T.C.
MİLLÎ EĞİTİM BAKANLIĞI

MÜZİK ALETLERİ YAPIMI

MÜZİK ALETLERİ TEMEL KAVRAMLARI

Ankara,2016

- Bu modül, mesleki ve teknik eğitim okul / kurumlarında uygulanan Çerçeve Öğretim Programlarında yer alan yeterlikleri kazandırmaya yönelik olarak öğrencilere rehberlik etmek amacıyla hazırlanmış bireysel öğrenme materyalidir.
- Millî Eğitim Bakanlığınca ücretsiz olarak verilmiştir.
- PARA İLE SATILMAZ.

CONTENTS

INSTRUCTIONS

ALAN	**Müzik Aletleri Yapımı**
DAL/MESLEK	**Mizrapli Halk Müziği Enstrümanlari Yapimi**
MODÜLÜN ADI	**Müzik Aletleri Temel Kavramları**
MODÜLÜN TANIMI	Müzik aletleri yapımında, Yabancı dilde mesleki ve teknik terimleri tanımlayabilmek ve kullanabilmek için gerekli bilgi ve becerilerin kazandırıldığı öğrenme materyalidir.
SÜRE	40/ 24
ÖN KOŞUL	
YETERLİK	Yabancı dilde mesleki ve teknik terimleri tanımlamak ve kullanmak
MODÜLÜN AMACI	**Genel Amaç** Öğrenci, bu modül ile uygun ortam sağlandığında Yabancı dilde mesleki ve teknik terimleri tanımlayabilecek ve kullanabilecektir. **Amaçlar** 1. Müzik aletleri yapımı alanındaki temel kavramları tanımlayabilecek ve kullanabilecektir 2. Temel müzik kavramları ile ilgili temel kavramları tanımlayabilecek ve kullanabilecektir.
EĞİTİM ÖĞRETİM ORTAMLARI VE DONANIMLARI	**Ortam:** Ağaç işleri atölye ortamı, üst yüzey işlemleri atölyeleri **Donanım:** Çeşitli ağaç numuneleri, ağaç kitap ve katalogları
ÖLÇME VE DEĞERLENDİRME	Her faaliyet sonrasında o faliyetle ilgili değerlendirme soruları ile kendi kendinizi değerlendireceksiniz. Öğretmen, modül sonunda size ölçme aracı (uygulama, soru-cevap)uygulayarak modül uygulamaları ile kazandığınız bilgi ve becerileri ölçerek değerlendirecektir.

INTRODUCTION

Dear student;

Nowadays, knowing a foreign language is a fact that cannot be ignored. And everyone knows this fact. It has become an important part of people's daily lives. If people know a foreign language, they can find a job easily. In addition, It is possible to achieve better wages.

We live in the time period described as the information age. The information age has accelerated the development of technology. In addition, information age is changing rapidly and the validity of information is short-term. Therefore, the information obtained must be kept up to date. At this point, you need to know a foreign language in order to be a step ahead. Today, English has been adopted by the whole world and accepted as a world language. All issued information is translated into English and published.

This module is about the Basic Concepts Related to Musical Instruments. With this module you will learn English equivalents and usage patterns of the basic definitions and terms and will have the knowledge of technical English of music.

LEARNING ACTIVITY–1

AIM

Students will be able to define the basic terms in the production of musical instruments.

RESEARCH

- Search the basic definitions and terms about tree types, tools and machines used in making musical instrument.
- Prepare a report of your findings.
- Make a presentation to your teacher and your friends in your classroom.

