



# MAC MAKERSON



**MAKER ADVENTURE &  
BUILD INSTRUCTIONS**

↑ THIS SIDE UP ↑  
**FRAGILE**  
HANDLE WITH CARE

MAC MAKERSON

# THE ADVENTURE BEGINS



**Mac Makerson**



**Grace**  
(Mac's mom)



**Charlie**  
(Mac's sister)



**Ramon**  
(Maker mentor)



**Stanley**  
(pet stunt pig)

## FREE COMIC!

Join Mac and Maya on their first adventure in the Making. It all begins when Mac's father suddenly finds himself in a dangerous situation.

Using only their wits and a few household parts, Mac and Maya race against time to build an emergency flashlight that helps them save the day. Along the way, they stumble upon the mysterious Makerpedia—and discover there's more to being a Maker than meets the eye!



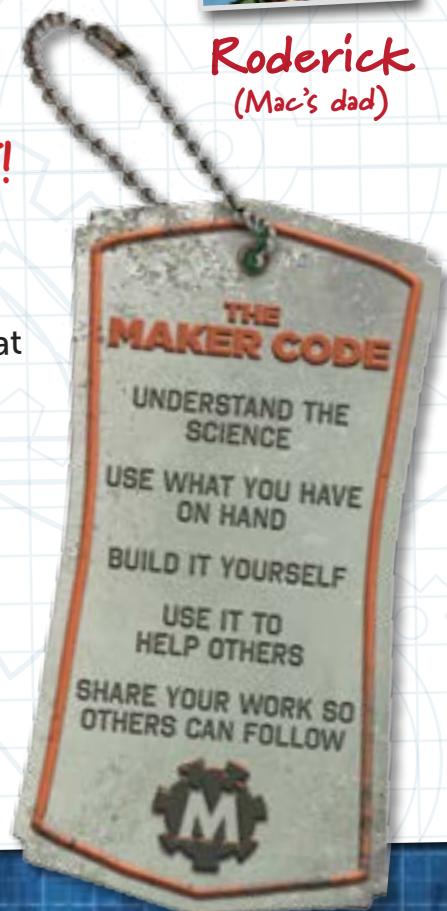
**Maya Craft**  
(Mac's best friend)



**Roderick**  
(Mac's dad)

## FREE PROJECT!

Instructions to build your own emergency flashlight out of household parts begin at the end of the comic.





A SINGLE BOLT OF LIGHTNING CAN HAVE  
100 MILLION TO 1 BILLION VOLTS OF  
ELECTRICITY ...

AND REACH TEMPERATURES HOTTER  
THAN THE SURFACE OF THE SUN.



THAT'S ENOUGH POWER TO INSTANTLY  
TOAST 100,000 SLICES OF BREAD.



CITY ARCHITECTS PROTECT THEIR BUILDINGS—AND THE PEOPLE INSIDE—BY INSTALLING LIGHTNING RODS AT THE HIGHEST POINTS.



IF LIGHTNING STRIKES, THE ROD ROUTES THE ELECTRICITY HARMLESSLY THROUGH A WIRE TO A CONDUCTIVE DEVICE BURIED UNDERGROUND.



JUST OUTSIDE THE CITY, MAC MAKERSON AND HIS FRIEND MAYA ARE HELPING MAC'S DAD, RODERICK, INSTALL A LIGHTNING ROD OF THEIR OWN ...

SLOW AND STEADY, MAYA. LET MAC AND I GUIDE IT UP.

GOT IT!



DAD! ARE LIGHTNING RODS USUALLY THIS HEAVY?!

