

Design Project 1: Dumpling Machine

Project Description:

Design Task:

Design and build a prototype of a dumpling maker suitable for use in either a household or a restaurant (backgrounds and some other details will be explained in class).

Design Specifications:

- The dumpling maker should be automatic or semi-automatic.
- The dumpling maker should produce no less than 10 dumplings per minute on average.
- The material cost for the dumpling maker should not exceed \$200 unless it can be justified.
- The dumpling maker should be safe as a food processor, easy to maintain, safe to use, and dishwasher safe.

Key Deliverables:

1. A lab report to be published on the web with the following items included (*Note: Guidelines for the lab report will be given later*):
2. Problem statement
3. Mission statement
4. Customer needs assessment
5. Gantt chart
6. Design approach (concept generation and concept selection with design matrix)
7. Working drawing
8. Prototype (images, scale, operation instruction, etc.)
9. Working mechanism and engineering analysis
10. Cost analysis
11. Conclusion
12. References (if any)
13. Acknowledgement (if any)

Evaluation Criteria:

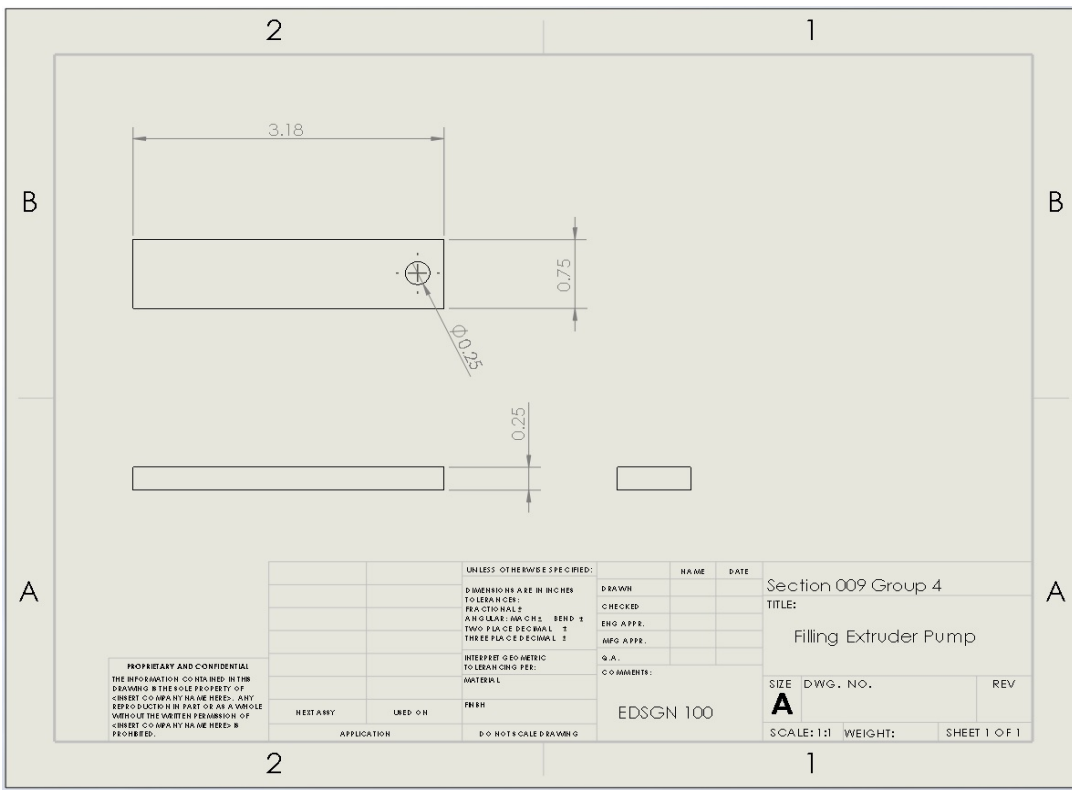
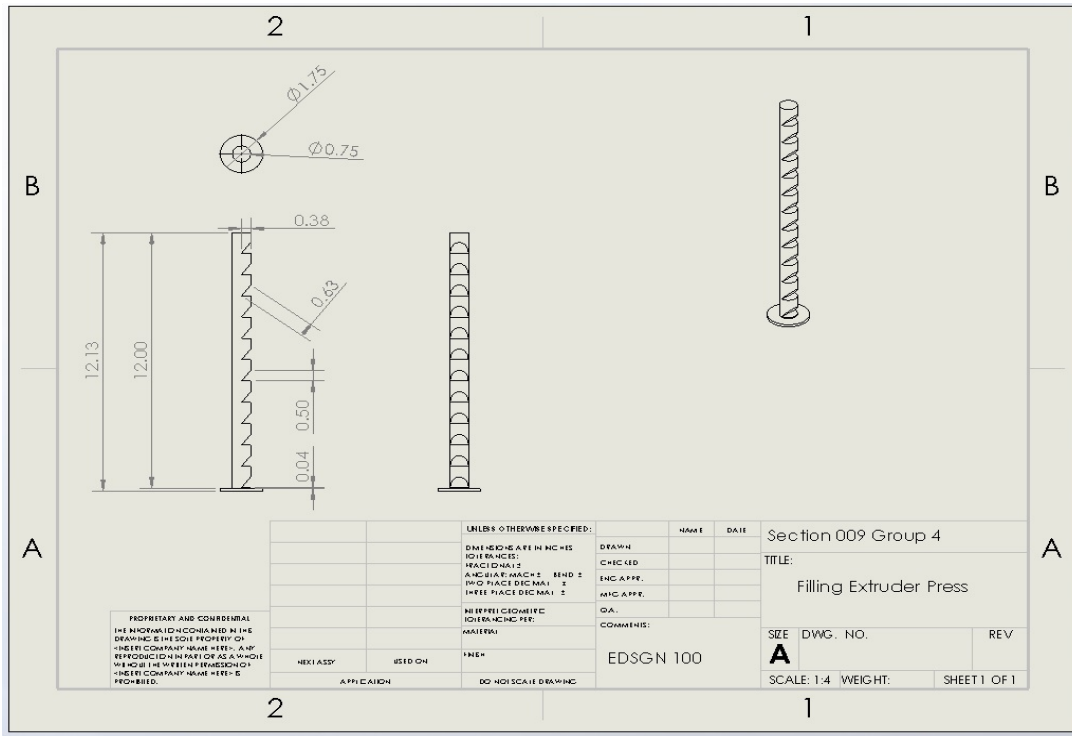
- Design meets specifications
- Creativity/Innovation
- Working mechanism and operation instruction are clear
- Ease of operation
- Safe to use
- Cost efficient

