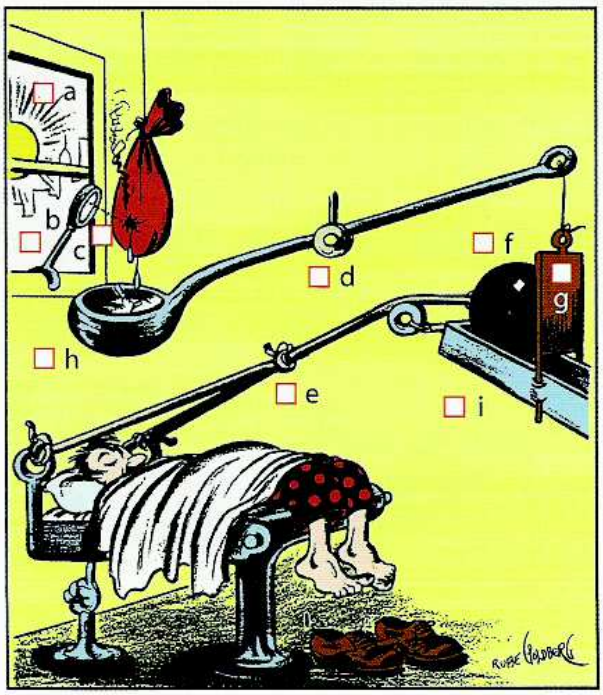
21 What a great idea!

Locating parts

1 What's this machine for?



2 Read how the machine works. Write the numbers of these parts in the diagram.

1	ball	4	ropes	7	large spoon
2	chute	5	gate	8	magnifying glass
3	the sun	6	pivot	9	beam of light

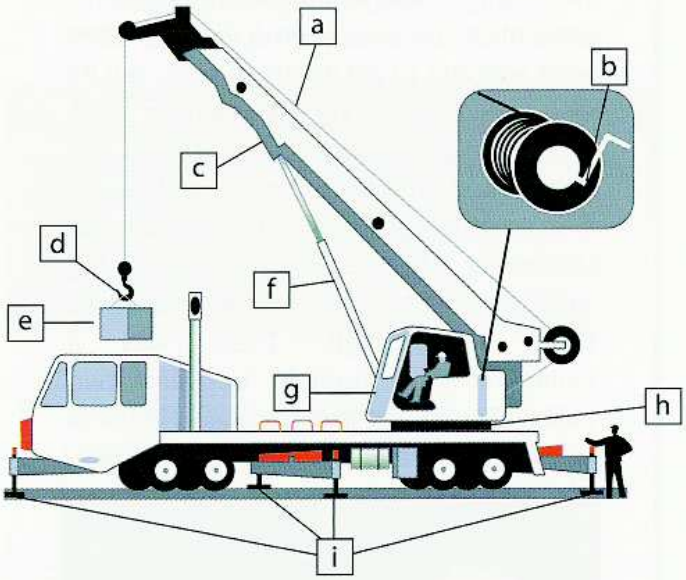
The sun rises in the morning and it shines in through the window. The magnifying glass focuses a beam of sunlight and it burns a hole in the bag. Water falls into the large spoon and it rotates on the pivot. This lifts the metal gate and the heavy ball rolls down the chute. The ropes lift the bed up into a vertical position and it drops the man into his shoes.

3 Look for the word *it* in the text in **2**. How many *its* are there? What does each *it* refer to?

Example

... it shines in through the window. (it = the sun)

4 Look at this diagram of a crane. Can you name any parts?



5 (21.1) Listen to someone describing the crane. Match the parts with the words in the list.

