

ODP Final

Design Review:

PinPoint

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**Alternative idea of a sophisticated seam ripper
was dismissed*

IDEA FORMULATION



INITIAL IDEA

- Initially considered ways to collect loose pieces of fabric/scrap
- Other problems which we assumed were bigger issues



INTERVIEW

- Major problem is messing up a stitch/need to undo a mistake
- Brainstorm ways to undo stitches, conserve material, easier to get back on track
- All makes sewing more pleasant to learn for new users



USER NEEDS / SCENARIO

- After some brainstorming, it is more beneficial to the user that the problem never happens
- Prevent the problem rather than fixing the resulting mess**

Target Hobby: **Sewing**



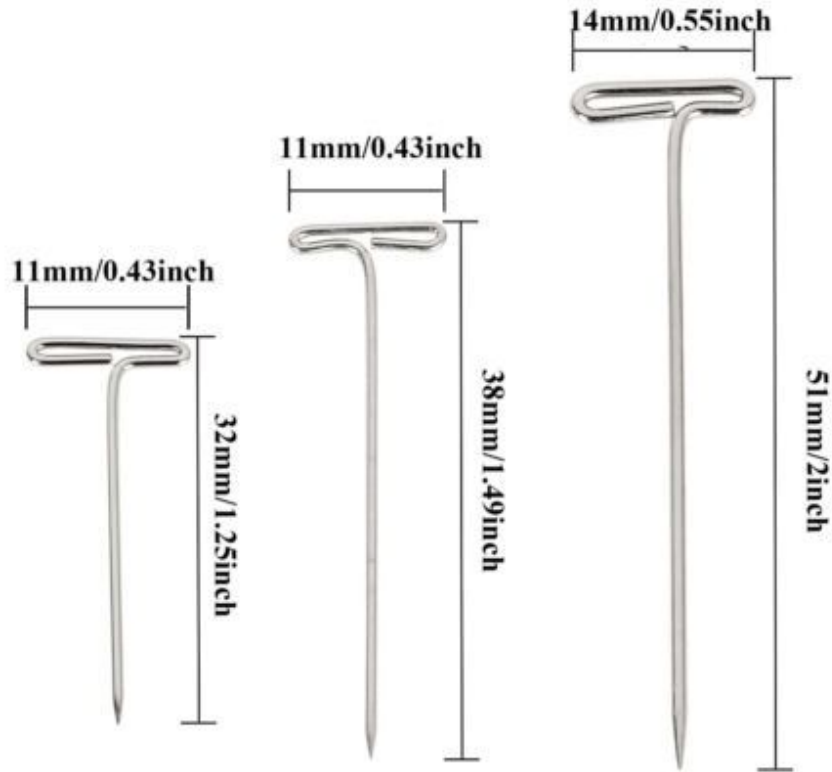
- Many areas problems can arise
- Many interviewees and experiences to draw from

OUR PROBLEM STATEMENT:

Traditional pinning methods can be time-consuming and difficult, particularly for individuals with physical limitations or those new to sewing. Accuracy is critical yet pins can be hard to handle, a large number is required, and when done incorrectly can damage delicate fabric. As such, there is a need for Auto-Pin to simplify the pinning process, make it safer, more accessible, and more enjoyable.

A stapler-like device for sewing pins to simplify the insertion process.










Nickel-Plated Steel.

Packed 1/2 lb. per box.

