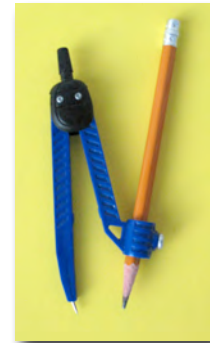




Technical analysis and diagramming exercises

2nd year of the first cycle



Corrected version

Name: _____

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Rules of diagramming

Complete the sentences using the words below:

proportion - elements - colour - links - view - simple lines - parts - symbols - forces - movement

- 1- Choosing the best view to represent the object.
- 2- Represent the object by simple lines.
- 3- Name the various parts of the object.
- 4- Use symbols to represent the operating principles.
- 5- Represent the forces using arrows.
- 6- Represent the links and the guidance.
- 7- Use colour to represent the various parts of the object.
- 8- Represent the movement of the parts using appropriate symbols.
- 9- Indicate the critical elements.
- 10- Retain a certain proportion between the various parts.

Technological analysis of the graduated cylinder

Global function of the object:

Measures the volume of various liquids to the closest millimetre.



Analysis of the object

Observe the object and answer the following questions:

1- What are the various parts of the object? What is their use?

A glass graduated cylinder, graduated in millimetres, used for measuring liquids.
The removable safety ring protects the graduated cylinder if it is knocked over.
The base allows the cylinder to stand in the vertical position.

2- What are the various materials used in the object?

Glass is used for the cylinder.
The base and the safety ring are plastic.

3- What is the purpose of the gradation printed on the object?

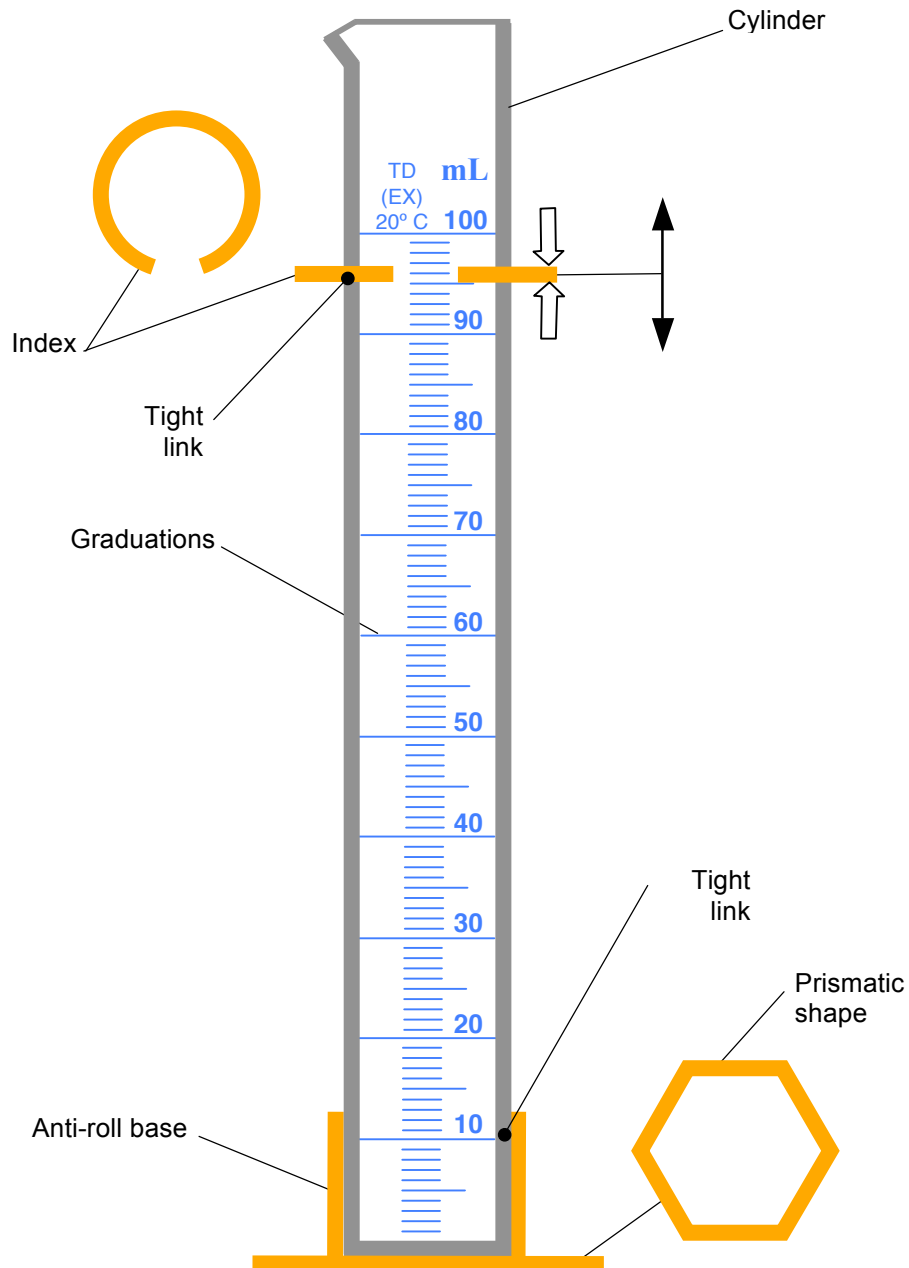
It allows you to precisely measure the volume of a liquid in millimetres.