operator's cab	load	hook
hydraulic ram	gear	cable lines
outriggers	boom	winch

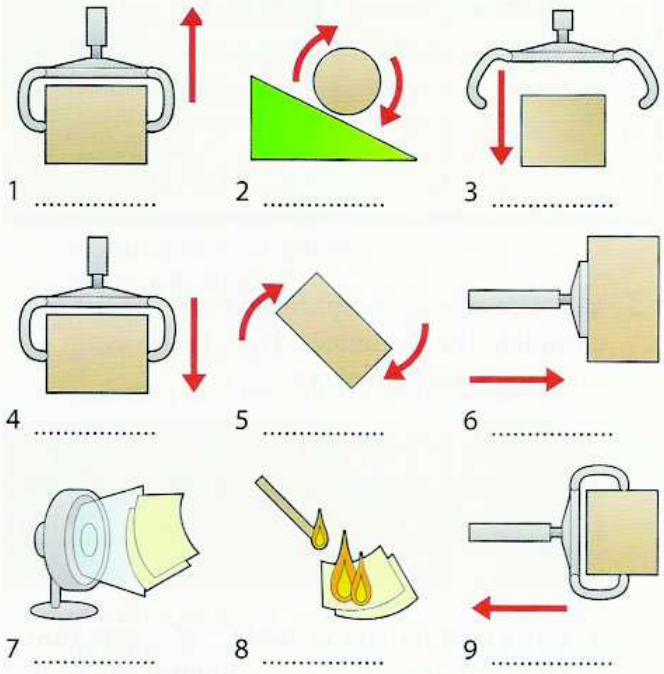
6 Read listening script 21.1 on page 127. Find the words *it* and *they* in the text. What do they refer to? Complete the rules.

it* and *they

..... refers back to one thing.
..... refers back to two or more things.

7 Write the verbs in the list under the correct diagram.

rotate	lower	burn	blow	roll
pull	drop	push	lift up / raise	



1 ..... 2 ..... 3 .....

4 ..... 5 ..... 6 .....

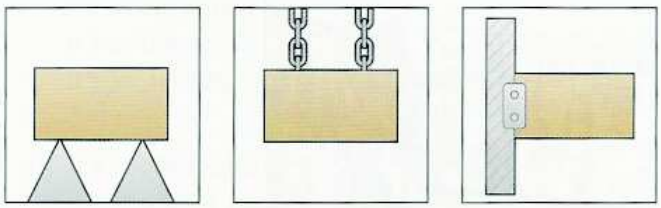
7 ..... 8 ..... 9 .....

8 Here's another machine. What's it for? Match the parts with the words in the list.

tank of water	magnifying glass	weight
piece of wood	beam of light	pivot
piece of string	piece of rope	lamp

9 Work with some other students. Say how the machine works. Then turn to file 33 on page 114.

10 Work in groups. How are the parts connected in these three machines? Locate the part that is *supported*, *suspended*, or *attached*.



a is supported b is suspended c is attached

11 Look back to the first machine in **1**. Use the phrases in **10** to complete the sentences.

1 The magnifying glass ..... to the window frame.
2 The bag of water ..... from the ceiling.
3 The bed ..... by a finger.

12 Look back to the picture of the crane in **4**. Complete the sentences.

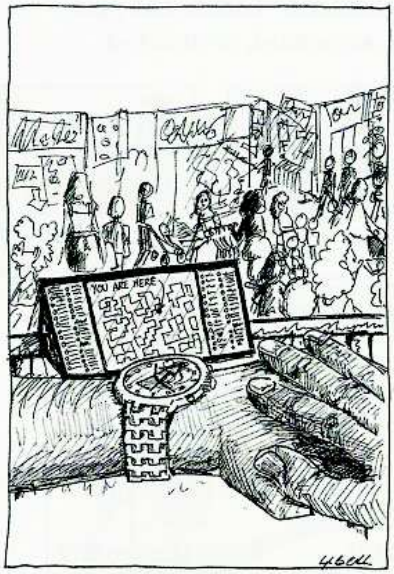
1 The hook is suspended from the ..... .
2 The load is attached to the ..... .
3 The truck is supported by the ..... .

13 Look at the automatic window-closing machine. Is anything *supported*, *attached*, or *suspended*? Make sentences with the phrases in **10**.

