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AIM OF THE EXPERIMENT :-

→ To make a wooden rack.

TOOLS AND EQUIPMENTS REQUIRED :-

1. Ruler / steel rule.
2. Measuring tape.
3. Try square.
4. straight edge.
5. Bevel square.
6. Marking gauge.
7. Mortise gauge.
8. Tenon saw.
9. Rip saw.
10. Mortise chisel.
11. Firmer chisel (pronounced as phamer not phemir).
12. Metal back plane.
13. Electric planner.
14. Mallet.
15. Ball peen hammer.
16. Pistol drill.
17. Bench vice.
18. Sash cramp.
19. Rasp tiles.

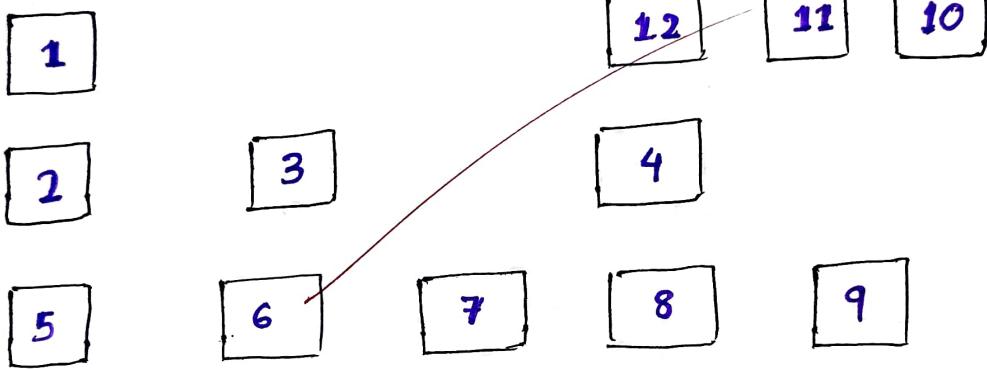
Auxilliary Items :-

1. Sand paper.
2. Nail.
3. Pencil
4. Figure punch.



LAYOUT FOR CARPENTRY SHOP :-

PROPOSED
SPACE
FOR
INSTALLATION
OF
CNC LATHE.



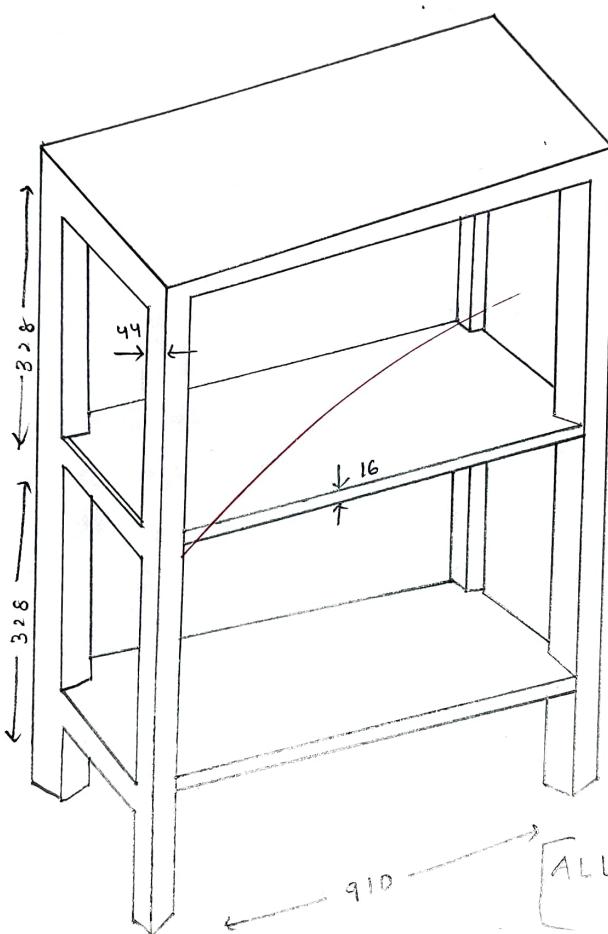
Carpentry shop :-

1. Work bench fitted with vice.
2. Work bench fitted with vice.
3. Work bench fitted with vice.
4. Work bench fitted with vice.
5. Work bench fitted with vice.
6. Work bench fitted with vice.
7. Work bench fitted with vice.
8. Circular saw
9. Circular saw and Band saw sharpener
10. Wood turning lathe.
11. Wood turning (A/W)
12. Circular saw (A/W).