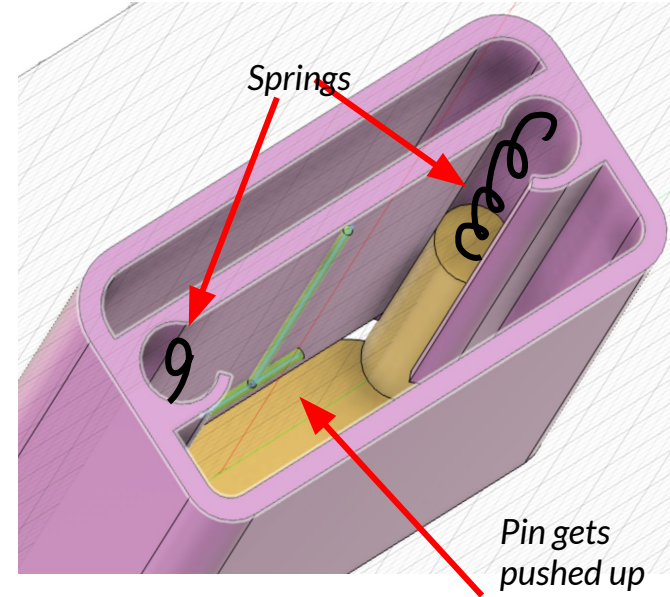
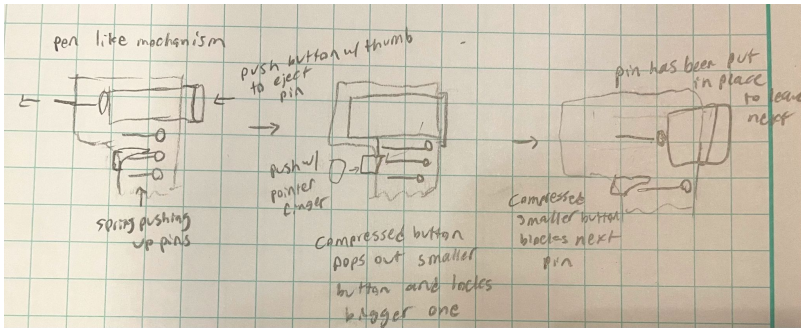
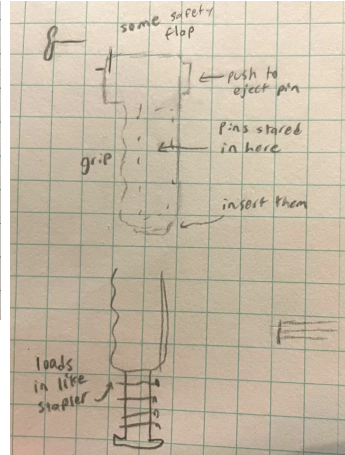
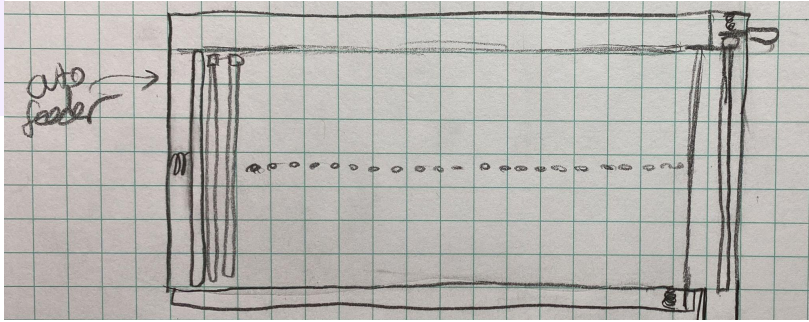
Westchester Sewing