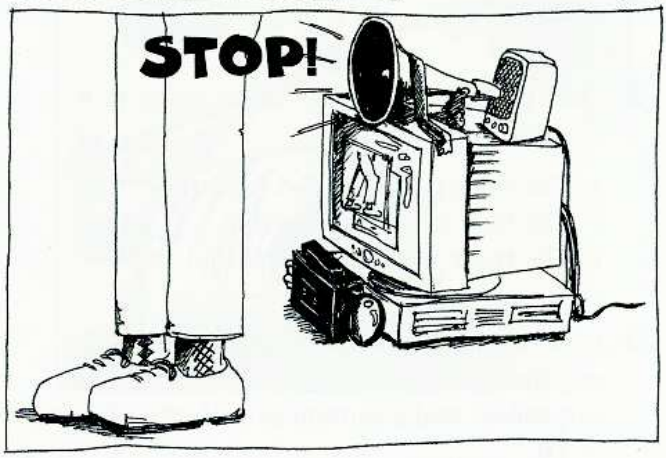
Describing inventions

1 Look at these inventions. What are they for? How do they work?

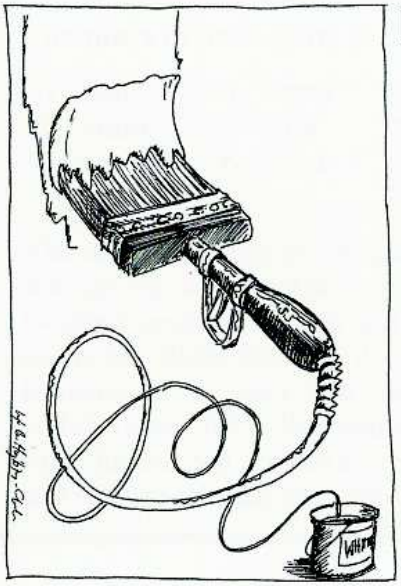
a

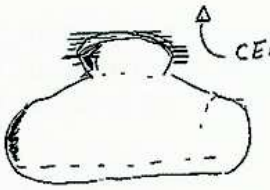


b

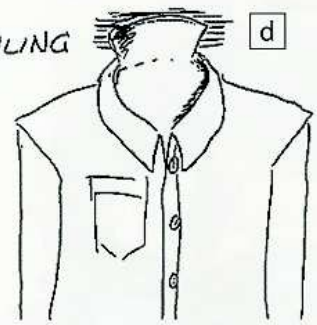


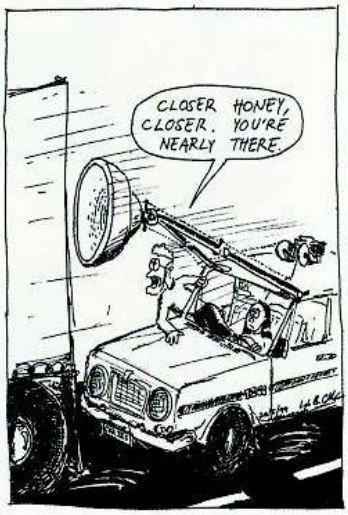
c





d





e

2 21.2 Listen to the inventor, Lyle B. Clarke, talking about the inventions in **1**. Which one does he talk about first, second, third, etc.? Complete the table.

	Invention	Picture	What it's for
1			
2			
3			
4			
5			

3 21.2 Use words and phrases from the list to complete the sentences. Then listen again and check your answers.

automatic	magnet	takes	map
filled with	*made of*	floats	useful
friendly	puts on	saves	match
pulls			

1 Lyle's coat hanger is *made* *of* very thin latex and it's .... helium gas so it ..... .
2 Lyle often .... odd socks, so this invention is for checking they ..... .
3 Painting walls ..... too long. Lyle's paintbrush is ..... and it ..... time.
4 Lyle's watch has a ..... so he can find his wife in a shopping mall. It's very ..... .
5 The last invention has a big ..... . You attach it to a truck and it ..... you along. It's environmentally ..... .