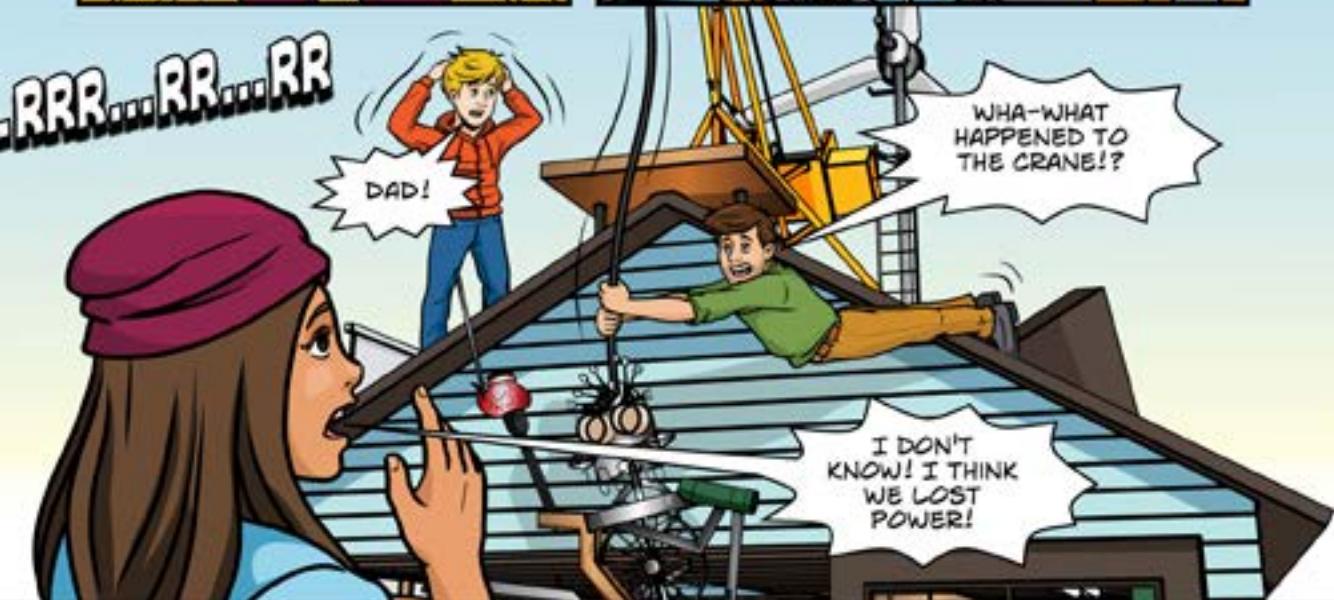
DON'T YOU MEAN, ARE THEY USUALLY THIS HANDSOME?



SON, IF YOUR MOTHER WANTED A SIMPLE LIGHTNING ROD TO PROTECT HER COMPUTERS, SHE SHOULD HAVE ASKED AN ENGINEER.

RIGHT. ASK AN ARTIST AND YOU GET A LIGHTNING "RODERICK."

EXACTLY! BESIDES, IT'S BEEN A LONG TIME SINCE I'VE CREATED A SELF-PORTRAIT.



MOMENTS LATER.



CLICK  
CLICK

OH NO!  
WE'VE BLOWN  
OUT THE  
ELECTRICITY FOR  
THE WHOLE  
HOUSE!

WE WON'T  
SEE ANYTHING  
DOWN THERE  
WITHOUT A  
FLASHLIGHT.



EMERGENCY  
FLASHLIGHT

DO NOT  
REMOVE

I'LL JUST  
GRAB ... WHO  
TOOK THE  
EMERGENCY  
FLASHLIGHT?



DAD!  
WHERE DID ALL  
THE FLASHLIGHTS  
GO!?

GEE, UH ... I  
DON'T KNOW!  
JUST ... DO  
SOMETHING!



THIS JUNK  
DRAWER MIGHT  
HAVE  
PARTS WE CAN USE TO  
MAKE A SIMPLE  
FLASHLIGHT.



I HAVE AN IDEA!



WE CAN USE THAT  
OLD LIGHT STRING.  
LET'S HURRY!

DETAILED INSTRUCTIONS FOR HOW TO  
MAKE MAC AND MAYA'S FLASHLIGHT  
ARE AT THE END OF THE STORY.

5 MIN LATER...

I THINK WE'RE DONE!  
LET'S GO!

HANG ON,  
DAD! WE'VE ALMOST GOT IT!

OK,  
MAYA. LET'S FIND THAT FUSE!

YOU MAKERSONS SURE HAVE A LOT OF STUFF IN YOUR BASEMENT.

WHAT'S THAT GLOWING OVER THERE?

PROBABLY JUST A SCULPTURE ... BUT I ...

WOW!  
THIS MUST HAVE BELONGED TO MY GRANDPA!

WHAT IN THE WORLD?

IT'S A BOOK ... A REALLY BRIGHT BOOK!

MAYBE YOUR DAD CAN TELL US WHAT IT IS.

MY DAD!





YOU TWO SAVED MY BACON TODAY. HOW'D YOU FIND THE CIRCUIT BREAKER IN THE DARK?

