Best Physical Design

Group 3

ECE 3760 A01

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1 Physical Design

1.1 Skip and Sweeper Devices

The skip and sweeper devices share a similar overall design, with the key difference being the top section. The skip device, shown in Figure 1a, has five larger holes to accommodate buttons for sending commands, while the sweeper device, shown in Figure 1b, has twelve smaller holes arranged in a ring for the LED ring we used as the indicator.

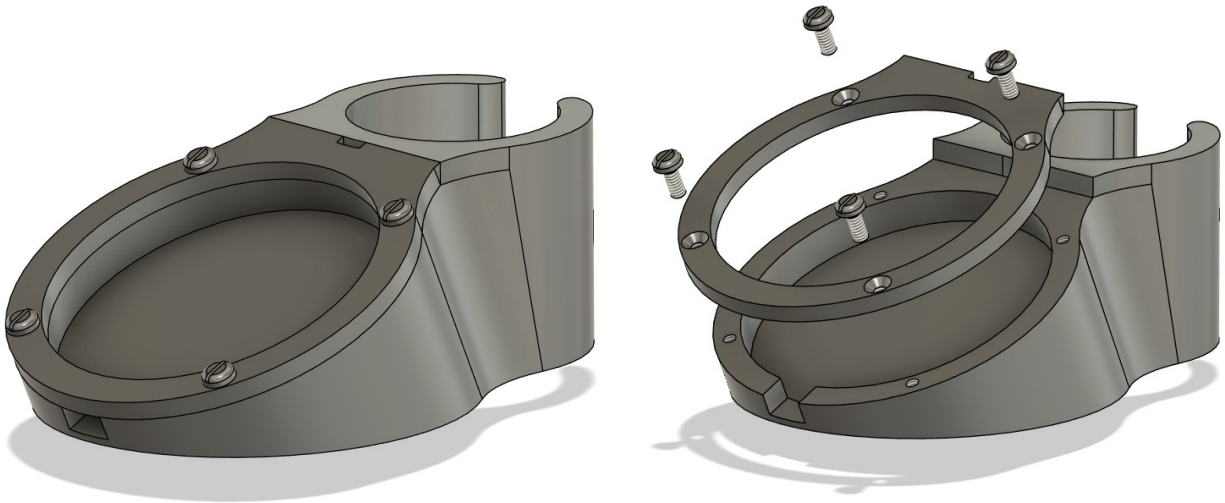
Both devices have a modular design, with identical bottom halves that simplify assembly and reduce manufacturing costs. The top and bottom halves connect via matching screw threads, allowing for easy attachment and replacement if needed. Additionally, each device includes a ring for a lanyard that the skip can use to attach to a neck strap, or belt loop. For the sweeper this is an unecessary feature, but it is included for consistency in design.

(a) Skip Device (b) Sweeper Device

Figure 1: Skip and Sweeper Devices

1.2 Sweeper Broom Attachment

The sweeper would slot into the following device seen in Figure 2a. There is a small covering that is attached with some screws, potentially thumb screws so it is easy to remove the sweeper's device. The attachment would clamp onto the broom handle, and the sweeper would be able to posiiton it at any height they prefer. The device is also slightly angled to give the sweeper a better view of the LEDs. This allows us to keep the sweeper device modular, and when charging is required, the attachment can remain on the broom and the device alone can be charge.



(a) Broom Attachment (b) Broom Attachment Exploded

Figure 2: Broom Attachment