SheaCycle

a Product of SLVR

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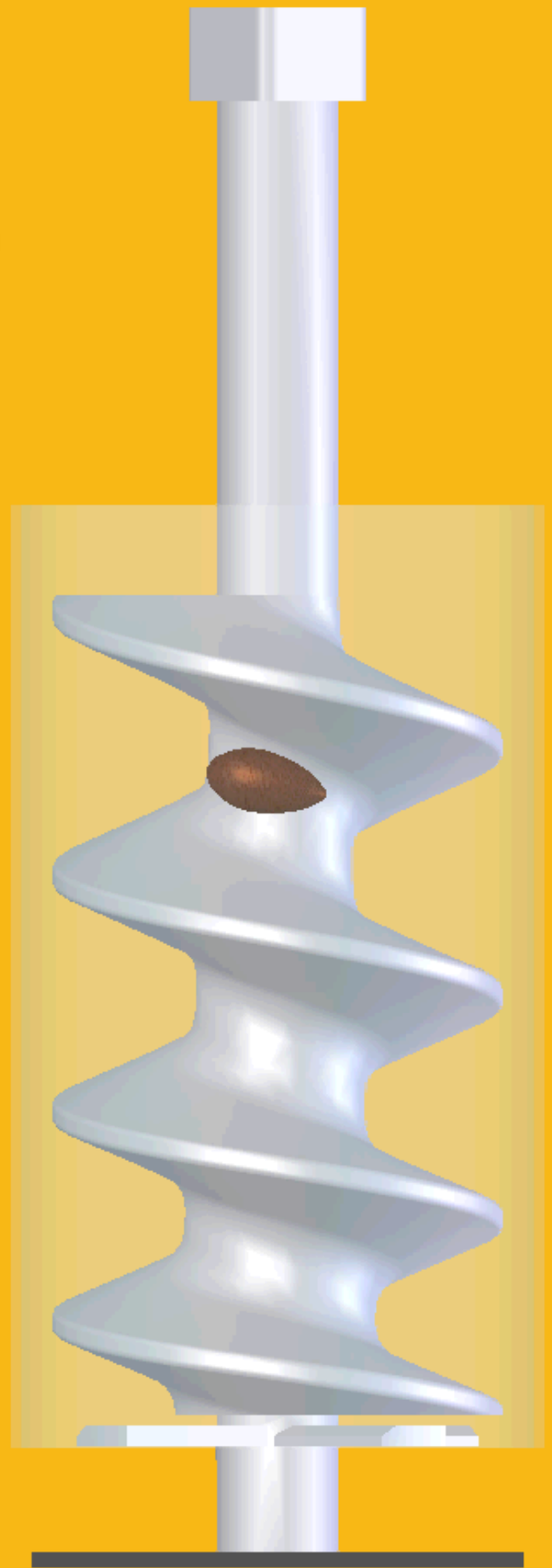
Demonstration