WE MADE A FLASHLIGHT FROM STUFF WE FOUND IN THE KITCHEN DRAWER.



WOW! YOU MADE THIS OUT OF JUNK?

YEAH, AND WE FOUND THIS WEIRD BOOK.



THE BOOK!

WHAT IS IT? DID IT BELONG TO GRANDPA?

YES. LET'S GET DOWN OFF THIS ROOF AND I'LL TELL WHAT I KNOW.

MOMENTS LATER, IN THE WORKSHOP.



MAYA, YOU ASKED ABOUT THE M ON THE COVER. IT DOESN'T STAND FOR MAKERSON—IT STANDS FOR MAKER.

MAKERS? LIKE BUILDERS?

DID YOUR DAD MAKE THIS BOOK?

I BARELY REMEMBER HIM ...

THE BOOK IS MUCH OLDER THAN YOUR GRANDFATHER. BUT HE ADDED SOME PAGES.

I FOUND THE BOOK JUST AFTER HE DISAPPEARED. I GUESS IT ENDED UP BURIED IN THE BASEMENT.

WOW! HOW OLD IS IT?

RRRR ... HOW DO YOU GET THIS THING OPEN? I WANT TO SEE WHAT HE WROTE!

ALL I KNOW IS, HE SAID THAT IF THE BOOK EVER DID ANYTHING STRANGE, WE HAD TO BRING IT TO THE MAKER'S GUILD.

I THINK GLOWING COUNTS AS STRANGE.

ME, TOO. THIS SOUNDS LIKE AN ADVENTURE! LET'S GO!

LET'S MAKE SURE THIS ADVENTURE INCLUDES A TRIP TO THE STORE ... IT SEEMS WE'RE OUT OF FLASHLIGHTS.

LATER ...

WELL, THIS DAY CERTAINLY TOOK A DRAMATIC TURN!

NO KIDDING. I JUST CAME OVER TO PLAN FOR OUR ROBOTICS COMPETITION, AND NOW WE'RE GOING TO BE PART OF SOME SECRET SOCIETY?

I KNOW IT SOUNDS MYSTERIOUS.

BUT FROM THE INVENTIONS I'VE SEEN YOU TWO MAKE, YOU'RE NATURALS FOR THE MAKERS GUILD.

THE GUILD IS ABOUT USING YOUR INVENTIVENESS TO CREATE THINGS THAT HELP PEOPLE.

AND HERE WE ARE!

BUT THIS PLACE IS A DUMP ... LITERALLY.

YEAH, ARE YOU SURE THIS IS THE PLACE?

DON'T JUDGE A BOOK BY ITS COVER.

RAP RAP RAP

UNLESS THAT COVER HAS A BIG MECHANICAL "M" ON IT?





WOW!  
LOOK AT ALL  
THIS!

NOT ALL, BUT  
SOME. SO DID  
OTHER MEMBERS OF  
THE GUILD. INCLUDING  
YOUR GRANDFATHER,  
MAC.

DID YOU  
MAKE ALL OF  
THESE  
THINGS?



YOU KNEW MY  
GRANDPA?

YES. BUT TELL ME,  
WHERE DID YOU FIND  
THE MAKERPEDIA?



WE WERE IN THE  
MAKERSON  
BASEMENT, AND WE  
SAW IT GLOWING.



AND WHAT  
WERE YOU DOING  
JUST BEFORE  
THAT?

WE MADE THIS  
FLASHLIGHT SO  
WE COULD GET TO  
THE FUSE BOX TO  
SAVE DAD.



AHA! OF  
COURSE!

COME LOOK  
AT THIS.

DO YOU REMEMBER THE EXCITED FEELING YOU HAD WHEN YOU CAME UP WITH THIS FLASHLIGHT?

EXACTAMENTE! THE BOOK IS ENERGIZED BY THOSE LIGHTNING-BOLT MOMENTS OF GENIUS.

SURE. IT WAS LIKE A BOLT OF ELECTRICITY!

AFTER SEVEN BRAIN "STORMS" LIKE THAT, THE SEVEN LOCKS ON THE COVER WILL OPEN FOR YOU.

HERE. KEEP THIS WITH YOU. THE CODE WILL GUIDE YOU AS YOU COMPLETE YOUR NEXT SIX INVENTIONS.

