SpindleTests

September 2, 2017

1 Spindle Cutting Tests

1.1 Object

- Play around with Dremel High Speed Cutter 115 in the ER11 spindle

2 Code:

```
In [21]: import GCode
         import GRBL
         import numpy as np
         from utils import picture
         cnc = GRBL.GRBL(port="/dev/cnc_3018")
```

```
In [22]: print("Laser Mode: {}".format(cnc.laser_mode))
```

```
Laser Mode: 0.0
```

```
In [23]: def init(feed = 200):
             program = GCode.GCode()
             program.G21() # Metric Units
             program.G91() # Absolute positioning.
             program.G1(F=feed)
             return program

         def end():
             program = GCode.GCode()
             return program
```

2.1 Test Setup

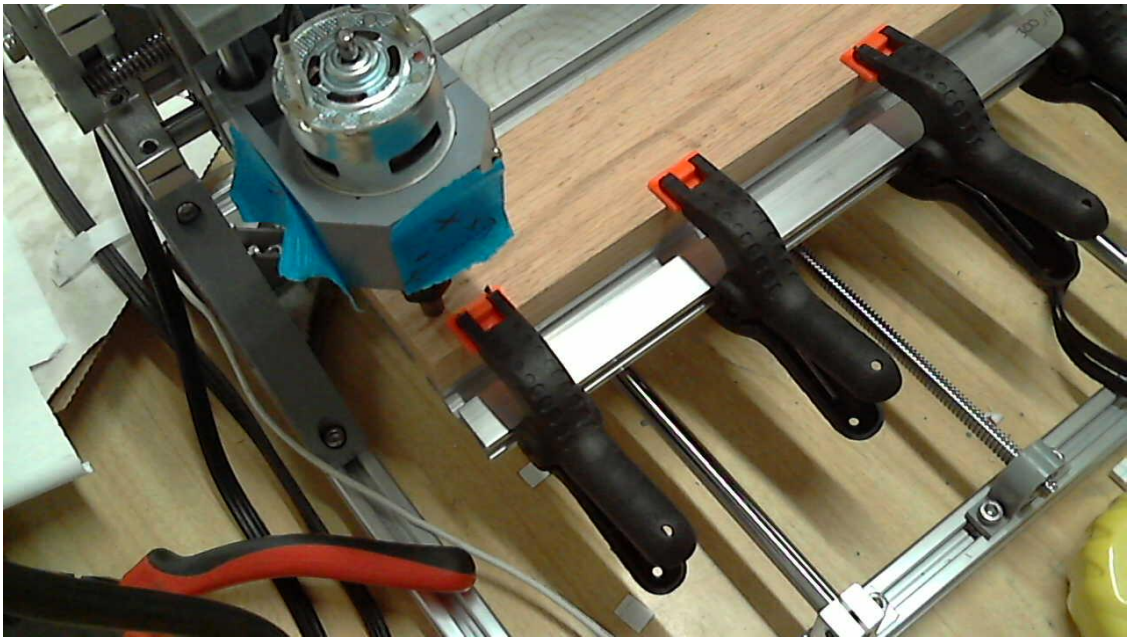
```
In [24]: cnc.cmd("$X")
```

```
Out[24]: ['ok', 'ok']
```

```
In [25]: def jogx(x=10):
             program = GCode.GCode()
             program.G0(X=x)
             cnc.run(program)
         def jogy(y=10):
             program = GCode.GCode()
             program.G0(Y=y)
             cnc.run(program)
         def jogz(z=10):
             program = GCode.GCode()
             program.G0(Z=z)
             cnc.run(program)
```

3 Test Setup

```
In [8]: picture()
```



4 Test Setup

- Oak Board 63mm x 300mm x 19mm
- Dremel High Speed Cutter "Carving / Engraving" 115.
- 28.8V . Coarse cranked up. Fine Knob in middle.

```
In [44]: def test_program(feed=200):
             prog = GCode.GCode()
             prog.G0(Z=-2)
```

```
            dZ = -1
            dX = 20
            X = 0
            Z = 0
            for loops in range(10):
                prog.M3(S=10000)
                prog.G1(Z=dZ, F=10)
                prog.G1(X=dX, F=feed)
                X+=dX
                Z+=dZ
            prog.M3(S=0)
            prog.G0(Z=-Z)
            prog.G0(X=-X)
            prog.G0(Z=2)
            return prog
```

In [45]:
```
test_program()
```

Out[45]:
```
<GCode>[cmds=35]
```

In [19]:
```
from IPython.core.magic import register_cell_magic
@register_cell_magic
def CNC(_, cell):
    commands = cell.splitlines()
    cnc.run(commands)
    return None
```

In [27]:
```
%%CNC
G1 F100
G1 Y+10
```

In [46]:
```
# This test is going to immediately run out of Y axis. To test Ctrl-C and interrupting
test_run = GCode.GCode()
# Lower head to touching part.
# Then lift by 2.
test_run.G0(Z=2)
for XFeed in [100, 250, 500]:
    test_run += test_program(feed=XFeed)
```