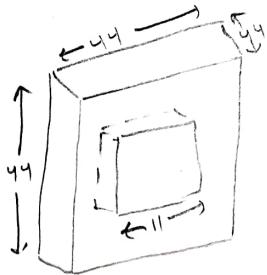


JOB DIAGRAM :-

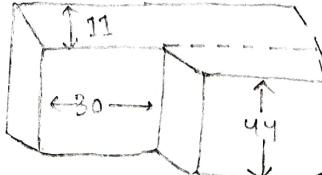
→ Wooden Rack.



ALL MEASUREMENTS
ARE IN mm



MORTISE HOLE



TENON.

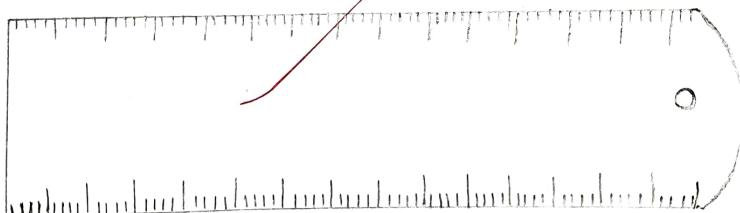


INTRODUCTION :-

- Carpentry and joinery are common items used with any class of work with wood. Strictly speaking, carpentry deals with all works of carpentry such as roofs, floors, partitions etc. of a building while joinery deals with the making of doors, windows, cupboards, dressers, stain and all the interior fittings of the building.
- Timber is the basic material used for any class of wood working. The term timber is applied to the tree which provide us with wood. Wood is one of the most valuable bio-degradable raw materials of industry and daily uses. It is available in a wide choice of weights, strength, colours and textures. Wood is having good machinability characteristics and can be sliced, bent, planed, sanded and useful.

1. Steel rule/ Ruler :-

Ruler of various sizes and designs are used for works for measuring, estimating and dimensions.

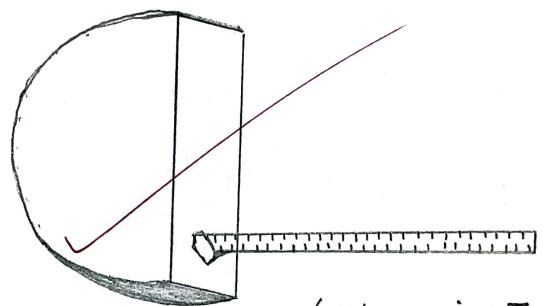


(STEEL RULE)



2. Measuring tape :→

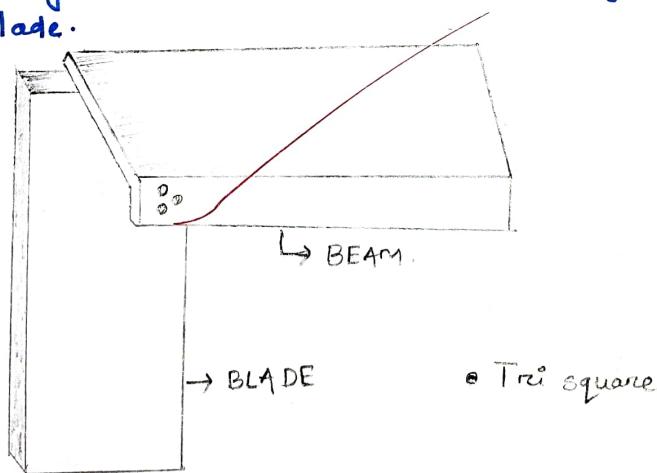
For large measurements carpenters use a flexible measuring ruler or tape. Such rulers are used for measuring rule in curved and angular surfaces when not in use. The blade is carried in to a small compact watch sized case.



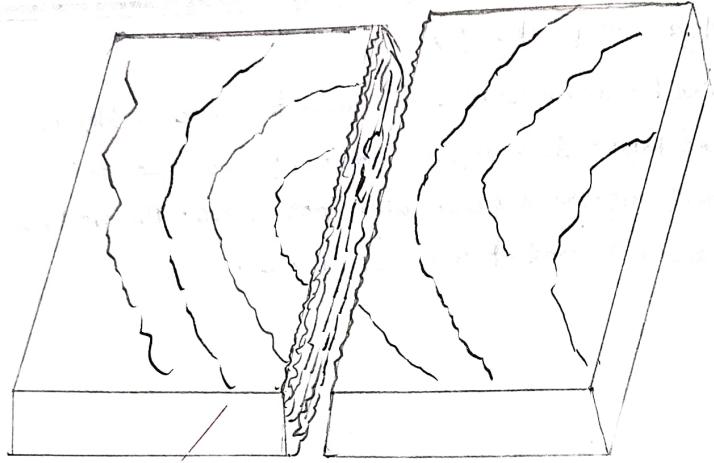
(Measuring Tape)

