

BONGOTIE TYING MACHINE

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Get It Together! -- with
BongoTiesTM
HANDY ELASTIC TIES FOR CABLES AND OTHER UNRULY ITEMS
CEO Tim Petros

BACKGROUND

What is a BongoTie?

They are currently **HAND-TIED** at 10s/BongoTie. This is too **SLOW** and is **UNSAFE** since users get snapped my pins



MANUFACTURING

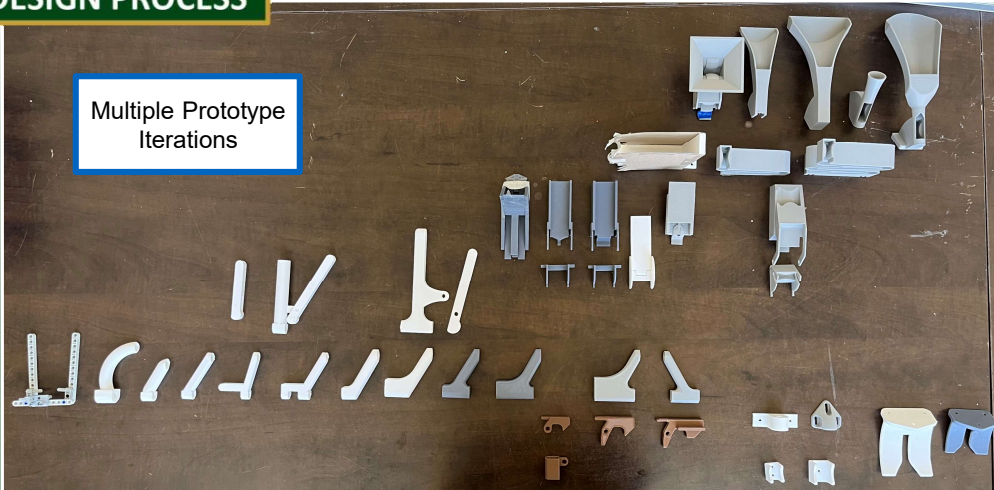
Student machine shops to manufacture base



3D Print majority of components in PLA.

DESIGN PROCESS

Multiple Prototype Iterations

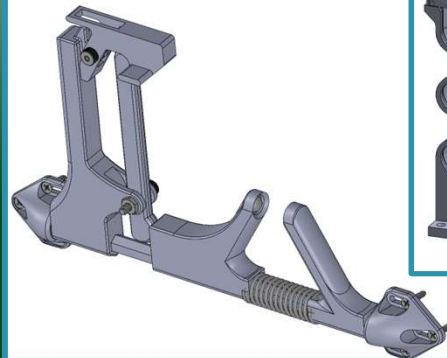


OUR DESIGN

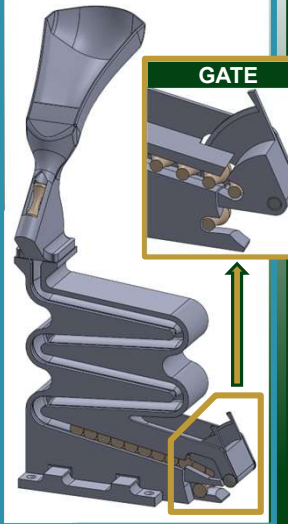
3 Main Subassemblies

- **Pin Arm Assembly**
 - Assembles BongoTie
- **Pin Loader Assembly**
 - Orients and Loads Pins
- **Base**

PIN ARM ASSEMBLY



PIN LOADER ASSEMBLY



HOW TO ASSEMBLE A BONGOTIE



STEP 1: Load band onto pin arms. Then turn up to reveal pin.



STEP 2: Lock pin into pin arms and grab revealed band.



STEP 3: Continue pulling band off pin arms to form knot.



STEP 4: Move band between finger guard and lift the pin arms to tighten the knot. Repeat if necessary.



STEP 5: Release assembled BongoTie.

TEST RESULTS

We tied 1000 BongoTies:

12.9 sec/BongoTies
Including Loading Pins

97% Stayed Tied

8.5 minutes
Learn to Assemble

CONCLUSIONS

What we Learned:

- Hand-operated device still too slow
- Device is safer and requires less dexterity
- Strengths and weaknesses of 3D printing

Next Generation:

- Sponsor intends to further automate
- Band handling (hard problem!)
- Better pin funnel for faster loading
- Electronic control
- Concept will be used