THEN, YOU'LL BE MEMBERS OF THE MAKERS GUILD, AND CAN ACCESS YOUR PREDECESSORS' GREATEST ACHIEVEMENTS ... YOU CAN EVEN ADD YOUR OWN.

LET'S GET STARTED!

AND REMEMBER: KEEP CALM, AND MAKE ON!

AS YOUR GUILD MENTOR, IT WILL BE MY DUTY TO HELP YOU IF YOU GET STUCK.



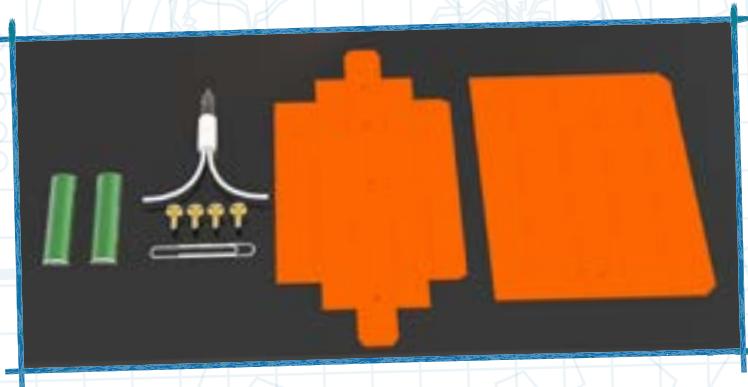
# FLASHLIGHT

## BUILD INSTRUCTIONS

ADULT PERMISSION AND ASSISTANCE REQUIRED!

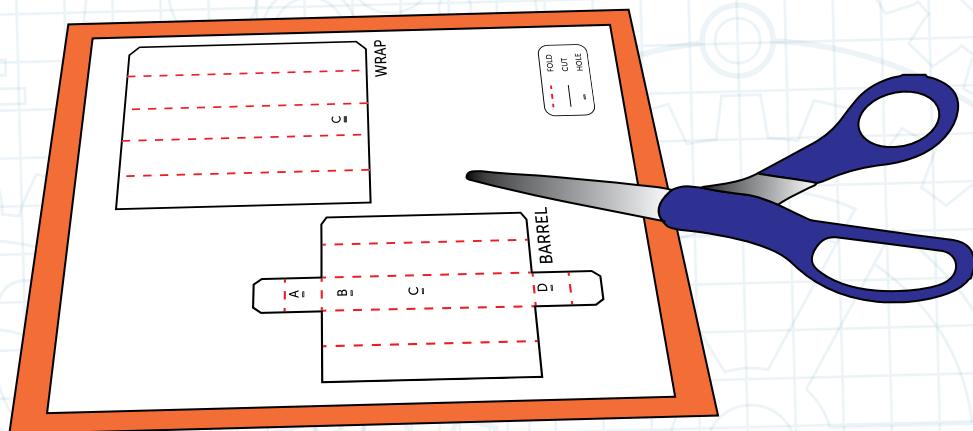
### WHAT YOU NEED:

- Construction paper or card stock paper (8.5" x 11")
- Plug-in LED light string that you can cut up (get permission!)
- 2 AA 1.5V batteries
- Jumbo paper clup
- 4 metal paper fasteners
- Scissors (sharp)
- Tape
- Pencil



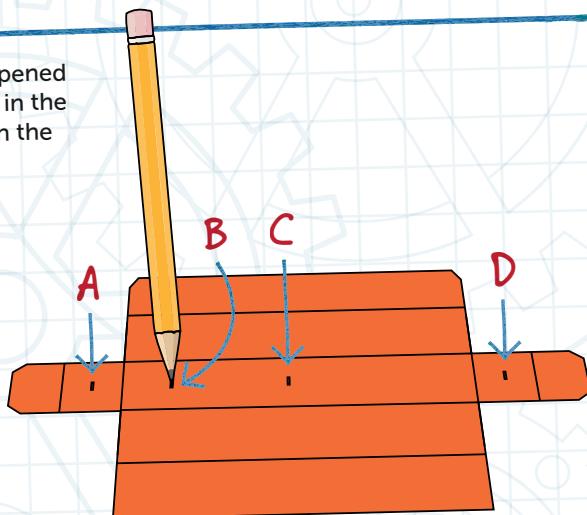
1

Download the printable template sheet. Lay the template over a piece of construction paper or cardstock. Cut out both pieces along the solid cut lines. Fold all the fold lines away from you, so they curve into a square-tube shape.



