



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**DESIGN AND TECHNOLOGY**

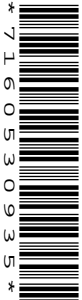
**6043/01**

Paper 1 Technology

**October/November 2008**

**2 hours 30 minutes**

Additional Materials:      Answer Booklet/Paper  
   Plain paper  
   Sketching equipment



**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

**Part A**

Answer **all** questions.

**Part B**

Answer **four** questions.

Answer **one** question from Section 1, **two** questions from Section 2, and **one** other question from either Section.

Use sketches where appropriate to help answer any question.

You are advised to spend no longer than 45 minutes on Part A and 1 hour 45 minutes on Part B.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **11** printed pages and **1** blank page.



**Part A**

You are advised to spend no more than 45 minutes on this part.

Attempt **all** questions.

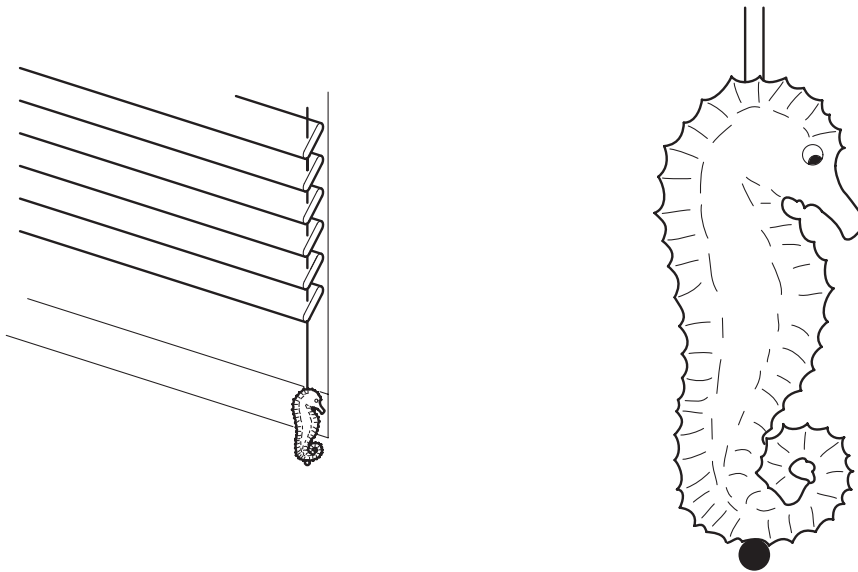
1 Sketch the following:

(a) a marking knife;

(b) a scriber.

[4]

2 Fig. 1 shows a bathroom blind pull.



**Fig. 1**

Give **two** reasons why plastic is a more suitable material for the blind pull than wood or metal. [2]

3 Explain what is meant by the term 'annealing' when applied to metal.

[2]

4 Fig. 2 shows a wood fitting.

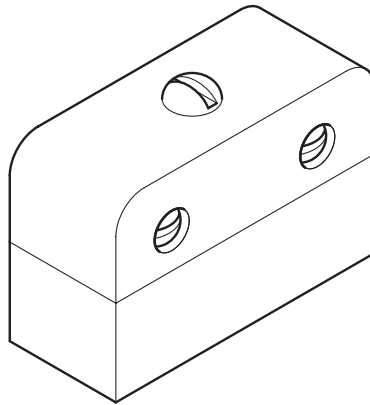


Fig. 2

(a) Name the fitting.

(b) Explain its use.

[3]

5 Flow charts are used at various stages when designing and making.

(a) Describe **two** key features of a flow chart.

(b) Suggest an operation that could usefully be illustrated by a flow chart.

[3]

6 State **two** methods of keeping plastic cool while it is being machined.

[2]