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our process flowchart

Harvest Nuts from Fruit
2 Steps

↓

Dehydrate & Shell
4 Steps

↓

Pound and Roast for Easier Paste Production
2 Steps

↓

Grind to Paste
Travel to neighboring village to use commercial mill
1 Step

↓

Extract the Oil by Hand
Best Non-Chemical Result
6+ Steps

↓

Stir & Cool Decanted Butter
1 Step

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current process flowchart

Harvest Nuts from Fruit
2 Steps

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our process flowchart

Harvest Nuts from Fruit
2 Steps

↓

Dehydrate & Shell
4 Steps

↓

~~Pound and~~ Roast for Easier Paste Production
~~2 Steps~~ 1 Step

↓

Grind to Paste
Process with SheaCycle
1 Step

↓

Extract the Oil by Hand
Best Non-Chemical Result
6+ Steps

↓

Stir & Cool Decanted Butter
1 Step

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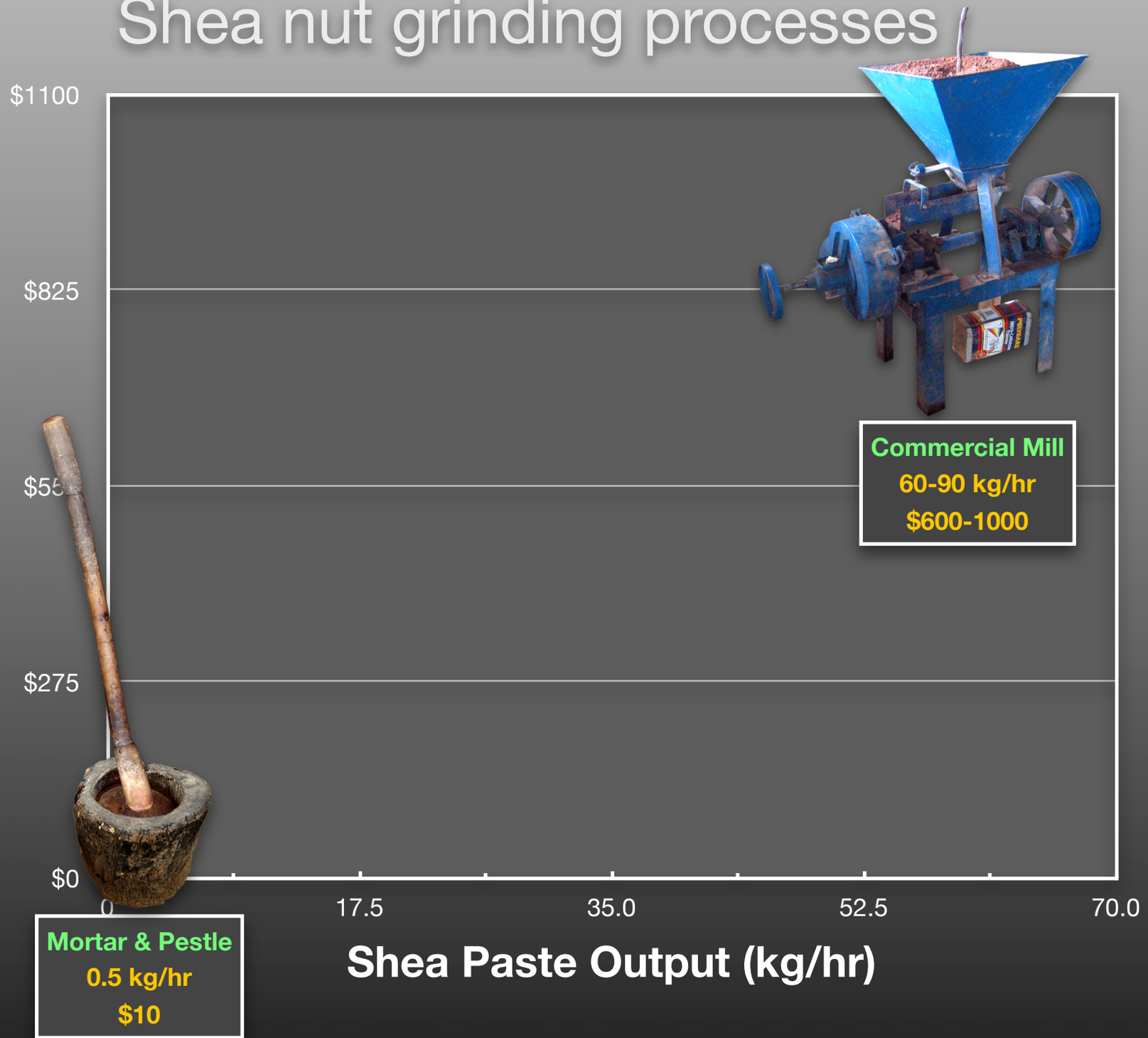
Shea nut grinding processes



