

## OPEN SOURCE PLANS

# Hand-Powered Table Top Hemp Break

*Created by Rezolana Institute & Growing Warriors*

*Published by Fibershed and supported by Clif Bar Family Foundation*



*Hand-powered hemp break (Photo by Paige Green)*

### Why a hemp break?

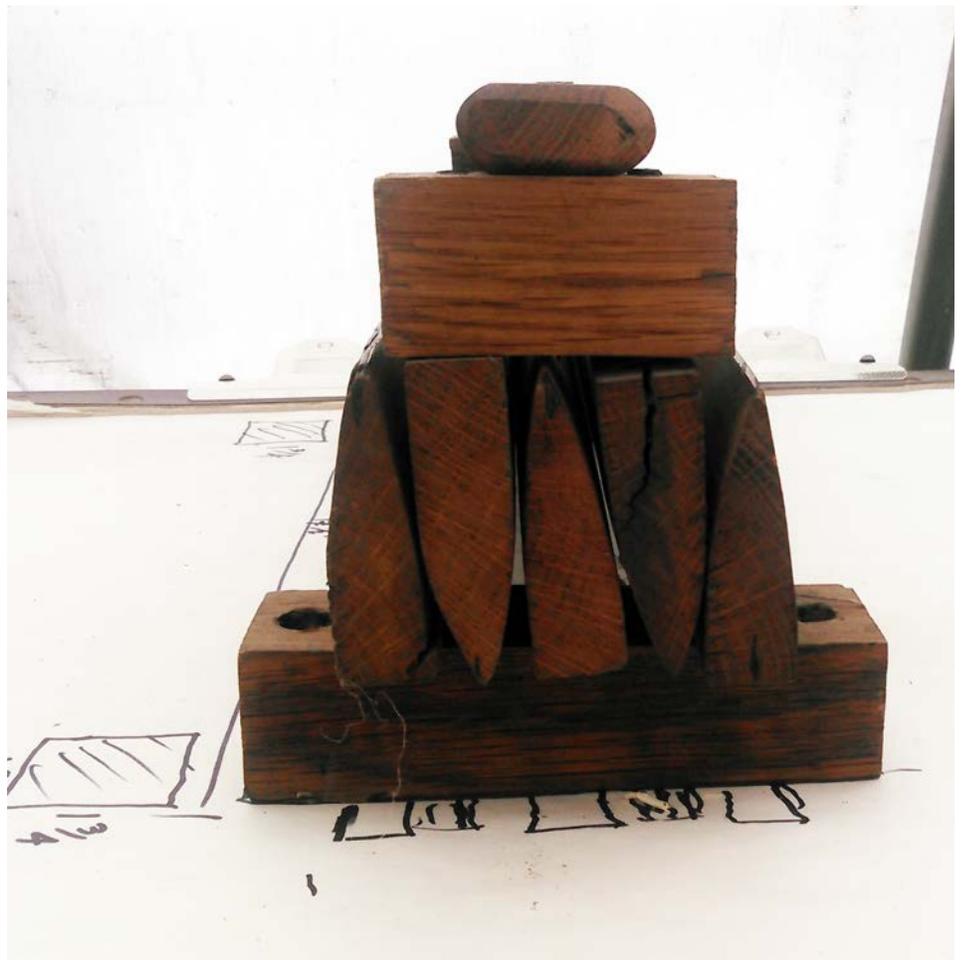
**T**HE table top model hemp break is a useful tool for small scale decortication of hemp fibers, and can be used to support farmers and students who are seeking to enhance their hands-on understanding of hemp fiber quality. The table top break is especially useful for farmers who would like to create an immediate feed back loop between their farming and retting decision and the impact of those decisions upon fiber quality. These small tools help individuals test fiber strength easily and proficiently directly from their harvested raw stalks.

The hemp break is designed to crimp the hemp stalks separating the hurd from the fibers. The crimping motion is accomplished by opposing wooden blades that are shaped with pointed, rounded edges. Three blades are attached to the base with the two rotating upper blades fixed to the handle and hinged with a bolt to the base. The size of the small demonstrator unit is 24 inches long and is limited to crimping small diameter stalks around  $\frac{1}{4}$  inch.