7 Fig. 3 shows an outdoor bench made from pine.

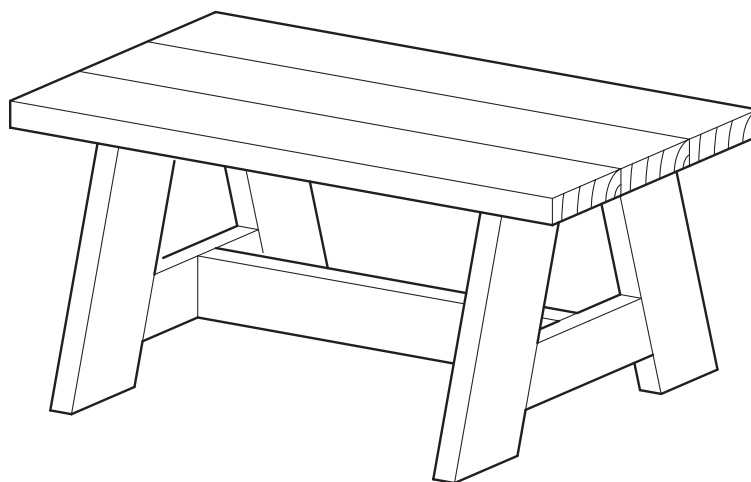


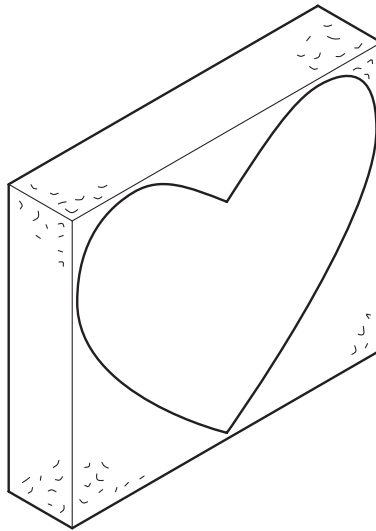
Fig. 3

(a) Why does pine need to be treated for use outdoors?

(b) State **two** treatments that could be applied to the pine bench to protect it in outdoor conditions.

[3]

- 8 Explain briefly the process of 'draw filing' steel. [2]
- 9 State the personal protection that should be worn when:
- (a) handling catalysts and resins;
  - (b) machine sanding timber;
  - (c) handling hot metal;
  - (d) lathe turning. [4]
- 10 Fig. 4 shows a three dimensional shape which is to be cut from a block of expanded polystyrene.



**Fig. 4**

- (a) Why is it difficult marking out this material?
- (b) What tool would be used to cut the polystyrene? [2]

**Part B**

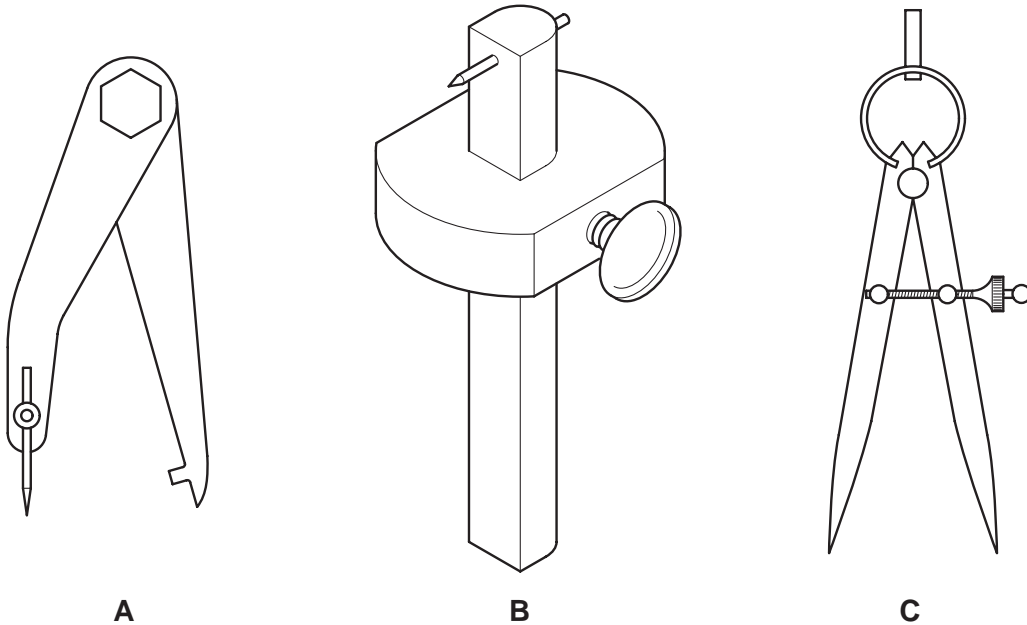
You are advised to spend at least 1 hour 45 minutes on this part of the examination.

