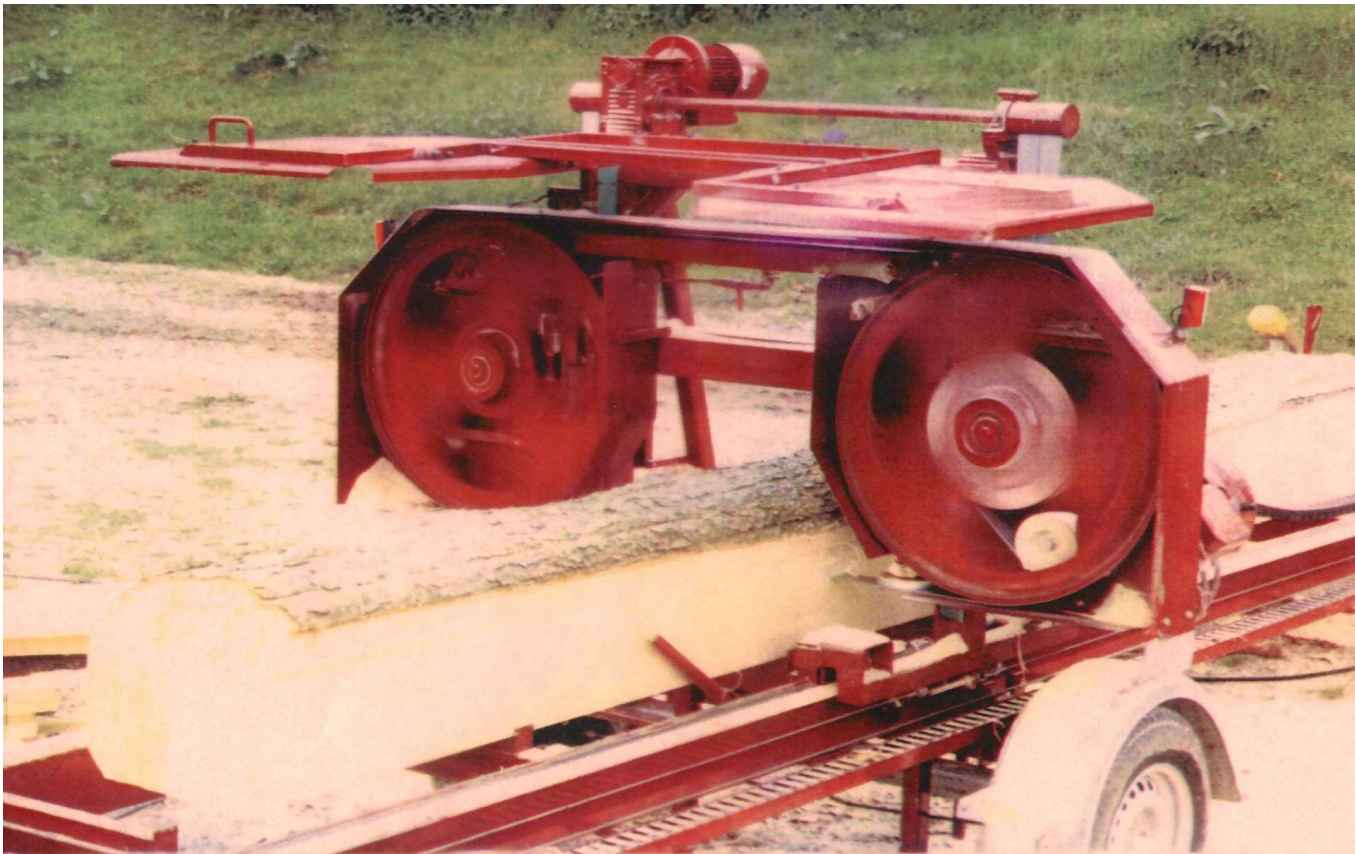




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Mobile horizontal log band saw – fixed table, feed of the cutting unit





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Stationary horizontal log band saw – fixed cutting unit, feeding device





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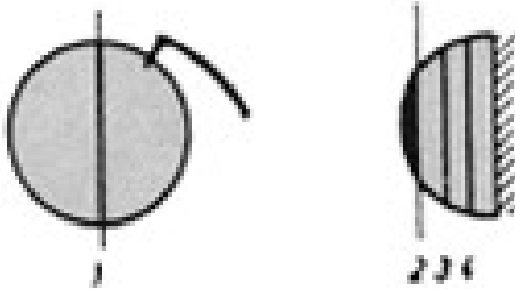


Log circular saw

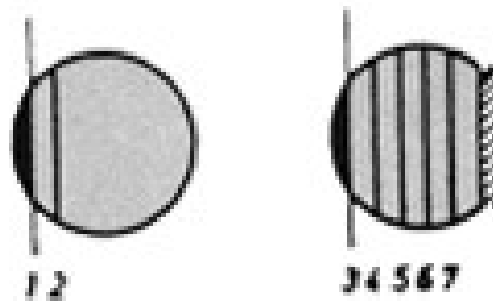
Cutting scheme:

