

Electric Produce Spinner

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Abstract

SpinLeaf is in the process of designing and building an Electric Green Spinner for Stone Gardens Farm, a small-scale family farm in Shelton, CT. One of the farm's important and time-consuming tasks is the process of cleaning the loose-leaf greens.

Currently the cleaning duty includes first soaking the greens in water, followed by a rinse cycle inside the farm's spinner. If not executed properly, dirt or remaining pesticides may stay on the greens. While the present process works, there still exist some health issues as well as the room for improvement.

The main function of the new apparatus will be to not only dry, but also clean the greens, all in one cycle. The new model will be made of strictly food safe material, and include safety features not present on the current model.

Motivation

Support Stone Gardens Farm in their pursuit of delivering a product the way NATURE intended



The Problem

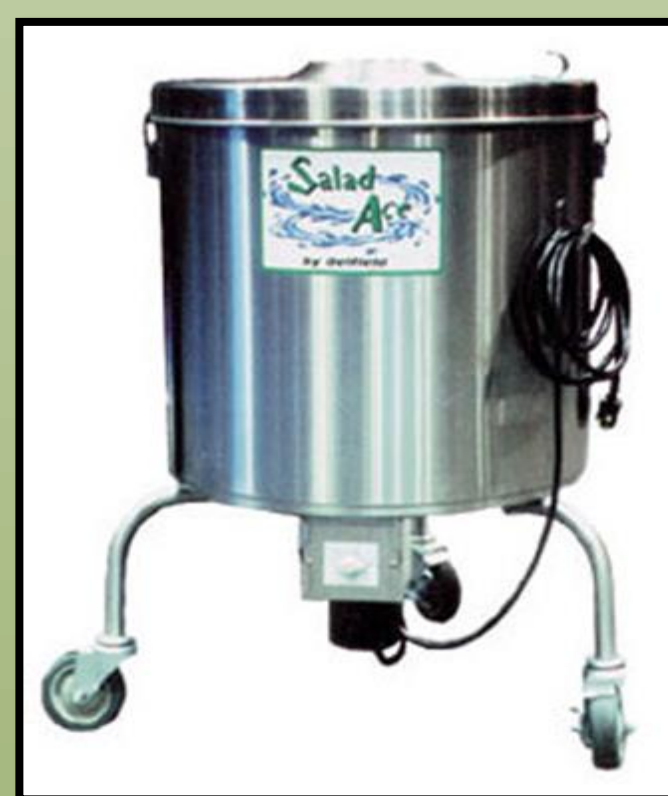


Fig (1-3) Other types of Salad Spinners on the Market

Small-scale farms are challenged with constructing custom-built produce machinery in order to compete in the agricultural market. For small to mid-sized farming operations, the necessary equipment is not always readily available or the equipment is designed, and more importantly, priced for the larger, corporate scale operations.

This leaves the task of designing and constructing the necessary equipment up to the farmers themselves. Fairfield University's School of Engineering has teamed up with Stone Gardens Farm to design and construct a loose greens spinner that will focus on safety, efficiency and reliability.

Old Design

- Frame is constructed with non FDA approved food safe materials such as woods, plastics and rusting hardware
- There are no current safety measures in place in the event of an emergency



Fig 4 (Old Spinner Front View)



Fig 5 (Old Spinner, Side View)

New Design

- SpinLeaf's design calls for 100% FDA food safe materials, such as Stainless Steel
- Variable speed motor to allow the user to control the RPM
- Internal water delivery system to eliminate the need for pre-washing the produce
- A mechanical brake system to allow the user to stop the drum in the event of an emergency
- Larger overall size to increase productivity