## Design and Construction

This utilizes the same basic design of the 24" unit built by Growing Warriors. The two base pieces are 12" long by 4" wide by 1 $\frac{3}{4}$ " thick rough sawn pine wood. The base blades are built from  $\frac{3}{4}$ " thick by 6" wide recycled mahogany boards.

It is preferred that a hard wood be used for the blades if possible since they are used to clamp down on the hemp stalks. The three base pieces are ripped to 3 $\frac{3}{4}$ " wide and cut to 30 inches. The boards are shaved and sanded to create an airfoil type surface. The top edge is thinned down to  $\frac{1}{8}$ " inch. Each of the boards fit into a  $\frac{3}{4}$ " deep slot that is cut into the base pieces. The slots are separated by a  $\frac{3}{4}$ " inch space to receive the top blades that are attached to the handle and hinged on one side of the break. The middle blade is rounded so that the handle can swing 90 degrees in the open position.



*Front view of Growing Warriors hemp break*



*Base and three blades of hemp break*



*Front view of base piece and blades*



*Bottom view of base pieces and three blades*



*View of handle and upper two blades*

The three blades are attached to the base pieces with  $2\frac{1}{2}$ " deck screws. On the hinge side of the base the blades are set 2" out from the base to allow for the swing of the handle. The base pieces are drilled with  $\frac{1}{2}$ " holes so the unit can be bolted to a wooded bench or other sturdy table or cabinet.

The two upper blades were cut to 3" wide by  $\frac{3}{4}$ " wide by 30" long. They were shaped and sanded to create the same "airfoil" shape as the base pieces. The two blades were then attached to the handle base piece which measures 30" long by 3" wide by  $\frac{3}{4}$ " thick. The upper part of the handle base piece had a  $\frac{3}{4}$ " wide by  $\frac{3}{4}$ " deep groove. The groove serves as a seat for the 36" handle. Once the groove was cut, the 2" wide handle was attached to the base piece with wood deck screws from the bottom. The two upper blades were attached to the handle piece to ensure that they were separated by  $\frac{7}{8}$ " to be able to close over the bottom base blades. The best way to set the space was to set the handle piece over the loose blades and to make sure there was adequate clearance for the handle to swing freely. The holes for the hinge bolt were then drilled. A  $\frac{1}{2}$ " by 6" bolt was inserted through all the blades securing the handle to the base unit.