4- What are the characteristics of the link between the safety ring and the graduated glass tube?

It is a direct link, elastic, removable and partial.

Complete the principles diagram of the graduated cylinder

1- Carry out the principles diagram of the graduated cylinder.



PRINCIPLES DIAGRAM

Technological analysis of the clothesline spacer

Global function of the object:

Allows you to bring the two lines of a clothesline loop together.



Analysis of the object

Observe the object and answer the following questions:

1- Is there a simple machine as the basis of this object?

The wheel (pulleys) is present in the object.

2- Of what material is this object made? Specify an advantage to using this material in the make up of the object.

This object is made out of plastic. It is inexpensive.

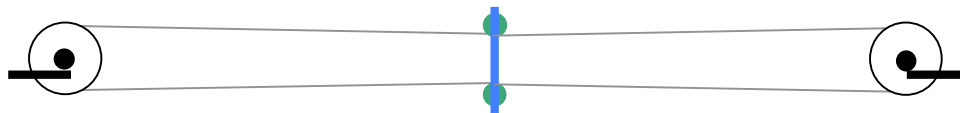
3- What is the role of the deflectors under the pulleys?

The deflectors prevent the line from getting stuck between the pulleys and the flange.

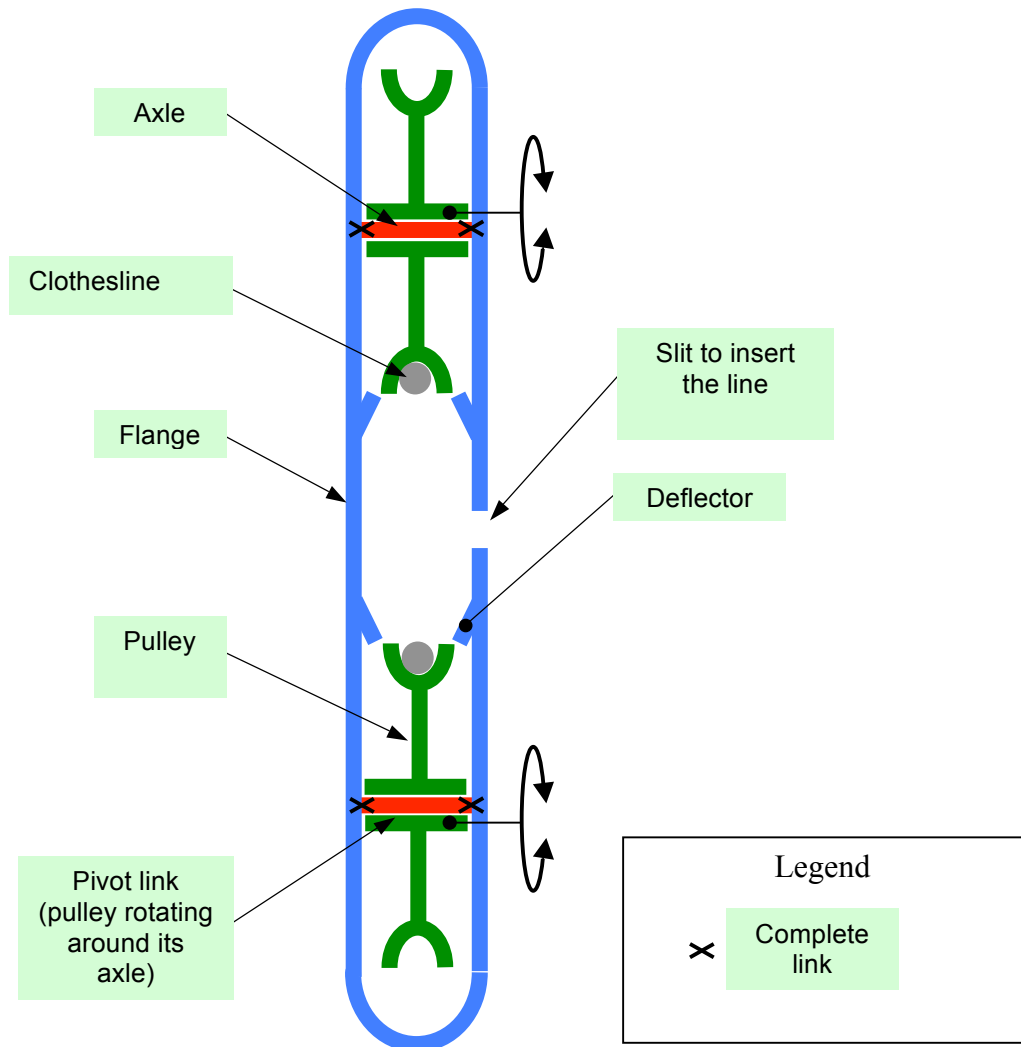
Complete the principles diagram of the clothesline spacer

1- Draw the pulleys.