1. THE TOOLS, MACHINES AND TREES IN THE CONSTRUCTION OF MUSICAL INSTRUMENTS

1.1 Parts of a tree

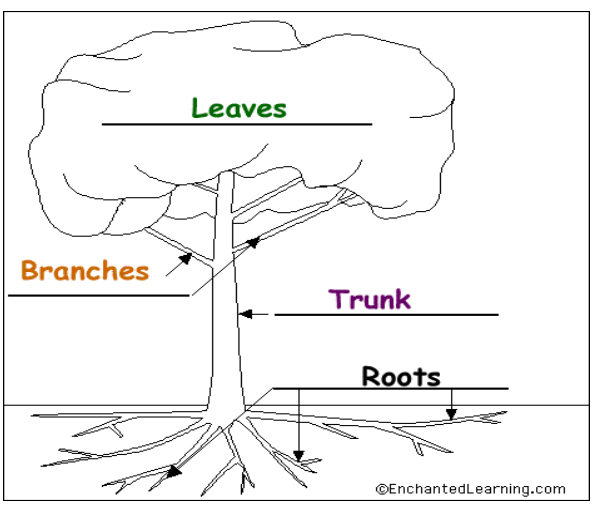


Figure1.1: Parts of a tree

1.2. Textures of trees

- Very fine textured trees: Buxus, Cornus mas (European Cornel).
- Fine textured trees: Platanus (plane tree), maple.
- Medium textured trees: Birch.
- Coarse textured trees: Walnut, mahogany.
- Very coarse textured trees: oak, chestnut, ash(Fraxinus), elm.

1.3. Sections of the tree trunk

1.3.1. Radial section
1.3.2. Tangential section
1.3.3. Horizontal (transverse) section

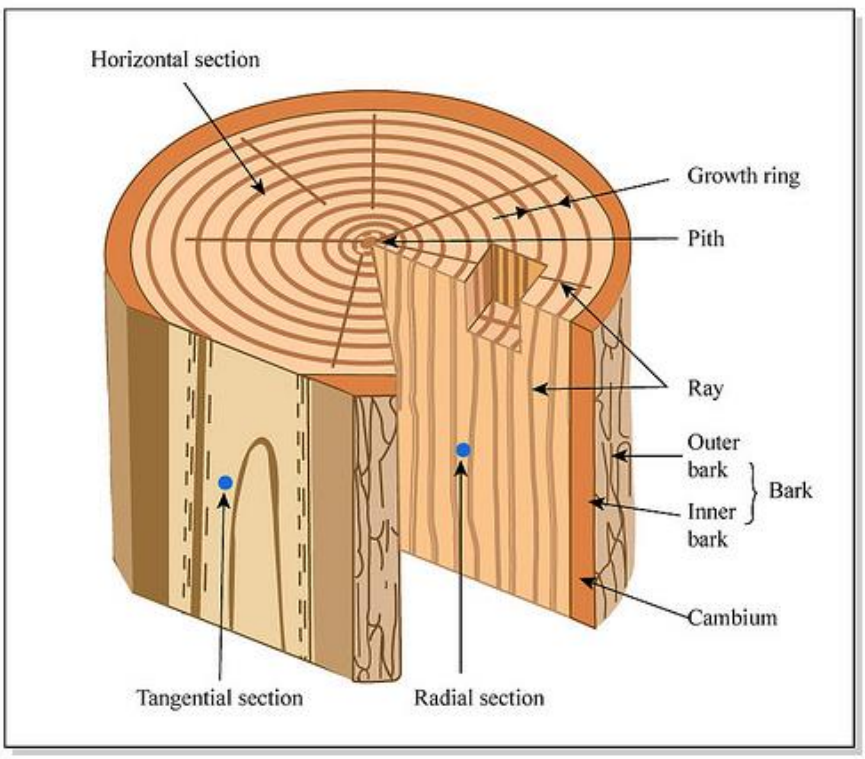


Image1.2. Segments of a tree

1.4. Tree Defects and Diseases

1.4.1. Wood Defects

- Knot

Picture 1. Knot

- Curved body

Picture 1.2. Curved body

- Eccentric pith (Deformed Growth Rings)

Picture:1.3. Eccentric pith.