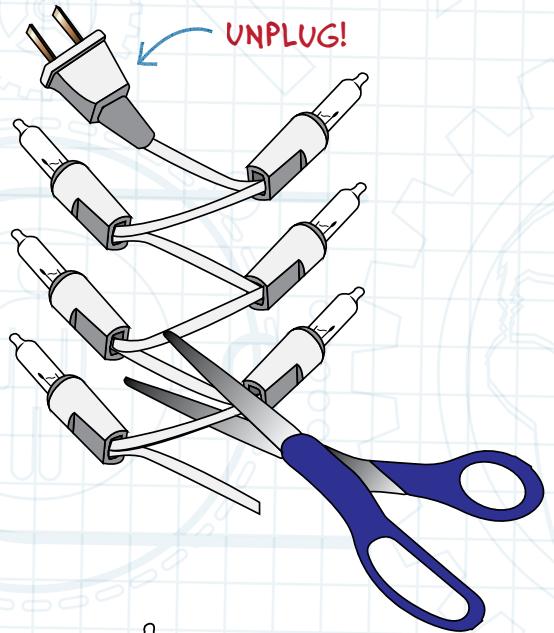
2

Lay the Barrel piece flat. Use a sharpened pencil to make holes A, B, C, and D in the construction paper. Make hole C on the Wrap piece.



3

Making sure to keep as much wire attached on either end as possible, use sharp scissors to cut a single bulb from the string of lights.

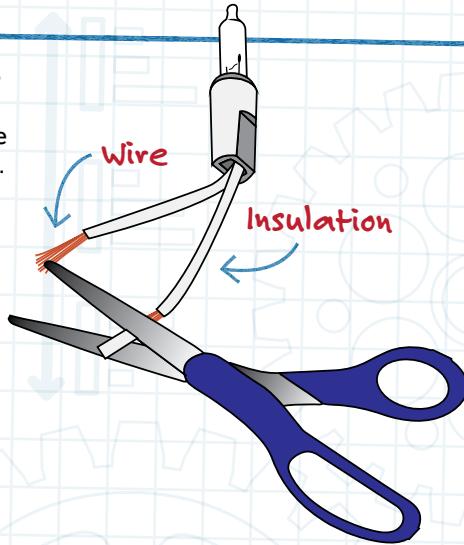


ASK PERMISSION BEFORE PROCEEDING. MAKE SURE THE LIGHTS ARE NOT PLUGGED IN.



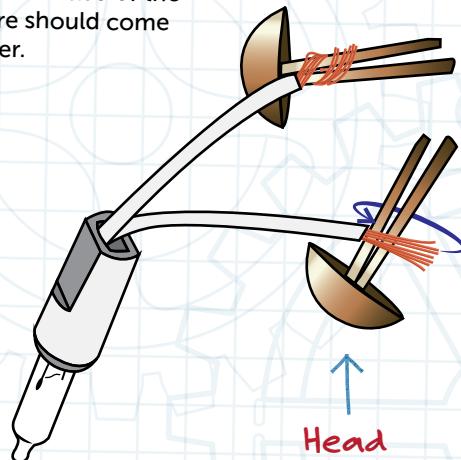
4

Starting about  $\frac{1}{2}$  inch from the end of each cut wire, use the scissors to carefully remove the plastic insulation from the wire. (You may need to ask an adult for assistance.)



