Open Mic

National Inventors Hall of Fame®
EDUCATION PROGRAMS

OPEN MIC™

INVENTOR LOG

SAFETY & HYGIENE

WARNING

Choking hazard–small parts.
Not for children under 3 years.

- All activities require adult supervision.
- Ages 5+
- Read and follow all instructions.
- Do not remove the microphone handle from the microphone, remove the battery, or replace the battery.
- Wash hands after each activity.
- Properly hold and use scissors. Do not run with scissors.
- Do not put materials in or near anyone's eyes, mouths, and ears.
- Do not play with or place plastic bags near the face or mouth.
- Ventilate the room when using markers.
- If anyone has an allergy, remove any materials that may trigger an allergic reaction.

For an enhanced experience, access MUSIC, POSTERS, and VIDEOS online at
invent.org/recharge/openmic

Password:
SOUND

Dearest Future Inventor,

You were born to be an inventor. Yes, you. If we are going to create a kinder, healthier, more sustainable world, then you need to share your creativity. Chances are no one has told you that you can become an inventor. Chances are you have yet to meet an inventor who looks like you. Even if those things are true, today is the day you learn that you are on your path to invent great things!

I grew up in the Nature Isle of the Caribbean, Dominica. One Saturday, my mom and I completed my first science experiment. I was five. We squatted on the stone steps of my great-grandmother's house, observing what happened as we mixed sand, sugar, ink and hot pepper sauce in water. THIS was the moment I fell in love with science–it was fun and simple, and I could do it at home. That is the promise that the Camp Invention® program offers you–an opportunity to fall in love with science and inventing.

Future Inventor, I cannot wait to use your marvelous inventions one day!

Stay curious, Arlyne Simon

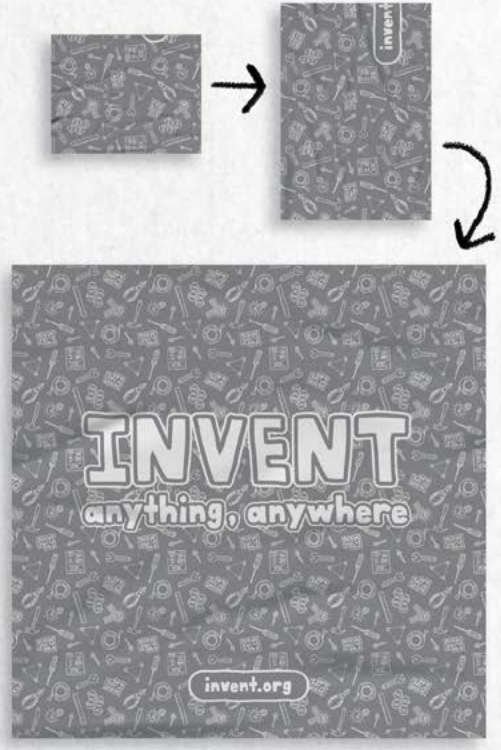
Arlyne Simon ↗
Biochemical engineer, patented inventor, author, and Collegiate Inventors Competition® (CIC) Finalist!

SET UP YOUR INNOVATOR WORKSHOP!

YOU'LL NEED:

Set up your Maker Mat

by unfolding it and laying it on the floor or a table.



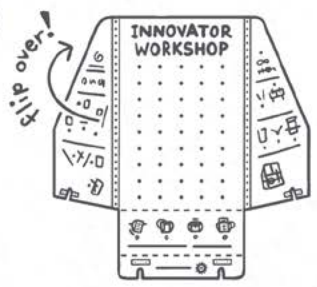
Tool up!

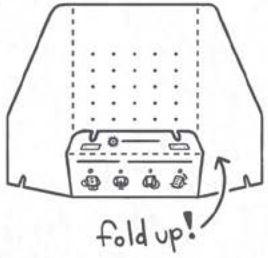
To make the toolbelt even smaller, tie a knot in it.

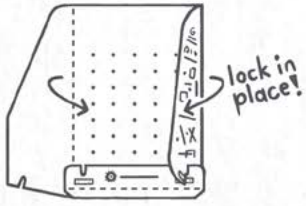
An inventor's most important tool is their imagination!

Set up your Pegboard!

Check out the side panels of your Pegboard for step-by-step instructions!

1. 

2. 

3. 