*View of base showing hinge bolt connecting handle*



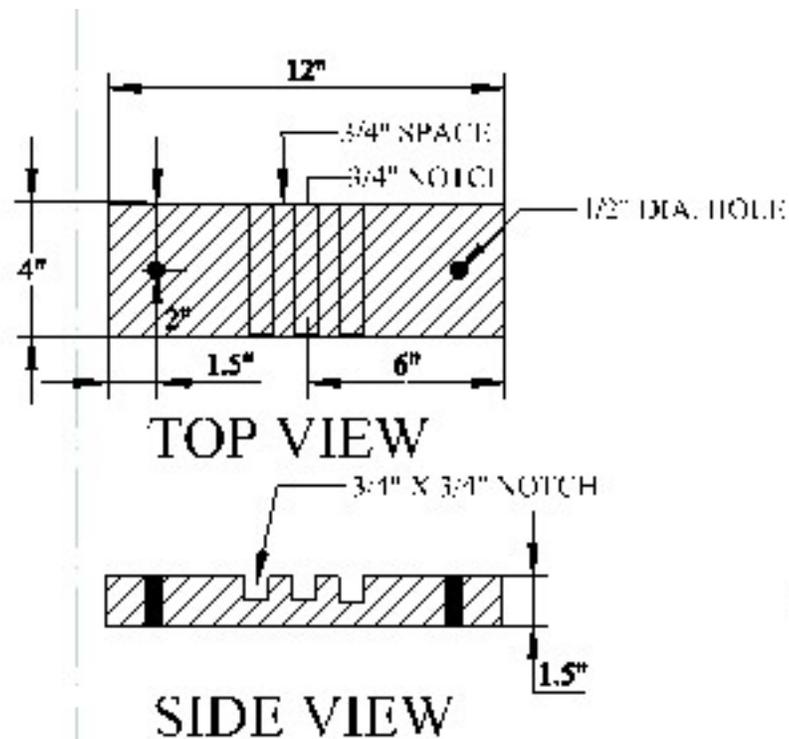
*Completed hemp break*

## Plans and Drawings for the Hemp Break

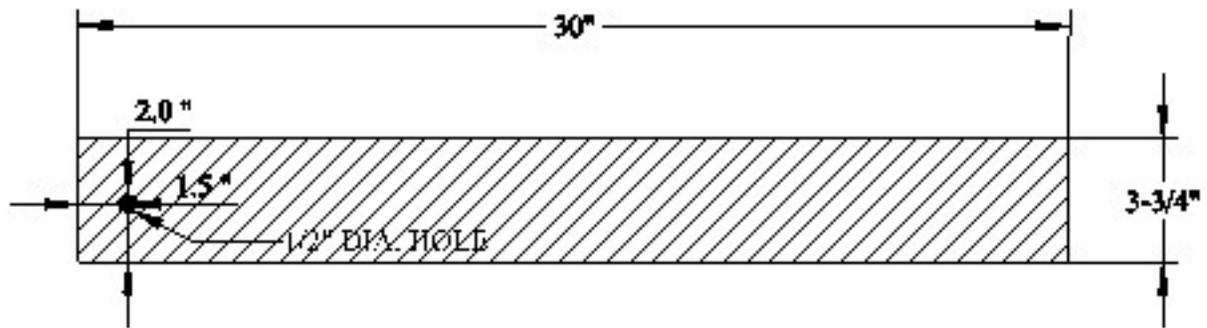


### Materials List:

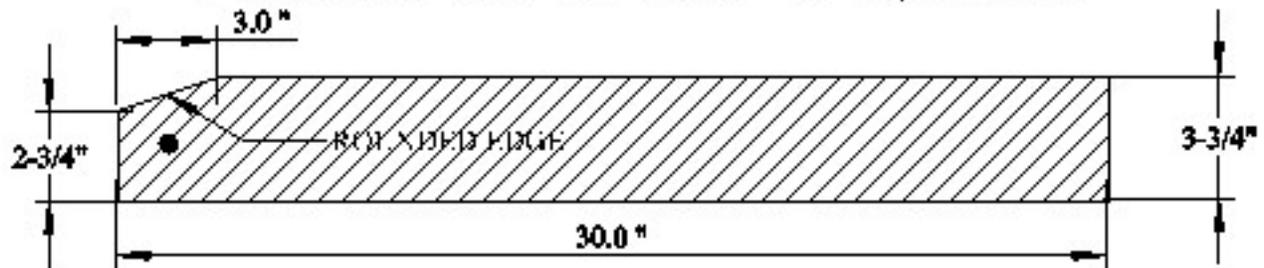
- Two 2" x 4" x 12" (Base)
- One 1" x 4" x 90" (Base blades, hardwood)
- One 1" x 4" x 60" (Handle blades, hardwood)
- One 1" x 4" x 66" (Handle base & handle, hardwood)
- One 1/2" x 6" bolt w/nut & washer (hinge pin)
- Two 1/2" deck screws
- Linseed oil or sealer for all wood components