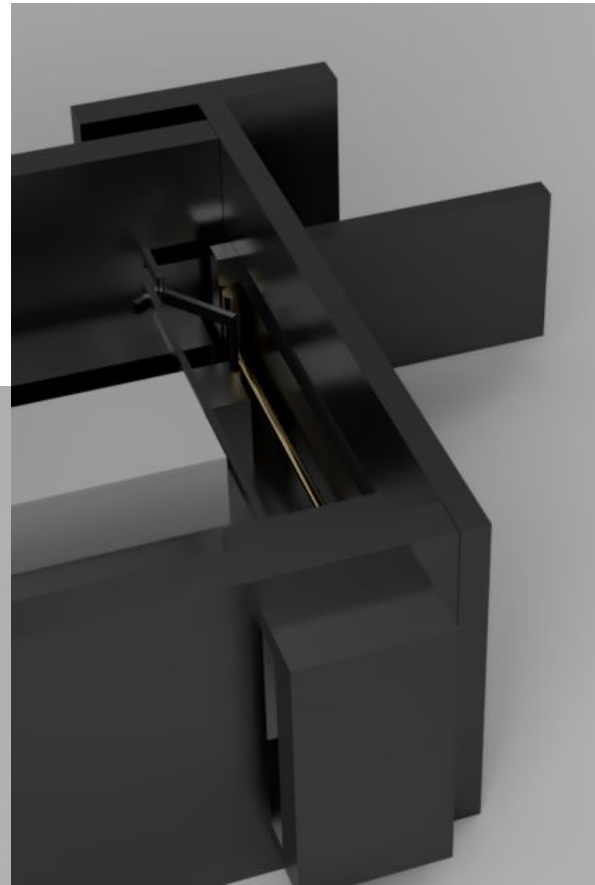
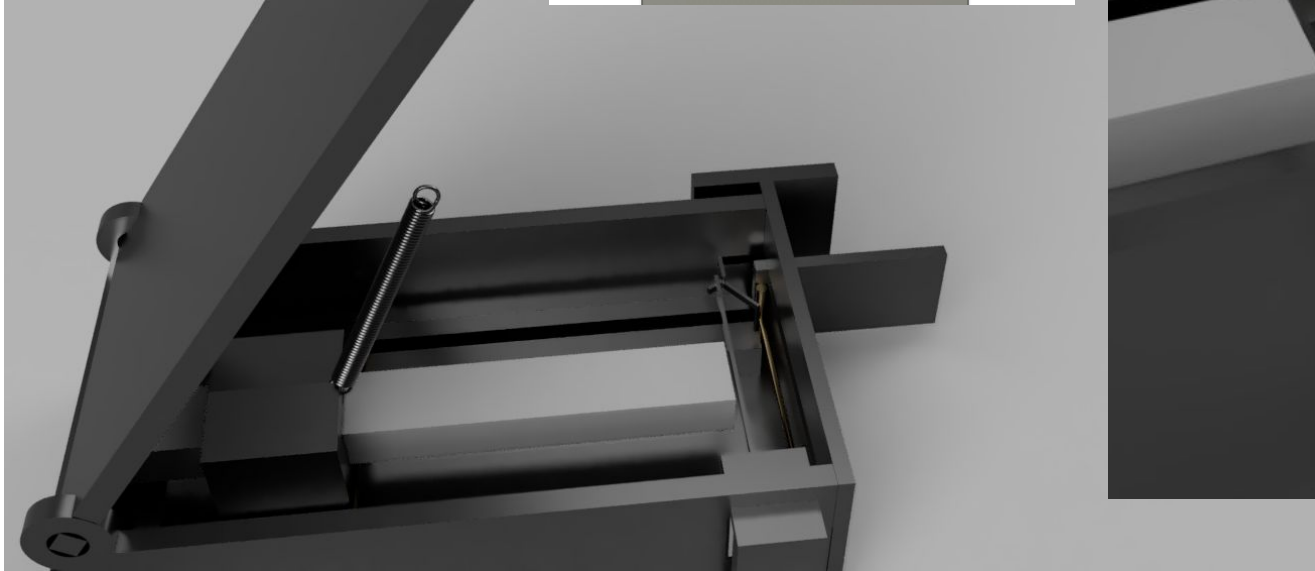
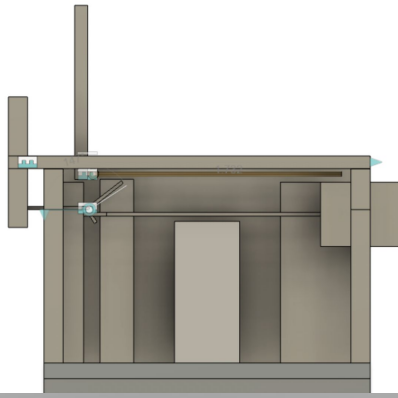
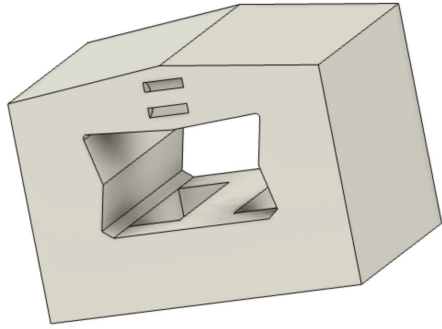
					