3. Try - square :→

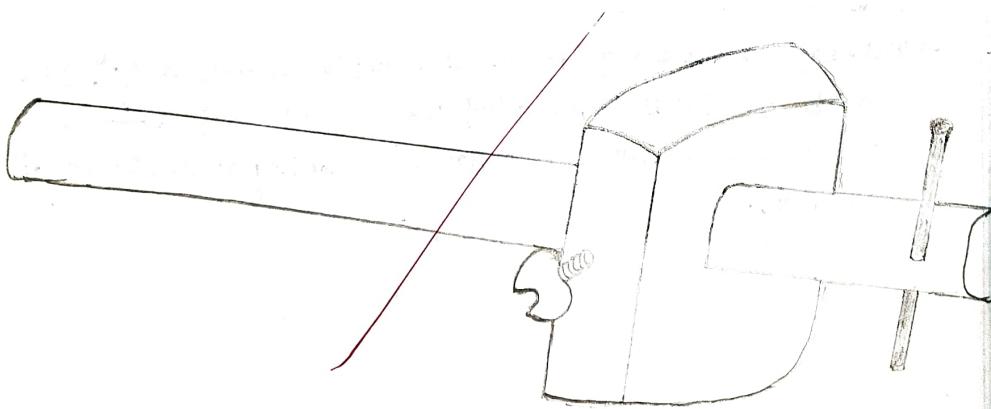
→ Try - square are used for making and testing angle of 90° . It consists of steel blades riveted into a hard wood surface. Sizes vary from 150 mm to 300 mm according to the length of the blade.



• Try square



STRAIGHT EDGE



• MARKING GAUGE



4. straight Edge :

The straight edge is a machined flat piece made up of wood or metal having truly straight and parallel edges. One of the longitudinal edges is generally made leveled. This is used to test the true ness of curve surfaces and edges.

5. Bevel square :

It is similar to try tri-square but has a blade that may be rotated to any angle from 0° and 180° . This tool is adjusted by releasing with a twin screw of suitable size in a machine screw running in a slot in the blade.

6. Marking gauge :

Marking gauge has one marking. It gives an accurate cut line parallel to a true edge, usually with the grain.

7. Mortise gauge :

It has two marking points. One fixed near to the end of the stem and the other attached to a brass sliding base. These two teeth cut two parallel lines, called mortise lines.

8. Tenon - Saw :

This saw is mostly used for cross-cutting when a finer or more accurate finish is required. The blade being very thin is reinforced with a rigid steel back. Tenon saw blades are from 250 to 400mm in length and generally have 13 teeth per 25 mm. The teeth are shaped in the form of an equilateral triangle and are sometimes termed as 'peg' teeth.



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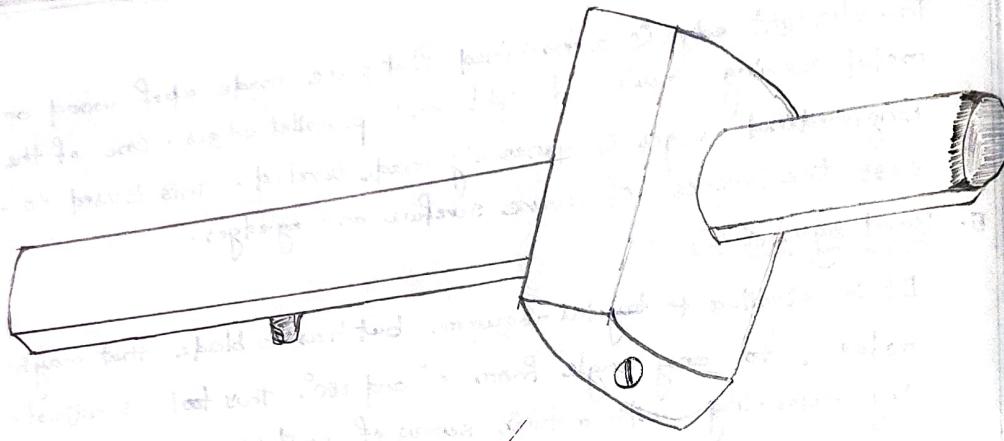
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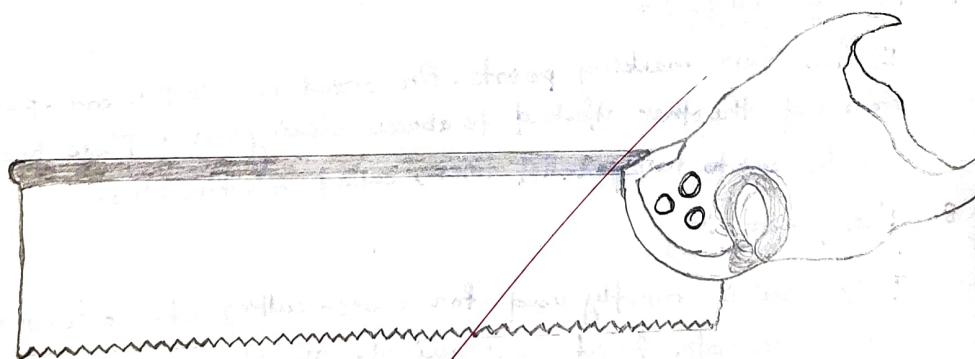
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Wood working tools



