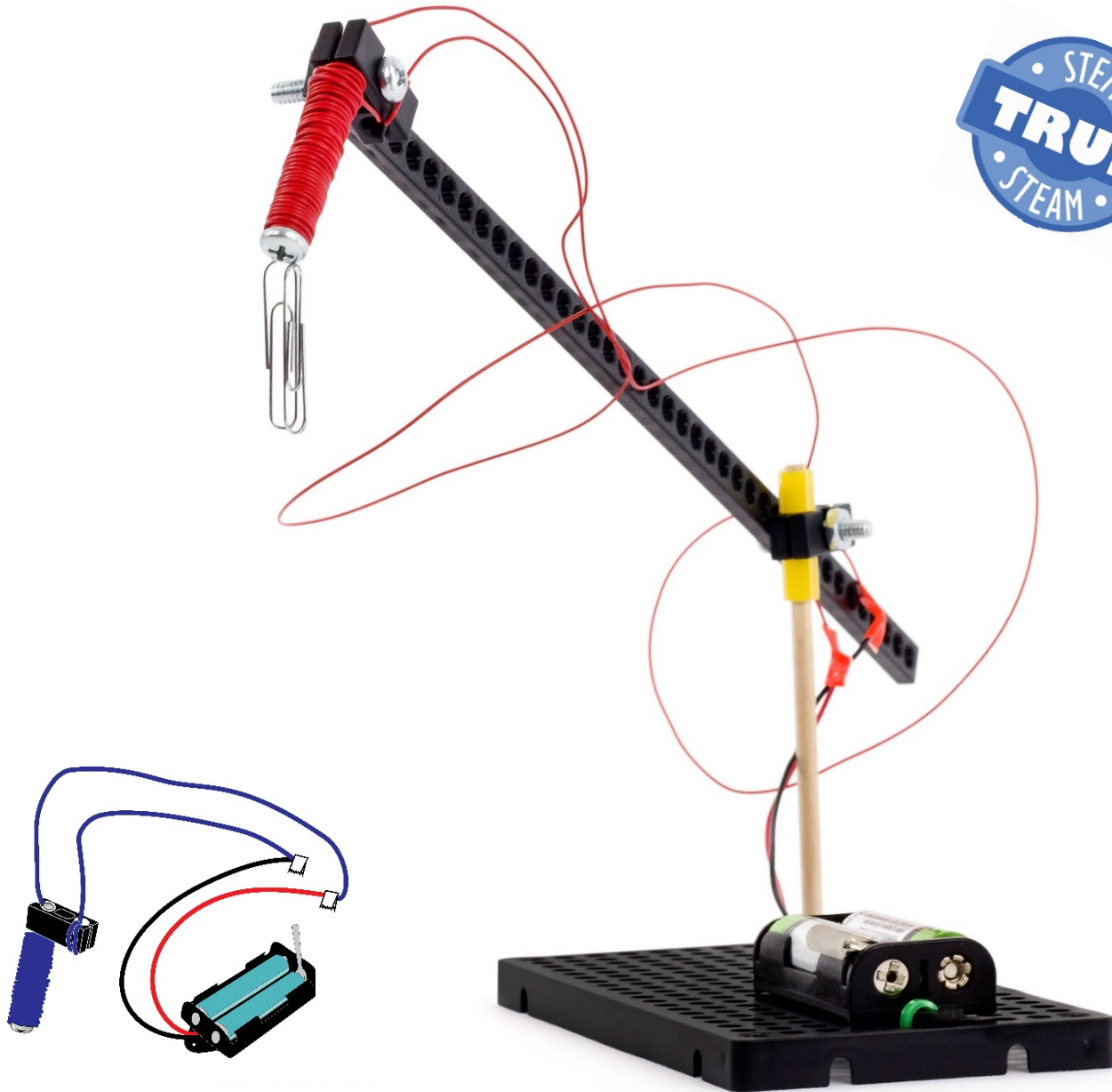
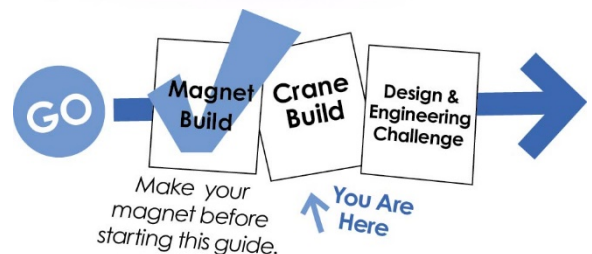