4 Lyle likes and dislikes a lot of things.

1 What does Lyle hate doing?
2 What doesn't he like doing?
3 What does he love doing?
4 Do you like doing these things?

5 Work with a partner. Ask if they like doing these things.

shopping
hanging up clothes
shaving
working in your garden
playing football
reading
washing the car
painting and decorating your house
watching TV
cooking
taking the dog for a walk
paying bills
putting the rubbish out
learning English
driving

Likes and dislikes

?	✔	✘
Do you like -ing?	*Yes, I do.*	*No, I don't.*
	Yes, I love it.	*No, I hate it.*

6 Think of jobs you don't like doing. Make a list.

7 Work in groups. Choose one of the jobs you don't like doing. Invent a machine to do the job for you. Draw a diagram of your machine.

8 Show your diagram to the class and answer these questions.

1 *What's it for?*
2 *What parts does it have?*
3 *How does it work?*

What is it?

This is a puzzle. Read the descriptions. What are they?

Example
It's cylindrical.
It's made of plastic.
It has ink inside.
It's for writing letters. (It's a pen).

1 It's rectangular.
It's made of paper.
It's a kind of book.
It has words in alphabetical order.

2 It's a rectangular box shape.
It uses high frequency electromagnetic waves.
It's a kitchen appliance.
It's for cooking food quickly.

3 It changes shape.
It's wet.
You can drink it.
It's made of oxygen and hydrogen.

4 It's cylindrical.
It has two or more lenses.
It for seeing things a long way away.
Hubble is a famous example.

5 It's circular.
It's made of steel.
It has teeth.
It's for passing power from one part of a machine to another.

6 It's made of nerve tissue.
It's soft and grey.
It controls how you think and move.
It's in your head.

7 It has a hole (called a *slot*) for money.
It has an arm on the side.
It has pictures that spin round.
It gives you money if you're lucky.

Review and Remember 7

will

+ / –

The contraction of *will* is *'ll*.
I will help you. → *I'll help you.*
Use *not* to make negatives: *will* + *not* = ***won't***.
*I **won't** help you. It won't work.*

1 Write the contractions.

1 I will come right away. .....
2 You will trip. .....
3 She will hurt her back. .....
4 It will not last. .....
5 We will be there at six. .....
6 They will not break. .....

?

Change the word order to make questions.
You'll be OK. → *Will you be OK?*

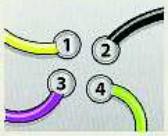
2 Write the questions.

1 I'll see you tomorrow. .....
2 She'll be late. .....
3 It'll burst. .....
4 We'll set off the alarm. .....
5 They'll be cold. .....

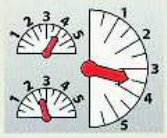
Safety instructions

This is a competition. When your teacher says a number, read and follow the instruction.

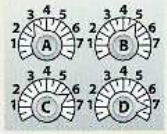
1 The red switch has to be on. Keep the green lever down. The blue lever can be up or down. If the controls are correct, sit down. If they are wrong, stand up.



2 The green wire should be connected to terminal 4. The purple wire can be connected to terminal 1 or 3. The black wire must be connected to terminal 2. If the wires are correct, stand up. If the wires are wrong, sit down.

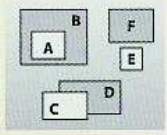


3 The gauge at the top on the left should say 4.0. Don't allow the gauge on the right to fall under 3.0. The gauge on the left at the bottom must not be over 2.0. If the gauges are OK, raise your left arm. If the gauges are wrong, raise your right arm.



4 You can turn knob D to 5 or 7 but never put it on 6. Knob A has to be on 3. Make sure knob B is on 6. Don't touch knob C. If the knobs are correct, put your left hand on your head. If the knobs are wrong, put your right hand on your head.

5 Never turn the machine on when the red warning light is on. Make sure the fan is on. Do not use the machine if the temperature is under 25° or over 35°. Wait for the pressure to increase to 350 before turning the machine on. If it is OK to switch on this machine, put your right hand on your head. If it is not OK, turn round and put your left hand on your head.



6 A must not be inside C. Don't allow D to be in front of C. Make sure you keep E under F. If the diagrams are correct, put your hands on the table. If the diagrams are wrong, shake hands with the person sitting next to you.