• MORTISE GAUGE



• TENON OR BACK SAW



9. Mortise chisel :-

~~It is used for chopping out mortises. These chisels are designed to withstand heavy work. They are made with a heavy deep (back to front) blade using generous shoulder or collar to withstand the force of the mallet blows on the oval-sectioned handle. Many of the mortise chisels are fitted with a leather washer of the shoulder to absorb the hard shocks of the mallet blows. Blades vary in width from 3-16 mm.~~

10. Rip saw :-

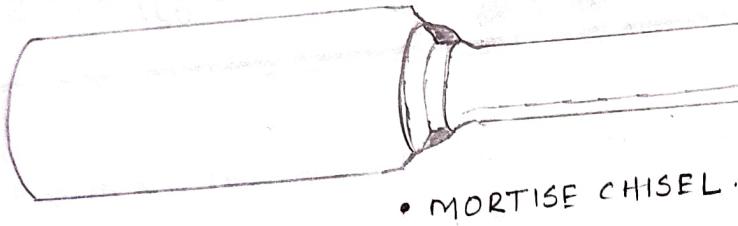
~~Rip saws are used for cutting along the grain in thick-wood. The blade is made up of high grade tool steel, and may be either straight or skew backed. It is fitted in a wooden handle made up of hard wood by means of rivets or screws. Rip saws are about 700 mm long with 3-5 points or teeth per 25 mm.~~

11. Firmer chisel :-

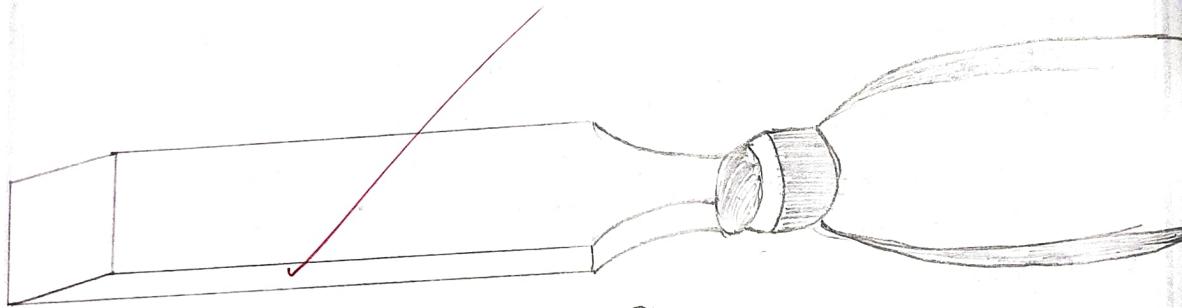
~~It is the most useful chisel for general purpose and may be used by hand pressure or mallet. It has a flat blade - about 125 mm and long. The width of the blade varies from 1.5 - 50 mm.~~

12. Metal Jack plane :-

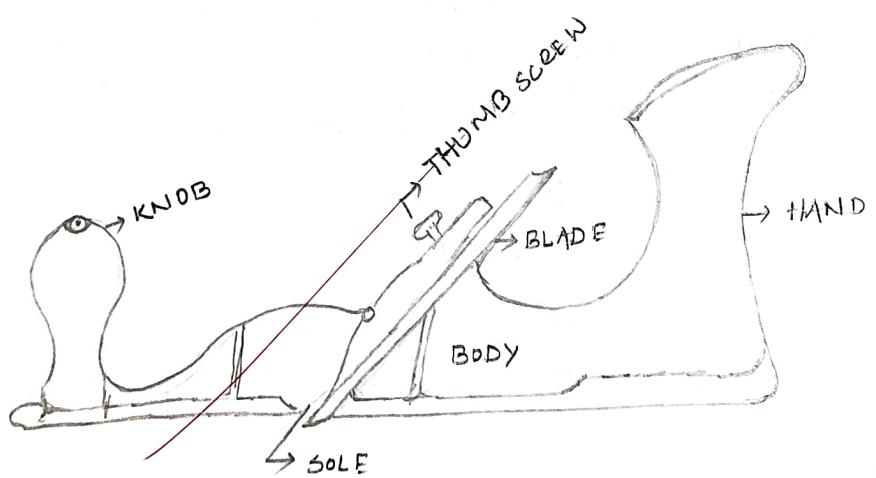
~~It serves the same purpose as the wooden planes but facilitates a smoother operation and better finish. The body of a metal plane is made from a gray iron casting, with~~



• MORTISE CHISEL.