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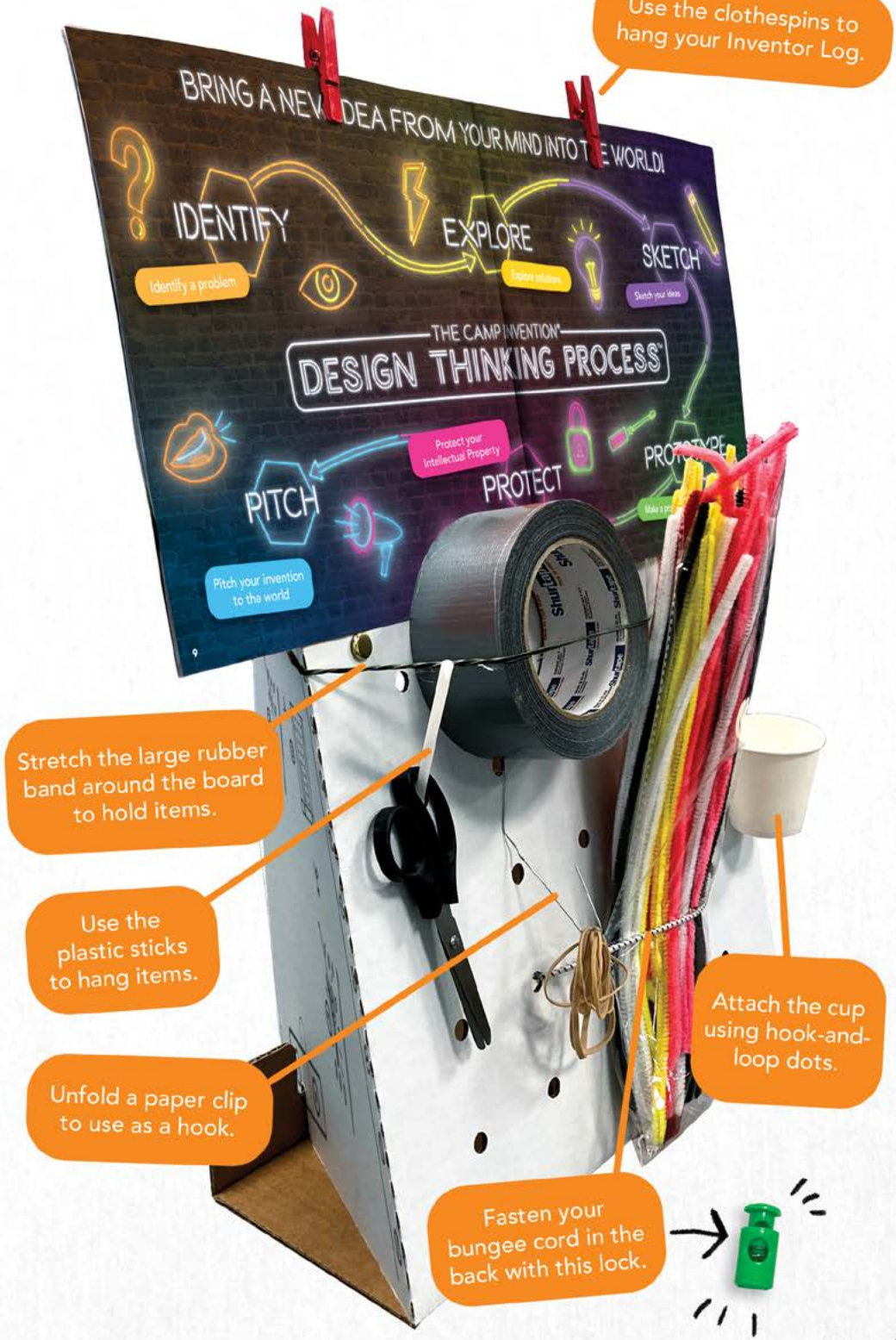


STEP UP TO THE MIC

YOU'LL NEED:

POWER

Hold for 3 seconds to turn on the mic!

Press until you hear a *BEEP* to change voice.

Slide to change mic volume.

Slide to change echo.

Check to make sure your microphone is charged. You can charge it here!

Further instructions on all microphone functions are in the mic's box.

RHYME TIME

Create a rhyme.

INTRODUCE YOURSELF

Fill in the blanks to create your own introduction:

My name is _____
and I like to have fun.

My favorite color is _____

↙ ↓

and now I'm done! (or) but I'm not done!

↓

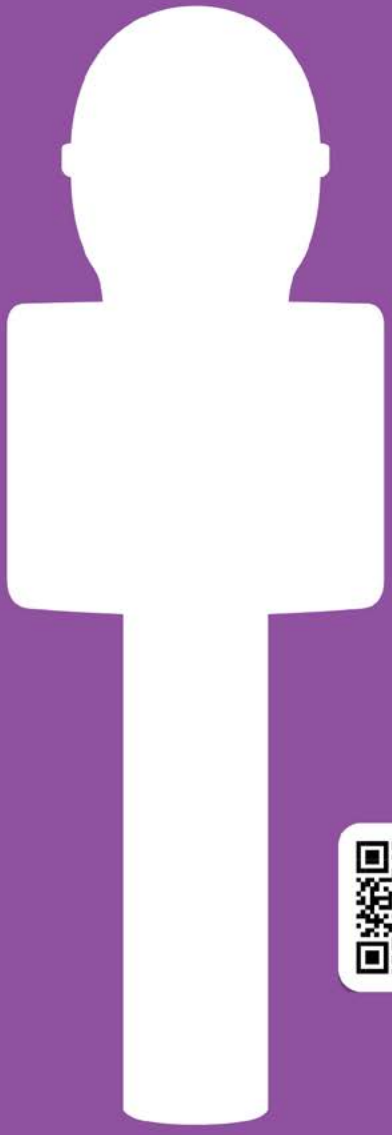
Add two more lines, if you are "not done!"

_____

_____

WHAT'S INSIDE A MICROPHONE?

Sketch what you think is inside the microphone!