Sharp cut

Variant 1



Variant 2





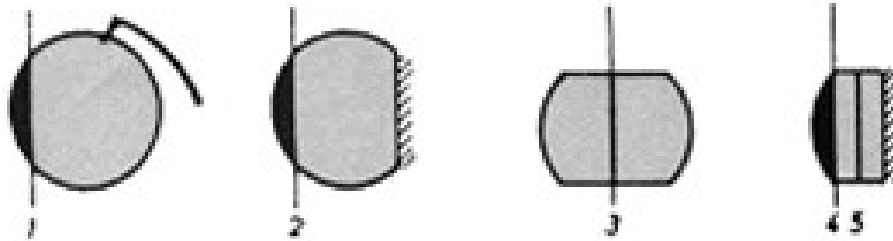
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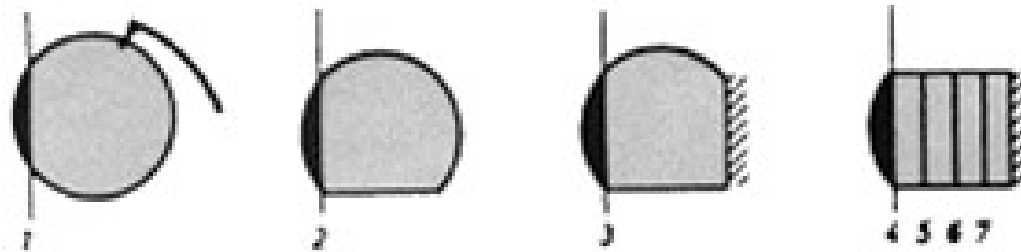
Log circular saw

Cutting scheme:

Prism cut



With prism halving

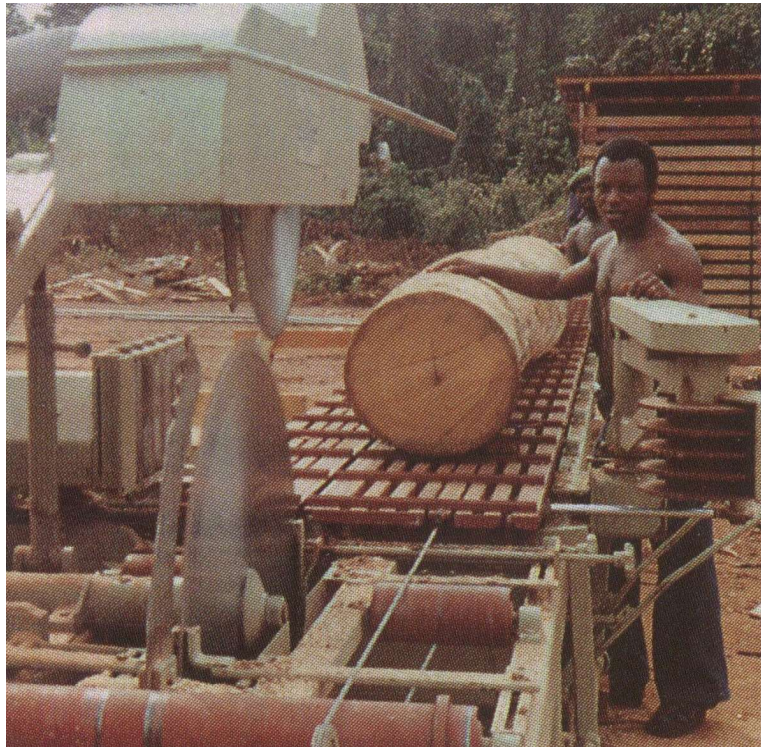




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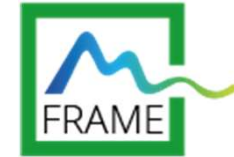
Log circular saw



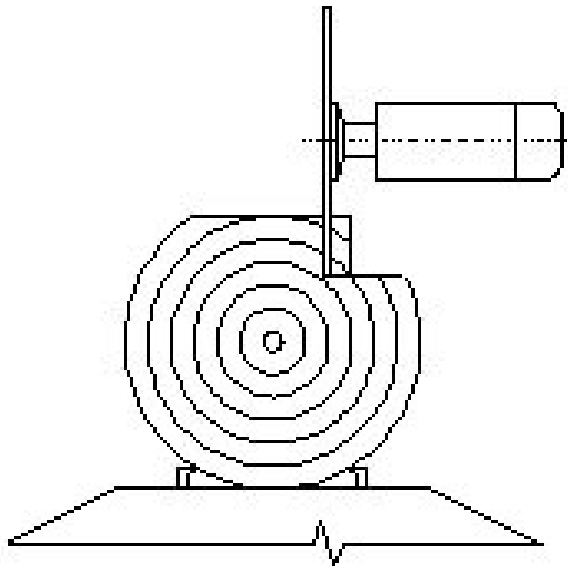
Dual circular saw:
for larger cutout diameters



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Log circular saw





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