George Riehm

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Sent: Monday, March 06, 2017 7:07 PM
To: 'chandler.riehm@newfairfieldschools.org'
Subject: Meeting Notes - 3.02.2017 - particle sweeper
Attachments: 170305 Figures 1 & 2 - Sweeper Drive Concepts.pdf

At the meeting Thurs. Geo and Jen and Mentor Jay reviewed concepts with Mentor George for improving the particle sweeper arrangement on the robot.

Current issues:

- The feeder does not aggressively pick up particles, and jams frequently.
- Finger mounting to the rollers is ugly (but easy).
- Picture of the current arrangement – see figure 1 attached.

Observations:

- The sweeper fingers seem to be too flexible – they bend really easily, but may not be causing the jamming.
- The drive belts/rings slip easily on the rollers.
    - Good tension to the motor pulley is not achieved, even with the idler pulleys.
    - When picking up particle, if there is any resistance, the belts slip, the particle stops moving up the ramp.
    - The motor keeps running, the drive belts slip on the motor pulley.
- The drive motor mount is hitting one of the drive wheel motors, preventing the particle ramp from being mounted in the correct place.
    - Motor to roller spacing is not correct for the belts we have.
    - Ramp to roller spacing is incorrect, perhaps too small to let the particles pass the roller when the sweeper fingers contact the particle.

Suggested concepts for improvement:

- See the attached figure 2.
- Move the sweeper drive motor
- Change from o-ring belt drive system to geared system, gearing the rollers to move faster than the motor.
- Re-attach the fingers

Review comments:

- Looks feasible
- Gears used by other teams, with good results.
- Jay – need a guard to keep the fingers from going into the gears.
- Better if the motor didn't stick out of the side panel
- How to hold the fingers – put plastic balls inside the tubing. Tubing goes through the roller, one ball from each end.
- Use stiffer tubing, but instead of 4 fingers at each spot go with 2.
- Gear sticks outside robot allowed size.

Action Items:

- Find smaller gears
- Find stiffer tubing, rework rollers for stiffer tubing. Figure out size and purchase small plastic balls.
- Revise design to include finger guards at gears
- Concept different motor mounting so the motor doesn't stick out.

Status as of 3.05.2017:

- Smaller gears have been ordered and shipped. Yet to be received.

- Redesign with guard and different motor mounting pending.