Size	16	20	24	28	32
Length	1"	1-1/4"	1-1/2"	1-3/4"	2"
Diameter	.030"	.0335"	.033"	.045"	.045"
Approx. Count Per Box	1600	1100	450	400	375
Part #	P214100	P214200	P214300	P214400	P214500

T-pin sizes range from 1-2 inches with varying diameter and head size.

> We should allow enough room for 2 inch pins but have the magazine apply force to the area of a 1 inch pin, this way our device is usable with multiple sizes

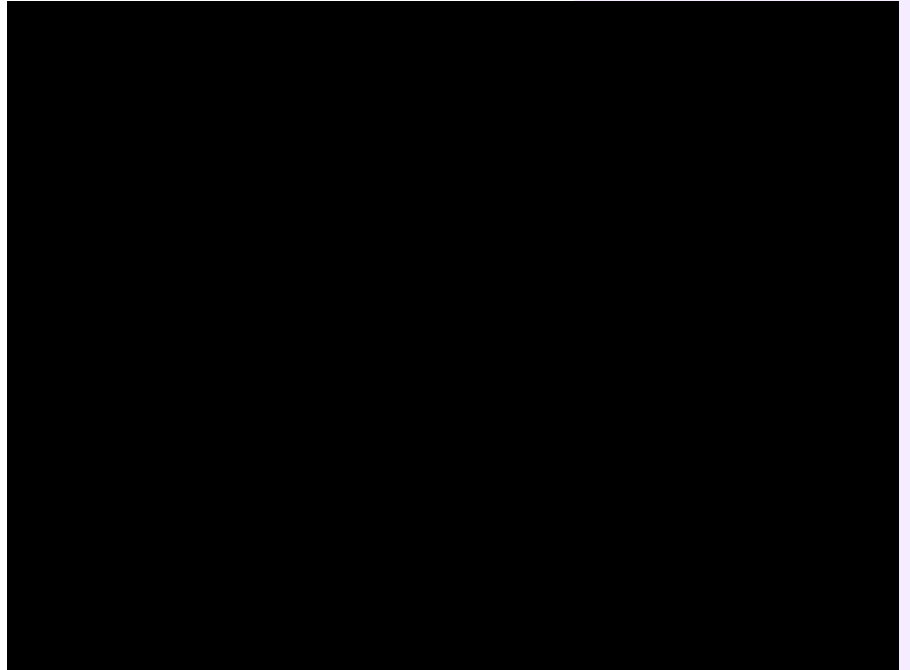
PRELIMINARY DESIGNS





FINAL CAD

VIDEO / ANIMATION



Material	Source	Quantity	Total Cost (\$)
Auto-Feeder Spring	McMaster-Carr	1pkg -6pc	\$14.92
Bearing Balls	McMaster-Carr	1pkg -100pc	\$8.20
3D Print	RPL - ABS \$1.00+\$0.50/g	3.59g	\$3.30
Laser Cut Casing	RPL - Acrylic	5.5mm 3mm	\$2.87 \$6.82
Total			\$36.11

PROTOTYPE COST ANALYSIS

Our prototype uses less than the provided \$50 budget.



TARGET MARKET

- About 35 million households in the US own at least one sewing machine.
 - Based on study by the Home Sewing association.
- Recent rise of DIY and sustainability movements → sewing has become more popular amongst younger generations.
 - Report by the National Endowment for the Arts asserted the number of crafters ages 18-34 increased by 13% between 2011 and 2016.