2- Connect the parts of the object to the elements on the diagram.



SITUATION DIAGRAM FOR THE SPACER



PRINCIPLES DIAGRAM

Technological analysis of the eyelash curler

Global function of the object:

Curl the eyelashes upwards by pressing them, using two fingers.



Analysis of the object

Observe the object and answer the following questions:

1- Is there a simple machine as a basis for this object? Specify which one.

A Class 1 lever.

2- What are the characteristics of the link between the short and long arms?

Indirect link, rigid, fixed and partial.

3- What are the characteristics of the "short arm - press" pivot link.

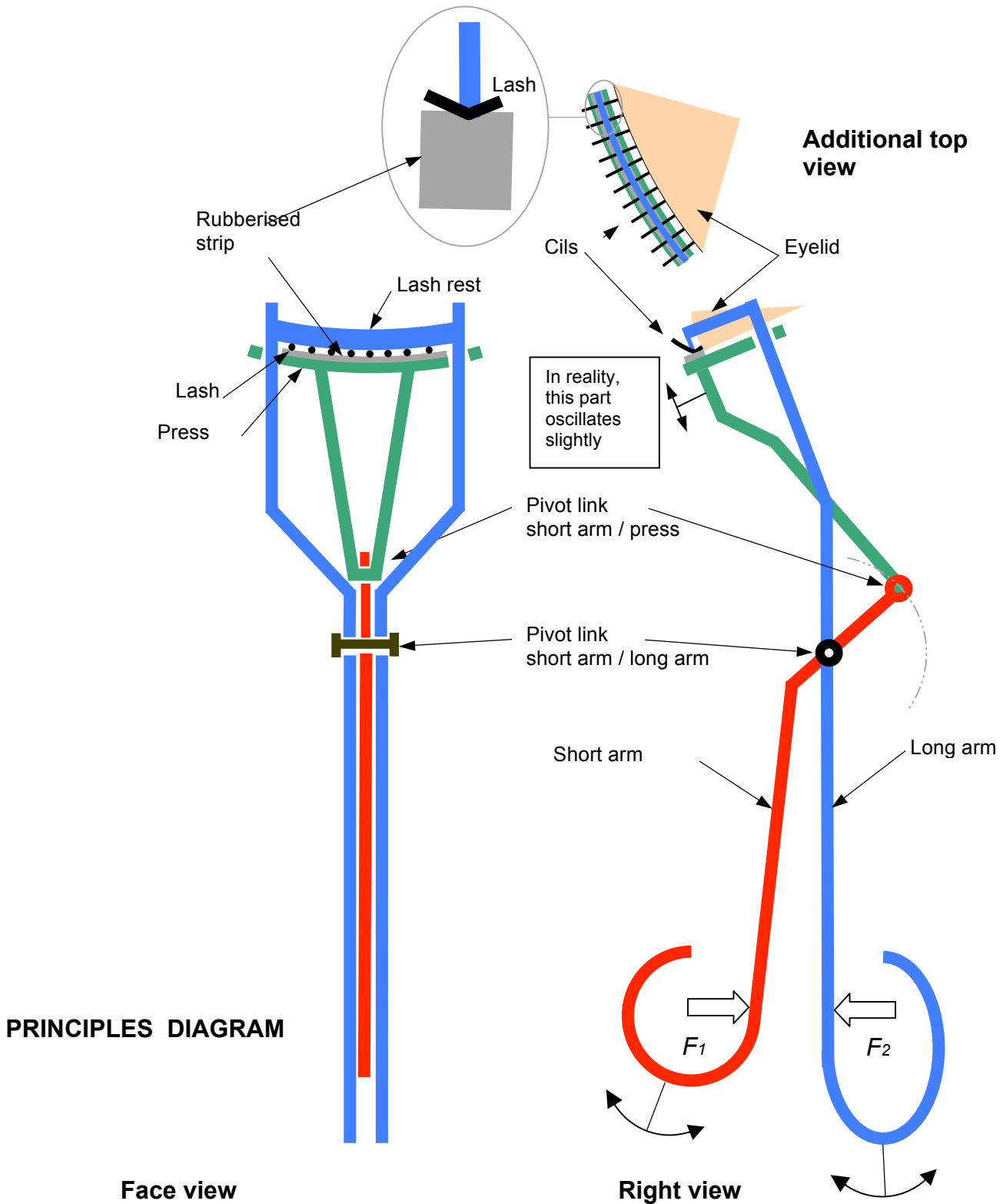
Direct link, rigid, fixed and partial.

