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THE FELLING BENCH

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Figure 1. The Felling Bench

INTRODUCTION

The felling bench is primarily a work saving device developed for pine fallers working an outrow* system in 1st and 2nd production thinnings in South Australia.

The bench was developed by Mr B. Dowling of the Mt. Gambier Logging Industries Training Team. All pine fallers working in this area are at present being 'retrained', registered, and where applicable, provided with a bench and shown how to use it to its best advantage.

The bench was initially designed to reduce the heavy lifting work necessary to 'present' wood for forwarder extraction. Essentially, its main functions are:

1. To act as a pivot for moving and stockpiling logs.
2. To support logs off the ground to facilitate trimming.

Use of the bench makes the entire operation of processing the tree once it is felled, a lot safer, faster, and physically less demanding.

This has led to an integrated work method which is being taught to pine fallers through a three week course. The basis of this method

* Outrow - Term used for one or two rows removed for extraction access.

is the felling bench, which is used in conjunction with; a specific felling system, Scandinavian style trimming, loggers tapes, light weight chainsaws, and short roller tip bars.

APPLICATION

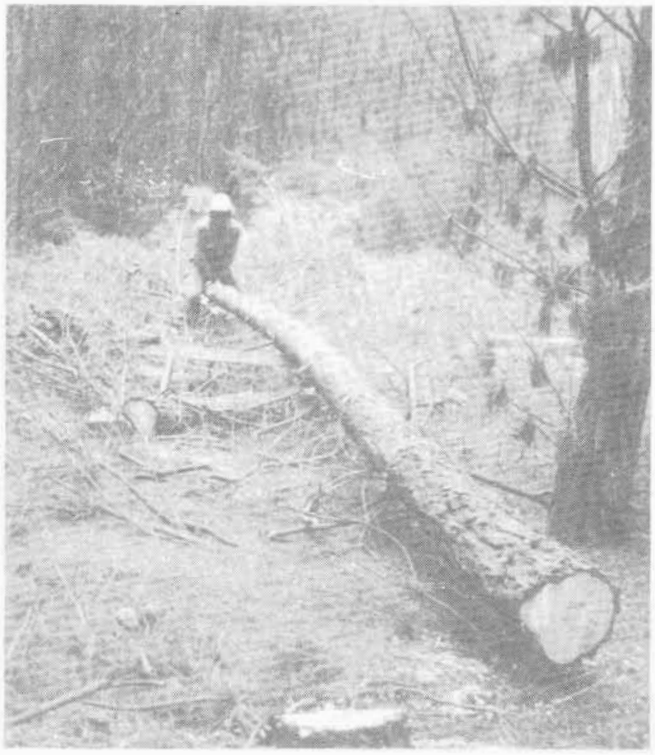


Figure 2. Tree Being See-Sawed Off Bench to Edge of Outrow for Stacking

The bench is always positioned in the outrow. Generally small branchy trees should be felled close to slash piles and large heavy trees felled close to stacks.

Each tree is felled separately onto the bench which is placed at right angles and at a distance of approximately 1/3 of the height of the tree away.

Once felled onto the bench, each tree is trimmed, measured and marked (using the logger's tape and saw cuts) and headed off.

The log, which could weigh anything up to 250 kg, can be easily balanced on the bench and manoeuvred by a see-sawing action away from the outrow and 'flicked' on to the nearest stack. The log is then cut into the desired products. Roundwood material is stacked, and long pulp and small sawlogs are grouped. The faller then repositions his bench slightly for the next tree and the same cycle is repeated.

The bench is of direct benefit for processing timber in the outrow and the two rows on either side of the outrow. Trees from the remaining 2 or 3 outer rows are also felled onto the bench wherever possible to facilitate trimming. Logs from these trees are harder to manoeuvre because they are butt-heavy, and obstructed by the remaining crop.

As a result of this felling and stacking method, the wood is presented clear of the slash and able to be readily loaded by the forwarder's grapple.

COMMENT

Because the tree is off the ground, Scandinavian techniques (e.g. the lever method) can be used for trimming. This is faster, safer, and less fatiguing for the operator who generally spends up to 60% of his work time trimming.

