Objective

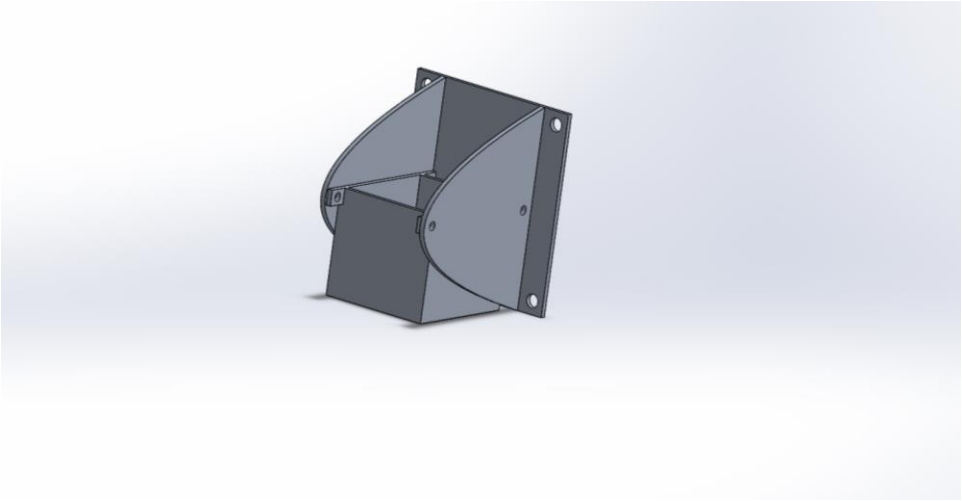
- Research ways to mount the camera onto the chassis and rotate the camera on top of the mast.

Cameras That We Need

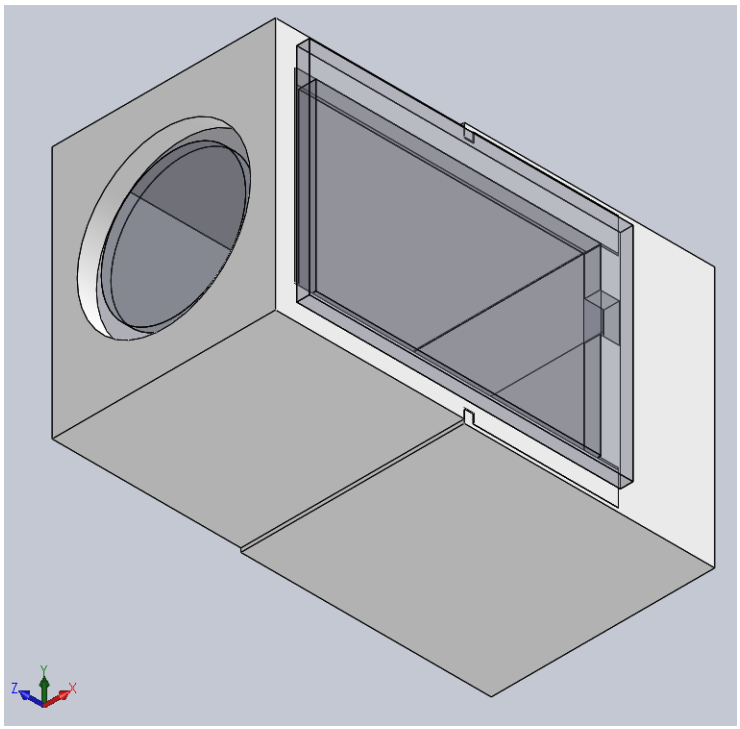
- Mast camera
  - Camera needs to be high (2 ft – 3 ft)
  - Camera needs to be able to rotate 360°
- Arm camera
  - Needs to be looking down at claw to get a better view of what the rover is picking up
- Front drive camera
  - Needs to have a view of both wheels

Mounting the Mast to the Chassis

- This part can be screwed on either the inside or outside of the chassis and a fiber glass tube would be slid into the square piece.



