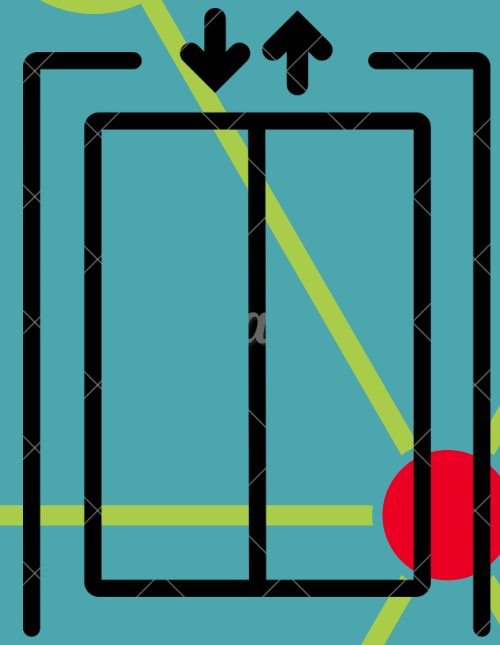




# DT- Year 3/4 Summer Cycle B

## Materials and Construction: Making a Pulley System



### What do I already know?

Y3 and Y4 have both made pop up cards using different mechanisms. Y4 have also constructed a Davy lamp incorporating a bulb.

Children can:

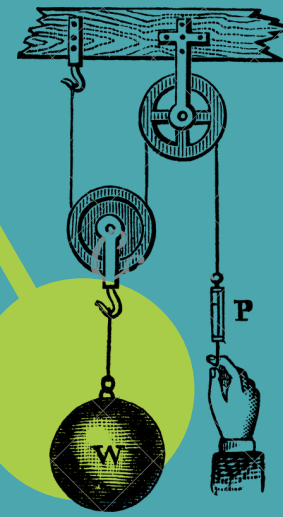
- Explore and create products using mechanisms, such as levers, sliders, wheels and axles.
- Explain why they have chosen moving parts.



### I will know how to design and make:

#### A PULLEY SYSTEM TO HELP THE EGYPTIANS LIFT THE FINAL STONE ONTO THE PYRAMIDS (USING DUPLO BLOCKS) by:

- Looking at the work of Elisha Otis and using his safety elevator design as inspiration.
- Explaining how mechanical systems such as pulleys create movement.
- Designing a pulley system to lift a given weight safely.
- Testing my product and making any necessary adjustments.
- Evaluating my pulley system to see if it served its purpose and was able to lift the brick onto the pyramid.



### Key Vocabulary:

pulley		A device using a rimmed wheel, axle and rope system which makes it easier to lift heavy objects or move things from one place to another.
rotation		The action or process of rotating (turning) on an axis or centre.
hoist		To lift or raise.
motion		An act, process or instance of changing place: a movement.

load		The quantity or weight that can be carried at one time by a specified means. E.g. a lorry load.
function		The job which a person or thing is specifically made or used for.
axle		A pin or shaft on or with which a wheel or pair of wheels revolves.
annotated drawings		A drawing or diagram with added notes, labels or comments.