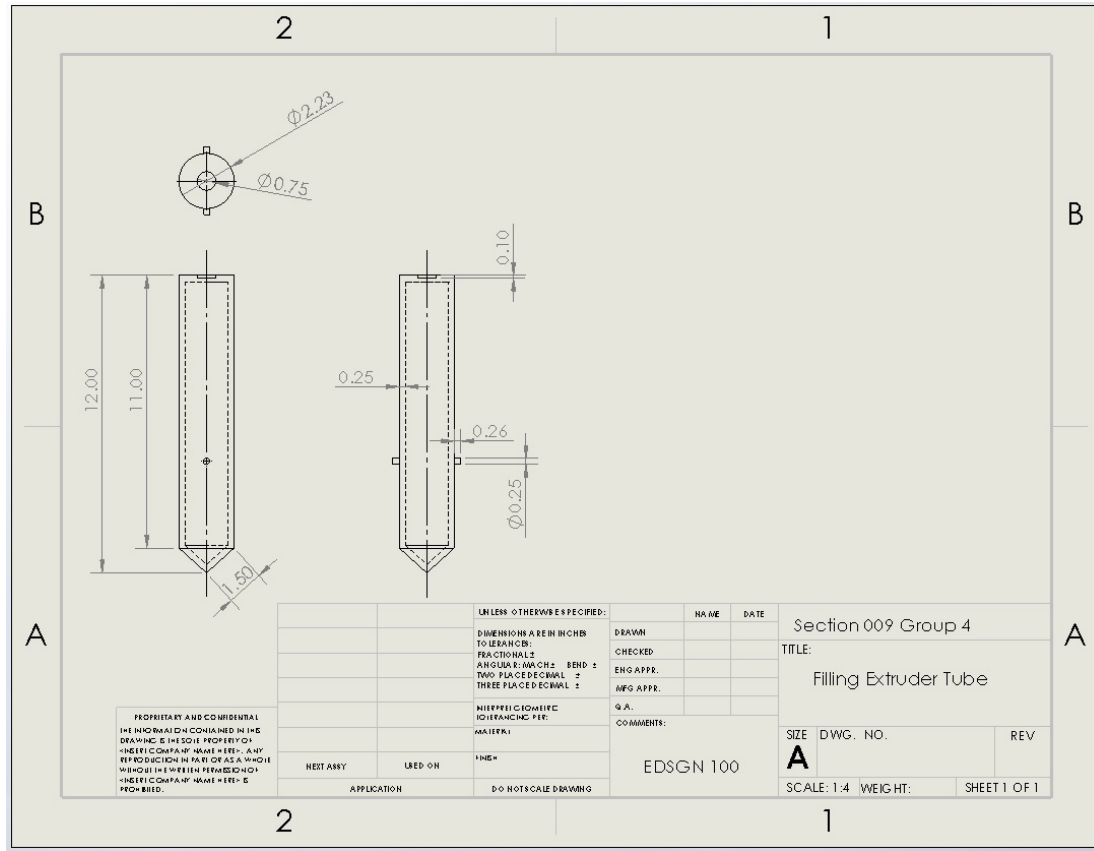
A 3D CAD model of a mechanical assembly, possibly a hand-operated pump or a small motor. The assembly consists of a base plate with a large circular component on the left, a central vertical cylinder with a handle on top, and a rectangular housing on the right. A long handle is attached to the side of the housing. The model is rendered in a light blue color with a soft shadow.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Filling extruder pump		1
2	Filling extruder tube		1
3	Filling extruder press		1
4	DumplingBase		1
5	DumplingCutter		1
6	Doughextruder		1

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES TO DECIMALS: FRACTIONALS ANGULAR INCHES: 30 TWO PLACE DECIMALS THREE PLACE DECIMALS		DRAWN	
		CHECKED	
		ENG APPR.	
		AWG APPR.	
HIERARCHICAL TREE: DRAWING TREE: MATERIAL		G.A.	
		COMMENTS:	
DESIGN	EDSGN 100	TITLE: Dumpling Machine Assembly	
SIZE	DWG. NO.	REV	
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1	

Detailed Drawings:





Main Design Features:

The design of this dumpling machine features a dough extruder, a base, a filling extruder, and a revolving cutter. The dough is inserted into the dough extruder and then rolled into a thin sheet. The sheet has filling placed onto it by the filling extruder in increments. The thin sheet then is folded by the two posts on the base. The folded sheet then lays on its side and is then cut by the revolving blade. The product of this is dumpling and excess dough, which is then placed back into the dough extruder as the process repeats.