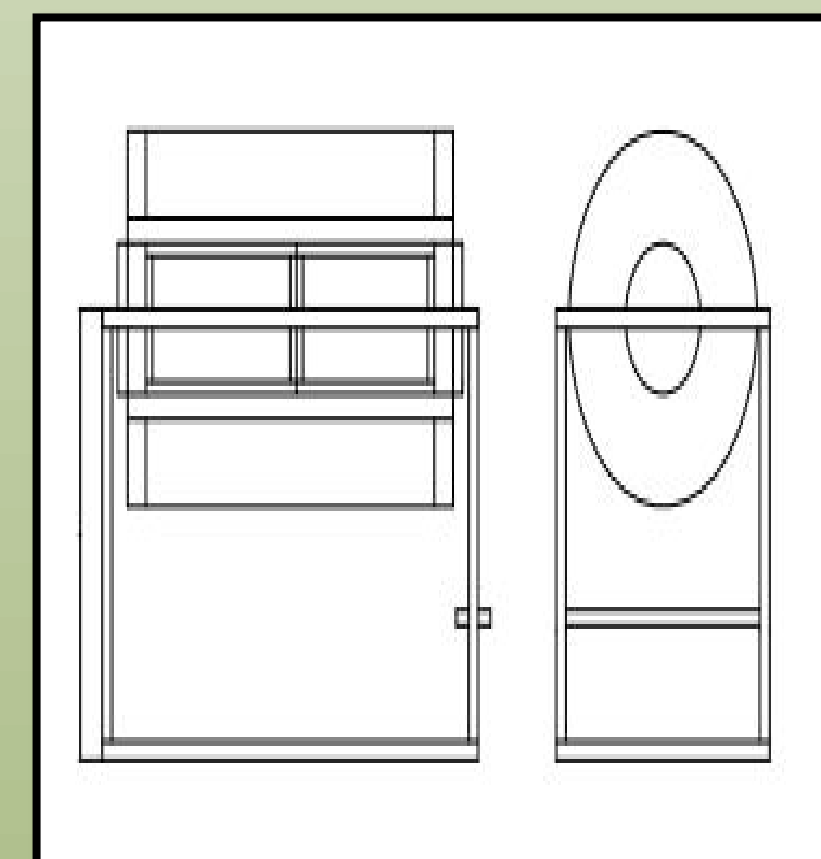


Fig 6 - AutoCAD rendering of the new proposed design

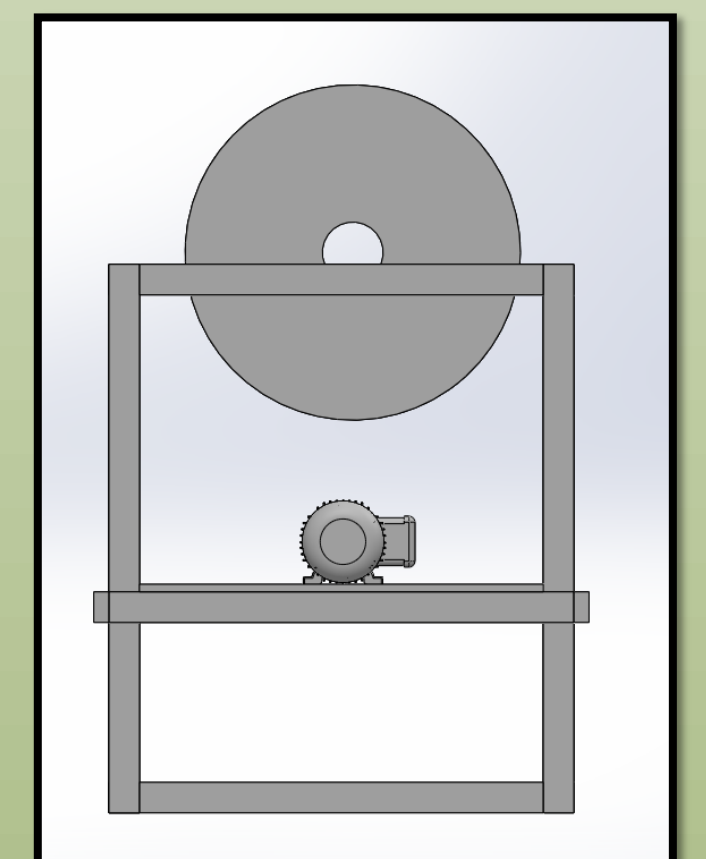


Fig 7 - Solid Works (Side View)

