

**ME183 Mechanical Engineering Lab IV  
Fall 2000 - ASME STUDENT DESIGN  
CONTEST  
"Sip-and-Puff" Fishing Rod**



**The Design Problem**

A definite need exists for outdoor sports equipment which integrates "sip-and-puff" technology for control of the device. For instance, a quadriplegic who may be well practiced at using sip-and-puff controls to maneuver a wheelchair, may not readily find or be able to buy a similarly controlled device to allow him or her to go fishing.

Specifically, you are requested to design and demonstrate a well-tested, cost-effective, and reliable prototype apparatus which would allow a quadriplegic to cast accurately a fishing lure using a specified rod and reel "Snoopy catch 'em kit".



**ME183 (Mechanical Engineering Lab IV) Project**

This ME 183 project consisted of a design portfolio due in the middle of the semester, class presentation, construction phase, and design trials. The students were given a budget of \$50 and came up with some exciting and novel designs.

For more details see the ME183 course web-site:  
<http://www.emba.uvm.edu/~iatriadis/me183>

**Results** (in the order of competition)

**Pat, Greg, Charlie and Josh (Group 1)** with their casting system. This group was very resourceful and did a great job finding parts and staying under budget by using "out-of-the-shop" technology. Their device applies translation and rotation to the Snoopy pole and mimics a traditional casting motion. The design had several electromechanical systems to drive a car along a track and pivot the fishing rod at the end of

the road. Their transport system had significant frictional losses and didn't adequately transport the car. With a little help from Pat's arm, though, this project won the "Greatest Distance Award."



According to Group 1, the transport setup "closely resembles a ski lift where the car is represented by the chairs on the lift." The only difference is that with their device the skier would get catapulted out of the chairlift and onto the trail. This group is optimistic about inventing a new action sport and wants to bring their design concept back to the ski industry. The sky is the limit for this technology which also put them in the running for the prestigious "most likely to cause serious injury award."



**Jeff, Brad, and Tyler (Group 2)** with their Snoopy casting project. This was the first of several designs to use a slingshot casting style. This project won the "Best Rewind Action Award." Their application of the KISS principle showed significant promise. Their timing circuitry and use of a second reel demonstrated this group's ingenuity.



System by system, their device worked well, however, with all systems go the lure didn't. Never fear...with its vertically downward cast it was clear that this system was ready for ice fishing. Get out the drill and warm up the cider.



**Brock, Mark, Shannon and Jon (not present) (Group 3)** showed the most heart by pushing the slingshot casting technique to its elastic limit. This design had several interesting systems that all fit neatly (or nearly) into a compact steel box.



This project won the "Best Use of Available Technology Award" for their application of an erector set, PVC pipe, and bottle caps. All mechanical systems were well tuned for the competition. If it weren't for some electrical "diode I think" problems, their system would have surely scored high. Shown below is their bail gripper system that was modeled after a lobster claw. For further system development Group 3 is pursuing a grant through the Red Lobster Foundation.



**Hale and Brian (Group 4)** won the "Best Manufactured Device Award" with their entry. They had an ingenious use of a worm gear as both rewind mechanism and for distance control. This group demonstrated their manufacturing prowess by making carefully machined aluminum parts and a hand-wound solenoid.



All Snoopy Project participants agreed that Group 4's project showed the most potential for success in the regional/national competition. We hope they pursue regional greatness and wish them luck!



**Chung-Han's (Entry 5)** device was based on the sling-shot design and incorporated 2 reels. The underlying design goal was simplicity. While the theory was simple, this project won the coveted "It Ain't Fishin' If Yer Line Don't Get Tangled Award" and we discovered that untangling the line isn't as simple as getting it tangled in the first place.



Chung-Han persevered and made a valiant showing as the only solo entry.



**Congratulations** to all participants in the Snoopy Design Trials for your efforts in making prototypes!!!

**Thanks** to attendees to the Snoopy Design Trials for your support!!!

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