SolidWorks Crossbow Design

Alexander T Hanks

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Below are images of the crossbow and a SolidWorks Drawing:
The reason why I decided to design a crossbow in SolidWorks is that I have always been fascinated with the design and complexity of the modern day crossbow. Ideally with more time I would want to design an actual fully functioning model that withholds the mechanics and intricacies that a real crossbow has. Other options for the project came to mind such as a car, and also a bridge, however seeing as I recently changed my major to mechanical engineering, and that I wanted to be more original, I decided on the crossbow. I got design concepts from online pictures however the design overall is unique to me and this project.

I used a variety of SolidWorks features when designing this crossbow. The main ones I used were lofts, extruded cuts, revolves, and extruded boss/base. I also used many features that we recently learned in class through the tutorials such as fillets and creating new planes and stretching to make a 3D image from multiple 2D shapes. One part that I found the most interesting was the way I had to cut out the parts from the crossbows arch. I had to add a new plane on the face of the shaft, draw a rectangle and extrude the cute in the opposite direction and select “through all planes”. This was a feature I recently learned with the help of a TA in office hours.

The hardest part of the model to complete was making sure everything was without errors and mating everything. For many of the mates I actually has to add new drawings in the assembly which I’d never done before. Getting the symmetry and dimensions of everything right in order to mate was especially difficult seeing as I had roughly 8 parts to assemble.

The SolidWorks portion in the class, along with the graphics portion, in my opinion have been the most helpful to me. My knowledge of SolidWorks and its features has expanded from not
knowing what SolidWorks was to being able to creatively design really cool objects. I have actually started exploring more features of SolidWorks in my own time to try and get a better understanding. None of this would be possible without the very strong base understanding that this class has built for me on this program.