Figure 3. Short Pulp & 1.8 Metre Posts Stacked on Outrows

(Trimming with the tip of the guide bar, as normally practised in New Zealand, is more strenuous for the operator who is continually bending over. Also chainsaw cuts and 'kickback' injuries are more prevalent because the saw is always close to the operator's legs. Trimming with the tip of the guide bar also wears out the guide bar faster and the operator is more liable to blunten the chain while trimming material lying on the ground.)

Using the felling bench, heavy lifting is reduced considerably. This leads to a decrease in back-strain-type injuries, which are commonplace in this type of work. The faller also has to expend less energy and is capable of greater productivity. (See *Figures 4 & 5*)

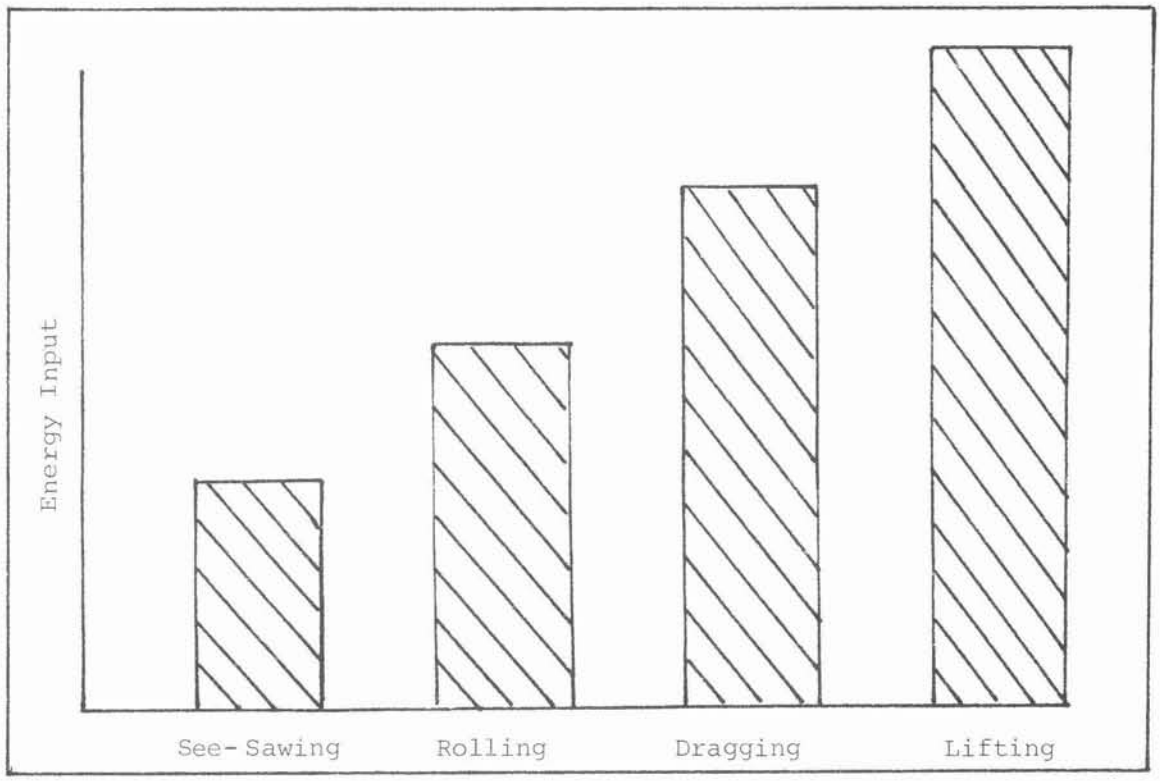
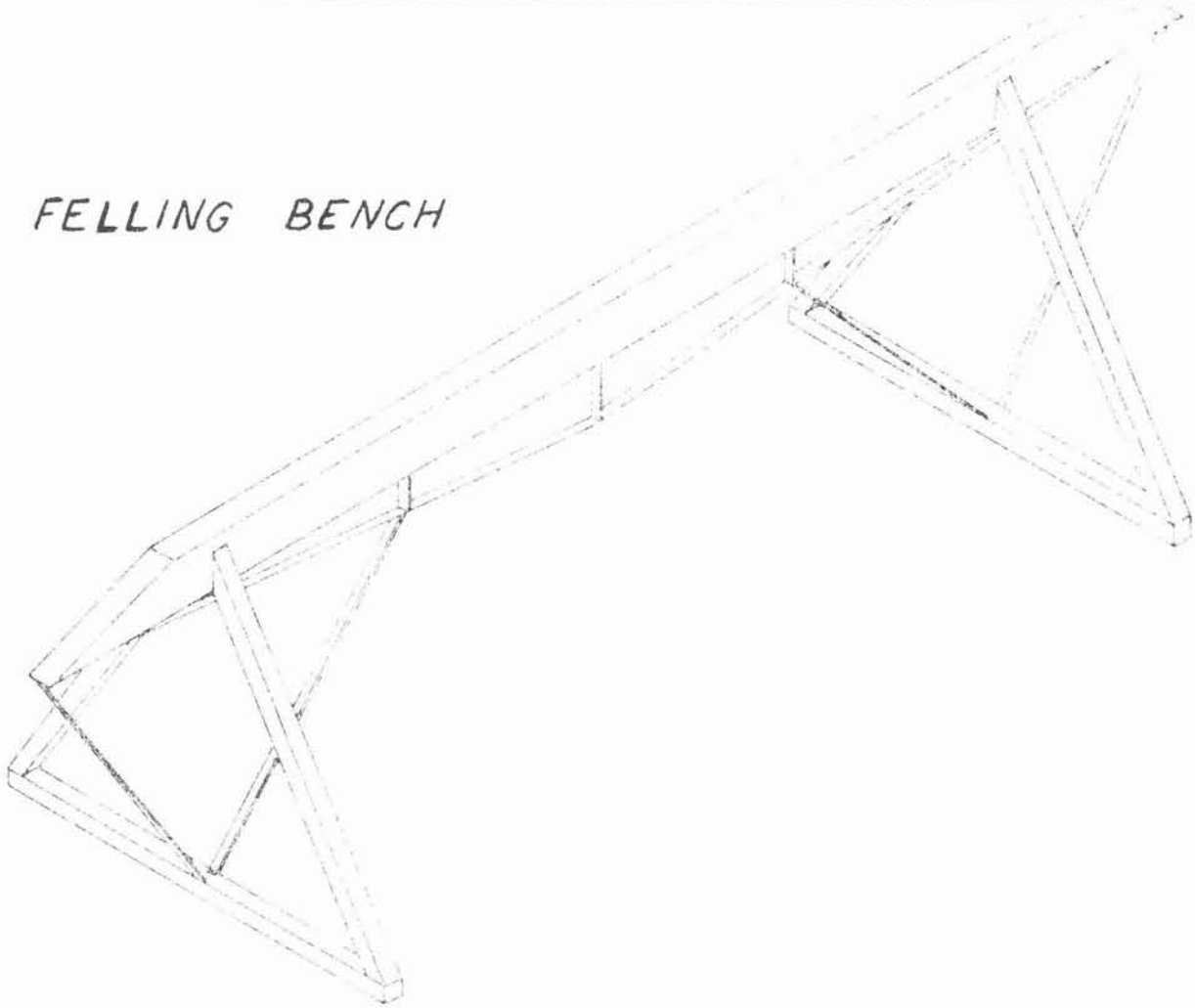
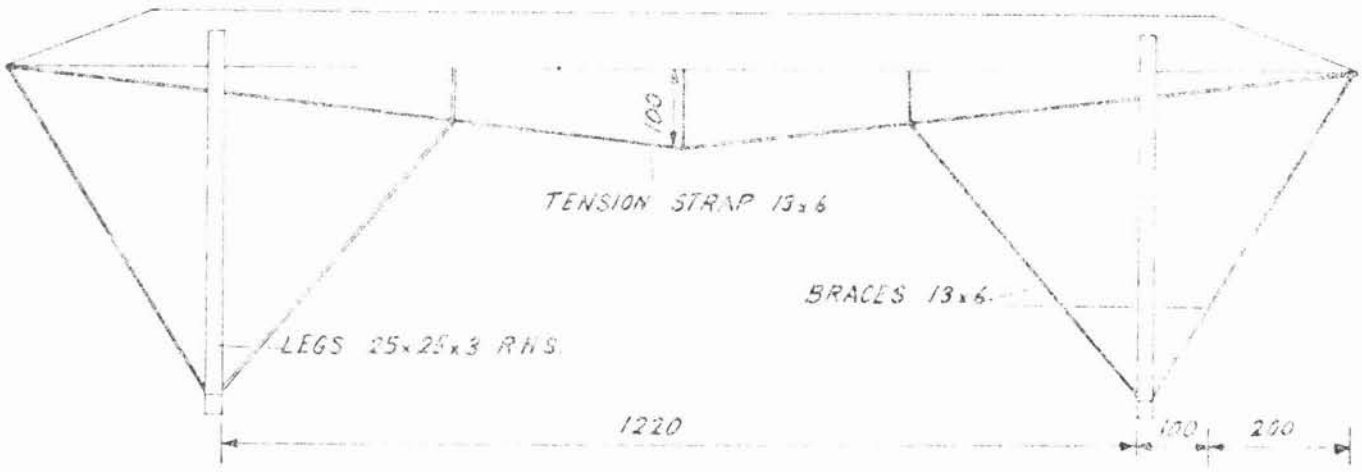
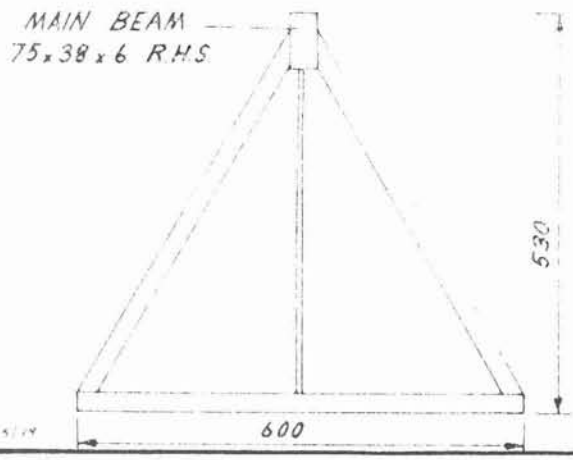