Attempt **four questions** including **one** from Section 1, **two from** Section 2 and **one further** question from either section.

All questions carry equal marks.

**Section 1 – Tools and Materials**

11 Fig. 5 shows details of three marking out tools used in the workshop.



**Fig. 5**

- (a) Name and state the purpose of each of the tools. [6]
- (b) Using notes and sketches, explain how each of the above tools is set up for use. [6]
- (c) Explain the purpose of the following tools:
- (i) a surface plate;
  - (ii) a sliding bevel. [5]

12 When making several identical parts or products, simple devices are commonly used to ensure they are all the same. Explain the benefits of **four** of the following when making a number of identical items.

- (a) a template
- (b) a pattern
- (c) a former
- (d) a jig
- (e) a mould

[17]

13 The design for a door handle is shown in Fig. 6.

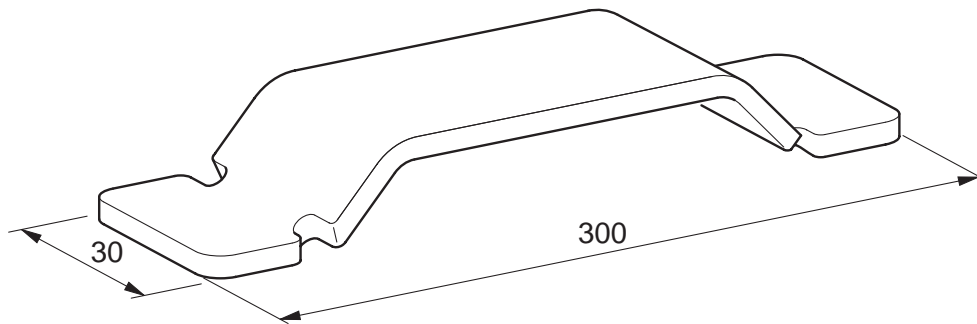


Fig. 6

(a) Some possible materials being considered for the handle are:

- (i) brass;
- (ii) teak;
- (iii) acrylic.

For each material give **one** reason for selecting and **one** reason for rejecting it as a suitable material for the handle. [6]

(b) Describe how heat or steam are used when forming the handle shape from each of the materials in (a). [6]

(c) Give the reasons for:

- (i) having paper on the surface of acrylic sheet;
- (ii) using pumice powder on the surface of brass;
- (iii) oil to the surface of teak.

[5]

## Section 2 – Processes

14 Fig. 7 shows the outline details for a butterfly brooch.

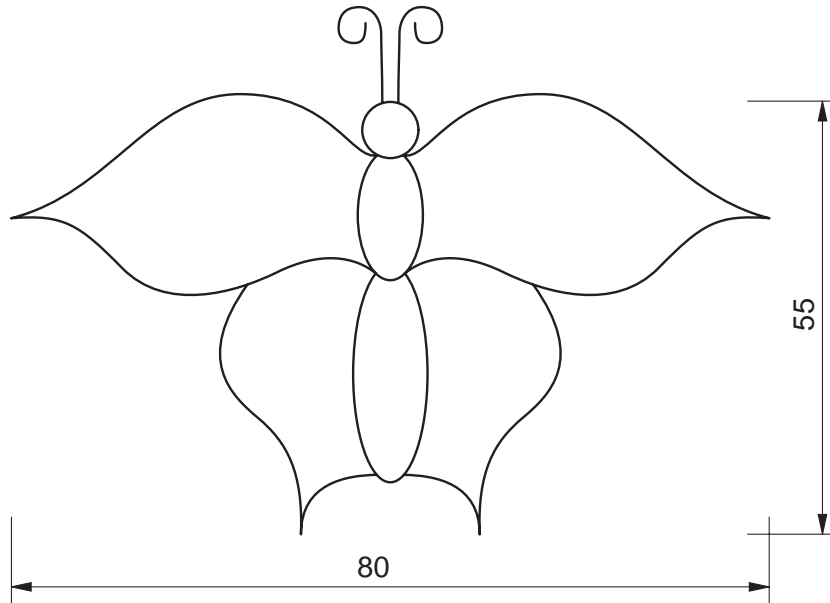
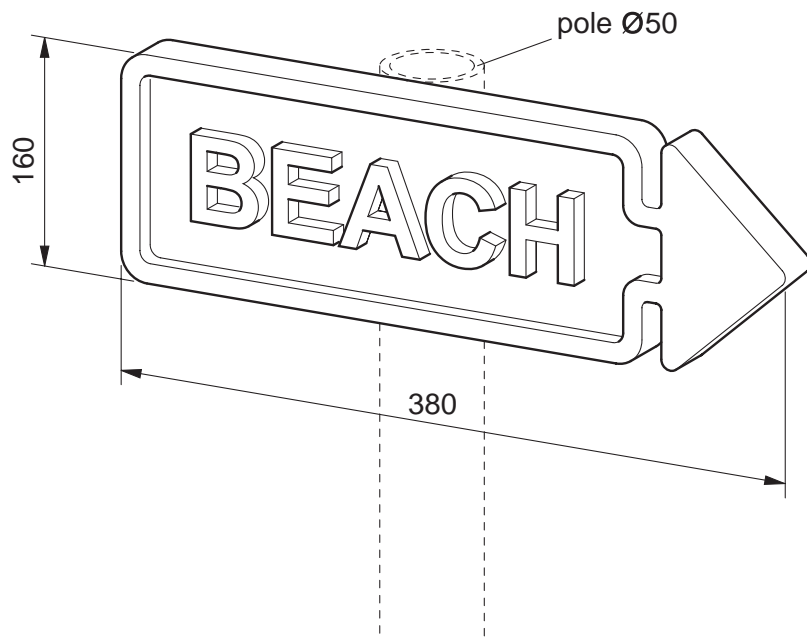