- Ghanaian GDP = $600

mention GDP of Ghanaian
cost of competing machines

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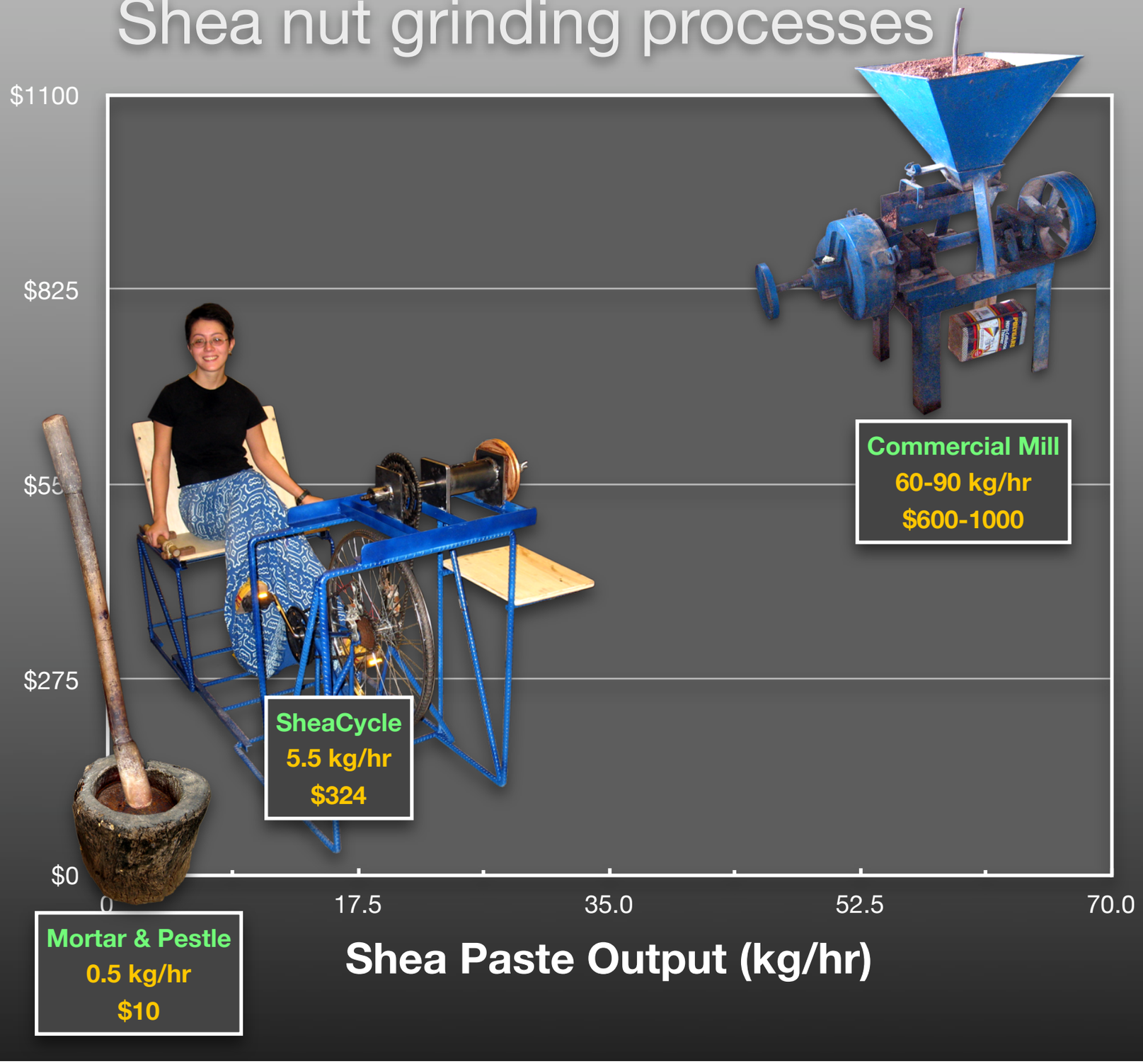
Shea nut grinding processes



- Ghanaian GDP = $600

mention GDP of Ghanaian
cost of competing machines

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commercial mill inconveniences

- Too expensive to own and operate
- Distance/Cost
- Unreliable or nonrepairable
- Preprocessing