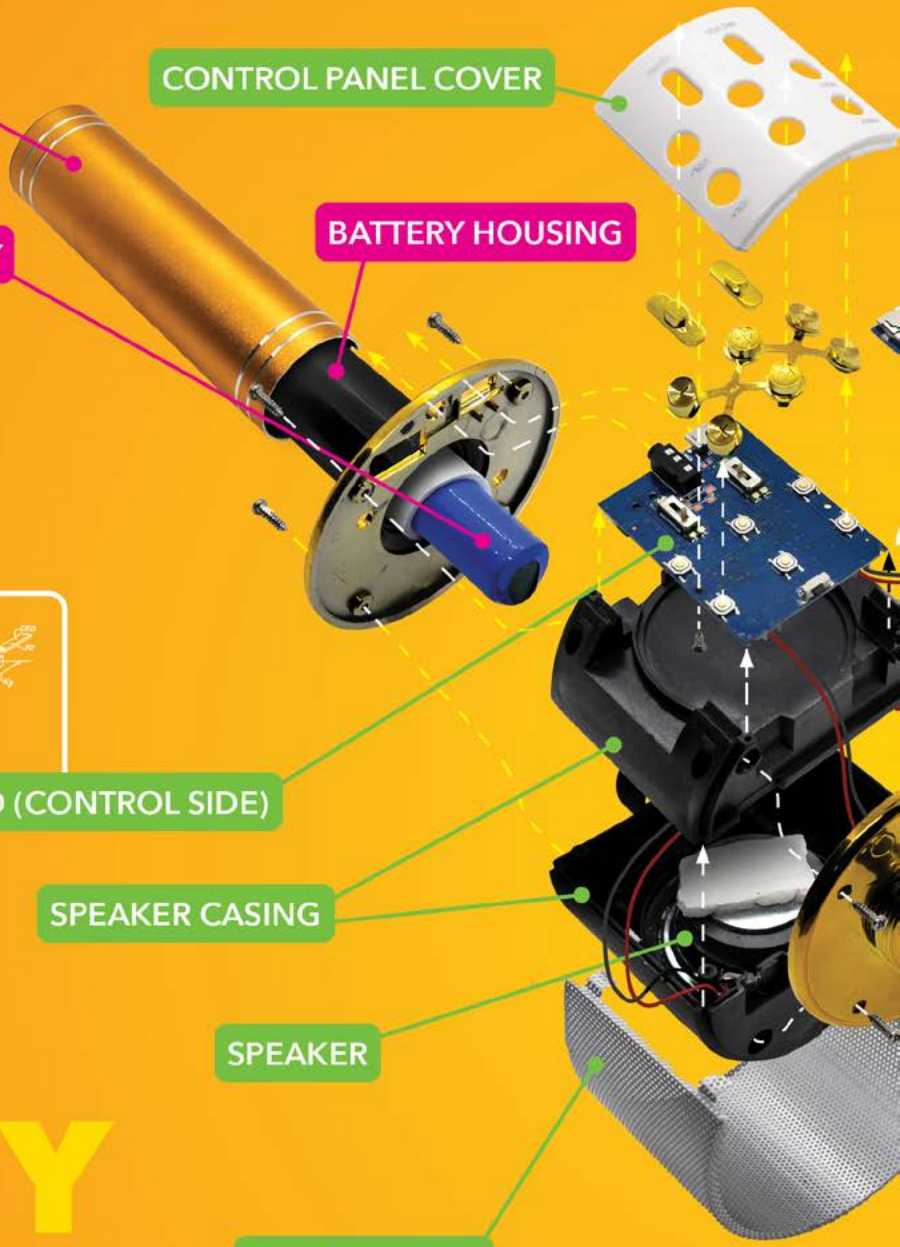
Unscrew the gold **microphone grill** on top and check out the Electret Microphone!

This is the patented invention of Hall of Famers **Jim West** and **Gerhard Sessler.**

Watch the **Jim West video.**

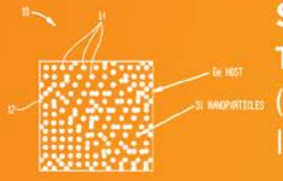
Then, watch the **Speaker Reveal video.**

THE ANATOMY OF A MICROPHONE



National Inventors Hall of Fame®

Mildred Dresselhaus invented **Superlattice Structures for Thermoelectric Devices** (found in rechargeable lithium ion batteries).



National Inventors Hall of Fame®

Jack Kilby invented the **Integrated Circuit.**

National Inventors Hall of Fame®

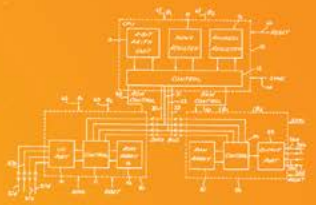
Jim West and Gerhard Sessler invented the **Electret Microphone.**

*Bluetooth® is a registered trademark of Bluetooth SIG, Inc.

CIRCUIT BOARD (CONNECTOR SIDE)

National Inventors Hall of Fame®

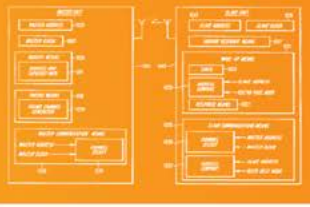
Federico Faggin, Stanley Mazor, and Ted Hoff invented the **Microprocessor.**