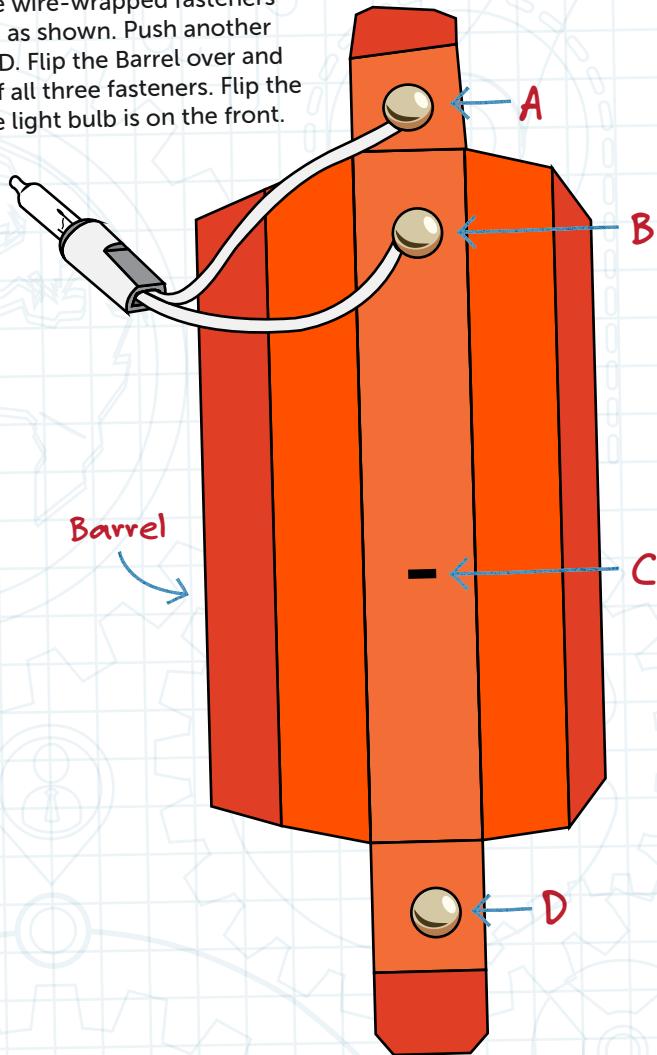
5

Wrap the stripped ends of wire around two of the paper fasteners. The insulated wire should come right up to the head of the fastener.



**6**

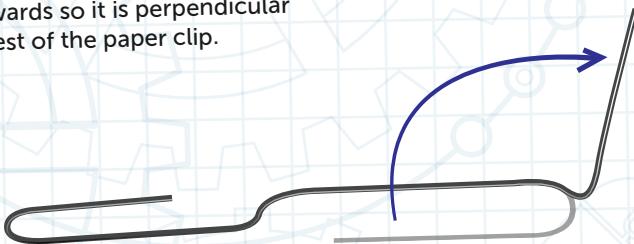
On the Barrel, push the wire-wrapped fasteners through holes A and B, as shown. Push another fastener through hole D. Flip the Barrel over and bend back both legs of all three fasteners. Flip the Barrel back over so the light bulb is on the front.

**7**

Take your jumbo paperclip and bend it into a flattened "S" shape.

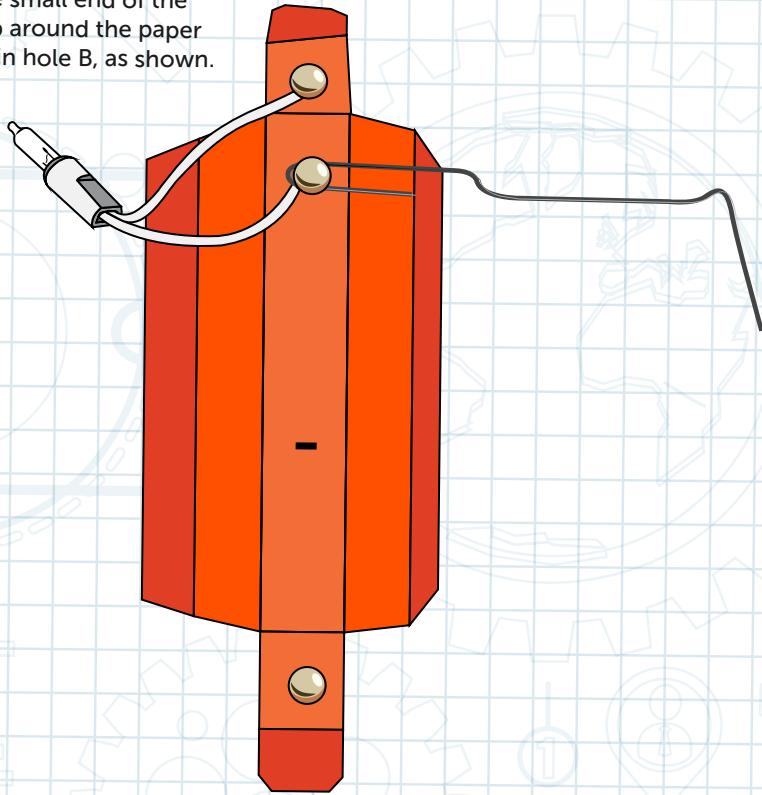
**8**

Take the end of the larger loop and pull upwards so it is perpendicular to the rest of the paper clip.