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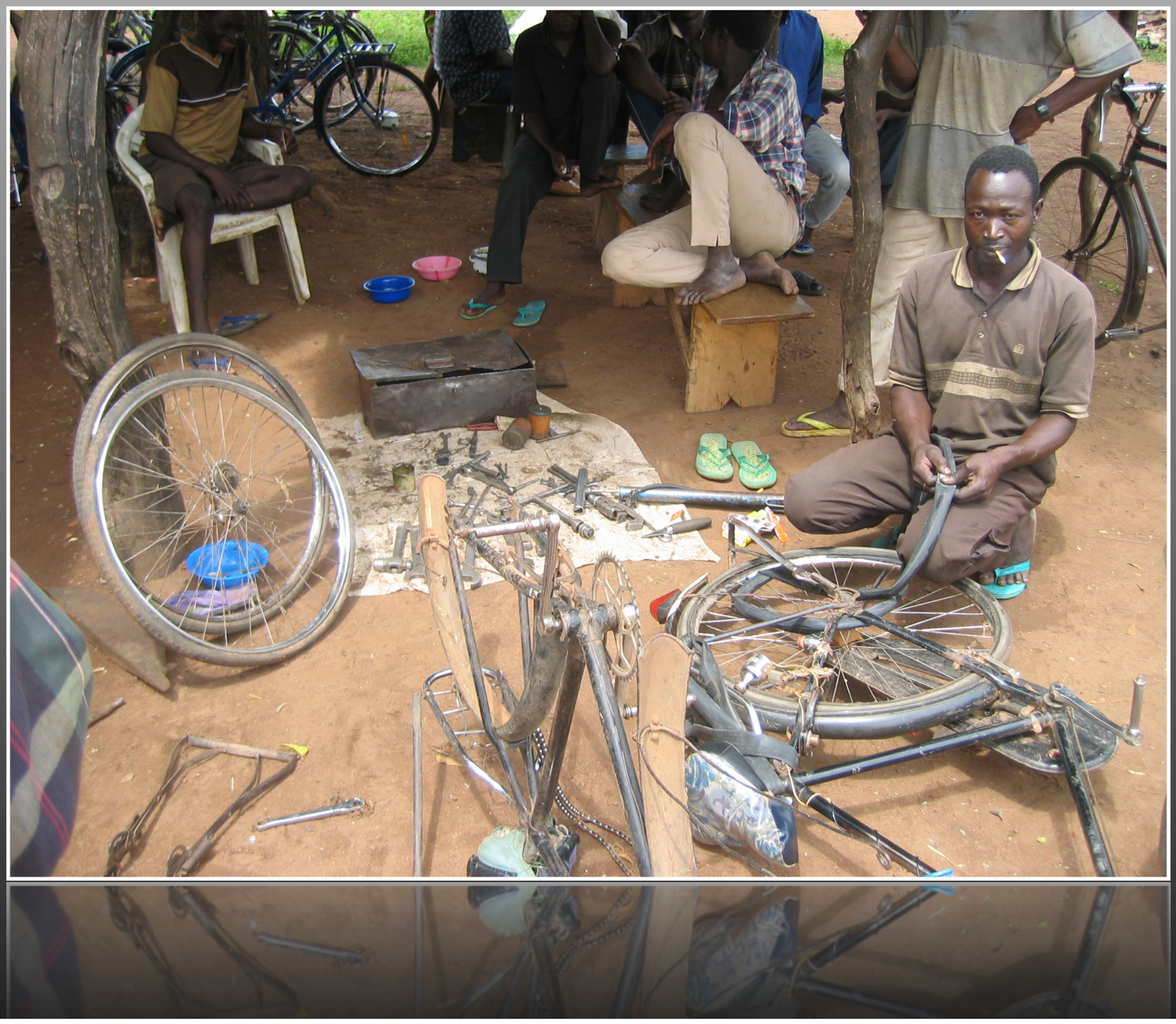
local materials and processes



- Materials: rebar, angle iron, bike parts, bamboo, wood, steel
- Processes: welding, bending, casting