# BASE PIECE

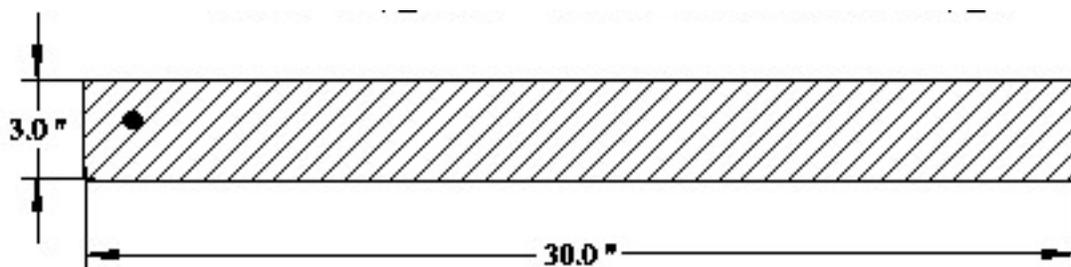


**BLADE END PIECE-2 REQUIRED**



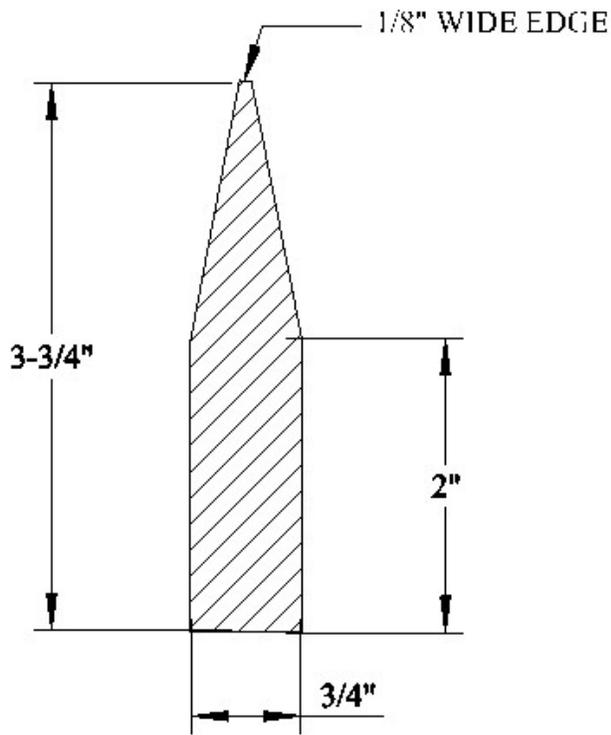
**MIDDLE BLADE PIECE-1 REQUIRED**

## **BASE BLADES**

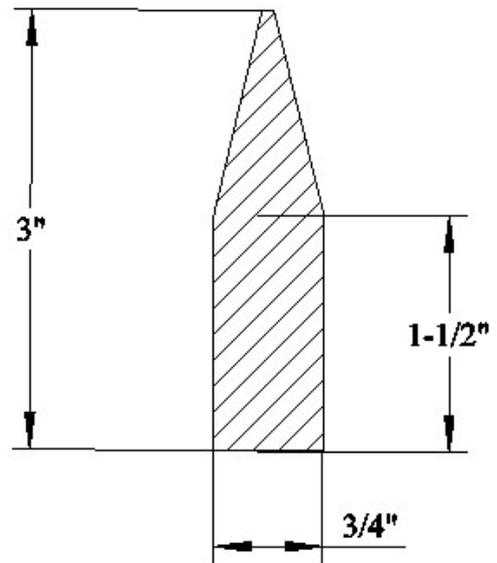


**HANDLE BLADE PIECE-2 REQUIRED**

## **HANDLE BLADES**

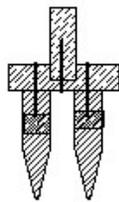
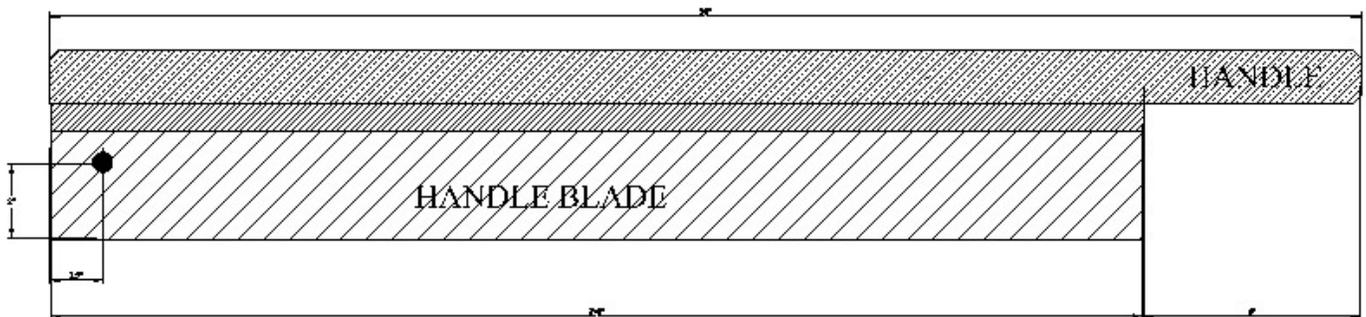


BASE BLADE

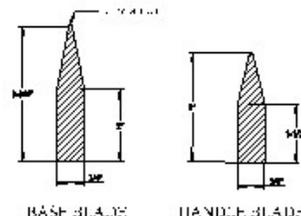


HANDLE BLADE

# BLADE PROFILES



HANDLE CROSSSECTION



BASE BLADE

HANDLE BLADE

BLADE PROFILES



*Completed hemp break processing hemp stalks*

