Current Pump used in canning line

https://www.ifm.com/us/en/product/PI2796?tab=documents

* How capri suns are pouched: (<https://www.capri-sun.com/group/en/how-capri-sun-drinks-are-packed/>)

-pouches are filled at 85 degrees to ensure there are no bacteria or germs present

-pouch is vacuum-sealed immediately

-drink is cooled down to avoid condensation

-straw is pasted on the pouch

-weight is checked

-hourly taste and quality checks (pouches are randomly taken out of production line and tested, then stored so they can retrace complaints)

-capri sun pouching machine: <https://www.alibaba.com/product-detail/capri-sun-machine_1600051377285.html>

-costs $5,500

-weighs 180 kg ~ 400lb

-operates at 220V

* <https://www.northernbrewer.com/collections/brewing-equipment?msclkid=4e5c7ed9400b15dfe6371d8d238dc71a&utm_source=bing&utm_medium=cpc&utm_campaign=(NB)%20Equipment%20-%20General&utm_term=home%20beer%20making%20equipment&utm_content=Equipment%20-%20General>

^ can find a bunch of parts involved in filling cans/bottles with beer (valves, tubes, dispensers, etc)

* Manual and Semi-Auto solutions from pouch manufacturer:

<https://astrapouch-na.com/product-category/fillers/>

-Cost not listed but I believe the Astrofill Easy Start is the semi auto design Mathew mentioned

-Astrofill Probox has automated capping and filling

* Similar design to Probox here: [SRAML Automatic Bag in Box Wine Filling](https://www.youtube.com/watch?v=goKP8MKkxdE)

[](https://www.youtube.com/watch?v=goKP8MKkxdE)

This design has a similar filling/capping mechanism, but I think we should expand further with better depalletization (release latch perhaps). However, this does show that operating the machine can be a one-person job and the whole process only takes two ppl (one labeling and one running the machine) or one person doing all the labeling first then filling.

* Wireless remote controlled 2HP pump cart: <https://www.craftmasterstainless.com/pump-cart-pumps>

Costs $3950, looks like it is a portable beer pump

-key features include:

Text

Description automatically generated with low confidence

* There’s another option of slightly different pump for $2850

Graphical user interface, text, application

Description automatically generatedA picture containing indoor, different, engine, gear

Description automatically generated

Table

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^from <https://www.craftmasterstainless.com/brew-hoses>

* The following website provides different types of automated systems: <https://www.smbsales.com/used/packaging-equipment/fillers-filling-equipment/?msclkid=46da8bfd82df1bf4c3cde8ab8062578c&utm_source=bing&utm_medium=cpc&utm_campaign=Used%20Equipment%20Smart%20Broad-G15159792640&utm_term=automatic%20liquid%20filling%20machines&utm_content=Used%20Filling%20-%20Consolidated>
* Idea similar to what Matthew uses right now: <https://www.youtube.com/watch?v=IFsDVUCC6AY>

Company: “Geissberger Farmhouse Cider”

 use funnel to put liquid into spout of pouch

* <https://www.youtube.com/watch?v=Ze7eCkavKBo>

watch above video for an existing solution: CDF

-differences: their “pouches” are a continuous piece of plastic, like how garbage bags are attached to the next one in the roll and you have to tear it off along the perforated line

-allows for the continuous feed of the pouches into the machine

CDF corporation: more info here : <https://www.cdf1.com/solutions/bag-in-box/>

One of the automatic machines: A picture containing text, indoor, several

Description automatically generated

<https://www.cdf1.com/solutions/bag-in-box/>

-follow above link and click on “Cheertainer & Filler Video”

Another roller based design similar to above but with different actuation:

<https://torrindustries.com/packaging-systems/torr-150-bag-and-pouch-filler>

-caps are still on and pouches are chained together when fed in

Sources used to determine weight constraint to quantify our specification of “easily maneuverable”:

<https://ergoweb.com/force-guidelines/>

^tells us that the average person can push (with 2 hands) up to 44 pounds which is about 20kg so if the coefficient of friction is 1 (assuming floor is concrete and wheels on machine are rubber, <https://hypertextbook.com/facts/2006/MatthewMichaels.shtml> ) then the maximum weight of the machine can only be 88 pounds or 40kg assuming you have 2 people to push it (as specified in our requirements that the entire operation requires a maximum of 2 people)

-40kg seems super lightweight? Can we get a more exact estimate for what material the wheels will be made of and what the coefficient of friction will be so we can increase our weight limit?

Another option: ask him if he knows how much the canning machine weighs?

Another source: <https://www.loadmoverinc.com/force-labor-power/#:~:text=The%20%E2%80%9CLabor%20Power%E2%80%9D%20of%20one%20is%20defined%20as,which%20would%20be%20a%20%E2%80%9CLabor%20Power%E2%80%9D%20of%203>.