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technical challenges

- Materials & processes
- Design for Ghanaian women
- Overcoming the shea nut

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components

- Mill
- Frame
- Bike

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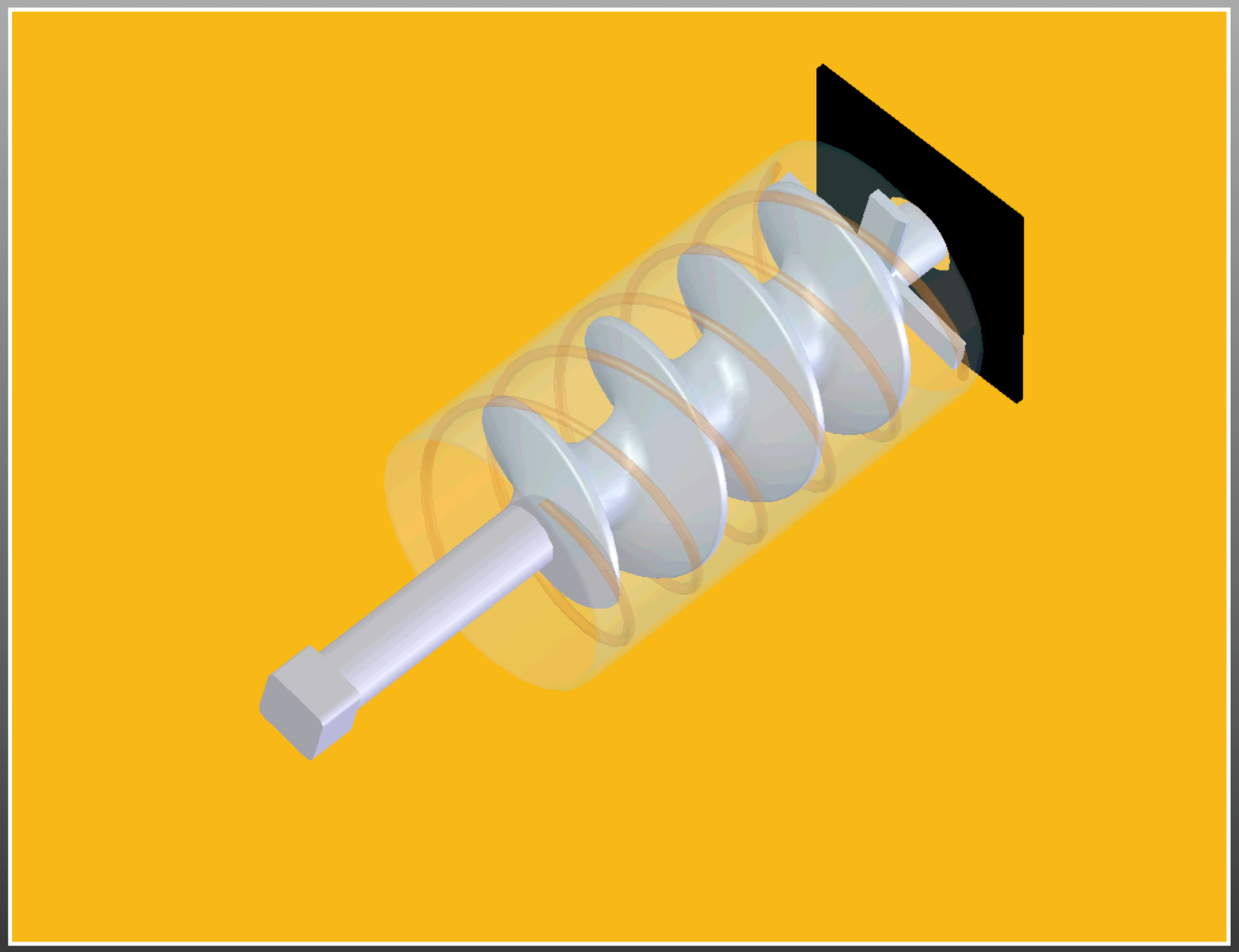
Mill - Components



- Augur
- Chopper/Die
- Barrel
- Grindplates
- Hopper

- Augur anim. demonstrates nut propagation.
- Picture of augur and grindplates

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manufacturing costs and plans

Material	Cost
Grind Plates	$90
Auger	$45
Steel Rods/Sheets	$58
Aluminum Rods/Sheets	$15
Wood	$30
Rebar	$16
Angle Iron	$30
Bicycle Parts	$0
Labor Costs	
Blacksmith (Cutting/Machining/Welding) - 16 days*	$40
Total Costs	**$324**
*highly-skilled blacksmith wage ~ $2.25/day	

- Disassembled for transport to Sekaf's village of Tamale in Ghana
- Other villages invited to replicate the device