MICROPROCESSOR ON CIRCUIT BOARD

National Inventors Hall of Fame®

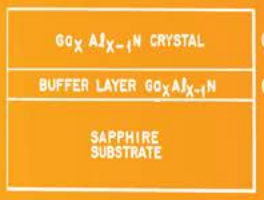
Jaap Haartsen invented **Bluetooth®*.**



BLUETOOTH® TRANSCEIVER

National Inventors Hall of Fame®

Shuji Nakamura invented the **Blue LED.**

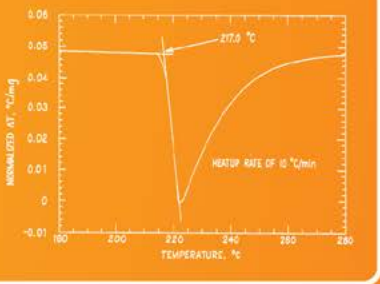


BLUE LED ON CIRCUIT BOARD

SOLDER ON CIRCUIT BOARD

National Inventors Hall of Fame®

Iver Anderson invented **Lead-Free Solder.**



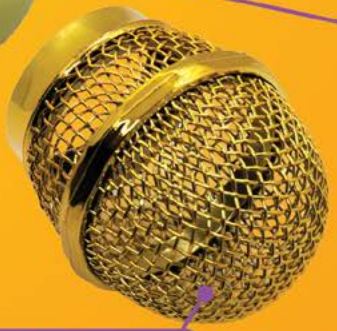
MICROPHONE PLATE

FOAM SOCK

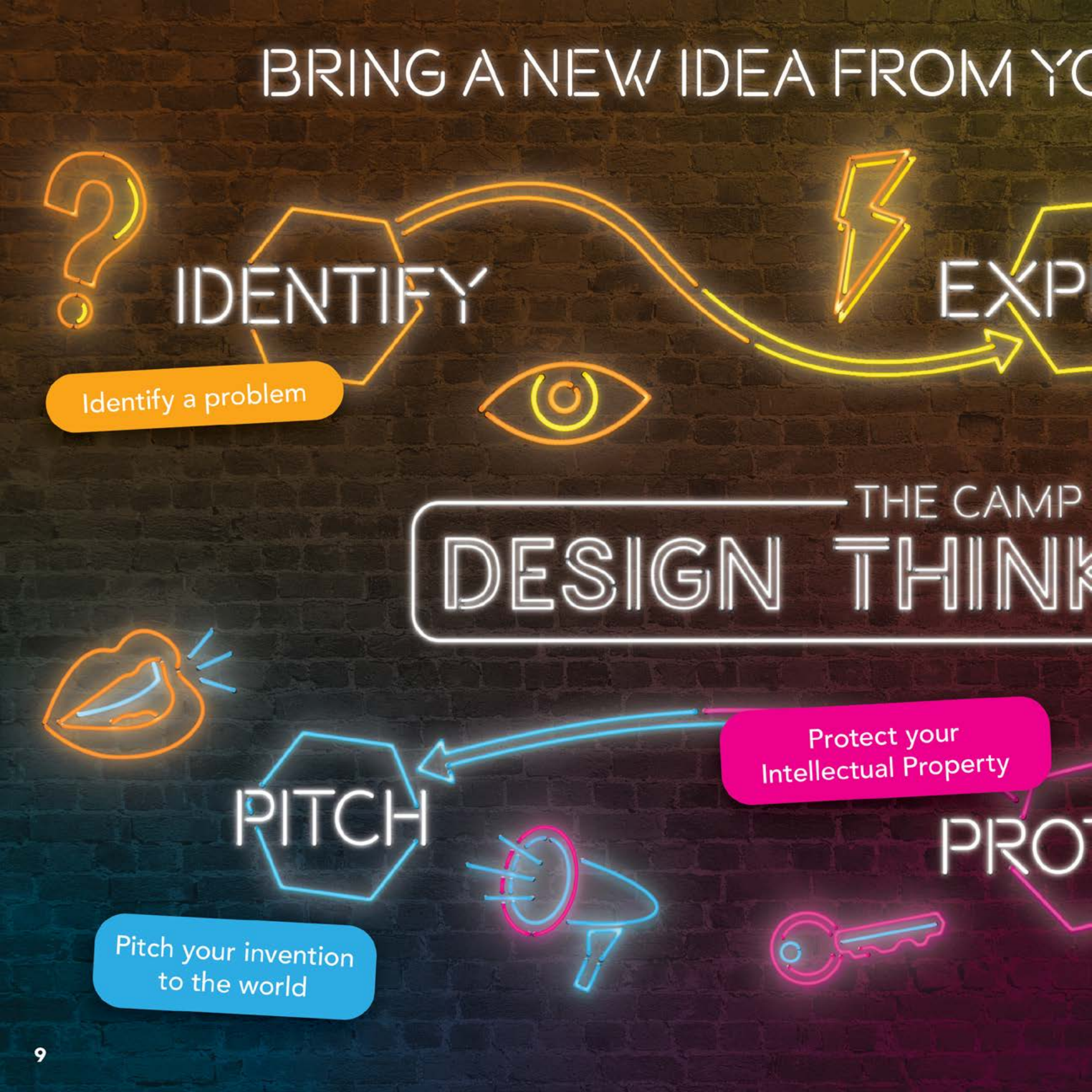
National Inventors Hall of Fame®

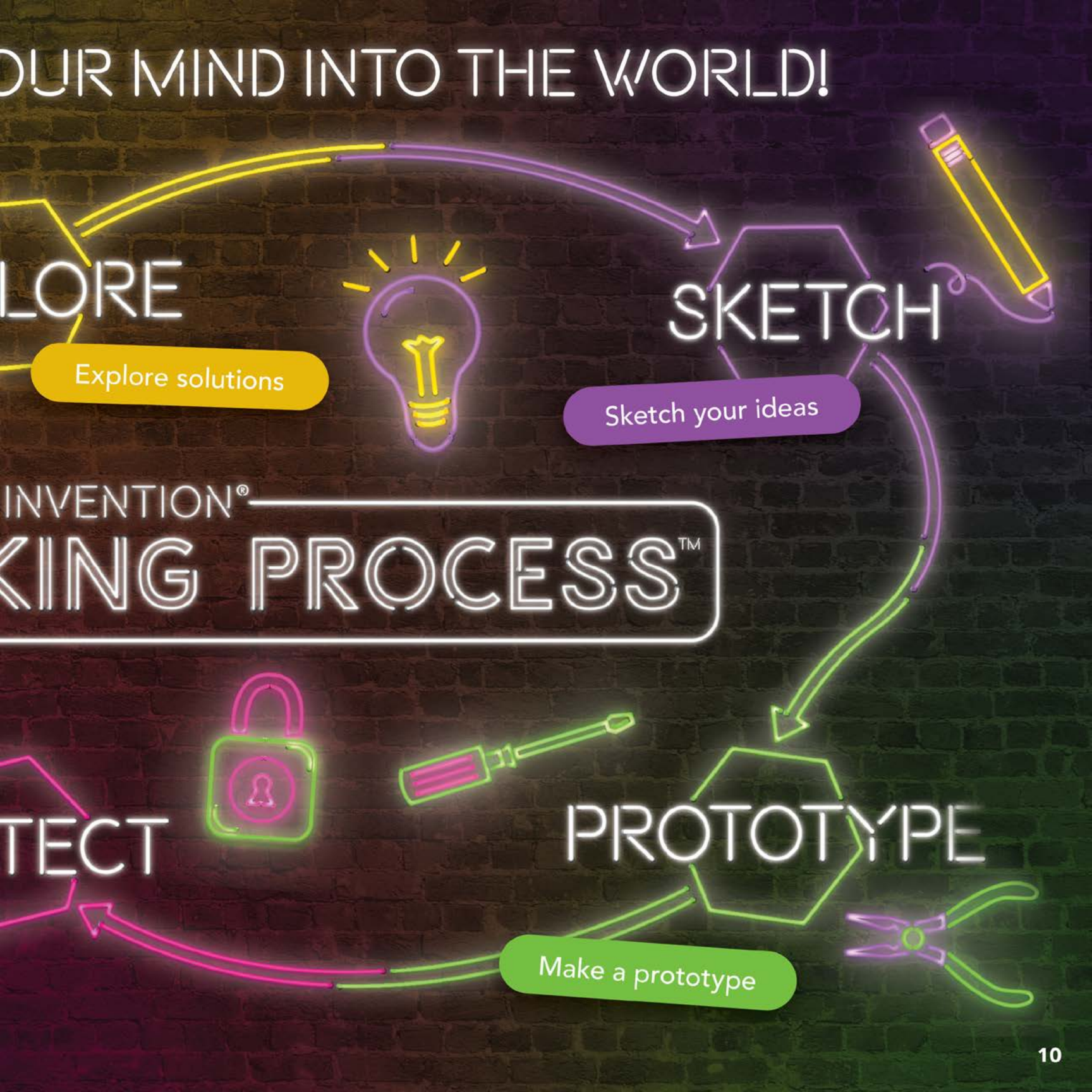
Donald Fletcher Holmes and William Edward Hanford invented **Polyurethane.**