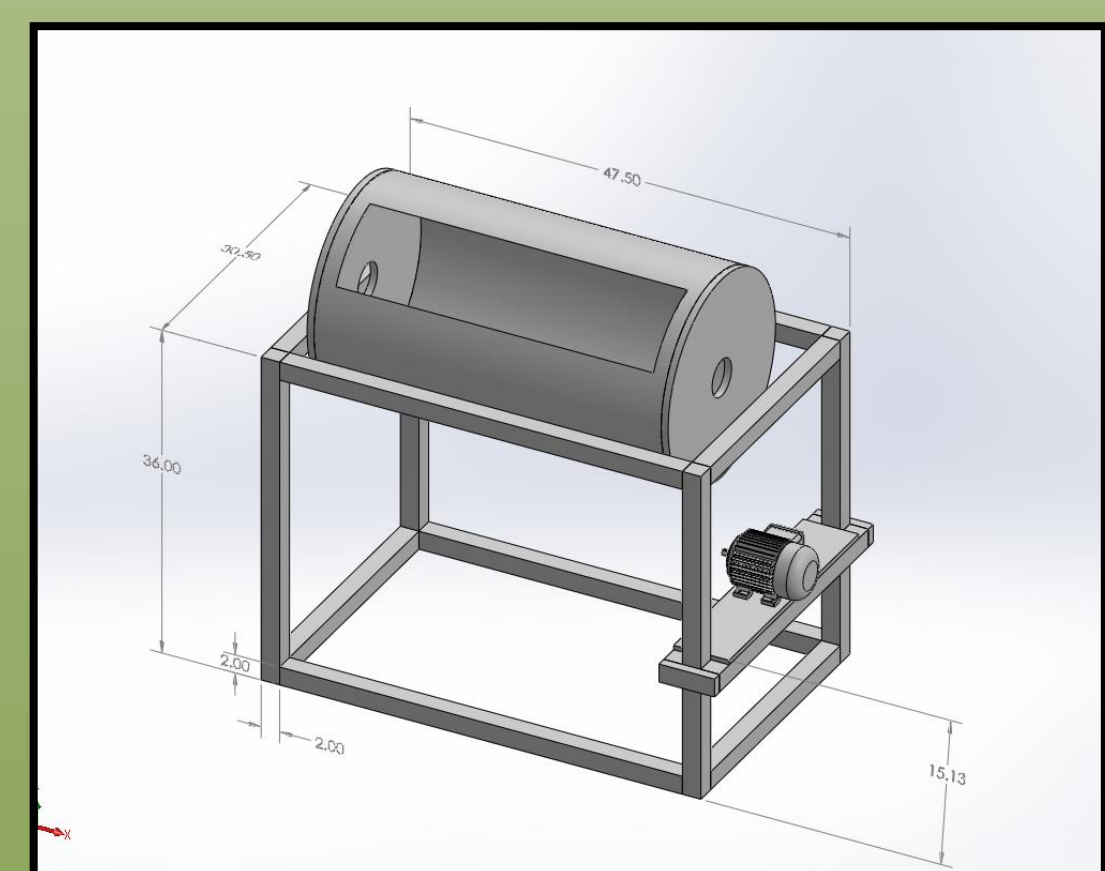


Fig 8 - Solid Works Full Model

SpinLeaf						
Bill of Material						
Material/Part	Size (Per unit)	Unit of Measure	Quantity	Usage	Cost	
Motor	3/4	HP	1	Motor for spinning drum	\$199.99	
PWM	TBD		1	For varying RPM of motor	\$100.00	
Steel	24	Linear FT	2	Boxed Steel needed for building the stand	\$200.00	
Perforated SS Mesh	48x48	IN	?	Drum	\$362.04	
SS Sheet	TBD			Drum	\$339.00	
2 Way Union	TBD		2	Drum Rotation	\$40.00	
Flat Steel	1 1/2" x 36"		2	For motor mount	\$20.00	
Angle Iron	1 1/2" x 36"		1	For motor mount	\$9.00	
Boxed Aluminum	3/4"x48"	Linear FT	2	Door Track	\$16.00	
Angled Aluminum	1"x48"	Linear FT	1	Door Track	\$20.00	
Magnets	NA		2	Doors	\$3.00	
Handles	NA		2	Doors	\$5.00	
Belt Pulley	TBD		1	To turn drum	\$25.00	
Fly Wheels (Big)	12	IN	2	For Belt Pulley	\$12.00	
Fly Wheels (Small)	3	IN	2	For Belt Pulley	\$13.00	
Misc SS Hardware	NA		TBD		\$50.00	
Band Brake			1		\$30.00	
SS Pipe	1/2	IN	1	Water Delivery System	\$70.00	
Misc Plumbing						\$1,514.03