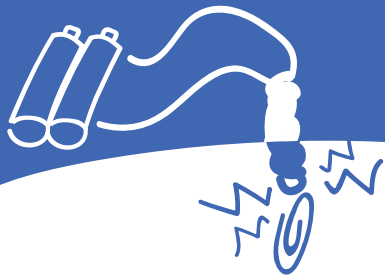
# Crane Build For Electromagnet



Have you made an **electromagnet**?  
You will need to make it, before  
making your crane. Instructions for  
making the electromagnet are at  
[teachergeek.com/learn](https://teachergeek.com/learn)



Other documents available at [teachergeek.com/learn](https://teachergeek.com/learn)



# Crane Build For Electromagnet



Here's how you make stuff with TeacherGeek:

## Cut

**Multi-Cutters** cut wood & plastic (like **dowels** and **connector strips**). They do not cut metal.

## Push, Wiggle,

Push, wiggle or tap **dowels** into holes.

## Tap

Use a **hammer** and **slider block** to tap **dowels** farther thru holes.

### Quick Tip!

Use a **crayon**, or **soap** on the end of a **dowel** to make building easier.

## Ream

Most parts have holes with **teeth**. The **teeth** hold **dowels** (keep dowels from falling out).

**Push & Twist**

A **reamer** removes **teeth** from a hole. This allows a **dowel** to spin in the hole.

Only **ream** holes where dowels should spin

Never **ream** pulleys, gears, wheels, or any hole a **dowel** stays stuck into.

## Screws & Nuts

Do not **ream** holes you will put **screws** into.

**Screws (without nuts)** can connect parts, and allow them to rotate.

**Screws (with a nut)** can connect parts, and keep them from rotating.

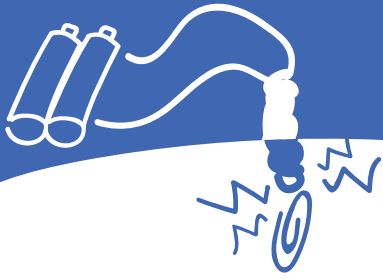
### Stop Clip

Press a **stop clip** onto a **dowel** to keep it from sliding or use it as a hook for a string / rubber band. It takes little force to get it on.

### Slide Stop

Cut **slide stop** into sections. Use **slide stop** on **dowels** to stop **dowels** from sliding thru **reamed** holes.

Adult supervision required for children 12 and under.



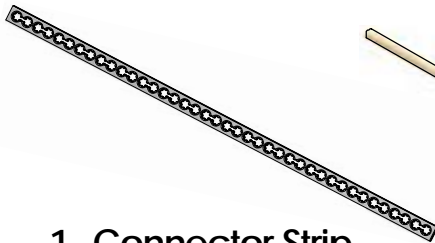
# Crane Build For Electromagnet



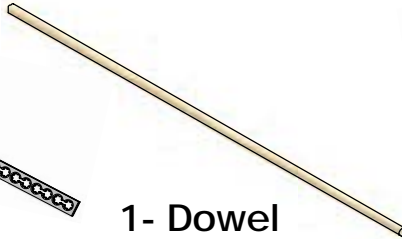
## Get Supplies

### You will need these TeacherGeek components for the Crane:

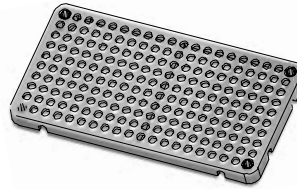
Available in the TeacherGeek [Electromagnet Crane Activity](#), TeacherGeek [Maker Cart](#), or at [teachergeek.com](http://teachergeek.com) (activity packs include extra components for further tinkering and innovation).