ELECTRET MICROPHONE



MICROPHONE GRILL


BRING A NEW IDEA FROM YO
IDENTIFY
EXP
Identify a problem
THE CAMP
DESIGN THINK
Protect your
Intellectual Property
PITCH
PRO
Pitch your invention
to the world


OUR MIND INTO THE WORLD!
LORE
Explore solutions
SKETCH
Sketch your ideas
INVENTION®
KING PROCESS™
TECT
PROTOTYPE
Make a prototype

DREAM UP YOUR INVENTION!

YOU'LL NEED:

The first step is to **Identify** a challenge you want to solve.

Let's warm up our brains!

IDEN

Fill in the blanks:

Wouldn't it be cool if there was a _____ **that could** _____ **?!**

Wouldn't it be cool if there was a _____ **that could** _____ **?!**

Already have an idea? Write or sketch it here.

KEEP YOUR GEARS TURNING

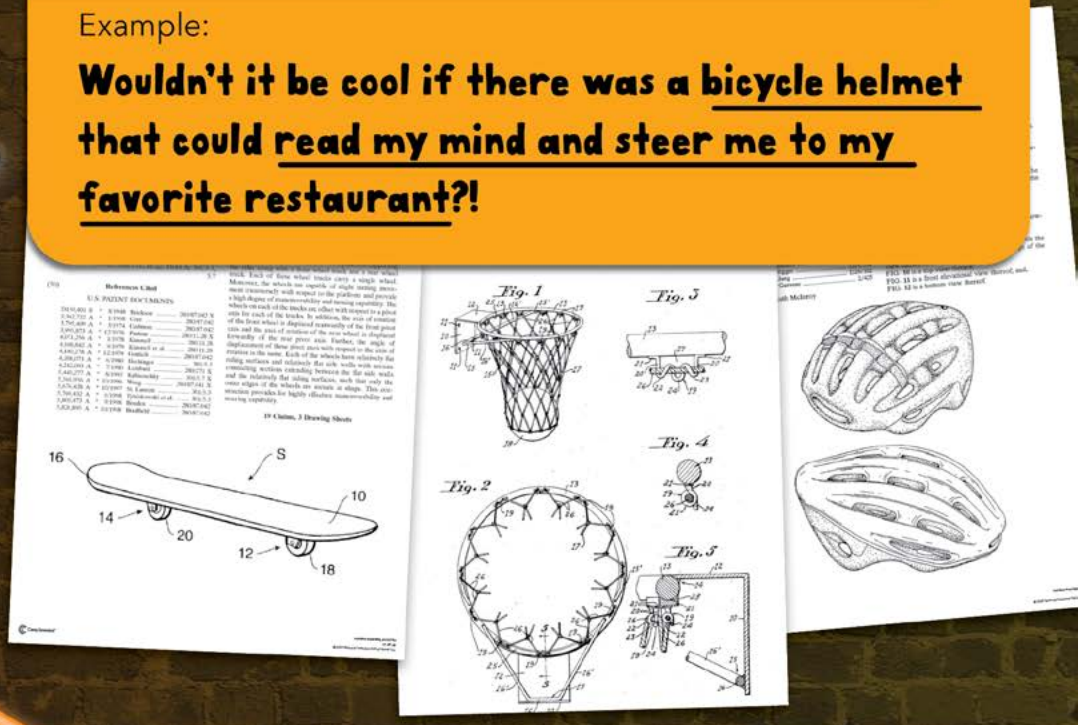
Wouldn't it be cool if there was a (pick one)
- skateboard
- basketball hoop
- bicycle helmet

that could _____ ?!
(Fill in the blank.)

TIFY

Example:

Wouldn't it be cool if there was a bicycle helmet that could read my mind and steer me to my favorite restaurant?!



Consider this...

What system could you invent to help people live on other planets?

What might be in every home in the future?

What process could you invent for cleaning your room?

What type of new plant could you invent?

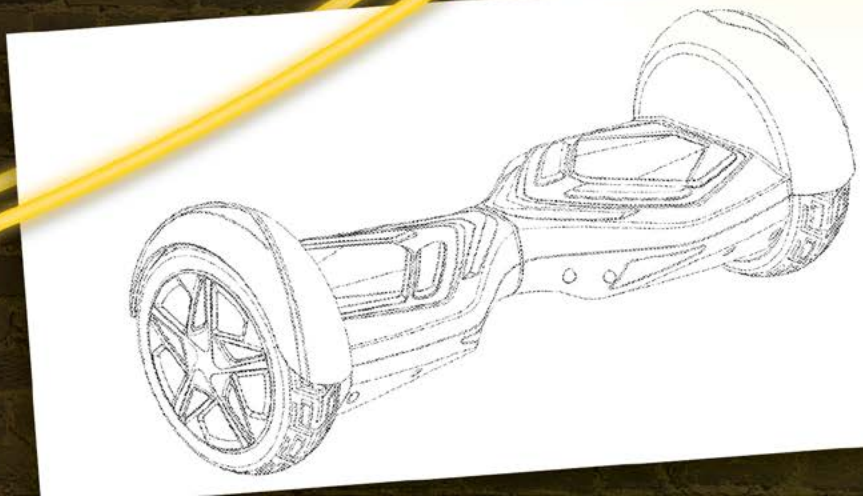
Check out the **Identify poster** for quick tips.

