Design Document   Angus Cowan

Abstract

A robotic motor that will move an arm to a precise distance from the saw blade to allow for fast and accurate cuts. This robot will be connected to a system that would allow the operator to enter a desired measurement that would allow for more precise and safe cuts in comparison to doing them by hand.

Description

The purpose of this robot will be to optimize the efficiency of a saw. To accomplish this, the robot will have a moveable arm, and an application that can accept a desired length. The Arm will be connected to a simple motor that can move to an accurate distance from the saw blade. This will allow the workers to quickly type in a length, then immediately move the material up to the robotic arm and cut the material to the correct length. This will eliminate the time consuming process of attempting to secure the material at an exact distance from the blade. The arm will have a pivot point to allow rotation in the y-axis, thus allowing the arm to move up and out of the way. Once the arm is in the correct position, the arm will be clamped down to ensure no movement over the period of the cut(s). The arm will be able to travel to the left or to the right of the blade by imputing a positive or negative number. This will make it so that if their is a large piece of material being fed in from the front or the back of the saw, the material will still be able to be cut with the help of the robotic arm.

The arduino would be connected to a nearby computer with a usb cable where the operator would be able to input the length. The arduino would then run a program to rotate a motor a certain number of degrees. The circuit on the breadboard will look like as seen in figure 1. The machine will be powered via a usb cable connecting to a computer. Then the power will go through the arduino and the circuit will be told to move the motor a specific amount of degrees. The potentiometer in the circuit will be used as a shutoff switch, stopping any power reaching the motor.

Drawings

Figure 1

Labels in Figure 1: Ground Wire, InputWire, Power Input, Potentiometer, Input and ground wire, Output, Motor

Labels: Saw, Table, Saw blade, Rollers, moveable arm, track for arm, Computer, long USB Cable, Potentiometer

Computer

Length:—

Saw

moveable arm

roller table