Fig. 7

- (a) Suggest a suitable material for the brooch (this does **not** include the antennae) and give a reason for your choice. [2]
- (b) Using the material chosen in (a), describe, the process of marking out and cutting the brooch shape. [8]
- (c) The design of the brooch is incomplete.
- (i) Show by means of a sketch, a design for the surface of the wings. [2]
- (ii) Explain in detail how the design may be applied to the brooch surface. [5]

15 Fig. 8 gives details of an outdoor direction sign.



**Fig. 8**

**(a)** Suggest, with a reason:

**(i)** a suitable material for the sign;

**(ii)** a method of manufacture.

[2]

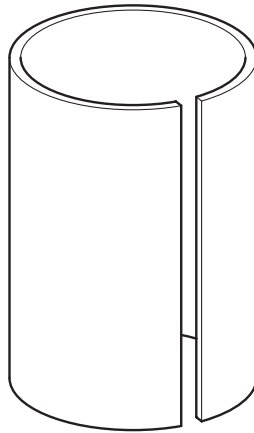
**(b)** For the material and manufacturing method you suggested in answer to **(a)**, use notes and sketches to describe the major stages in making the direction sign. [10]

**(c)** Show by means of design sketches how the sign could be fixed to the top of a 1 metre  $\times$   $\text{Ø}50$  mm support pole. The method should allow the sign to be positioned in any horizontal direction. [5]

