## Assisted Eating Device (AED)

This is an article that provides information that will enable you to build a device that will assist someone who is having difficulty or unable to feed himself due to disease such as ALS (Lou Gehrig's disease).

Glen Wesley is a member of the Gulf Coast Blacksmith Association and he has been diagnosed with ALS. As the disease progressed he began having difficulty feeding himself. He asked if I would help him design a device that would enable him to continue feeding himself. We discussed it a few minutes, made a couple sketches, and then went out to the shop.

A few hours later we had produced, with the materials we had on hand, the first step toward the AED. It only prompted more questions about how to achieve the movement needed. I took it to the next blacksmith meeting and briefed the members on what we were trying to accomplish. I then asked for their comments. Members, with various backgrounds, made numerous suggestions that moved the project forward significantly.

Above is a picture of Glen demonstrating how it works. His right arm is positioned on a rest that is mounted to a 12" x 18" ¾" plywood board. There are three directions of movement required that have to attained in order to eat. We will explain these as we proceed. There is also a "lazy susan" below the plate to allow him to rotate his plate if he needs to.


Here is a side view. The base is made with a metal circular disk 7 inches in diameter and there are three holes drilled in it to mount it to the board. The assembly attached to it (See footnote 1) was purchased at a local lawn mower repair shop. It is a miniature "tie rod end ball joint" assembly that allows the AED to move horizontally in a circular 360 degree clock like pattern. There is a 3/8" fine thread at the top. We welded a 3/8" nut to a shaft that extends up toward the arm rest so it can be removed if the need arises.

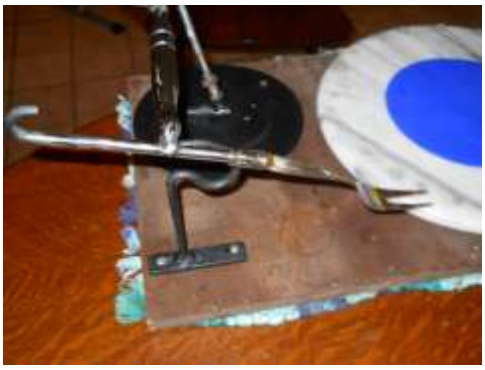
On top of the shaft we placed a sling shot shaped piece of 1/4 x 1/2 flat bar. There are holes drilled in each end to accommodate a 1/4" bolt. We then welded a piece of tubing or small pipe to the bottom of the arm rest. The arm rest is attached to the shaft by running the bolt through the sling shot and tubing to create a hinge.

The arm rest was made from 18 gauge sheet. The pattern was cut "to fit" slightly less than the length of Glen's arm – wrist to elbow. A swage block was used to put the dip /curve in it. Note that both sides of the back end are flared out so that when pressure is put on it the users arm will not slide off. The flared part is important to assist in the turning movement.

At his point we can now move horizontally around in a circle and we can pivot or rock up and down like a see saw. How about lateral "wrist rotation"? Fortunately we found a tool at Harbor Freight made so that the handle rotated around the shaft. It is normally used to put sockets on to "speed tight" nuts. We cut the handle off and welded the shaft to the arm rest. Glen's wrist, hand, and fingers rest on this part so it allows him to rotate his wrist as needed.

The next question was how do we attach the eating utensils? We wanted a way to be able to quickly attach a fork or spoon. Glen is right handed, so we decided to weld a ¼" socket extension to the left side of the Harbor Freight handle. On the other side we forged a "curl" to prevent his hand from sliding off the rest. These components are essential to form a hand rest and

provide leverage. Next, we brazed spoons and forks to the sockets in order to be able to change them quickly. You may have to orient the eating utensils on the nuts using the "trial and error method to determine what position to weld them in.



The pictures below provide a glimpse of the progression of movement.

Note the position of the shaft and hinge as he rotates through the range of motion.

Footnote 1: MTD Company 923-0448A Joint Assembly Lock