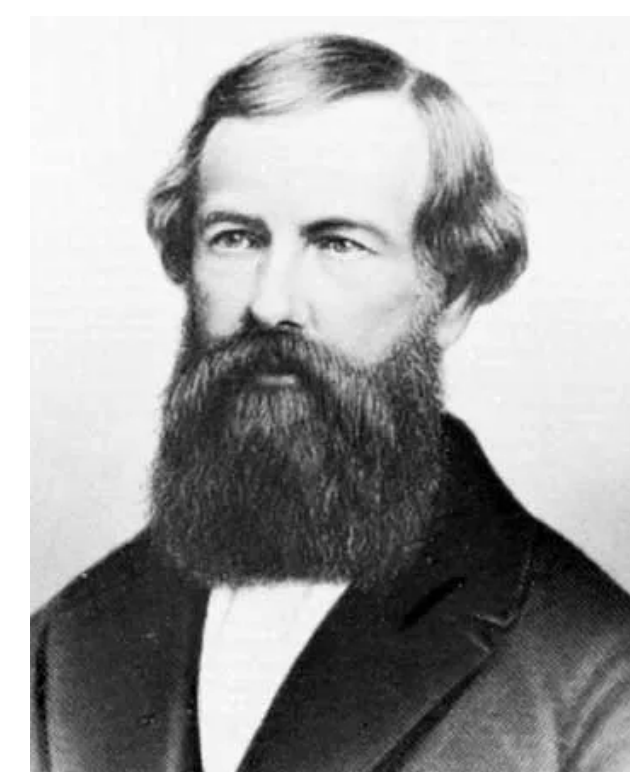
# DT- Year 3/4 Summer Cycle B

## Materials and Construction: Making a Pulley System

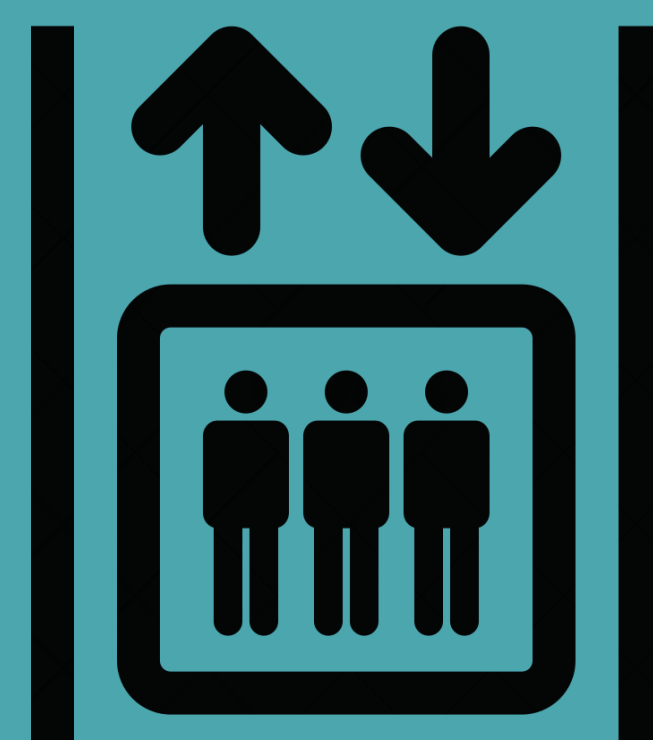
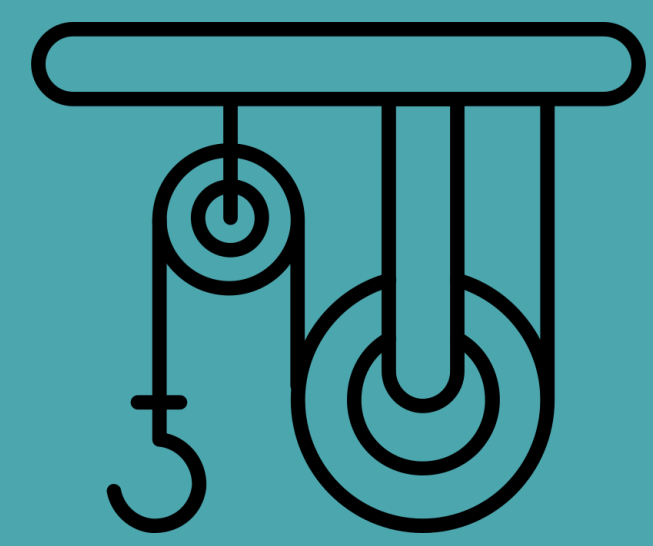


### Designer

Elisha Otis (1811-1861) was an American Industrialist and founder of the Otis Elevator Company - What is an elevator?



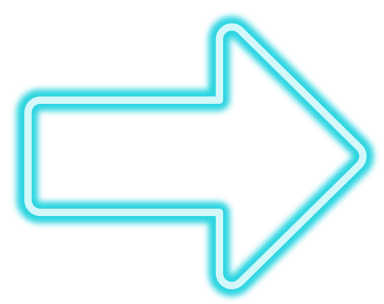
Although the concept of a powered hoist had been around for some time, Elisha Otis designed the first elevator that could lift and lower people and cargo safely. He designed an automatic safety device in 1853 which stopped the elevator from falling if the rope or pulley system snapped or failed. Otis was raised on a farm and he enjoyed working with machinery, this was what inspired him to go into construction and design. Once he had designed his safety elevator he took it to a trade show in New York and to prove it worked he was raised up high on a platform by a pulley system and then he ordered the rope to be cut! This invention has made a huge difference to the construction of buildings - think of all the skyscrapers and buildings which need lifts to move people and cargo safely from one floor to another.



Will your pulley lift the final block onto the pyramid?  
How will you make sure your pulley is fit for purpose?



*When designing think about:*



- User - who is the product for?
- Purpose - what task does the product need to perform?
- Functionality - will it work?
- Design Decisions - what choices do you have?
- Innovation - how is your product unique?
- Authenticity - is the product believable?

