

ES	TECHNOLOGY	Knowledge & understanding	Needs	Resources	Processes
	TECHNOLOGY	Skills in designing & making	Preparing	Carrying out	Reviewing
	SCIENCE	K & U - Energy and forces	Properties of energy	Conversion of energy	Forces
	SCIENCE	K & U - Earth & space	Materials from Earth	Changing materials	<i>levers, gravity, friction</i>
	SS&T	K & U - People in the past	Change and continuity		

This is an attractive little model that looks more complicated than it really is. It is not, however, very robust. The challenge is to make a more substantial derrick, one that you have designed to handle a specific load. Most model cranes have to be held while a load is being raised and lowered. You could, of course, glue or clamp it to the table, but maybe this isn't a great idea. So you have to design and make a derrick that can lift AND HOLD a load of 250grams without falling over, and without being fastened to the table or floor. It's all going to be about levers!

Being strong and stable enough to hold the load won't help if the cable unwinds when you let go of the crank handle. So you will have to provide a locking device, or brake, to prevent the cable being pulled out.

STAGE ONE

So, how heavy is 250grams? Obtain a 250gram weight, either a proper weight or weigh some material, maybe small stones or sand, and put it in a small plastic bag. Feel the weight in your hand - hang it from a length of wood like a fishing rod. Then you should have some idea of the forces your derrick will have to handle.

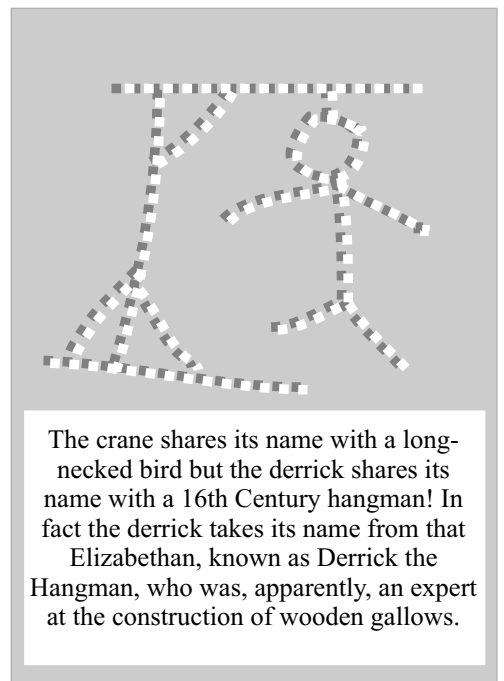
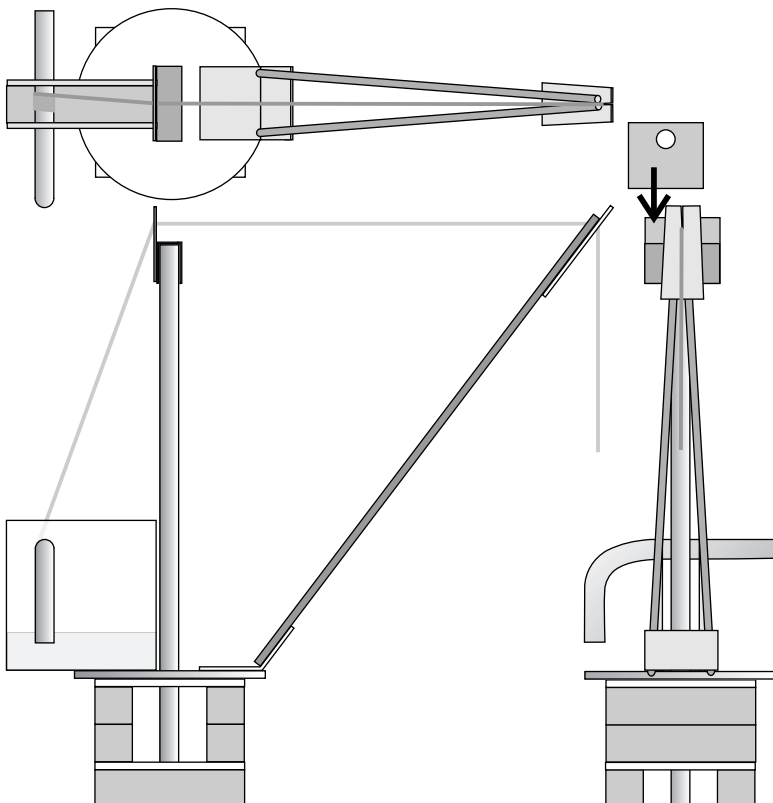
How are you going to keep the derrick from tipping? Extra weight on the back? - support legs on the front?
How are you going to brake, (not break!), the cable? Something that gets in the way of the crank handle perhaps? Or something that locks the jib so that there is no strain at all on the cable.

STAGE TWO

Design and make your derrick. You will need to keep checking against the load to make sure you're not wasting your time on an idea that can't work. On the other hand **PLEASE DO NOT** strain your model while the glue is still wet. *(It's a great temptation - we know, it's a mistake we all make, but... be strong - be patient!)*

STAGE THREE

This is easy. Hang the 250gram weight on the hook and lift it up! It's bound to work because you have been testing it at every stage - haven't you?



The crane shares its name with a long-necked bird but the derrick shares its name with a 16th Century hangman! In fact the derrick takes its name from that Elizabethan, known as Derrick the Hangman, who was, apparently, an expert at the construction of wooden gallows.