

Drum Modifications

Pranav Joshi, 2081830

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Link to this SSA

<https://www.overleaf.com/read/yngdzxhwgpzn#e9ab38>

Goals

- To design a wider drum than previously designed and edit the height of the drum accordingly

Summary

A new drum was designed with the largest diameter as 80mm and smallest diameter as 40mm. The grooves were edited so that the string can easily be wound and finally, the height of the drum was changed to be 25mm (slanted part of the drum) and 5mm of height on the top and bottom. Giving the drum a total height of nearly 30mm

1 Elaboration

1.1 Changing Diameters of Drum

Firstly, the diameters of the drum must be changed so that the larger diameter is 80mm and the smaller diameter is 30mm.

Now, the helix, ie; the grooves were edited. They were changed to accommodate for atleast a little more than 1.5m of string as seen in figure 1

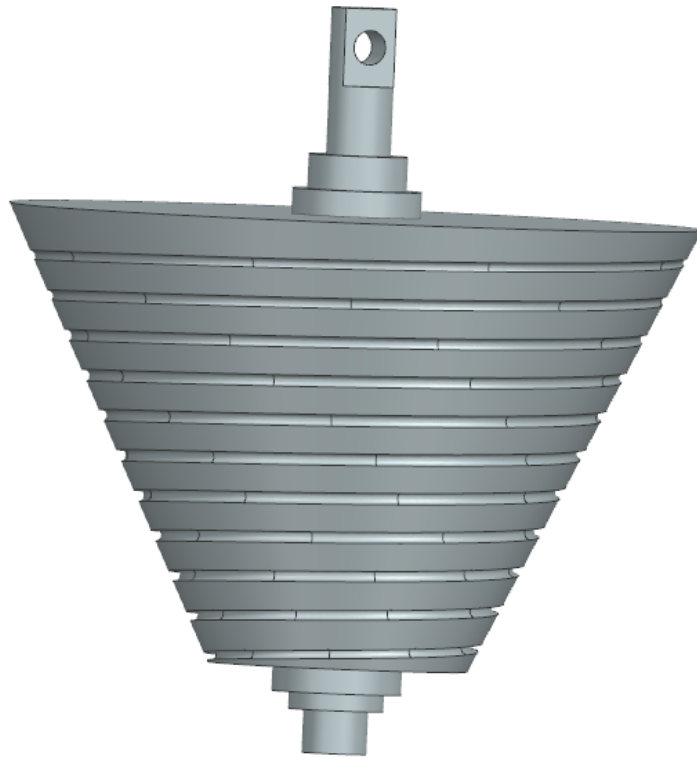


Figure 1: Edited Helix

Clearly, the spacing between the grooves is excessive, hence, the height of the drum was reduced. The edited height(25mm) is displayed in figure 2

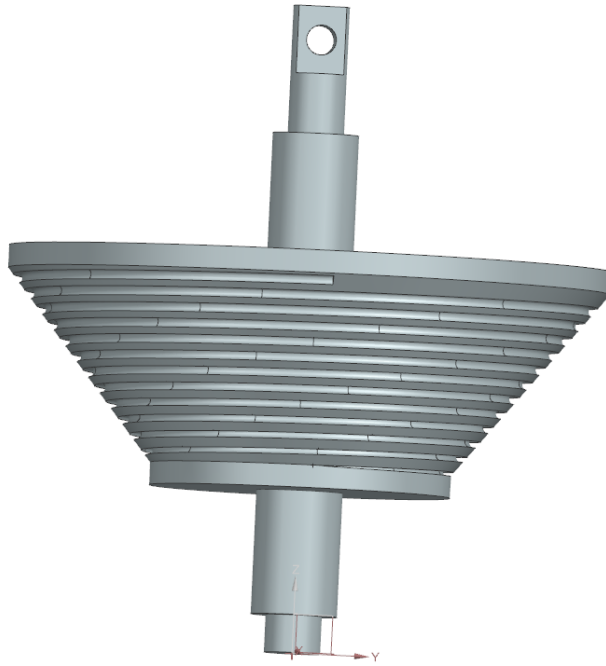


Figure 2: Edited Height

To optimize material usage, the shaft of the drum can be reduced to half it's original distance on each end as seen in figures 3 and 4