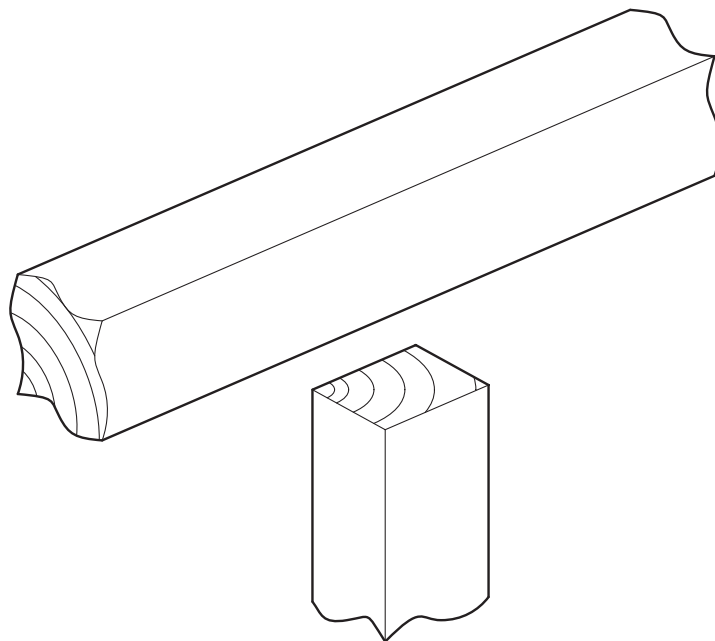


16 Choose **two** of the tasks in Fig. 9 and, using notes and sketches, describe how each is carried out.

(a) silver soldering a joint in a copper cylinder



(b) cutting a bridle joint in a pine upright and rail



(c) press forming an acrylic water bowl

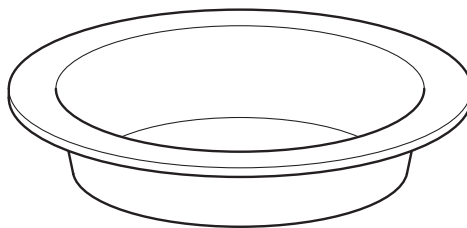


Fig. 9

[17]

