Log splitter
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TUS
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AIM OF PROJECT

The main aim of my project is to design and manufacture a hydraulically powered log splitter that can be ran off the tractors hydraulic system. Another aim is to ensure it gets completed within the given time frame as it's a requirement to pass the module.

MANUFACTURING PROCESS

The manufacturing process consisted of measuring, cutting and welding. Once the frame had been assembled I could mount the hydraulic cylinder. The push plate and splitting wedge was then connected to the ram and secured onto the frame. I decided to have the blade as part of the push plate as I believed it was safer than using a stationary blade and meant the log was more stable when being split. The hydraulic ram was mounted with a bracket each side with a pin holding it in place while the rod was held securely by a pin and brackets welded to the push plate.

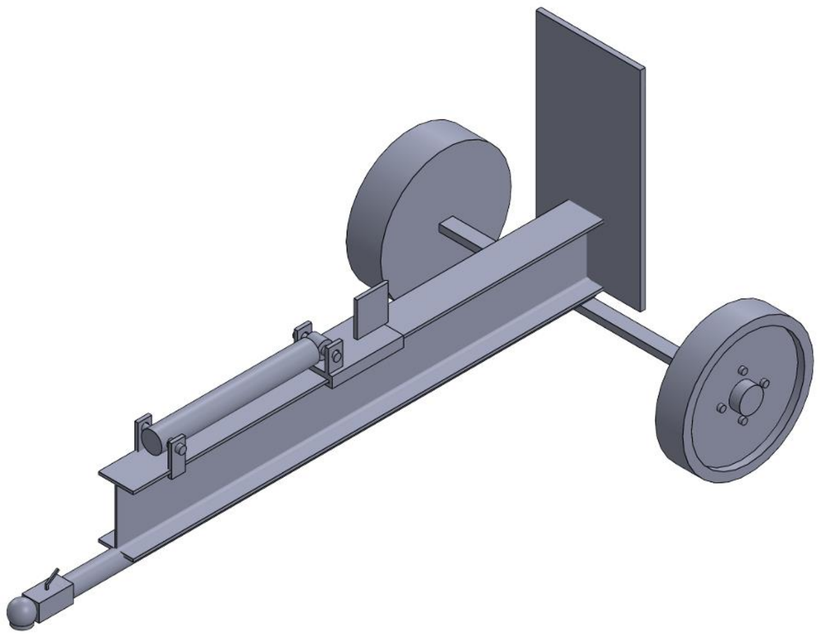
Push plate mechanism I based mine on with bolts to reduce play on the plate

BACKGROUND

Splitting logs is a vital step in wood processing. Log splitters have been used since the late 60s as an alternative to manual labour which is time consuming and labour inducing. The first hydraulic log splitter was invented in America in in 1959. Since then, many versions have been created and are available on the market.

The Concept

The hydraulic pressure from the tractors backend is sent to a hydraulic cylinder. The force exerted from the hydraulic cylinder drives the blade downwards toward the log causing it to split. The return stroke retracts the cylinder which readies the next log for splitting



3d model of the log splitter complete with ram, table, splitting wedge and push plate.

DESIGN PROCESS

I researched log splitters currently available on the market and took note of key features such as, mounting methods, blade design and push plate mechanism. I chose to mount my log splitter from the tow hitch of a tractor as we have a variety of small vintage tractors which wouldn't be able to lift it with the 3 point link arms. I used an old drawbar and axle from a quad trailer and bolted an rsj which would form the base. Bolting the RSJ also allows for modifications down the line as I can easily remove the RSJ to suit certain needs. I then used SolidWorks to come up with a suitable design. Once I came up with a design I was satisfied with I could begin the manufacturing process.

Picture illustrating how I mounted the RSJ to the drawbar using U-bolts

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