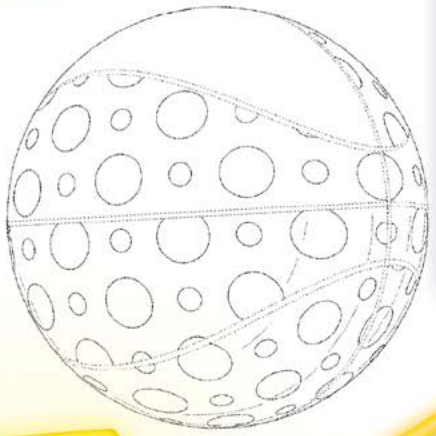
LET'S EXPLORE MORE IDEAS!

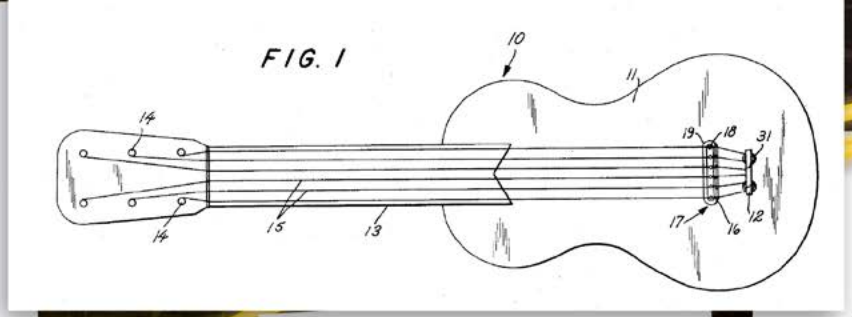
YOU'LL NEED:

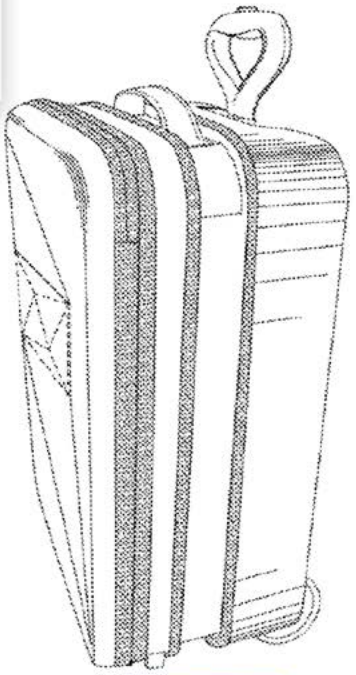
1. **Pick** one of the patent drawings on these pages.
2. Place the tracing paper over the invention and **trace** it.
3. **Enhance** the object by adding new features.
4. **Combine** different parts of inventions to make a mash-up!

Check out the **Explore poster** for quick tips.









LORE

The invention idea that I am going to Sketch and Prototype is:

National Inventors Hall of Fame®

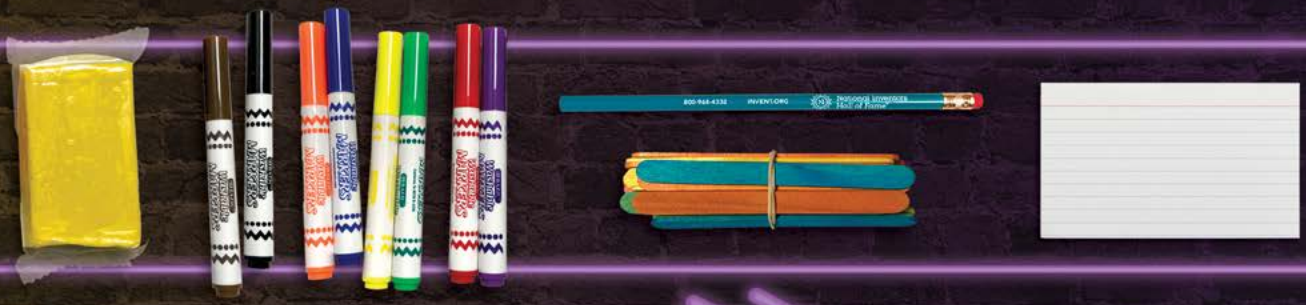
MEET A
HALL OF FAMER

MARGARET KNIGHT

Margaret Knight, who began inventing as a teenager, invented the flat-bottomed paper bag folding machine. She saw a problem (the time and cost of hand-folding paper bags was high) and invented a solution!

Learn more about Knight here:
invent.org/inductees/margaret-e-knight

YOU'LL NEED:



Sketch your original invention ideas here.

MY INVENTION SKETCHES

Add symbols and numbers to your sketch.

Add arrows to show how it moves.

Add notes about how it works.

SKE

Check out the **Sketch poster** and **Sketch video** for quick tips.

Play one of the **Background Music videos** or your favorite song while you are sketching.

Done sketching? → Try **molding** your ideas!

Clay is one way to express your ideas in 3D form.

Work with your clay on top of an index card...

...or on your Maker Mat!

Use a **craft stick** to add details to your clay model.

MORE TO EXPLORE

Sculpting is an ancient art form. Artists, designers, and inventors use clay to shape and express their ideas.

Did you know that clay is even used to build **full-scale model cars?**

MAKE YOUR PROTOTYPE!

YOU'LL NEED:

PROTOTYPE MATERIALS

A **Prototype** is a model of your invention.

It is another way to communicate **what your invention is** and **how it will work.**

Make a list of the materials you want to use to design your prototype here.

Then, gather those materials!

You can also use recyclables, like empty containers and boxes, from home.

FROM 2D TO 3D

Helpful hints:

Use your sketches or clay model to guide you.

Ask others what they think.

Compare which materials work best.