17 A design for a tracing surface and part of a three position support stand is shown Fig. 10.

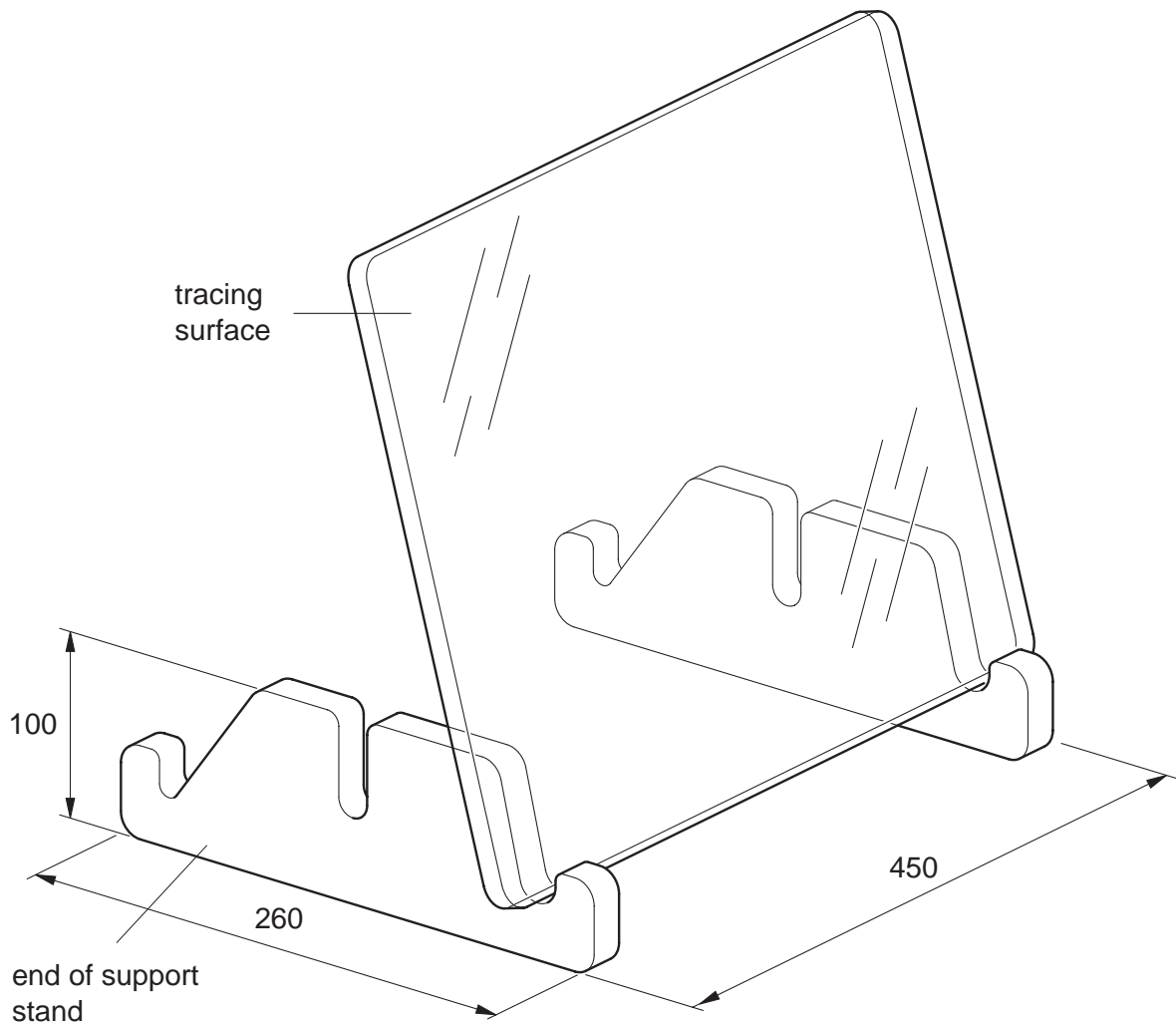
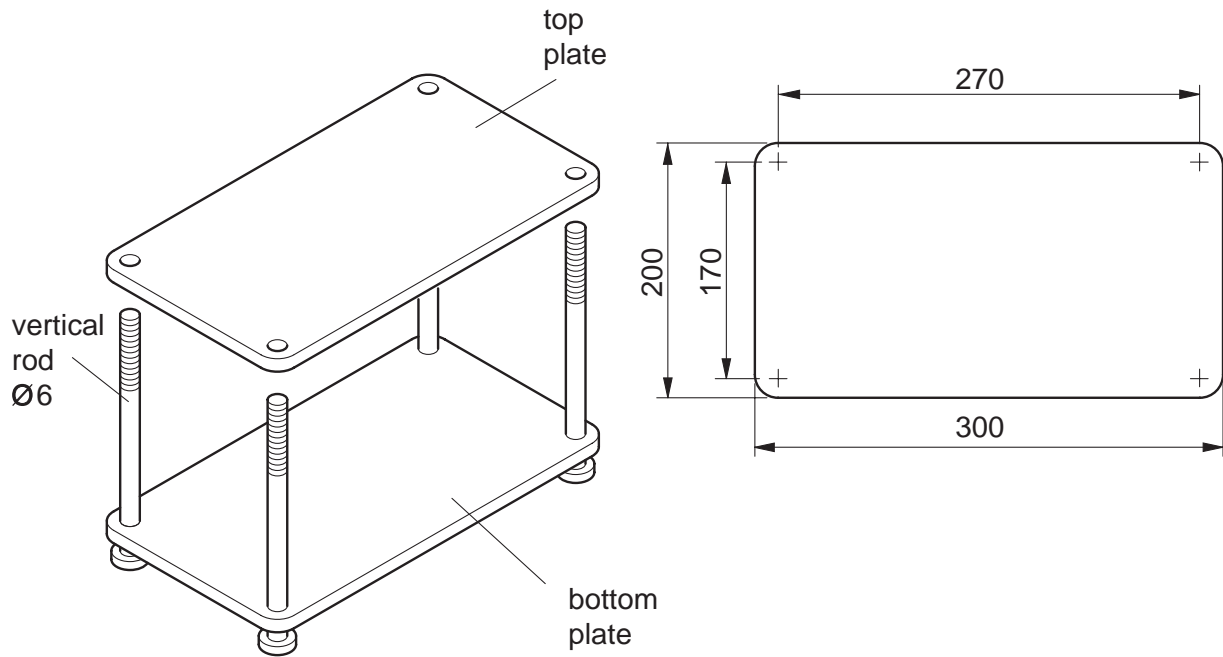


Fig. 10

- (a) Explain how tracing is used in design work. [2]
- (b) State **two** properties of a material that would make it suitable for the tracing surface. [2]
- (c) Using a material of your own choice, describe using notes and sketches the stages of making the two ends of the support stand. [8]
- (d) With the aid of sketches show how the two ends of the support stand could be joined to provide a firm base unit. [5]

18 Details of a flower press are given in Fig. 11.



**Fig. 11**

- (a) Describe, with the aid of notes and sketches, each of the following processes. You must state the materials used for each part.
- (i) threading the vertical rods
  - (ii) drilling the holes in the top and bottom plates to ensure alignment
  - (iii) production of the radiused corners on the top and bottom plates, including holding method. [15]
- (b) Each vertical rod requires a hand tightening device that can apply pressure to the top plate. Sketch such a device. [2]

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