4- What is the role of the rubberised strip?

It curls the lashes without breaking them.

Complete the principles diagram of the eyelash curler

1- Complete the diagram using a face view.



PRINCIPLES DIAGRAM

Face view

Right view

Technological analysis of the garlic press

Global function of the object:

Press one or more cloves of garlic to crush them and extract the flesh and juice, while withholding the skin.



Analysis of the object

Observe the object and answer the following questions:

1- Is there a simple machine as a basis for this object? Specify which one.

A Class 2 lever.

2- What are the characteristics of the link between the two levers?

Indirect link, rigid, fixed and partial.

3- Where is the force of action applied in this object?

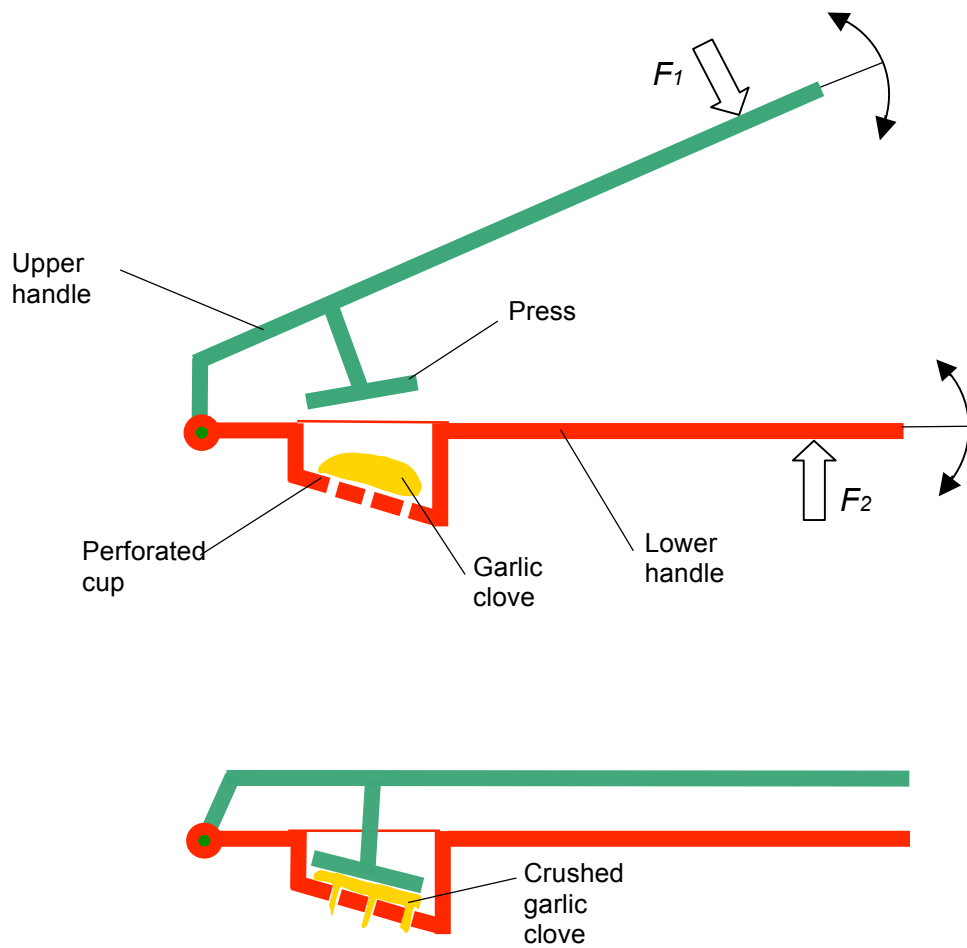
The force of action is applied on the handles.

4- Where is the resistance force in this object?

The force of resistance is caused by the clove of garlic when it is crushed.

Complete the principles diagram of the garlic press

- 1- Draw the press.
- 2- Draw the rotation guidance for the handles.



Garlic press with upper handle folded down

PRINCIPLES DIAGRAM

Technological analysis of the drafting compass

Global function of the object:

The compass is used to draw circles on flat surfaces using a pencil.



Analysis of the object

Observe the object and answer the following questions:

1- What method is used to keep the pencil in place while tracing?

The geared areas.

2- How is the pencil affixed to the compass?

The pencil is slid into the pencil holder and a screw immobilises it.

3- What type of movement is associated to the screw?