TARGET USER

- Professional tailors and seamstresses
 - No room for mistakes
- Hobbyists and DIY enthusiasts
 - Decreases time spent on the “boring part” of sewing projects
- New sewers
 - Enforces importance of pinning
 - Makes it more approachable
- In the future: individuals with physical disabilities or limitations that make traditional pinning difficult or impossible

“Sewing with a machine moves extremely fast ... [a new user] wouldn't notice when the fabric gets caught up until way too late”

“It's unforgiving for beginners ... the number of times I had to seam rip when I first started was atrocious.”

“A majority of my time [on sewing projects] goes into planning and prepping”

EXISTING SOLUTIONS



1. SewTites (\$21.99 x 4)
 - a. Replaces pins with magnets
 - b. Targets quilting with a strength for precision
2. Wonder Clips (\$20.66 x 50)
 - a. Replaces pins with clips
 - b. Targets bulk fabrics or for sewing through multiple layers
3. Pinmoor (\$40.60 x 100)
 - a. Replaces pins with small silicone discs
 - b. Easier to use and less damaging to fabric
4. Our solution
 - a. Simplifies pinning process
 - b. Utilizes the pins our users already have

TAKEAWAYS

- Importance of the user interview process - the user understands their needs better than anyone else
- Effectiveness of team brainstorming - we all had unique ideas and our final product implemented parts of them all
- Challenges of design by part method - assembling separately designed parts takes a lot of time
- Inspiration from other products (stapler inspiration) - products exist because they work well!

Design for Manufacturing:

- Had our prototype in mind and worked towards a design where the prototype could resemble the final product utilizing the materials we had and our \$50 budget
- Mass producing them would have a very similar price → plus the launching mechanism

REFERENCES

"National Endowment for the Arts Releases Latest Survey of Public Participation in the Arts."

National Endowment for the Arts, 27 Jan. 2020. Web. Accessed 20 April 2023.

<https://www.arts.gov/news/press-releases/2020/national-endowment-arts-releases-latest-survey-public-participation-arts>.

"3.5 Million Sewing Hobbyists in the USA." Under the Gables. Blogspot, 14 Aug. 2007. Web.

Accessed 20 April 2023.

<http://underthegables.blogspot.com/2007/08/35-million-sewing-hobbyists-in-usa.html>.



QUESTIONS?
THANK YOU!

PARTS LIST

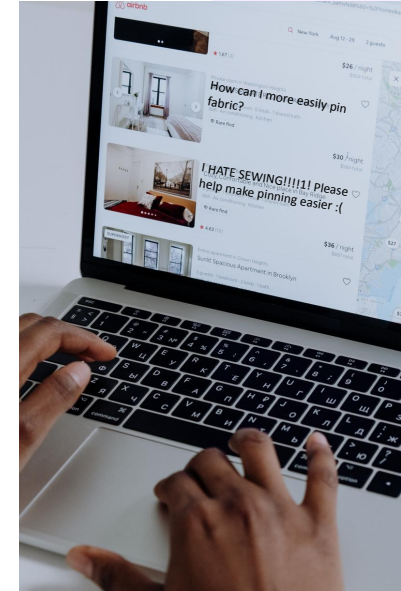
Manufactured Parts:

- Casing
- Auto-Feeder Board
- The small supporting pieces

balls

Acquired Parts:

- Launching Spring: 1" Long, 0.148" OD, 0.112" ID , 3 lbs./in.
 - <https://www.mcmaster.com/9657K681>
- Support Spring: 0.25" Long, 0.12" OD, 0.08" ID , 46 lbs./in.
 - <https://www.mcmaster.com/9657K256>
- Auto-Feeder Spring: 2" Long, 0.18" OD, 0.132" ID , 4.3 lbs./in.
 - <https://www.mcmaster.com/9657K381>



PRELIMINARY CAD

(Pen design)