Check out the DIY Tips on the next page.

OTYPE

CIC Finalist **Lia Winter** said that her team made more than 12 revisions to their prototype but learned something from each one.

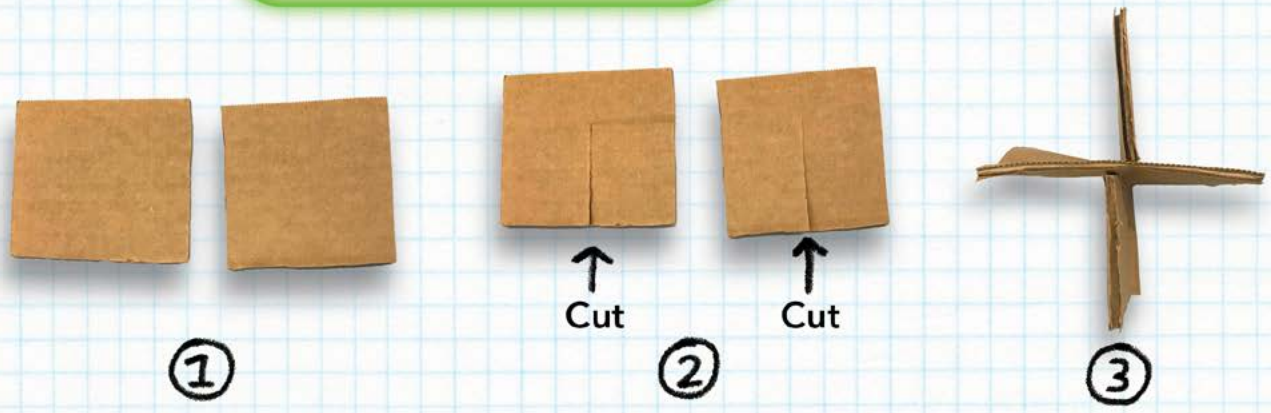
Check out the **Prototype poster** and **Prototype video** for quick tips.

Play one of the **Background Music videos** or your favorite song as you are building.