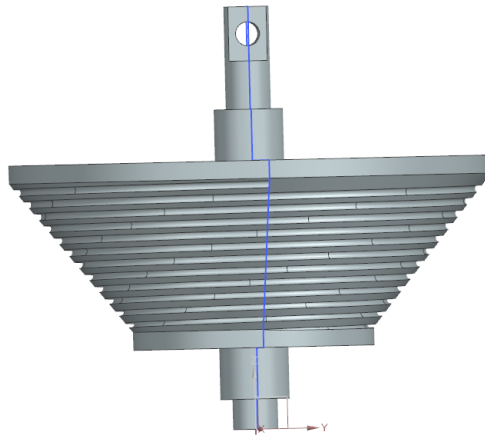


Figure 3: Edited Shaft

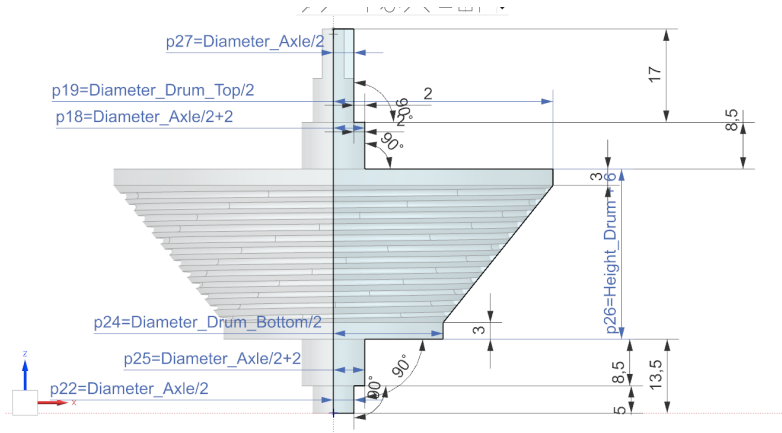


Figure 4: Final Drum

Finally, since the Geneva driving mechanism is designed in such a way that it does not require the drum to have an axle for rotating, the axle of the drum was deleted and a suitable hole was made in the drum, so as to accommodate for the driving arm of the Geneva mechanism. These changes are displayed below in figures 6 , 7. For reference, the Geneva Drive is also displayed below 5



Figure 5: Geneva Drive

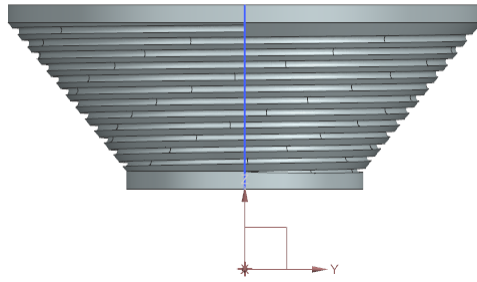


Figure 6: Deleting axle of the drum

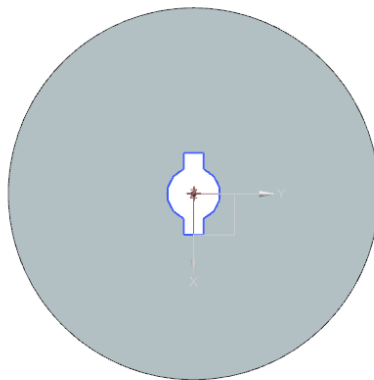


Figure 7: Hole for Geneva Drive

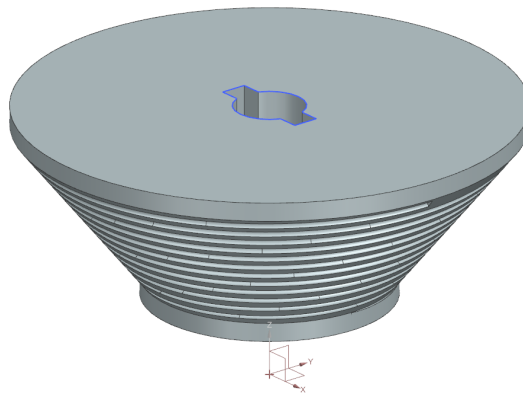


Figure 8: Final Drum