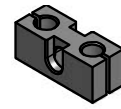
1 - Connector Strip



1 - Dowel  
300mm (12in)



1 - Hole Plate



1 - Block



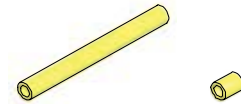
2 - 13mm Screw  
#6 (1/4in)



2 - 2.5cm Screw  
#10 (1in)



1 - Nut  
#10



≥ 2cm Slide Stop  
(≥ 1/2in)

### You will need these tools, they can be shared:

Tools available at [teachergeek.com](http://teachergeek.com)



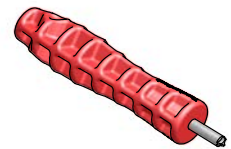
Multi-Cutter  
[SKU 1823-81](#)



Screwdriver  
[SKU 1823-90](#)



Pliers  
[SKU 1823-86](#)

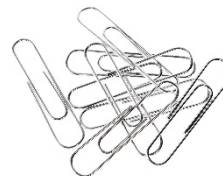


Reamer  
[SKU 1823-87](#)

### You will need these non-TeacherGeek supplies:

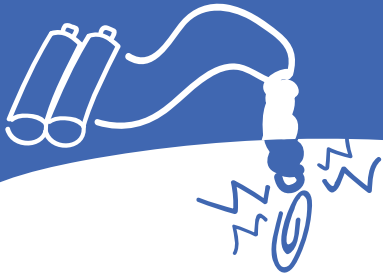


Tape



Magnetic Materials

Erasers, Washers, Staples, Dimes  
Candy, Pennies, etc.

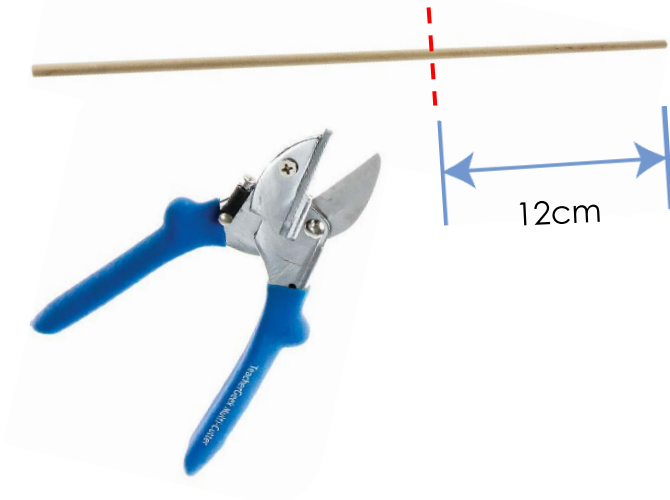


# Crane Build For Electromagnet



## Make the Crane

- 1 Cut a 12cm **dowel**.



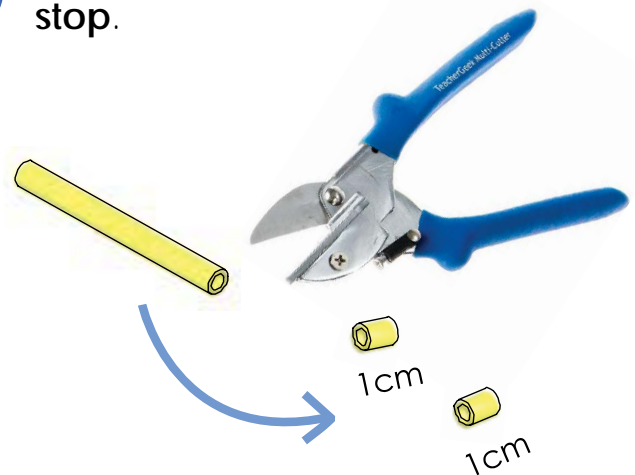
- 2 Tap or push the dowel into a corner of a **hole plate**.



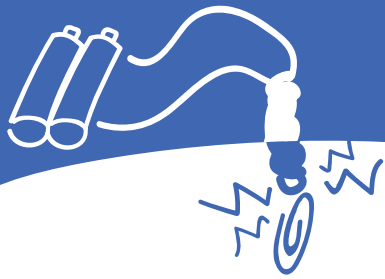
- 3 Ream one hole of a **block**.



