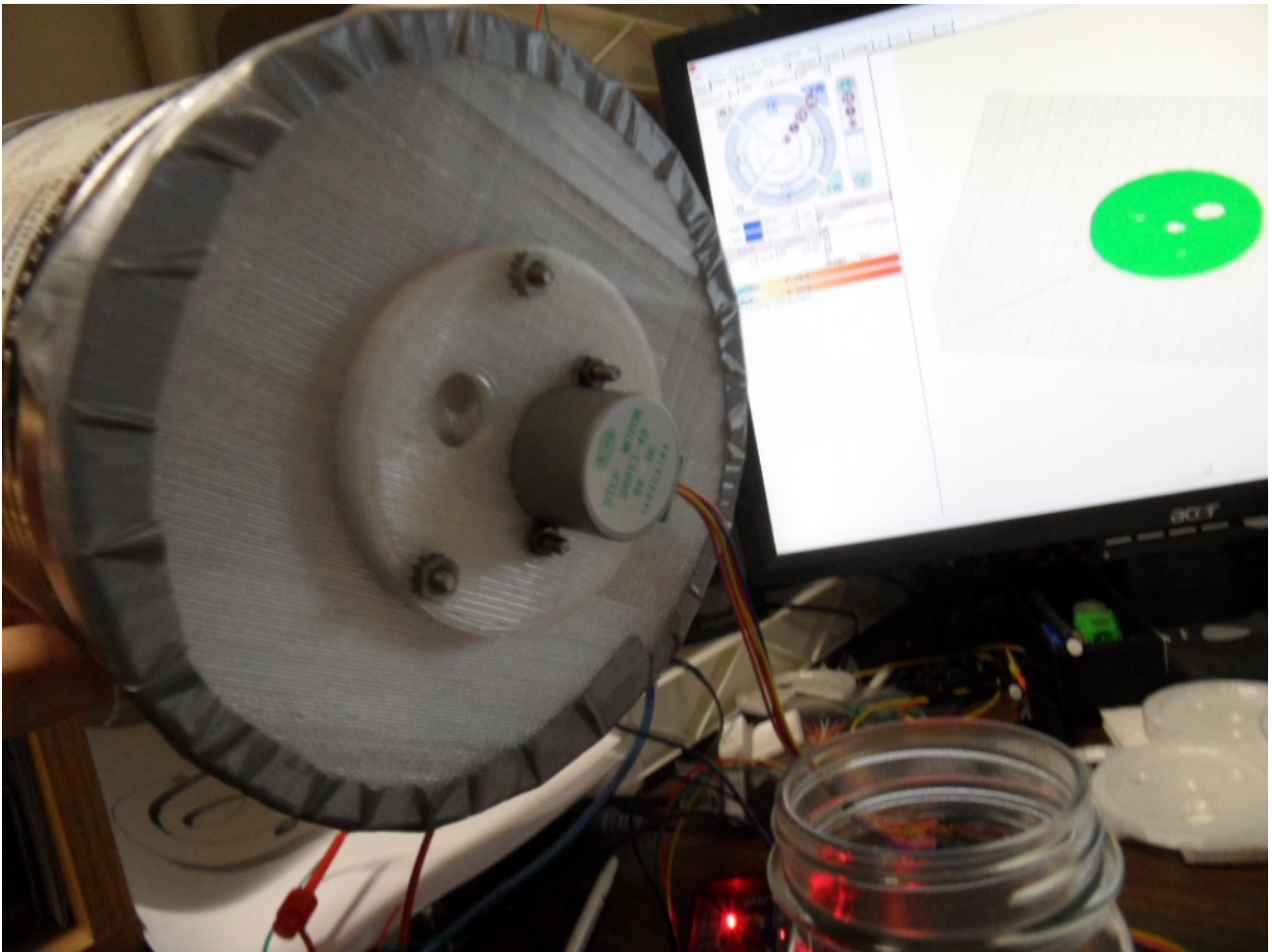# ArdiChef Project

by Thomas Gittins

The ArdiChef Project attempts to automate the entire process of kitchen cooking through the use of automatically microcontrolled food dispensers, cooking units (stove), mix / stir equipment (blenders) and cleaning (dish washer).