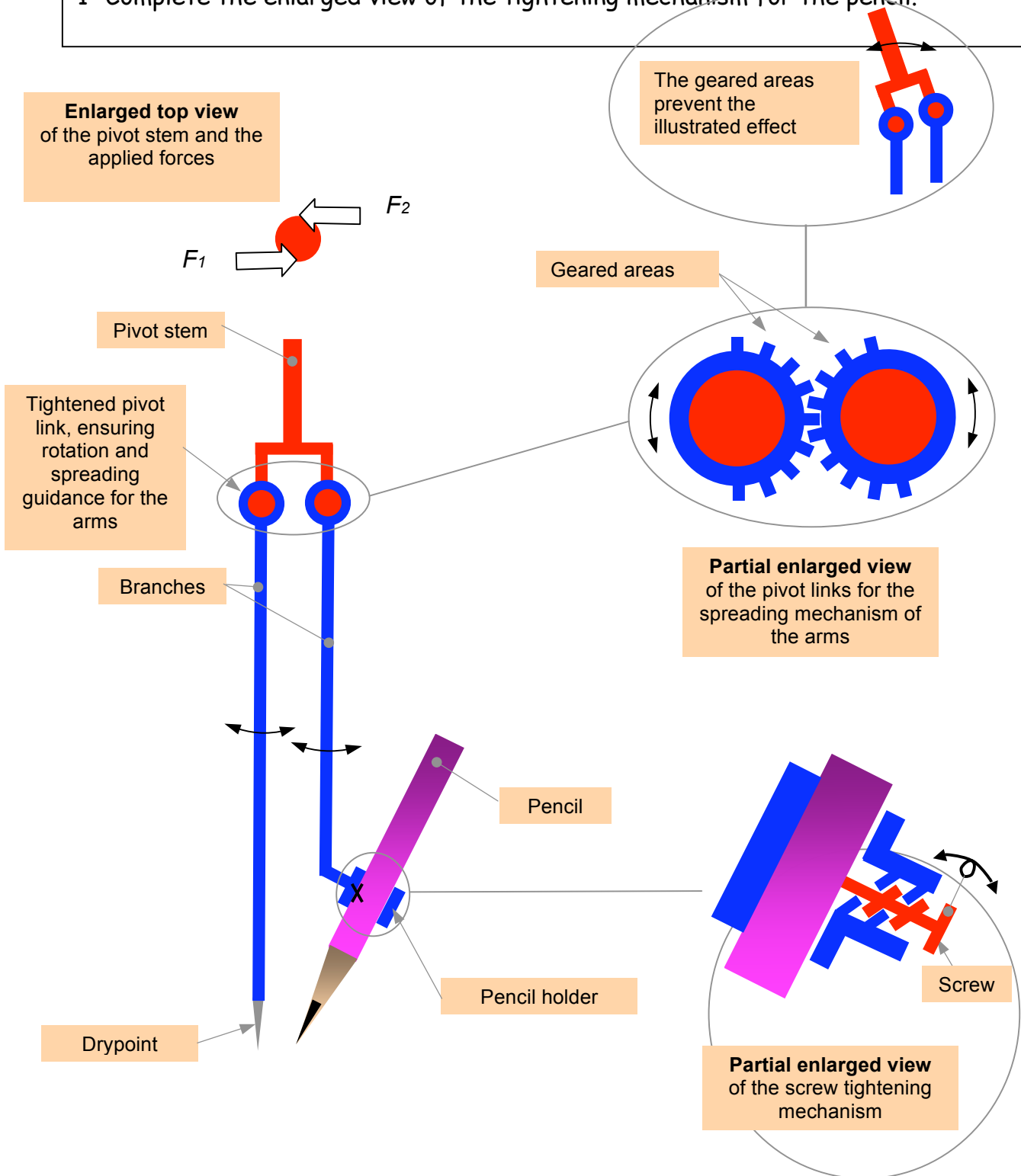
Helical movement.

4- What is the use of the drypoint?

Allows the compass to pivot around a fixed point.

Complete the principles diagram of the drafting compass

1- Complete the enlarged view of the tightening mechanism for the pencil.



PRINCIPLES DIAGRAM

Technological analysis of the garden cutters

Global function of the object:

Allows you to cut small branches with a single hand while trimming bushes.



Analysis of the object

Observe the object and answer the following questions:

1- What type of link is there between the handle and the blade?

Direct link, rigid, fixed and complete.

2- Is there a simple machine in the construction of this object? If so, specify which.

A Class 1 lever.

3- What is the use of the compression spring?

