

Background

- Carolyn Wren is a visual artist
- For over a decade she has wanted to create an installation which incorporates dropping of straight pins from the ceiling
- The art installation will represent how peace and quiet are often sought after, though are very rarely found in the chaotic world we live in¹

Design Process

- Pin moving concepts were conceived and evaluated through rudimentary prototyping
- Pre-separated pins were discovered to be essential to the pin delivery system
- Selected design was constructed, evaluated, and adapted to ensure functionality

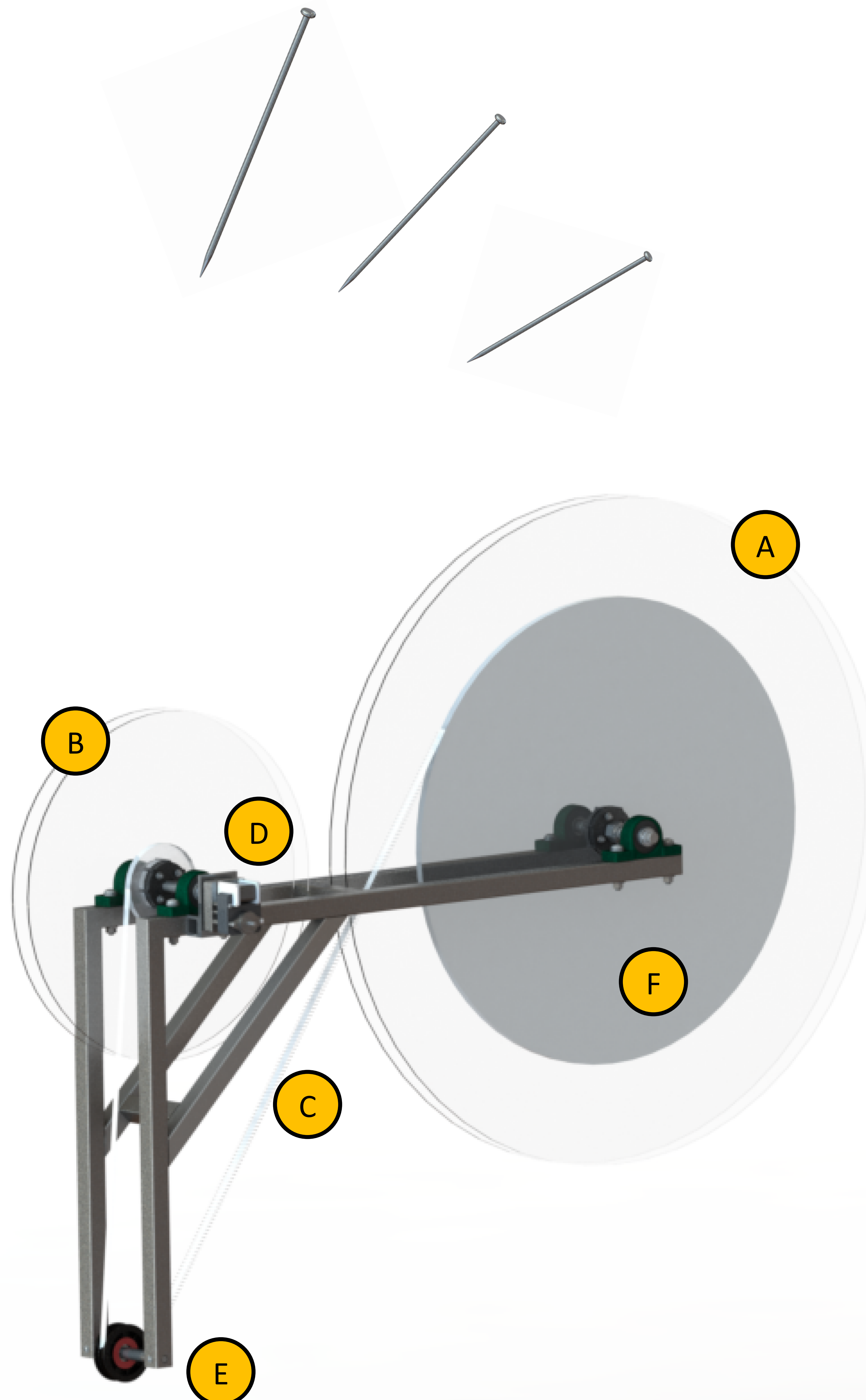
Pin Delivery System

- Pins are pre-loaded on an adhesive strip which is coiled onto a spool
- The adhesive strip passes through the pin drop location and is gathered on the collector spool
- Pins over-hanging either side of the adhesive strip are pushed off the strip at the pin drop point
- Pins drop to the floor forming an increasing pile of pins
- 7 modules of the system will be positioned in a radial orientation with the pin drop points located in the center

References

- Carolyn Wren, Interview, 25 Sep 20

Team 22: Nathan Bertram, Peter Black,
 Alexandra Smith, Owen Smith



Requirements

- To meet the artist's vision the machine must:
- Drop individual straight pins at a rate of 1 pin every 2 ± 1 seconds
 - Run for a period of 90 days, for 12 hours a day
 - Generate no more than 10 Db of sound measured from the point of the spectator
 - Be able to be transported with the straight pins pre-loaded on the spool
 - Attach to the ceiling
 - Drop 2,000,000 pins to form a single pile on the floor below

Components

- A. Loaded Spool—Stores adhesive strip loaded with approximately 290,000 straight pins
- B. Collector Spool—Collects the empty adhesive strip after the pins have been removed
- C. Adhesive Strip—reinforced tape transports pins from the loaded spool to the drop point
- D. Motor—Drives the collector spool
- E. Drop Point—Pins are pushed off the adhesive strip by the walls of the pulley
- F. Loaded Pins—Pins placed on the adhesive strip are coiled up while they wait to drop

Recommendations

- Increase adhesive strip width to 0.75 inches for increased pin travel stability and loaded roll stability
- Increase spool side thickness to ensure adequate support is given to the pin roll on the loaded spool
- Decrease the width of the collector spool to match the adhesive strip width to help guide strip more effectively
- After many runs, the press fit spools may loosen. To avoid this, snap rings should be added to either side of each spool to ensure that the spool does not slide side to side.