- 4 Cut two 1cm sections of **slide stop**.







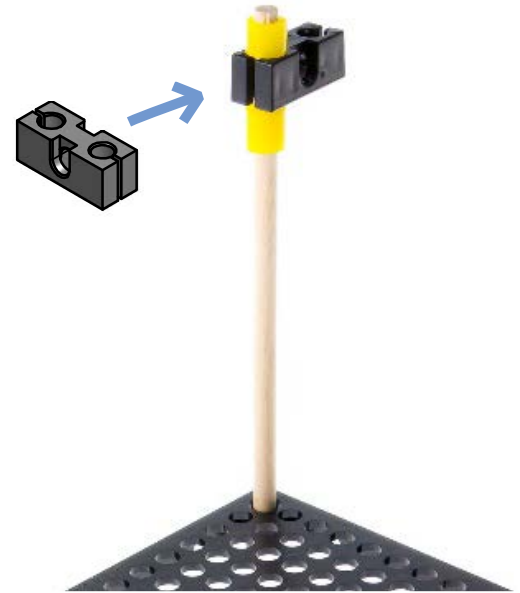
# Crane Build For Electromagnet



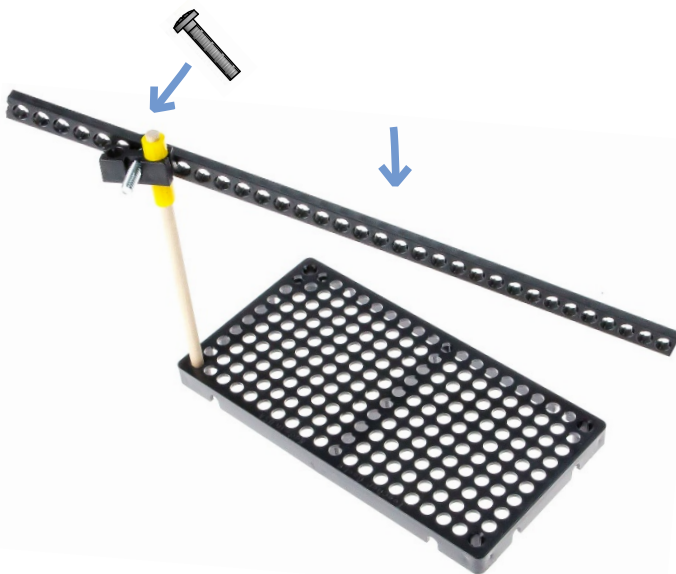
- 5 Place one of the **slide stop** sections onto the **dowel**.



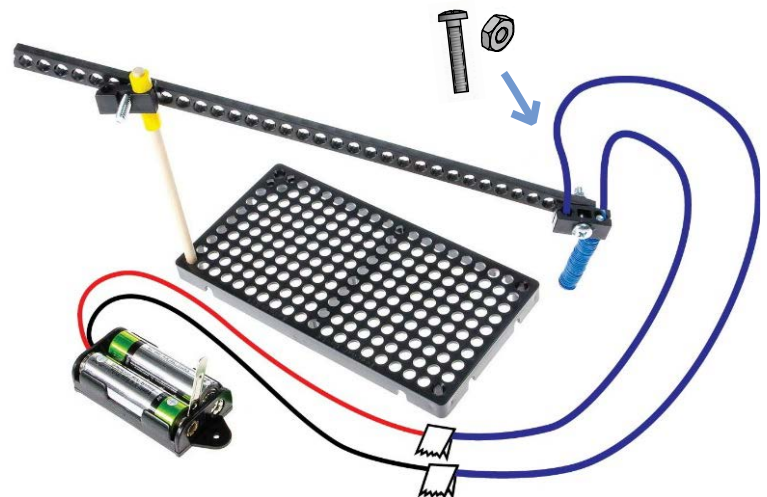
- 6 Put the **dowel** through the reamed **block** hole. Use a **slide stop** section to hold it on.