• FIRMER CHISEL.



• METAL JACK PLANE .



~~the side and sole machined and ground to a bright finish. The thickness of the shank removed is governed by a fine screw adjustment, and a lever is used for adjusting the blade at right angles.~~

13. Mallet :-

It is wooden-headed hammer of round or rectangular cross-section. The striking face is made flat to the work. It is used to give light blows to the cutting tools having wooden handle such as chisel and gouges.

14. Ball peen Hammer :-

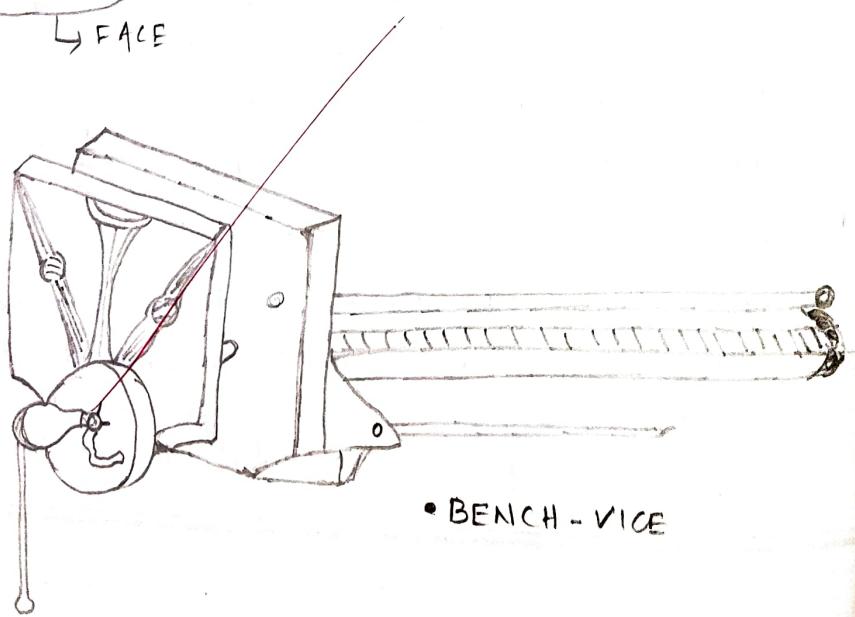
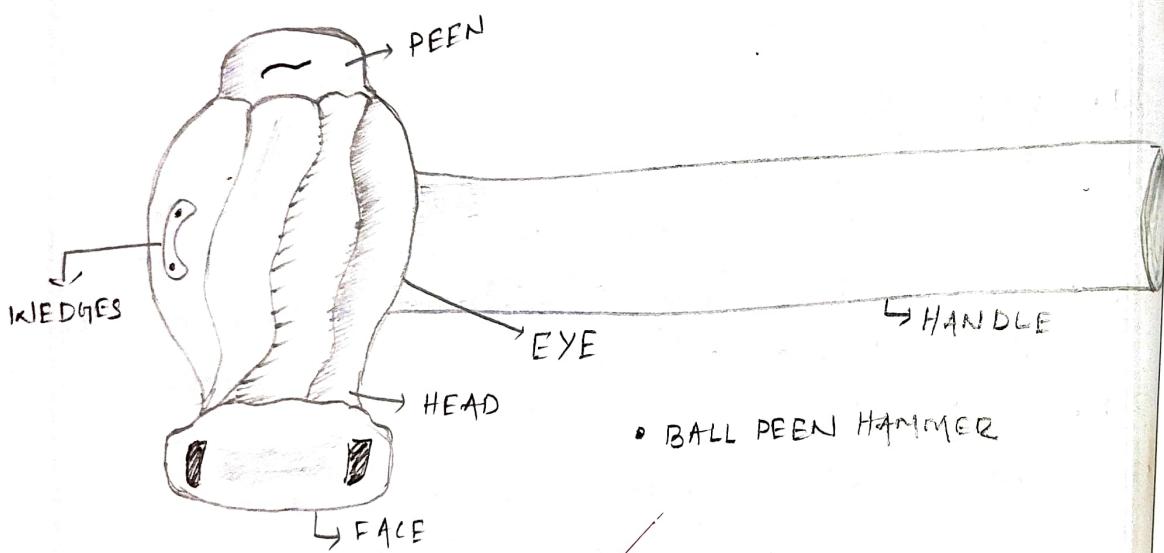
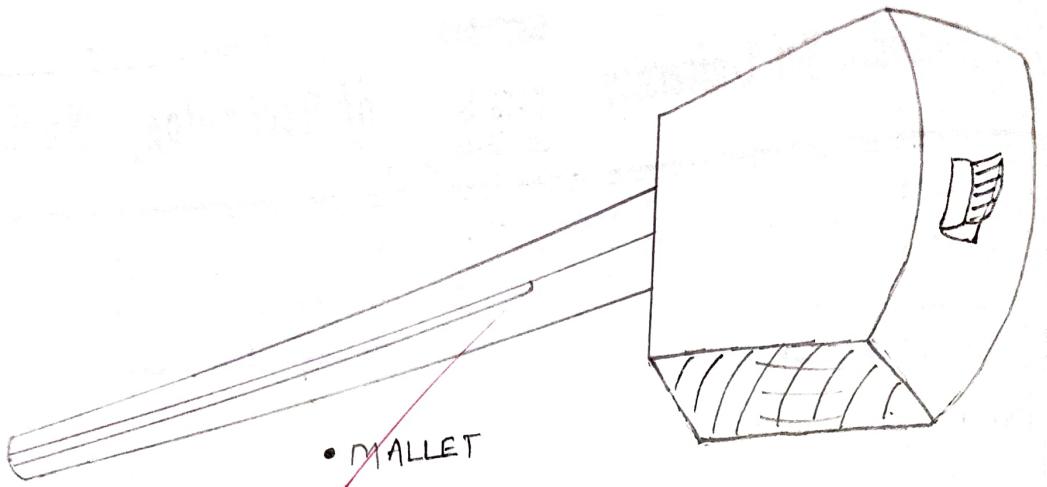
A ball-peen hammer consists of four parts namely as peen, head, eye and face. The eye is normally made oval or elliptical and it accommodates the handle or shaft. The head is cast steel and the face has been tempered.