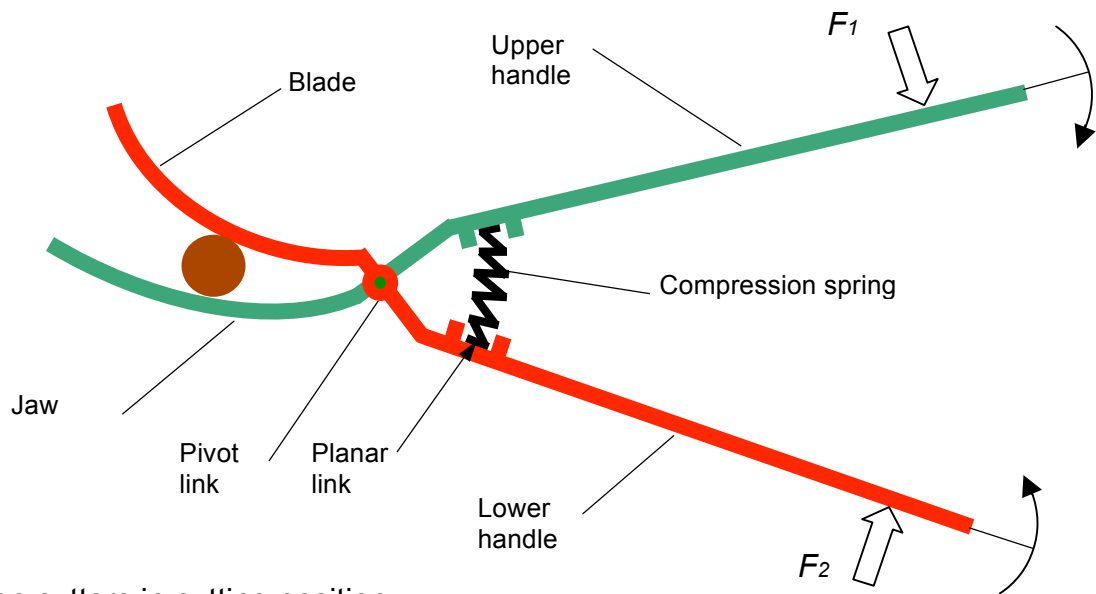
Allows the jaws of the blade to be spread when not pressing the handles together.

4- What type of link is there between the two blades?

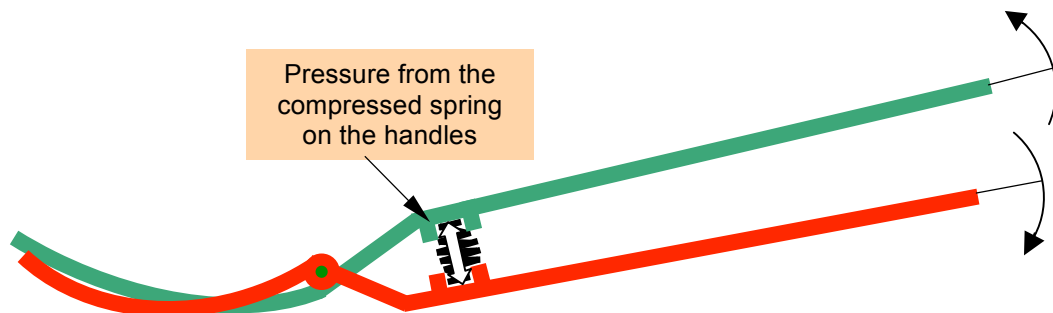
Indirect link, rigid, removable and partial.

Complete the principles diagram of the garden cutters

1- Complete the principles diagram.



Garden cutters in cutting position



Garden cutters closed in re-opening or unblocking position (see following diagrams)

Technological analysis of the pressure clamp

Global function of the object:

Permettre de serrer ensemble des objets temporairement
(Épaisseurs variables selon la dimension de la pince).



Analysis of the object

Observe the object and answer the following questions:

1- What type of link is there between the two parts of the pressure clamp?

Indirect link, rigid, removable and partial.

2- Is there a simple machine in the construction of this object? If so, which one?

A Class 1 lever when the clamp is clamping an object and a Class 2 lever when the clamp is closed.

3- What type of link is there between the bits and the jaws?

