

Thread driven nail puller

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Fastener Removal

- The resultant force vector forces the nail to be pulled at an angle against the material it is being removed from, resulting in possible damage to the material.



Figure 3



Figure 2

Solution

- Using the power of ACME threads, the tool will remove nails from wood in a way to preserve the wood.
- Tool will exert force only in a vertical direction (y).
- Should result in longer process of removal with more care and precision.

Design Conclusions

- Initial design included welds at junction of ACME Flange and Pulling Collar
- Amended to use Set Screws
- Allow for ease of disassembly



Design Conclusions

- Collar placed over Set Screws
- Collar is press fit over the Pulling Collar



Solution

ExtrACME Fastener Puller



Testing Results: Hammer



Indentation Damage



Detent Damage



Fastener Damage

Design



Testing Results: ExtrACME



Indentation Damage



Detent Damage



Fastener Damage

Design

Breakdown of included components



Testing Conclusions

- Pulling Head spins when there is no tension on it.
- When at the top of the thread range, it is possible to slightly tighten the upper threaded shaft clamp.

Improvements

- Add guide system to keep the Pulling Head stationary from nail to nail.
- Place bump stop or machinist mark to the threads to not have the Pulling head make contact with the ACME Flange.