15. Pistol - Drill :-

It is a type of electric drill machine used for making holes in wood and they are selected according to the type and purpose of hole. They consist of main functioning drilling instruments.

16. Bench Vice :-

It is a wood job holding device. It's one jaw is fixed to the side of the table while the other is kept movable by means of a screw and a handle. The whole vice is made up of iron and steel, the jaw being lithed.





lined with hard wood face which don't mark and which can not be reused as required.

17. Sash cramp :-

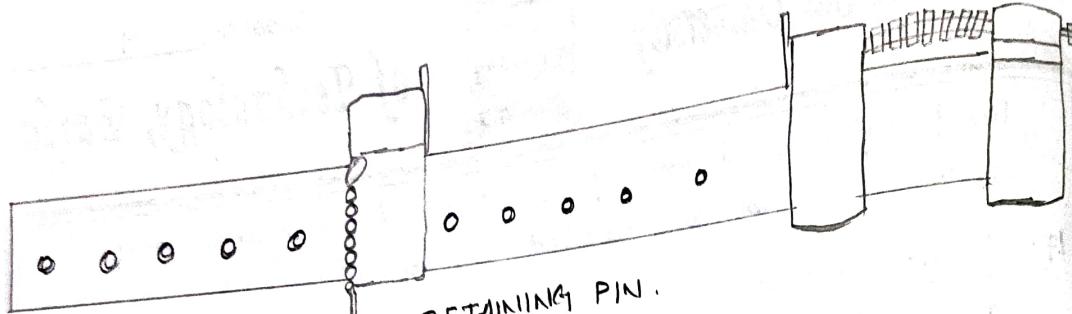
The sash cramp is made up of a steel bar of rectangular section, with malleable iron fittings and a steel screw. This is used for holding wide work such as frames or tops.

18. Rasp and files :-

These are useful for cleaning up some curved surface. For instance, certain concave shapes are so small that the spoke shaver can not enter them and here a file is invaluable. Tools containing many small cutting teeth each of which acts rather like a chisel on a plane.