Figure 4. Energy Used in Different Movements of Small Log Handling

Figure 5. Minimal Effort Required to See-Saw Logs to Edge of Outrow







SPECIFICATIONS :

OVERALL LENGTH	1820 mm
OVERALL HEIGHT	530 mm
BASE	600 mm

WEIGHT: 15 kg MATERIAL: Mild Steel

COST: $60 approx (In Australia)

Figure 6. Specifications of the Felling Bench

DISADVANTAGES

The main disadvantage is that the bench has to be carried around in the bush. However, this is hardly noticed as the bench is quite portable, weighing only 15 kgs approximately, and it is only shifted a few metres at a time.

PRODUCTION FIGURES

Once a pine faller has been correctly trained to use the bench and the associated work methods, higher productivity can be achieved with less operator fatigue and greater safety.

Productivity depends a lot on the characteristics of the stand being thinned, the product being cut, and the quality of the product required.

In the Mt. Gambier region fallers consistently process 130-150 pieces of 5 metre pulp or 250-400 pieces of roundwood (in stands suitable for roundwood material) per 8 hour day, depending on operator skill.

LIMITATIONS

1. The bench has been designed to be used in a forwarding system and performs best on reasonably flat country with minimal side slopes. It works well on slopes from 0-15°.
2. The bench works best on a fifth or sixth row outrow basis. Wider spacing of outrows means material has to be shifted further to be within reach of the forwarder's grapple.
3. Tree size is important. Trees weighing much more than 250 kg can damage the bench, especially if it is placed too far out from the tree. Development of the design has been carried out to make the structure stronger.

FURTHER APPLICATION

The bench and associated work methods have a lot of potential for development wherever small thinnings are processed manually in the bush for forwarder-type operations.

In the right situation the introduction of the felling bench and associated work methods through training, would have considerable safety and productivity benefits for both management and workers.

NOTE: LIRA has hada felling bench constructed and trials are currently being carried out in N.Z.F.P. forests. Results will be described in a later LIRA publication.

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