



light rope cam lock

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Summary

A cam lock for lightweight rope, should work for line 3mm - 7mm thick. Tested with 1/8" dacron.

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I put this together to assist in raising a horizontal loop wire antenna with multiple lift points. The cam lock purpose is to simplify the multi-step lift process at each lift point by eliminating repeated untying/tying of the haul up line during the lift process. It was sized for a comfortable fit in-hand. At this time, I do not intend to leave it attached long term, just until the wire is lifted to the desired final height. The cord being used in the project is 3mm - 6mm in size and the initial design has only been tested with light loads.

Although my application was related to ham radio, the cam lock may have other applications such as roll up window blinds, etc. and could be mounted to a fixed surface.

I printed with PETG using multiple walls (6) and top/bottom layers (6). Assembly is done with M4 screws. I used stainless steel 20mm cap head screws, 18mm would be a better fit for the original version.

The cam is offered in two variations, coarse teeth and fine teeth. The anvil component is offered in both smooth and serrated versions. See pictures for assembly info, it should be self explanatory.

cam lock 1 is the original version. It will have the shortest print time.

cam lock 2 is a beefier version to help deal with heavy loads causing anvil flex & over rotation of the cam. It uses more material and will take longer to print.

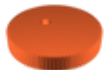
Followup note (4/12/2023):

I have now used 7 of these on the 160m Full Wave Loop antenna (551' of 14awg wire). They worked well during the raising of the loop and are probably going to be left in place full time. My loop anchor points use a suspended pulley that supports the haul up line. With only the weight of the wire & corner pulleys as a load, the cam locks are well within their capacity. The corner pulleys allow easy wire movement if winds cause trees to move. The corner pulleys are found here:

<https://www.printables.com/model/437051-wire-antenna-corner-pulleys-3-inch>

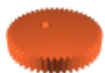
<https://www.printables.com/model/523547-wire-antenna-corner-pulley-4-inch>

Model files



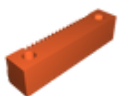
cam-lock-1-cam.stl

☐ fine cam serrations



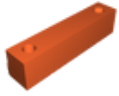
cam-lock-1-cam-c.stl

☐ coarse cam serrations



cam-lock-1-anvil-s.stl

☐ serrated anvil



cam-lock-1-anvil.stl

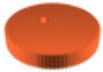
☐ smooth anvil



cam-lock-1-strap.stl



cam-lock-1-base.stl



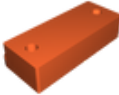
cam-lock-2-cam.stl

☐ fine serration cam



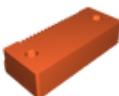
cam-lock-2-cam-c.stl

☐ coarse serration cam



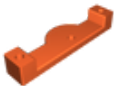
cam-lock-2-anvil.stl

☐ smooth anvil



cam-lock-2-anvil-s.stl

☐ serrated anvil



cam-lock-2-strap.stl



cam-lock-2-base.stl

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