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Aalto University
School of Science

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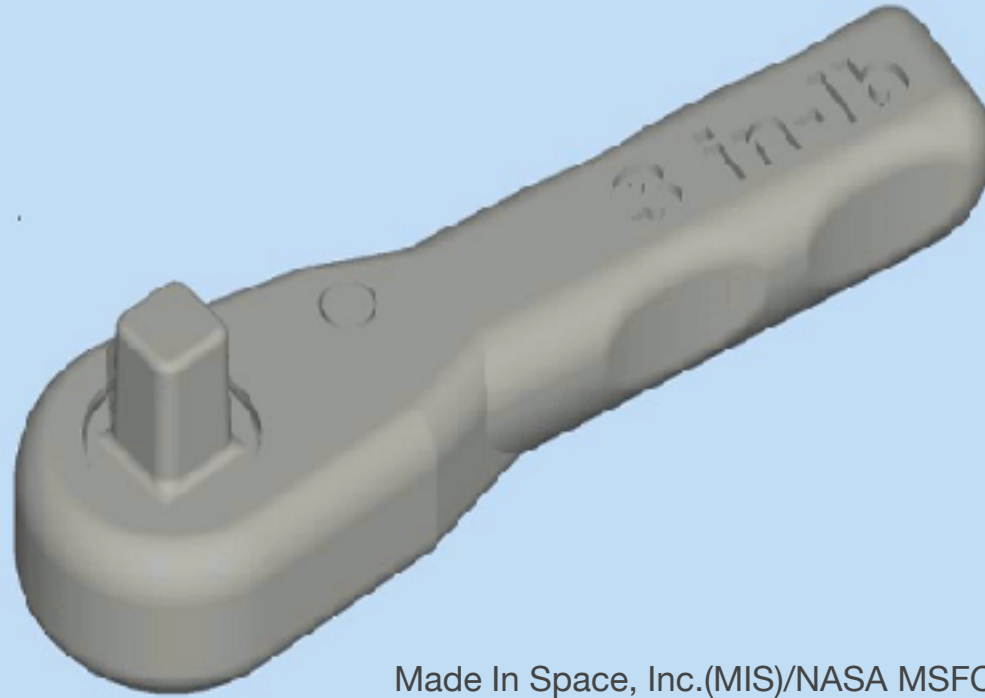
Aalto University

3D Printing Final Assignment

Jorden Senior, 20. Oct. 2017

**What was the first tool
3D printed in space?**

14/01/2015



Made In Space, Inc.(MIS)/NASA MSFC

When International Space Station Commander Barry Wilmore needed a (torque) wrench, NASA knew just what to do.

***They e-mailed him one.
(Imagine the cost of shipping...)***

**Why:
Because they are
useful.**

Why do we need one:

**Because they are so useful,
they always go missing.**

SMA Torque wrenches (RF essential) are expensive!

Break-Over Torque Wrench With 5/16 Bit For 3.5mm, 2.92mm, 2.4mm, SMA Connectors
Preset to 8 in-lbs

Product ID: PE5019-1A

Available Quantity:  169



Image Views:



PRICING TABLE

QUANTITY	PRICE
1-24	\$193.57
25-49	\$180.02
50-99	\$166.47
100-249	\$154.86
250+	CALL

ADD TO CART

Quantity:

ADD TO CART



**100% Secure
Order Options**

All Prices are in US Dollars and
do not include duties

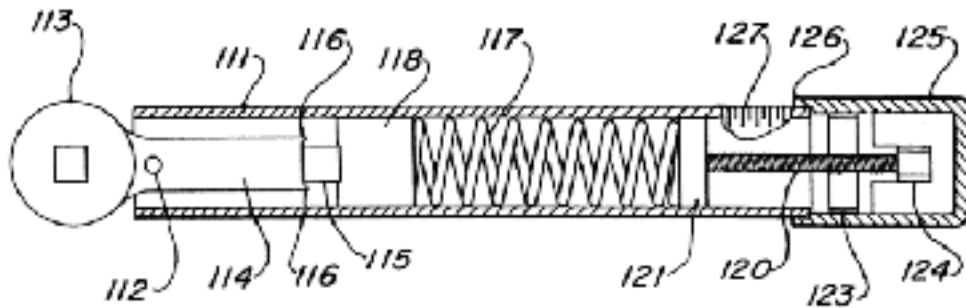


FIG. 67

PRIOR ART

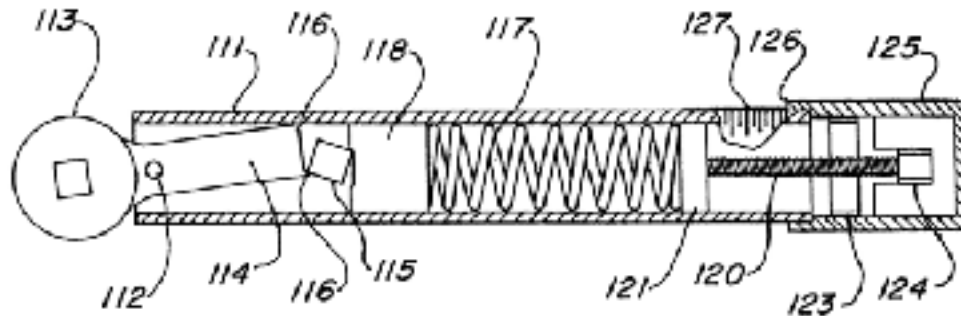
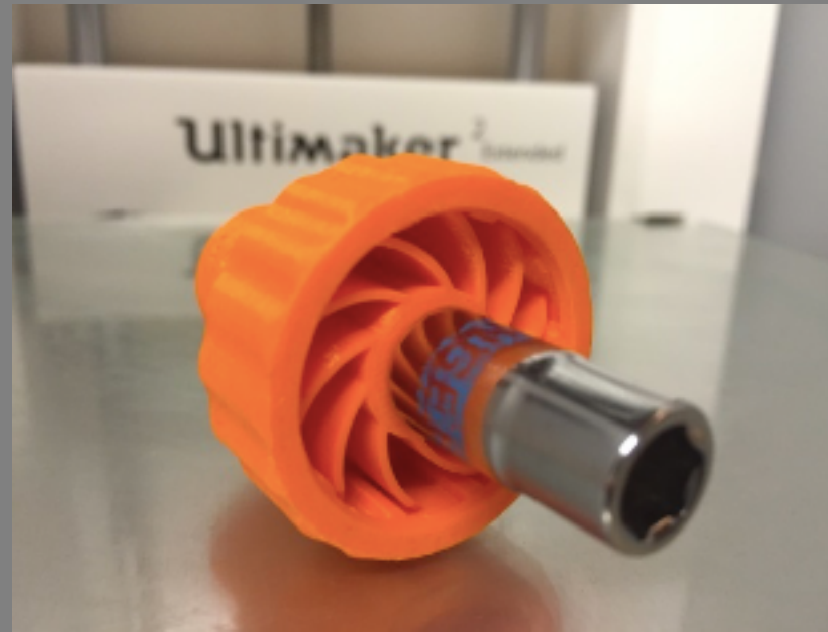


FIG. 68

PRIOR ART

Electromechanical releasing
torque wrench
US 6276243 B1

Should be
possible to
make?



[https://www.youmagine.com/designs/
nozzle-torque-wrench](https://www.youmagine.com/designs/nozzle-torque-wrench)

<https://www.thingiverse.com/thing:2069847>

Estimated savings?

Cost to buy (LTL): 20 x 200 USD = 4000 USD + tax and shipping

Potential userbase: anybody working with RF, including drone / FPV users, engineers, etc. >1000 people.

Having a tool when you need it, rather than having to scour an unruly physics department to find one: priceless.