Equates 300pounds of horizontal pushing force to being able to move an object on a cart weighing 1500pounds therefore 100 pounds of horizontal force (which is about the force that 2 average people can supply) can move an object on a cart of 500pounds

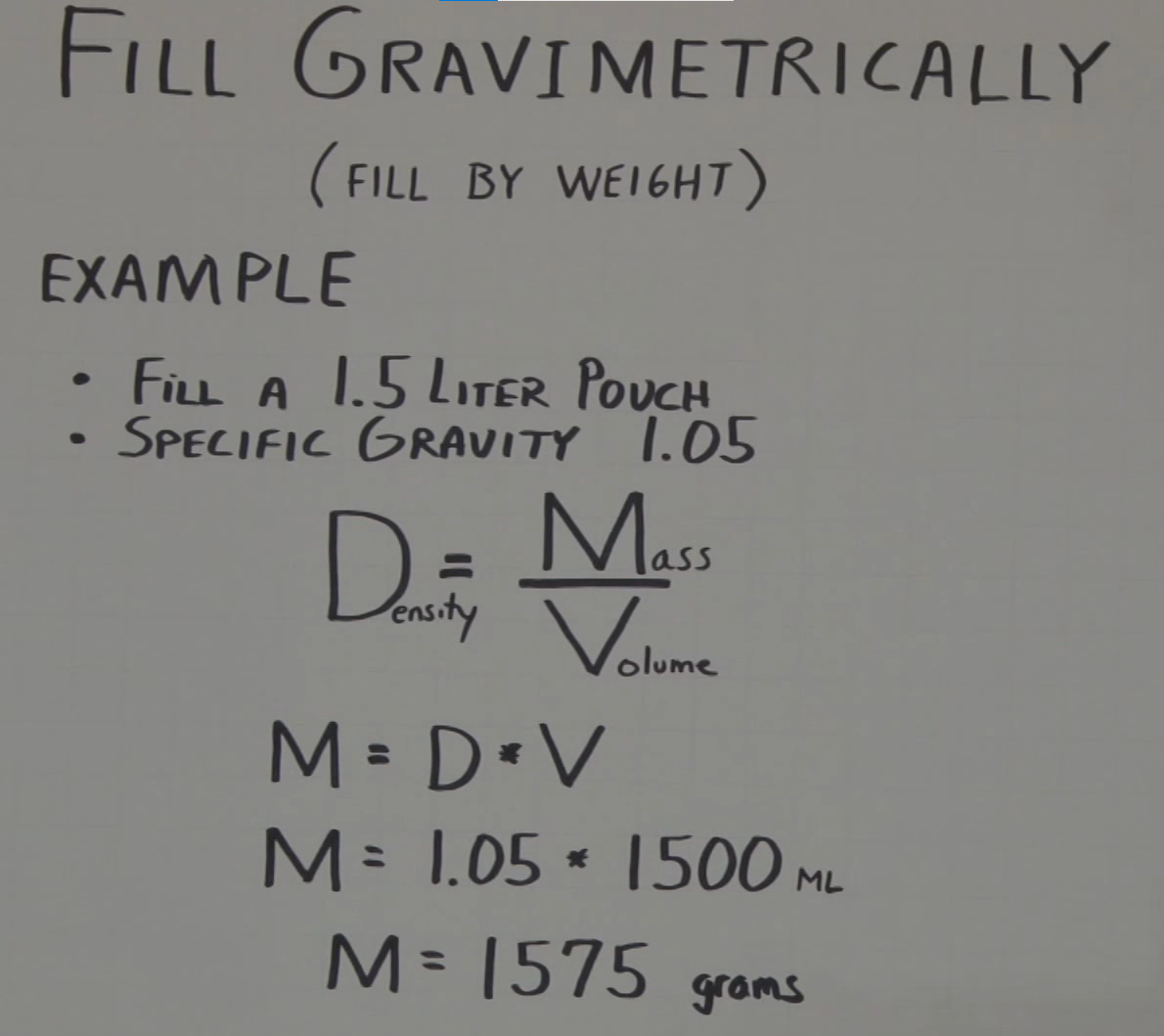
If we have 44pounds of pushing force per person, then 88 total pounds of pushing force has to be able to move the machine

88/x = 100/500

88\*500/100 = x

88\*5= 440pounds------maximum weight?

-another machine that has a conveyer-belt system: <https://www.youtube.com/watch?v=J8VD9GPKhvQ&t=86s>

-should we check that we have our fill ranges correct? This is showing that it may be different (we’ll have to look up what the specific gravity of wine is though)

Another type of food grade pump with range from 1ml/min to 17L/min

<https://www.longerpump.com/index.php/IndustrialType/show/181.html>