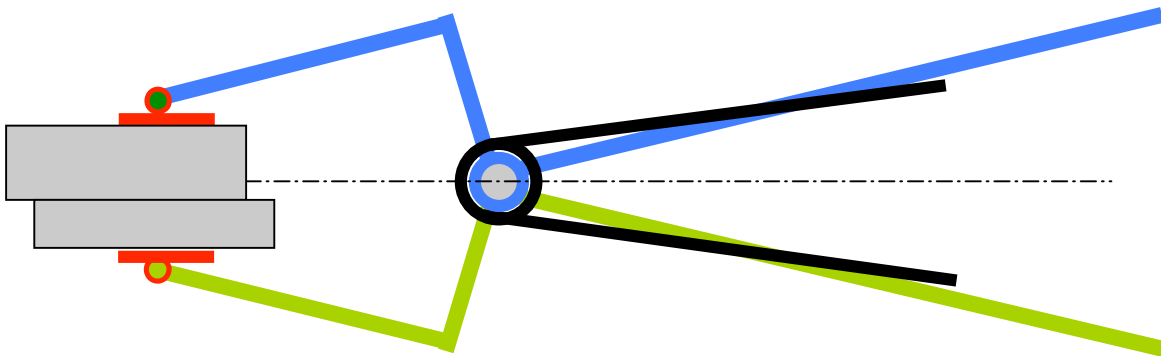
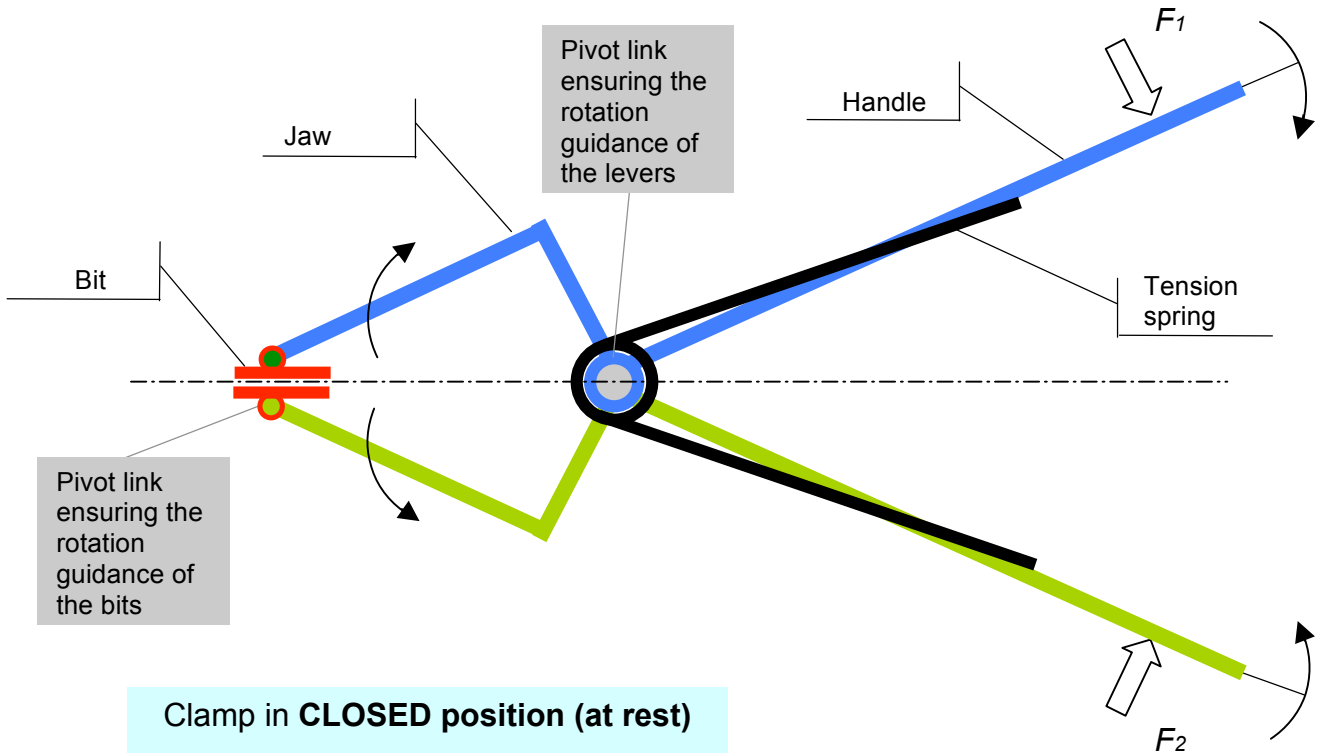
Direct link, rigid, removable and partial.

4- What is the role of the tension spring in this object?

The spring ensures that the handles spring closed when the pressure on them is released.

Complete the principles diagram of the pressure clamp

1- Complete the principles diagram by drawing the torsion spring.



PRINCIPLES DIAGRAM

Technological analysis of the pepper mill

Global function of the object:

Grind the peppercorns into fine granules using a single hand.



Analysis of the object

Observe the object and answer the following questions:

1- What is the role of the compression spring in this object?

Allows the abrasive stem to ascend to its initial position.

2- Why is the reservoir transparent?

To allow the user to see how much pepper remains.

3- Why is the stem knurled?