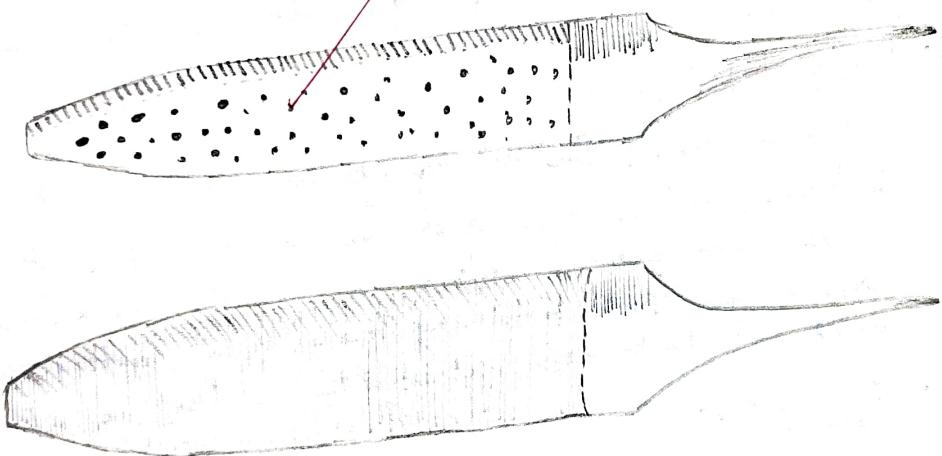
19. Scrapper :-

Scrapper consists of a piece of thin steel, bounded and tempered. A tin edged or made by passing over or - burnishing the edge of the metal to form that what is called as "burn".

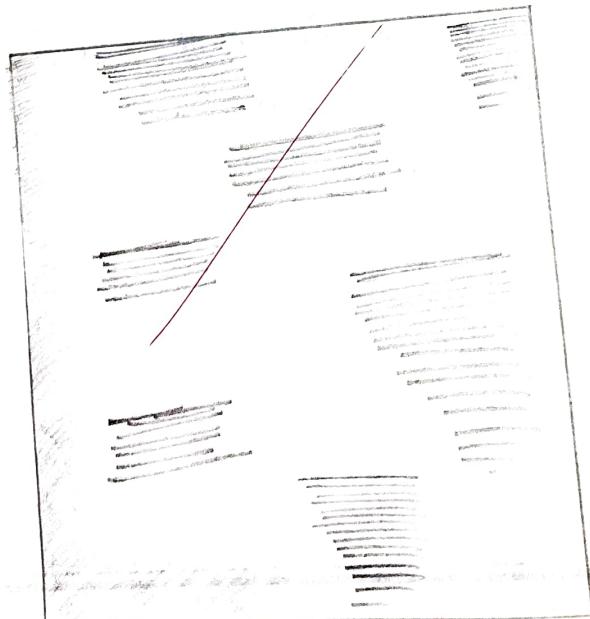


→ RETAINING PIN.

• SASH CRAMP



- RASP and FILES



• SCRAPE



ELECTRICAL PLANNER :-

- On/off switch.
- Planning depth control.
- Locking button.
- Housing handle.
- Sheath of cable.

TECHNICAL DATA :-

- Art. Nr/RW - 82.
- Voltage / Frequency - 230V/50Hz.
- Input power = 710W
- No of speed = 15000 rpm.
- Maximum cutting capacity - 82x2mm

Operation Instruction :-

1. Take down or put up the knife.

Attention :-

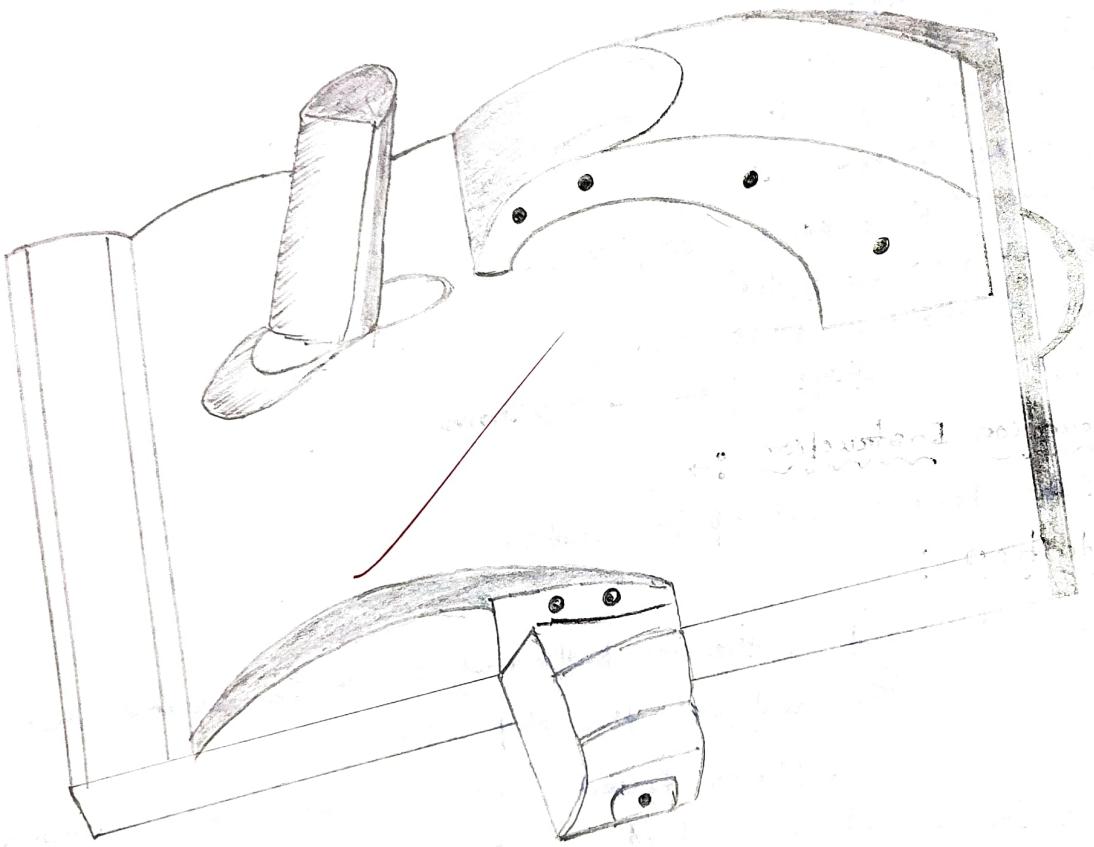
Before taking down the or putting up the knife, assume that-
the switch off and pull the plug out.