DIY TIPS

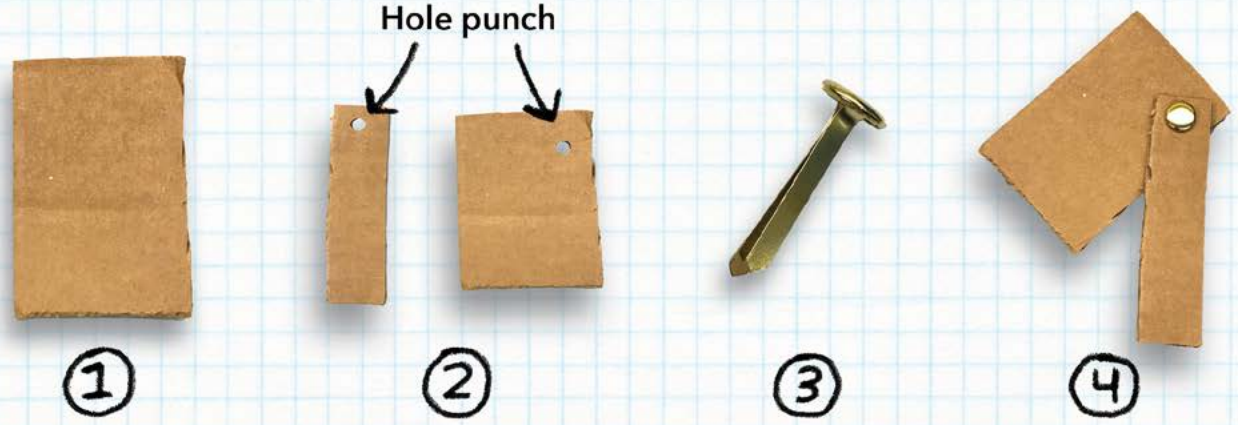
CARDBOARD SLOT

to connect



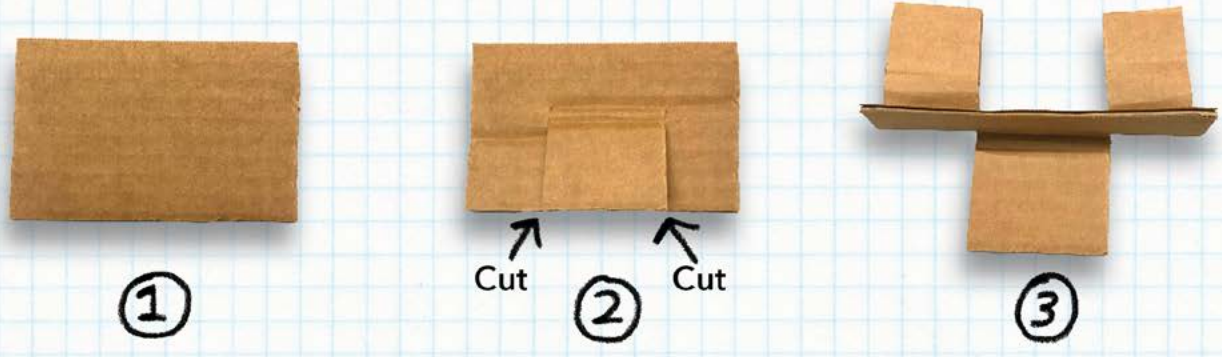
CARDBOARD BRASS FASTENER

to twist, spin, or move



CARDBOARD TABS

to stand

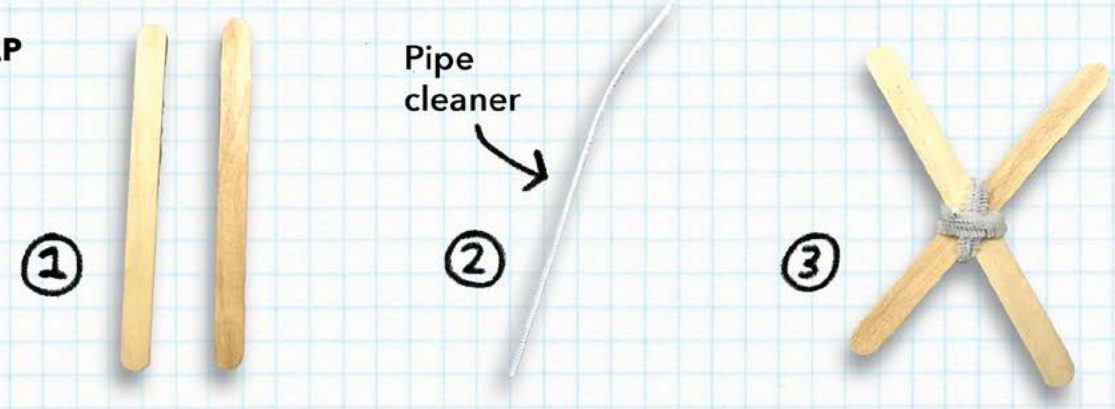


PAPER CUPS AND TAPE STRUCTURE

to build tall

CRAFT STICKS WRAP

to connect



Check out the **DIY Tips video** for more tips!

Cardboard is a great prototyping material.

Did you know that corrugated cardboard is three pieces of paper glued together? The middle piece is crimped to help give support to the finished board.

Studying materials is its own field of study called **materials science!**

GET OUTSIDE!

Take your invention prototype to the next level by adding nature-inspired details.

How many small objects from nature can you collect in 30 seconds?

1. Pick a collecting spot, race off, and pile them up!
2. Which items might you use to enhance your invention?
3. Reverse race the remaining items back to where you found them.

Explore nature with a materials scavenger hunt!

Find something that:

- ☐ is in the sky
- ☐ is green
- ☐ has a pattern
- ☐ flies or floats
- ☐ could be used for play
- ☐ is round
- ☐ is growing on something else
- ☐ moves
- ☐ has lines or spots

Stretch your body and imagination!

If you are the type of Design Thinker who likes to...

- Dream up new ideas → do 10 leg kicks up to the sky
- Sketch before they build → do 10 jumping jacks and feel the breeze
- Protect their ideas → spin in a circle (or around a tree) three times
- Test lots of materials before choosing one → do two push-ups on the ground
- _____ → _____

create your own!

PROTECT

YOU'LL NEED:

There are lots of ways you can **Protect** your Intellectual Property!

A **patent** is a protection granted by the United States Patent and Trademark Office (USPTO). It gives the inventor the right to keep others from making or using the invention without permission from the inventor.

TM

Any item with a TM has been **Trademarked**, but has not yet been registered by the USPTO.

When you see an ® on a product, it means the creator was successful in federally **registering** their unique mark for use in commerce.

Creators can also protect their work through a **Copyright.**

Copyrights are for written works like books and articles, as well as paintings, photographs, movies, software, and video games.

APPLY FOR A PATENT

Fill this out.

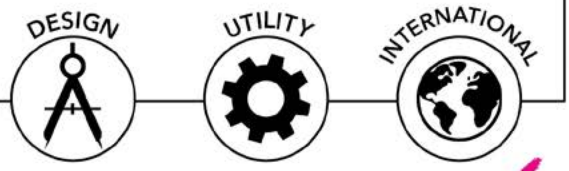
PATENT APPLICATION

INVENTOR

AGE

NAME OF INVENTION

INVENTION DRAWING



protects the way an invention looks

protects the way an invention works or is used

protects your invention in other countries

What type of patent would you like to apply for? Mark with an **X** on one or more!

MAKE YOUR MARK

Sketch a few ideas for your invention logo.

LOGO

A **logo** is a symbol or picture that represents a company, product, or service.

Check out these logo creation tips.

Consider color, style, and originality!

What colors best represent your invention?

Add a TM or an ® to your logo.

And, check out these Sponsor Logos for inspiration!

Play the **Protect video** and look at the **Protect poster** for quick tips.

SPONSORS

Our sponsors and donors light up Camp Invention!

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NATIONAL INVENTORS HALL OF FAME® ENDOWMENT CHILDREN'S EDUCATION FUND

Write a **jingle** (a short song) to promote your invention.

_____

_____

_____

Use your microphone to deliver it!

PITCH YOUR INVENTION TO THE WORLD!

YOU'LL NEED:

A **Pitch** tries to draw a person in to buy or invest in an invention.

Fill this out.

Think about these questions as you create your pitch!

How will you hook your audience?

What problem are you solving?

PITCH

MY INVENTION IS:

_____

DRAW YOUR INVENTION AND CIRCLE ITS 3 BEST FEATURES.

DRAW A PICTURE OF YOUR INVENTION BEING USED.

The people who use and buy your invention are your audience.

Why is your invention unique?

What are its special features?

Practice your 30-second pitch with the **30-Second Timer video.**

Use your microphone to make the pitch!

Watch the **Pitch video** and look at the **Pitch poster** for quick tips.

YOU DID IT!

KEEP DESIGNING, MAKING, AND INVENTING!

Use this space to write down or draw your ideas for the Next Big Thing!

CHECK OFF EACH ACTIVITY AS YOU COMPLETE IT!

- [ ] Set Up Your Innovator Workshop!
- [ ] Step Up to the Mic
- [ ] Identify
- [ ] Explore
- [ ] Sketch
- [ ] Prototype
- [ ] Get Outside!
- [ ] Protect
- [ ] Pitch

Learn more about West here: invent.org/inductees/james-e-west

MEET A **HALL OF FAMER**

JIM WEST

Looking inside a machine helps us better understand how it works. When we know as much as possible about each part and how it works, we can use those different parts to make new machines and devices. Taking apart a machine to see its inner workings is called **reverse engineering.** Hall of Famer Jim West, the coinventer of the Electret Microphone (the invention inside your wireless mic), took apart his grandfather's pocket watch as a young boy.

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UNITED STATES PATENT AND TRADEMARK OFFICE uspto

Learn more at **invent.org**

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