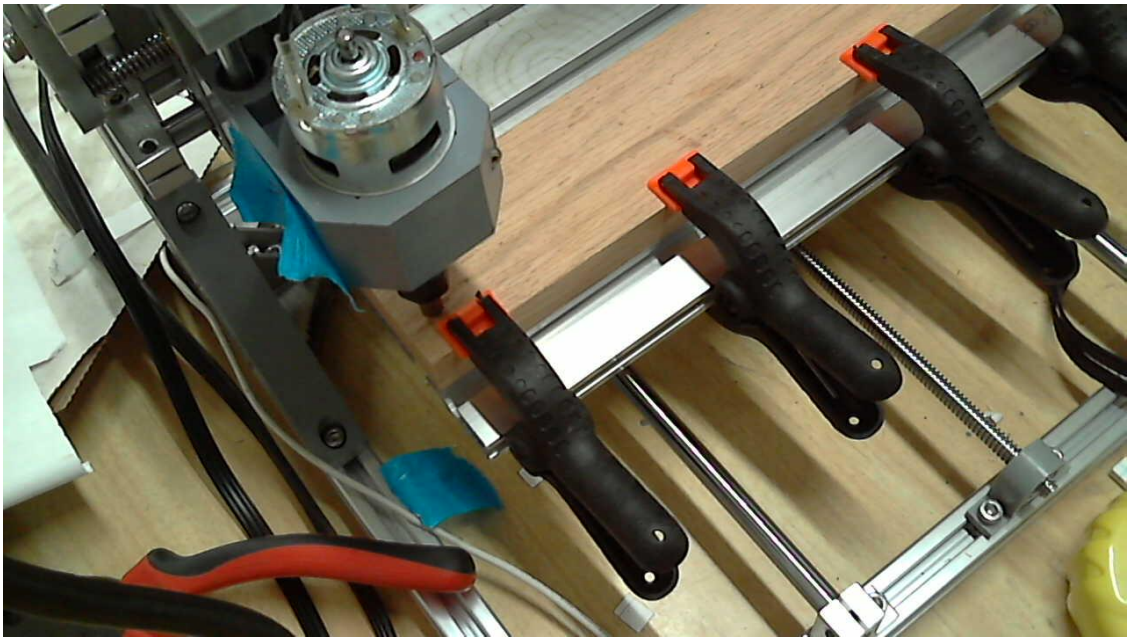
In [47]:
```
test_run
```

Out[47]:
```
<GCode>[cmds=106]
```

In [48]:
```
gcode_file = "SpindleTests.gcode"
```

In [49]:
```
test_run.save(gcode_file)

del test_run
test_run = GCode.GCode()

test_run.load(gcode_file)
```

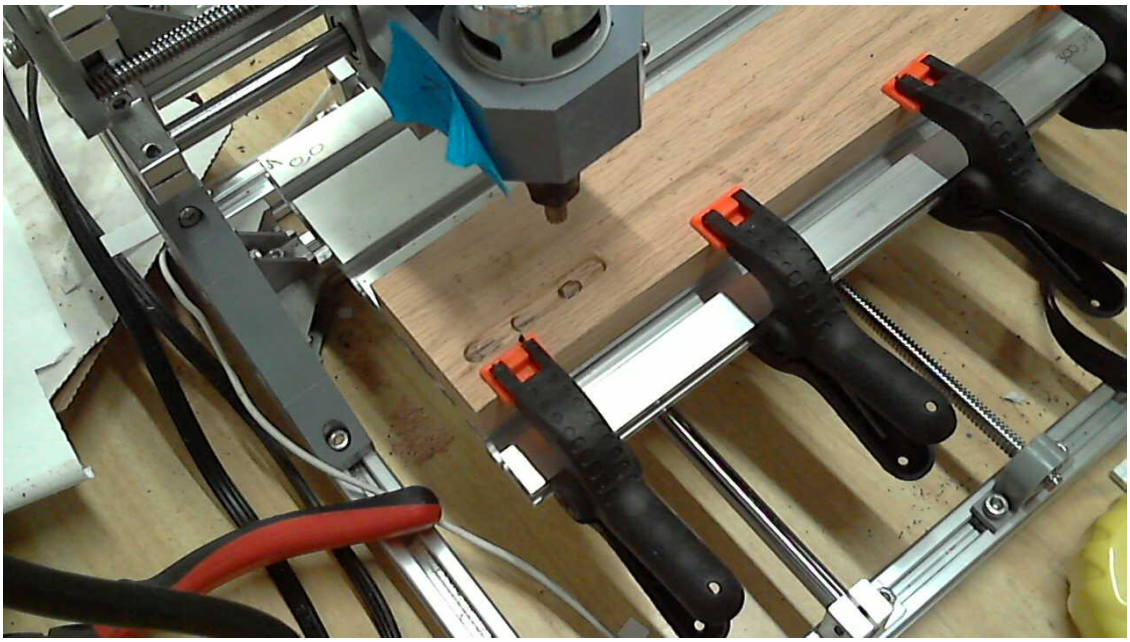
```
In [50]: test_run.buffer[0:5]

Out[50]: ['G0 Z2', 'G0 Z-2', 'M3 S10000', 'G1 Z-1 F10', 'G1 X20 F100']

In [51]: picture()
```



```
In [52]: while 1:
             try:
                 cnc.run(test_run)
                 while 1:
                     print(cnc.status)
                     sleep(5)
             except KeyboardInterrupt as error:
                 print("Feed Hold")
                 cnc.cmd("!")
                 print("^C")
                 break
             except:
                 raise

^C

---------------------------------------------------------------------------

AssertionError                            Traceback (most recent call last)
```

```
    <ipython-input-52-c54c312fb5fd> in <module>()
      3         cnc.run(test_run)
      4         while 1:
----> 5             print(cnc.status)
      6             sleep(5)
      7     except KeyboardInterrupt as error:


    ~/CNC3018/python_rs274/GRBL/__init__.py in status(self)
     68         """
     69         ret = self.cmd("?")
---> 70         assert(ret[-1] == 'ok')
     71         return ret[1]
     72


    AssertionError:
```

In [53]: `picture()`



5 Test Aborted.

Cuts were way too aggressive.