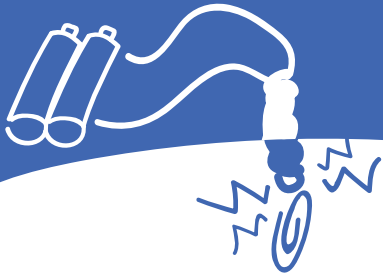


- 7 Use a 2.5cm (1in) **screw** to attach a **connector strip** to the **block**. This will become the crane arm.



- 8 Use a 2.5cm (1in) **screw** and **nut** to attach your **electromagnet** to the arm.



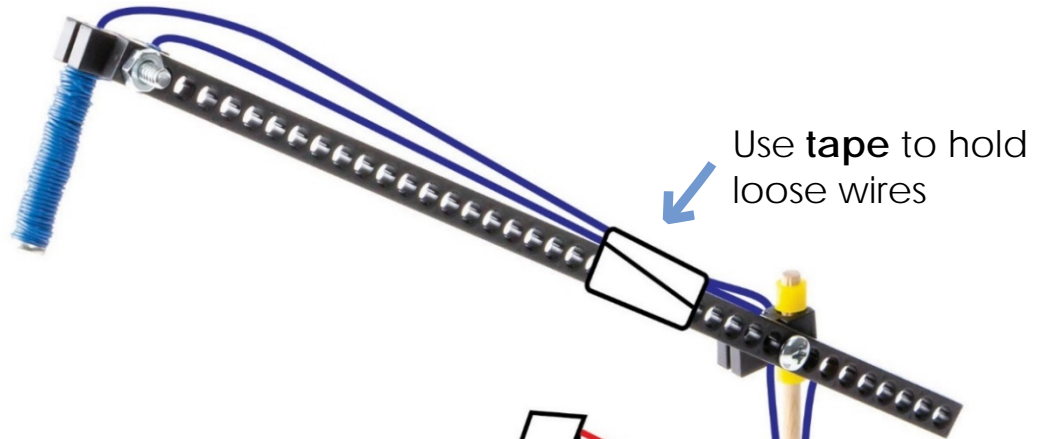


# Crane Build For Electromagnet

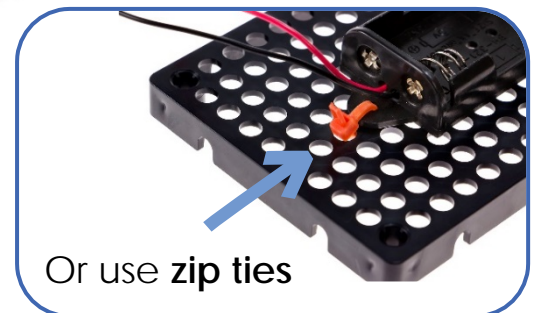
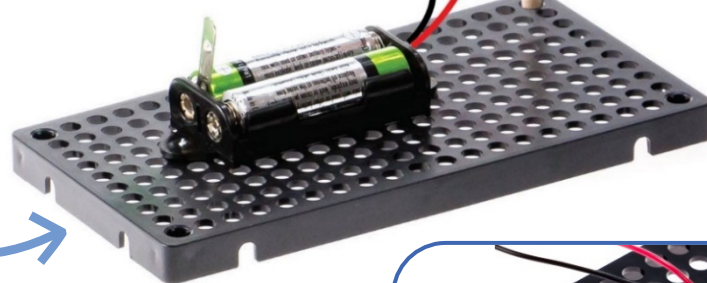


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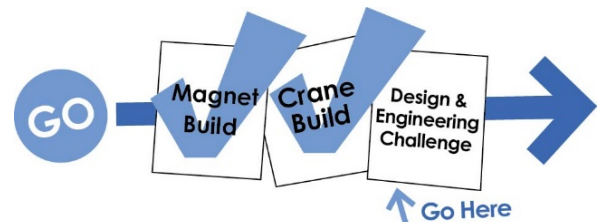
Finish your example Electromagnet Crane by attaching the **battery holder** and taping loose **wires**.



Screw the **battery holder** to the **hole plate**, from the bottom.



This example crane works okay, but you can make it work much better. It is time for you to redesign it. Start onto an Electromagnet Crane Engineering Challenge.



Documents at [teachergeek.com/learn](https://teachergeek.com/learn)