Mounting Camera on top of Mast

- Last year's solution
  - 
- Swivel mount

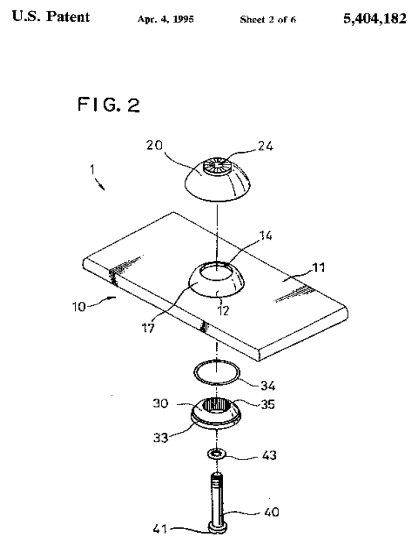

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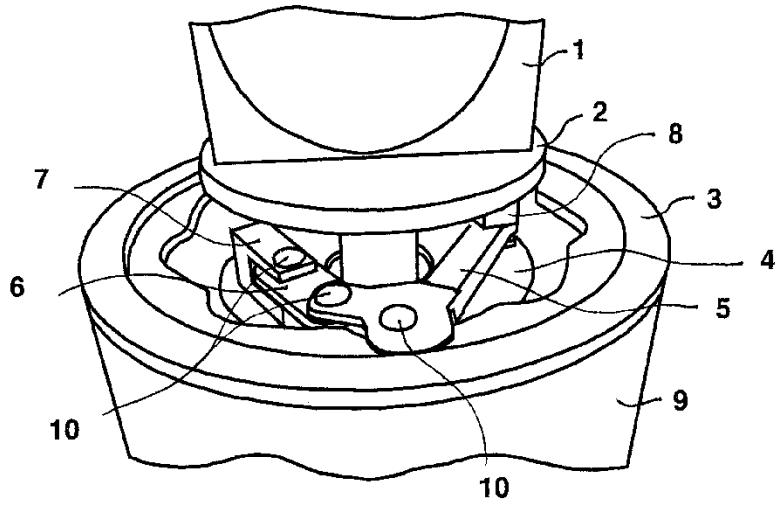
FIG. 2

  - Can be placed on the chassis or arm and manually adjusted to the needed angle.
  - We would have to build something to hold a small camera that would attach to the swivel mount.

- Rotating platform



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  - This platform rotates 360 degrees. We would attempt to put this part on top of a mast.
  - A thing to consider is the wires getting twisted as the camera rotates around. In past years they have had the wires go down the center of the mast and had the camera rotate about that center. We would also only allow it to turn 360 degrees and then make it go back in the other direction.

Arm Camera

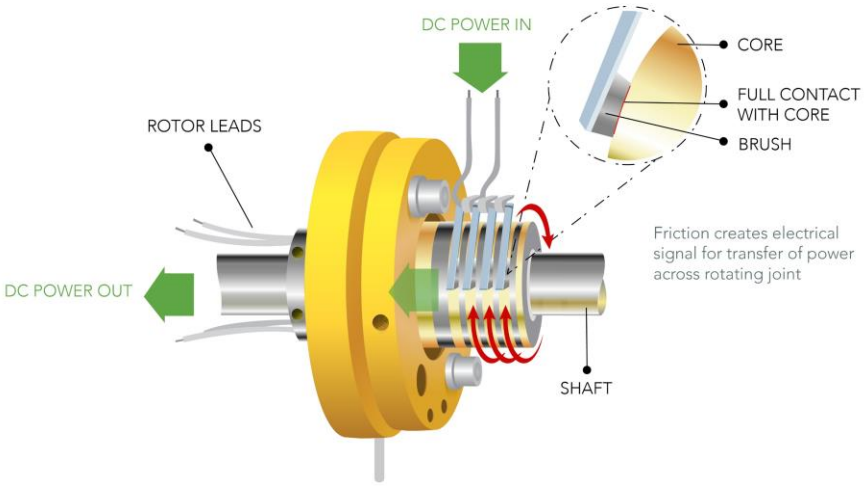
- Small camera that won't hinder arm movement
- Would be looking down at the arm from an angle so that the claw won't block most of the view
- Can use the swivel mount

Front Drive Camera

- Have one camera in the front and center of the rover to get a view of both front wheels
- Have one camera mounted one of the front corners of the rover
- Have two cameras with 1 by each wheel

Preventing Wire Twist

- We can use a slip ring so that the camera can rotate a full 360° without the wires twisting
- Slip rings transfer electric currents through an electrically conductive metal ring that rotates while stationary brushes, usually made of some type of graphite, are in constant contact with the ring. There are then wires connected to the brushes and the rings that can transfer power and data to and from the source.



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Conclusion

- We have many options for mounting the cameras and we feel like all of them would work well and would not be too difficult to manufacture. However last year's solution will probably be the best for the mast camera. Also we should look to add a slip ring to the mast camera so that it can keep rotating after the panorama so it doesn't have to go all the way back around.

Sources

https://www.google.com/patents/US5404182

https://www.google.com/patents/US8773503

https://powerbyproxi.com/slip-ring/