mention GDP of Ghanaian
cost of competing machines

Sekaf's village of Tamale

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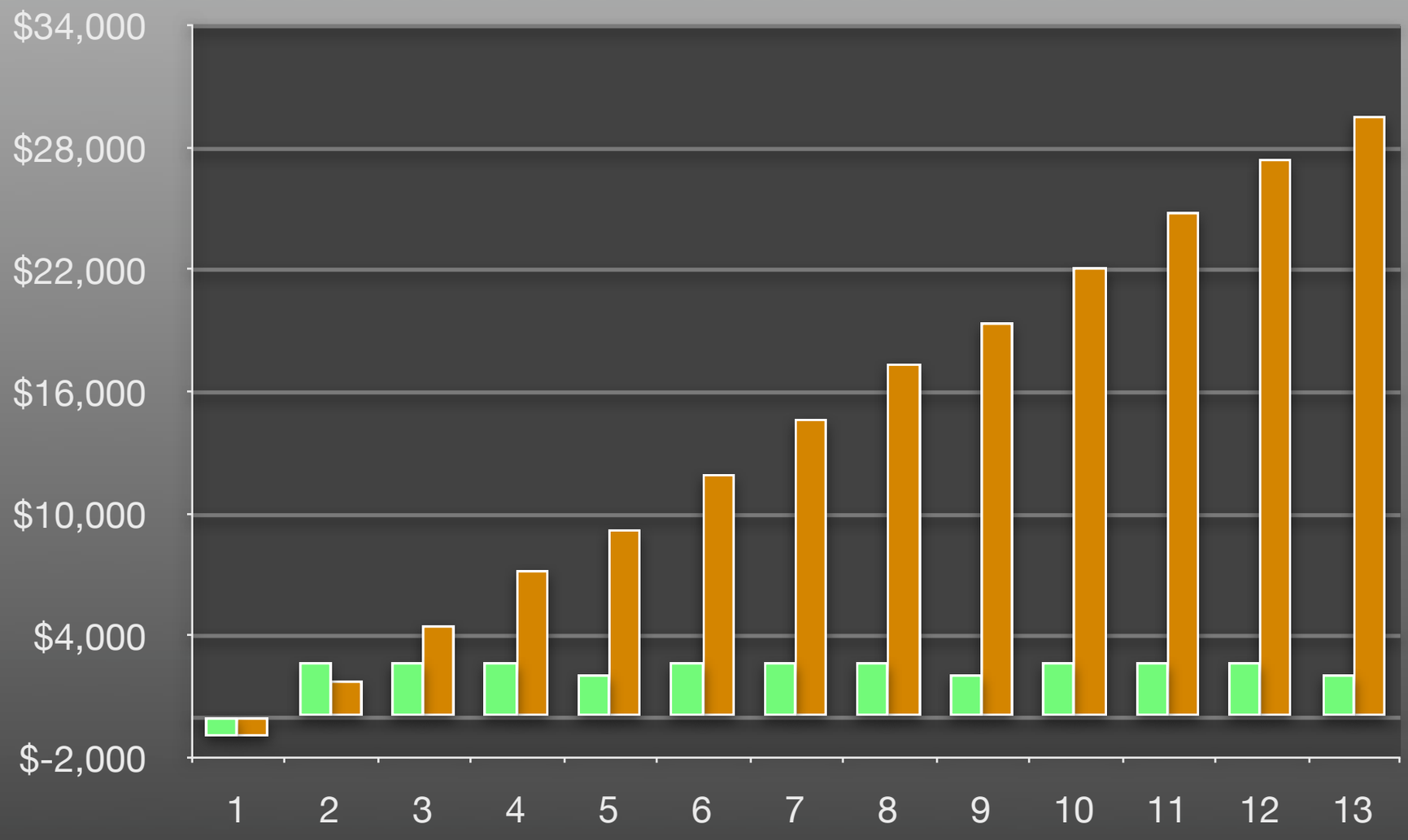
1st year customer cash flow



experimental IRR =	3485%
NPV =	$873.92
safe IRR = bank rate =	6%
safe NPV =	$104612.

mention GDP of Ghanaian
cost of competing machines

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moving forward

- Microfinance
- Extremely profitable investment

Women in rural villages eligible for loans from FNGOs organized through GHAMFIN

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special thanks

- Carol Schoeneberger, Evan Taylor, Mike Tarkanian, Smalltime, Tim Heidel, Timothy Kyiu, Tom Boley, Woodie Flowers
- Sekaf International LLC
- D-Lab & Amy Smith
- 2.009 Instructors & Administrators
- Shop guys
- And viewers like you

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any questions?

Additional Slides

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Mill - Auger

- Drives nuts into grindplates
- Variable Pitch
- Variable Diameter
- Pressure generation