Bulk Dry Foods

Using the Gumball approach the 1-Gallon bulk dispensor was created with a 3D-Printer and a 28BYJ-48 5V 4-Phase 5-Line Stepper Motor with ULN2003 Driver Module Board.
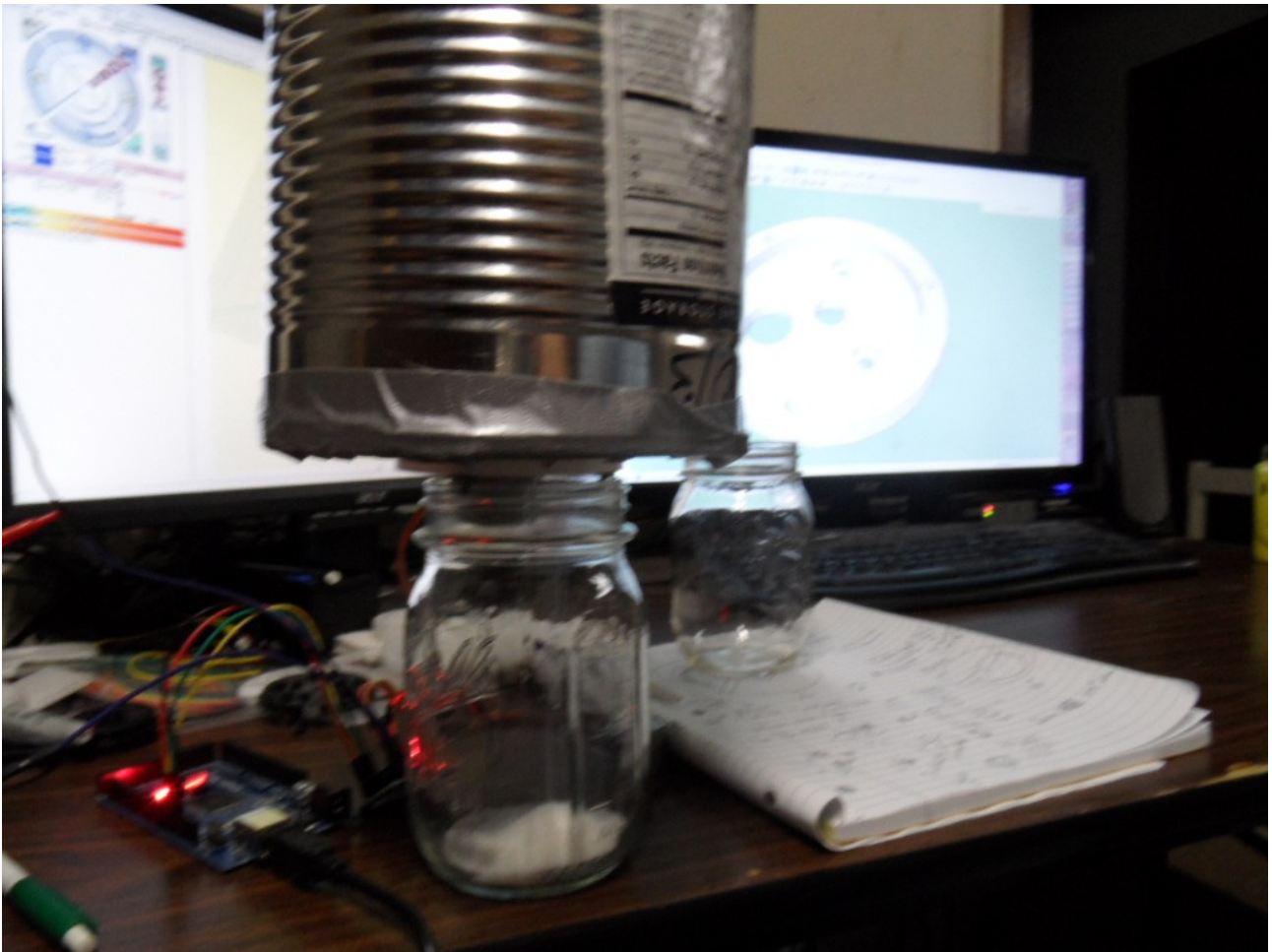

Bottom of inner-can

The Stepper Motor is attached (by bolts) to the 3D created Motor Base.

The 3D created Gear Dispensor is placed on the Motor shaft

The Motor Base is then attached (by bolts) to the Can Base

The 3D created can base is then Duct taped to the bottom of a 1-gallon tin can

Stepper motor is then driven by the Arduino Microcontroller to dispense sugar

11/23/2014

Two disperse cans are built identical and extrusion pipes are attached using

Nylon Hose Barb 3/8" in ID x 1/4" in MIP(Screw side) $0.95 / each

Nylon Hose 3/8" inner $0.39 / ft

Purchased at Grovers!

Used a box to elevate cans

Attached hoses to out-holes using MotorMountSpout.STL and "Nylon Hose Barb" screwed into the bottom of Spout 3D printed parts and cut ~1ft hoses to barbs.

Wired motors from the tail end

Issues

Problem: Original setup will not extrude flour. The flour packs into the tiny holes and will not release under drop hole.

Solution: We'll try a gear and MotorMount with larger holes.

Debate

1) 4- Canisters into one spout or 4-spouts together

2) Turn-table or Conveyor

3) Mixing bowl over heat?