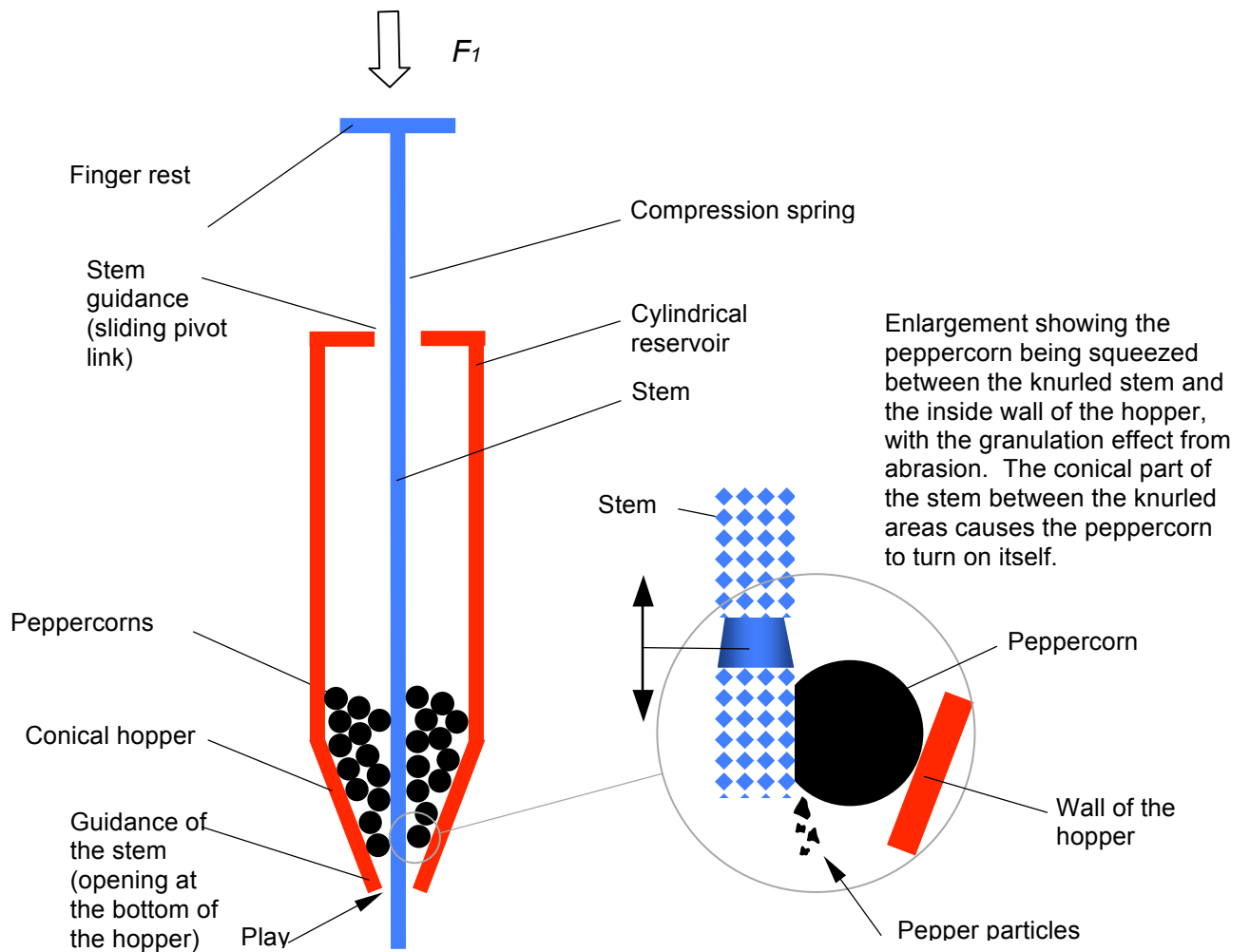
The knurling abrades the peppercorns into smaller granules, which fall from the opening below.

4- What type of movement does the stem make when the object is functioning?

It makes a translation movement.

Complete the principles diagram of the pepper mill

- 1- Draw the compression spring using the appropriate symbol.
- 2- Draw the guidance of the stem.



Technological analysis of the nail clipper

Global function of the object:

Allows the user to cut their nails in a rounded shape with a two fingered pressure, then easily store it.



Analysis of the object

Observe the object and answer the following questions:

1- What levers are at the basis of this object? Where are they in the object?

The two branches that are linked make up a Class 1 lever. The upper branch is a Class 3 lever.

2- How many parts make up this object? What are these parts?

There are 4 parts to the clipper.

Crooked stem, upper branch, two connected branches.

3- Why was this object designed to be closed?

So it takes up less space and can be more easily stored.

Complete the principles diagram of the nail clipper

- 1- Complete the principles diagram by drawing the crooked stem.
- 2- Carry out the principles diagram in the closed position.

Nomenclature

Class 2 lever

Class 3 lever
(Flexible branch)

Heel

Jaw

Crooked stem

Initial position

F_1

F_2

Nail

Bevelled edge of the jaw

Final position

Closed position

PRINCIPLES DIAGRAMS