- Augur anim. demonstrates nut propagation.
- Picture of augur and grindplates

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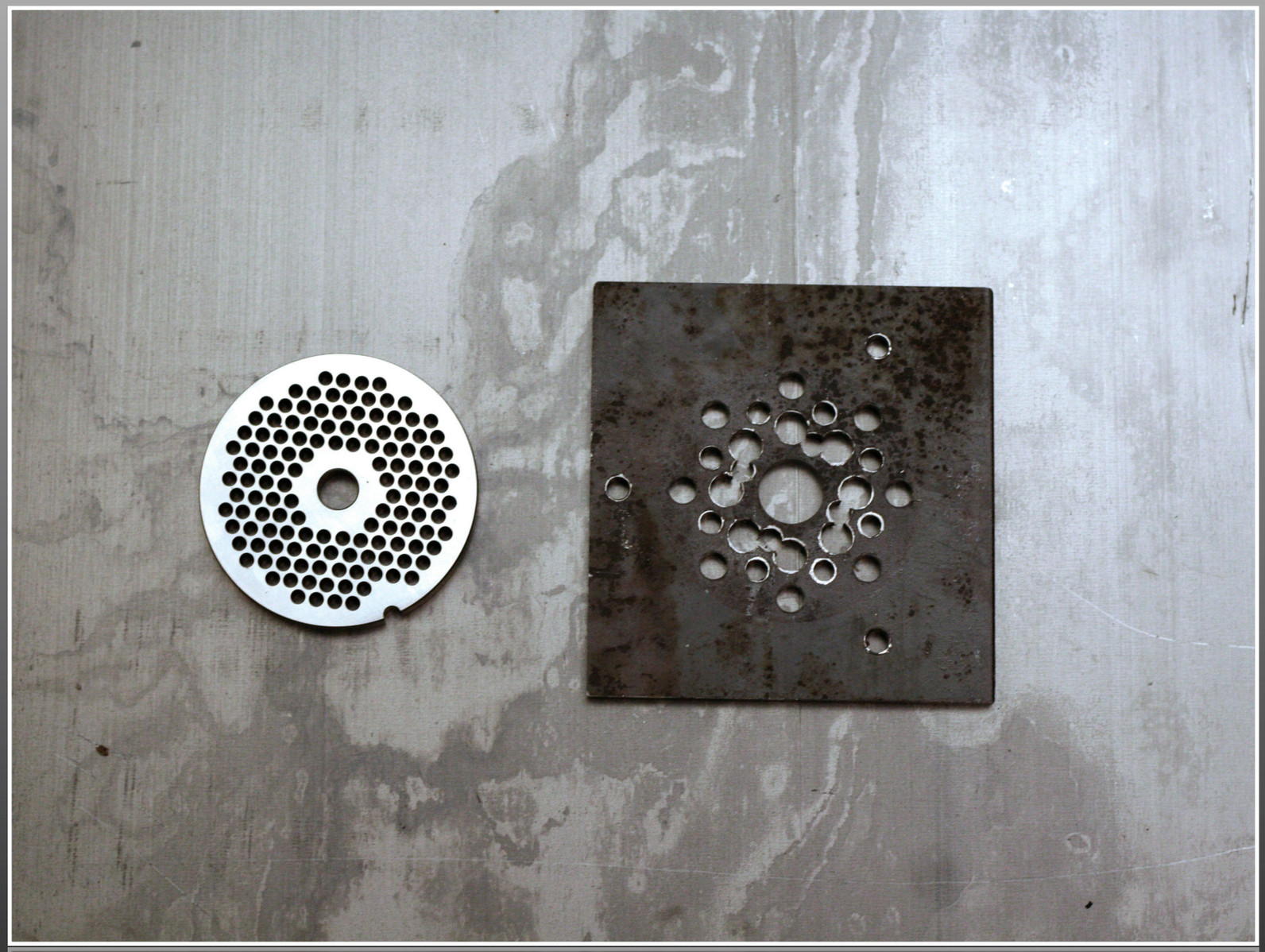
Mill - Chopper & Die



- Strength
- Die design

Tested w/ meat grinder – found this was critical
thickness, shape => strength
helps nuts get through die
die design = thickness, material

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Mill - Barrel

- Clearance
- Flutes

Straight vs. helical flutes

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Mill - Grindplates

- Entry hole
- Material choice
- Geometry and density of grooves

Tested w/ straight, conical burr, maybe pictures from testing w/ coffee machines, meatgrinder

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Frame - Framework

- Material choice
- Strength
- Simplified structure
- Integrates entire product

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Frame - Seat

- Ergonomics
- Adjustability
- Cultural acceptability

- (pic of Gavin and Wallace against wall with measurements)

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bicycle power transmission

- Bikes available
- Recumbent pedal power
- Flywheel
- Gear power transmission

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people we are not so pleased with

- Rima, from Denmark
- Bassel