Twist down the three fixed screws with the tube crucher.
The knife and the outside corner can take down at
the same time.

Clear the scraps and the wood of all the dust and on the
spindle of the knife must, and then put up the knife.

The knife must be of same size or weight.
Otherwise the spindle will vibrate. The quality of the
cutting will be bad, the tool will be damaged.





• (ELECTRIC PLANER)



Attention :-

When the knife is put up with the spindle, lock the fixed screws, otherwise it's dangerous. Inspect it always the position must be right. Then cut the bottom board must be parallel. otherwise the surface of the wood processing is not well leveled and smooth.

2. Adjusting the depth of cutting :-

It comes to the dept which you need.

3. How to operate the switch :-

If you want to use continuously, push the bottom to lock the bottom. If you want to stop the planer press the bottom again.

Attention :-

Before you turn on the power, inspect the switch whether it is easy switch and it is the right position.

4. How to plane :-

First the plane adjusting board is placed up the work piece. It must be smooth not to touch the knife, put on the power and press the bottom.

→ Beginning :- Bearing the pressure on the back of the planer.

→ Finishing :- Bearing the pressure on the back of the planer. The cutting of the plane resulting depends on the speed and depth.



If you want to cut the wood like serrae use the side fixed board. Draw a line of the cutting on the workpiece. If you need to add the length of the side fixed board be even with the side fixed board. Then makes the cut touch the line at cutting. Otherwise if wood happens the phenomenon of the bad balance.

The top depth of the cutting is 9 mm.

Now plane the angles :-

Let the groove of the mode 'V', the front of the adjusting bottom with the sole of the work piece, then operate the picture. Sharpen the knife at the milestone. That's like two butterfly. Then put the nut into it. Make the knife touch the side 'c' and 'b' then fix the knife take it out of the water on the self.
so the two knives have the same cut.

PROCEDURE :-

1. At first, we had checked the measurements of all the unfinished work piece provided. The measurement of these unfinished work pieces should be kept a little bit more than that of given in the diagram.
2. Next, we had selected the best surface. To planning operation a little on the surface.



3. Then planned another grog surface adjustment to no 1 face and marked no-2 on it.
4. After this, we had marked operation using marking gauge only as per the measurement indicated in the diagram.
5. Planned these surfaces and marked no 3 and 4 face.
6. Next, we had drawn mortising and tenoning mark line no 2 and no 4 faces as per the measurements provided.
7. chiseling operation is carried out by the job with the help of mortise and firmer chisel .
8. Then sawing is done by using tenon saw to generate the tenon on the job.
Depth of the mortise is 34mm.
9. Assembled the individual work piece by involving mortise and tenon joints and other suitable joints.
10. Used the sand paper in order to provide finishing to the job. punch your roll no. on the job and submit it for evaluation.

Precaution :-

- The job part should be held properly on the vice.
- The hammer should be used properly and carefully.
- The chiselling should be done according to the measurements.
- Prevent excess planning on the job.
- Joining of the parts of the job should be done carefully.



CONCLUSION :-

By the carpentry job , we made a wooden rack . To prepare this job , we used a large number of tools and requirements, focused by a number of operations to get the desired - shape , size and finishing . We can use marking gauge , rive , jackplane , chisels , tenons saw , mallet , hammer etc. to prepare other carpentry jobs . We also learnt the various techniques of marking , sawing and planning . Thus finally a well finished wooden rack was made .

Submitted By :-

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