4)

Purchases

From

[GZGW09 3D Printer Reprap Stepper Motor Driver Module Works with Official Arduino](#)	106842801	2	$30.54

GZGW09 3D Printer Reprap Stepper Motor Driver Module

Step angle: 1.8 degree
Rated voltage: DC 4.83V
Rated current: 0.84A
Phase impedance: 5.75 Ohm + / - 10 degree centigrade

Phase inductance: 9.3 mH + / - 20 degree centigrade (1kHz 1V RMA)
Shaft diameter: 5mm / 0.188
Shaft length: 20mm
Motor height: 34mm
Number of lead wire: 4 wires

Product Weight: 0.22 kg
Package Weight: 0.23 kg
Product Size(L x W x H): 5.8 x 4.2 x 4.2 cm / 2.28 x 1.65 x 1.65 inches
Package Size(L x W x H): 8.0 x 6.0 x 5.0 cm

28BYJ-48 5V 4-Phase 5-Line Stepper Motor with ULN2003 Driver Module Board	NZ0019501	3	$11.22
Arduino MEGA2560 RepRap Circuit Sets for 3D Printer Ramps	NZ0049801	2	$75.24

Package Contents:
1 x MEGA2560 Circuit Sets
1 x Ramps 1.4
4 x A4988
1 x USB Cable

Order at www.DX.com

SKU	Product Name	Purchase Price	Discount	Ordered Qty	Gift Qty	Shipped Qty	Operation

112766		WEITUS A05 Anti-Slip Stainless Steel Precision Angled Tweezers (120mm)	USD$ 3.15	USD$ 0	1	0	0	Review Re-Order
191637		XM-5002 Ultrasonic Pulse Oral Irrigator / Tooth Cleaner / Water Pick - White + Blue	USD$ 38.99	USD$ 0	1	0	0	Review Re-Order
277147		Double Tip 21cm Dupont Cable - Black + Multicolored (70 PCS)	USD$ 4.99	USD$ 0	1	0	0	Review Re-Order
145357		3-Pin Power Adapter Socket with Rock Switch for DIY Project - Black + Red (5-Piece Pack)	USD$ 7.91	USD$ 0	1	0	0	Review Re-Order
344826		S401 1/4" Water Flow Sensor for Dispenser / Coffee Machine - White	USD$ 4.80	USD$ 0	1	0	0	Review Re-Order
263660		DIY Copper Breadboard DuPont Connection / Test Cables - Multicolored (200 PCS)	USD$ 10.99	USD$ 0	1	0	0	Review Re-Order

120283		[20A Battery Terminal Alligator Crocodile Clamp Clip (Pair)](#)	USD$ 2.20	USD$ 0	1	0	0	[Review](#) [Re-Order](#)
123648		[2.54mm Mini Jumper Connector - Black (50-Piece Pack)](#)	USD$ 1.46	USD$ 0	1	0	0	[Review](#) [Re-Order](#)
162180		[1-Pin Female to Female DuPont Cables for Arduino (2 x 40 PCS / 21cm)](#)	USD$ 3.91	USD$ 0	1	0	0	[Review](#) [Re-Order](#)
4593		[Heatsink Thermal Compound (Grease-like)](#)	USD$ 2.33	USD$ 0	1	0	0	[Review](#) [Re-Order](#)
285349		[LSON 3mm x 1.5m Desoldering Wire Solder Wick - Brown](#)	USD$ 2.77	USD$ 0	1	0	0	[Review](#) [Re-Order](#)
206265		[SZF303 Small Water Pump Motor Water / Oxygen Pipe / Tube - Transparent (100cm)](#)	USD$ 1.77	USD$ 0	1	0	0	[Review](#) [Re-Order](#)

232242		DIY Plastic Water Pump Line Tube - White (4 PCS)	USD$ 2.41	USD$ 0	1	0	0	Review Re-Order
203330		20904 Silicone Tube Pipe - Translucent White (5 Meters)	USD$ 4.99	USD$ 0	1	0	0	Review Re-Order
219983		YZ02-175 ABS 1.75~1.8mm 3D Printer Consumables Filaments for Makerbot / RepRap / Mendel - Black	USD$ 41.23	USD$ 0	1	0	0	Review Re-Order
268732		Heacent P175 3D Printers Dedicated 1.75mm Filament PLA Print Materials - Transparent (1kg)	USD$ 41.67	USD$ 0	1	0	0	Review Re-Order
236808		HSYY01 Micro Gear Water Pump Motor w/ Hose - White + Silver	USD$ 5.23	USD$ 0	2	0	0	Review Re-Order
229082		DIY Electric Motor Mini Water Pump	USD$ 5.92	USD$ 0	1	0	0	Review Re-Order

300904		5.5V- 12V Submersible Water Pump - Black	USD$ 8.48	USD$ 0	1	0	0	Review Re-Order
185970		MPX08 Micro Liquid Gear Pump w/ Silicone Tube - White (DC 5V)	USD$ 6.49	USD$ 0	1	0	0	Review Re-Order

Order Subtotal: USD$ 206.92
Shipping Cost: USD$ 1.70
Handling Fee: USD$ 0
Discount Total: - USD$ 1.70
Grand Total: USD$ 206.92