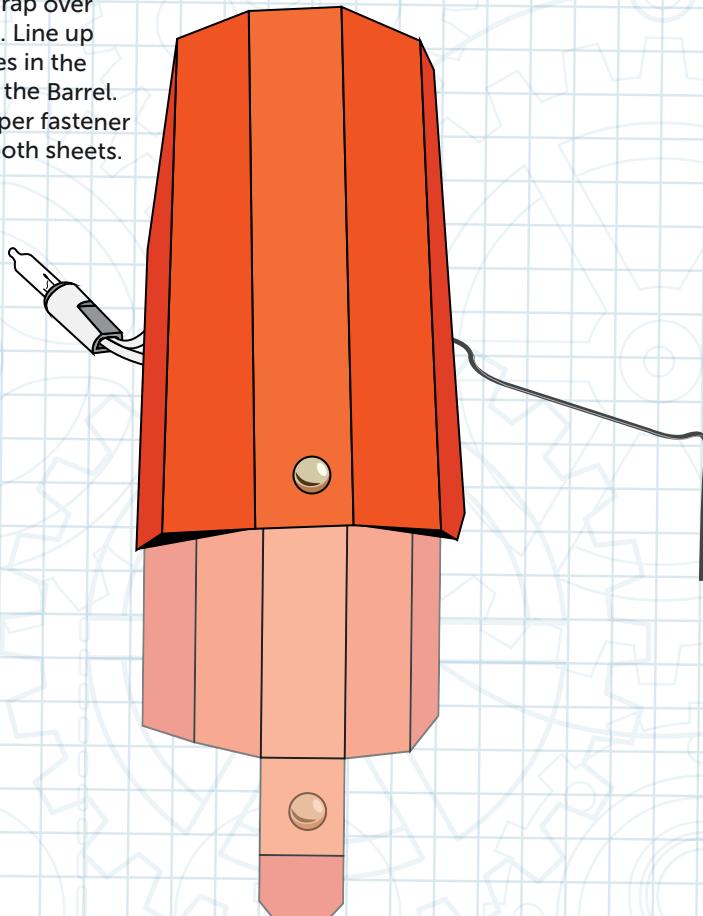
9

Hook the small end of the paperclip around the paper fastener in hole B, as shown.



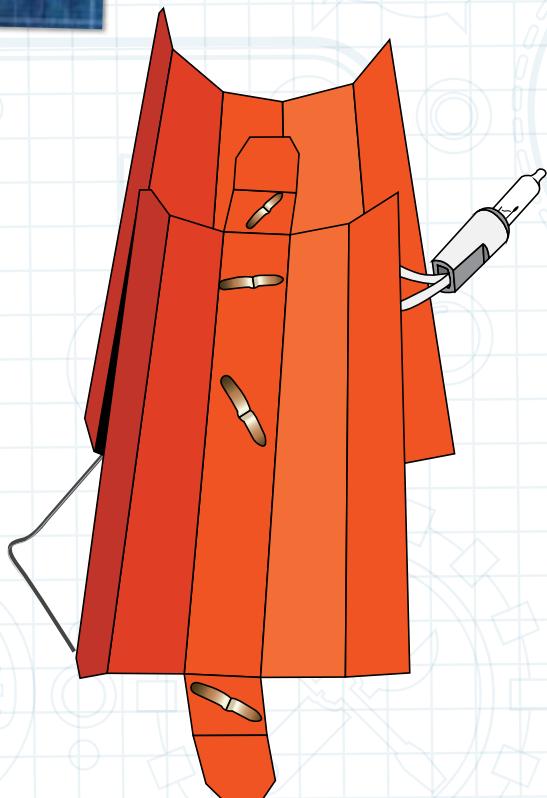
10

Lay the Wrap over the Barrel. Line up the C holes in the Wrap and the Barrel. Push a paper fastener through both sheets.

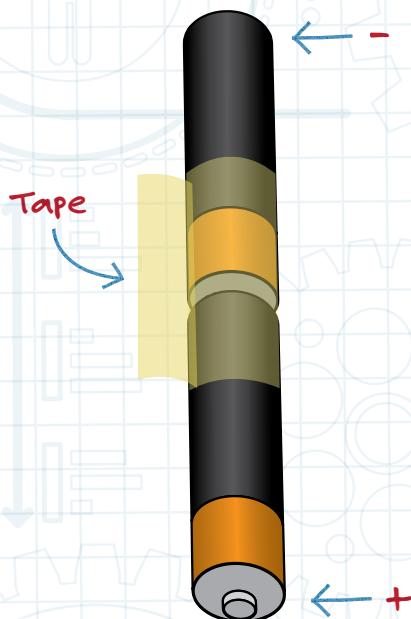


**11**

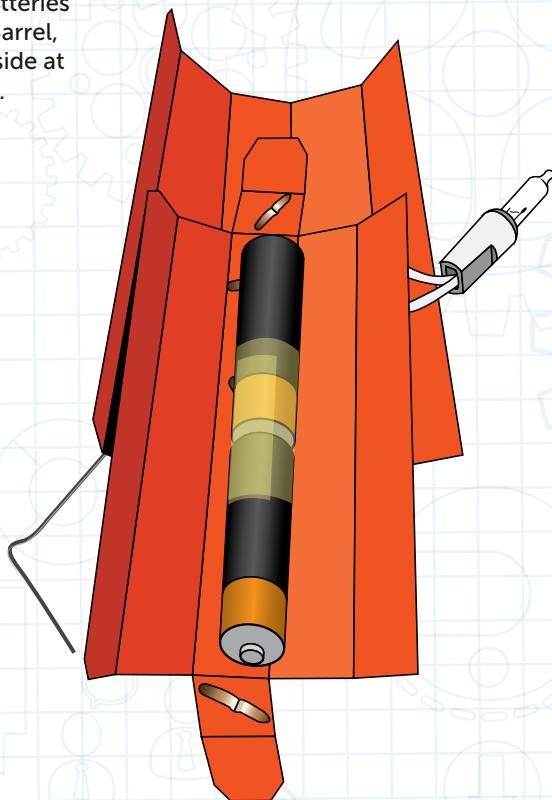
Flip over the joined pieces and bend the fastener ends back.

**12**

Line up 2 AA batteries end to end, so the "+" end of one is pressed against the "-" end of the other. Wrap the battery connection securely with a piece of tape. Set batteries aside.

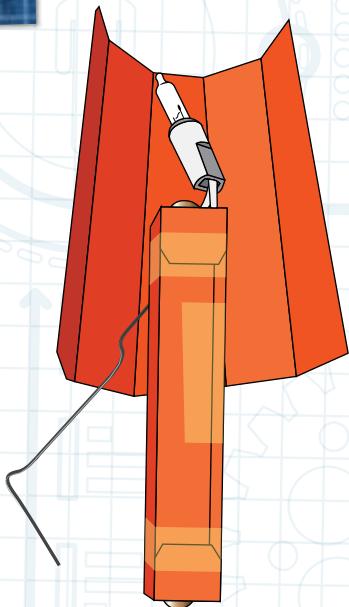
**13**

Lay your batteries inside the Barrel, with the + side at the bottom.



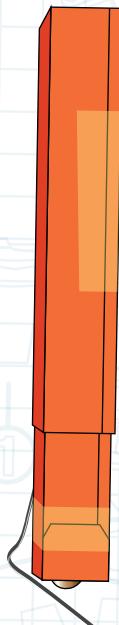
14

Fold the Barrel over the batteries. Secure with tape.



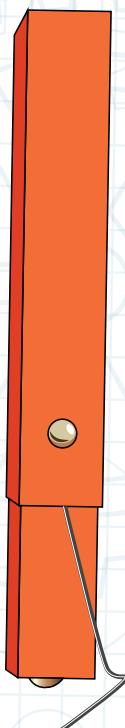
15

Fold the Wrap around the Barrel. Secure with tape.

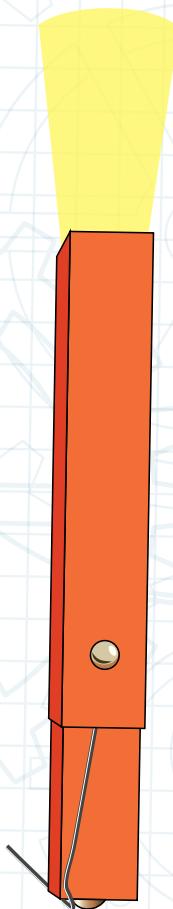


16

To turn on, move the end of the paperclip to the other side of the paper fastener at the end of the flashlight. It should stay in place. To turn off, flip it back to the other side and make sure it is not touching the paper fastener on the end.



OFF



ON