- Curling Fibrous

Picture:1.4. Curling Fibrous

- Canker Tree

Picture 1.5: Canker Tree

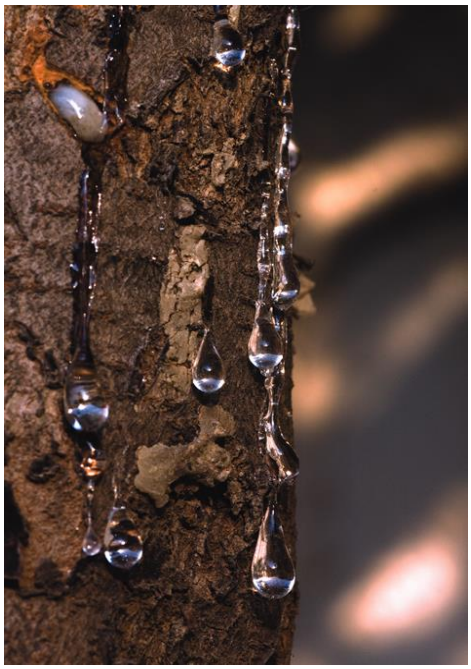
- Tree Annual Ring

Picture: 1.6. Tree Annual Ring

- Cracks

Picture 1.7:Crack

- Resin Bags



Picture:1.8.Resin Bag

- Fluted Web:

Picture:1.9. FlutedWeb

1.4.2. Tree Diseases

- Ardaklanma: They are spots manifesting themselves in oval or circular shapes.
- Pseudo-umbilical: This disease shows itself as a color change, which is similar to heartwood's color, seen in beech core and around it.
- Fungi

1.5.Trees Used to Make Musical Instruments and Their Selection

1.5.1.Native Trees and Where To Use

- **Walnut:** Used to construct a boat and piano frame.

Resim 1.10: The Texture View of Walnut Tree

- **Box Tree:** It is a kind of hard tree, used to make bridge for *bağlama*, a type of long-necked lute that has three double strings.
- **Hornbeam Tree:** Used to construct *bağlama*'s neck, *cura*'s and *kemenche*'s side.

Picture 1.11: The texture of hornbeam

- **Juniper:** It is used to build the body of *bağlama*.

Picture 1.12. The view of juniper wood

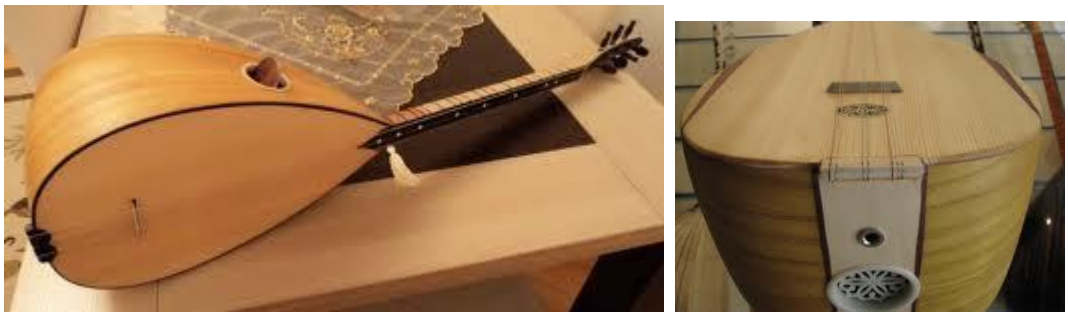
- **Cherry :** It is used to construct the body of *ney* and *mey*.

Picture 1.13. The texture of a cherry wood

- **Chestnut:** It is used to build the body of *bağlam*a and carved *cura*.

Picture 1.14. The texture of chestnut.

- **Mulberry:** It is used to make the body of *bağlam*a and carved *cura*.



Picture 1.15. The texture of mulberry

- **Spruce:** The body and sound board (top) of stringed instruments are made of spruce.

Picture 1.16. The appearence of spruce

1.5.2. The non-native trees and their usages

- **Mahonagy:** It is used to make the whole of the body and neck of stringed instruments.

Picture 1.17. The texture of mahonagy

- **Ebony :**The fingerboard (fretboard) of stringed instruments and the body of *mey* and *zurna* are made of ebony.

Picture 1.18. The texture of ebony

- **Wenge:** It is used to make the fingerboard (fretboard) of guitar and *bağlama*.

Picture 1.19. The view of wenge wood

- **Rosewood :** There are many types of rosewood. Its characteristics can vary according to climate of the country where it comes from. It is used to make the fingerboard (fretboard) and the body of *mey*, guitar, and *ud*.

Picture 1.20.: Samples of rosewood

- **Rose:**It is used to build the body of guitar.

Picture 1.21: The view of rose

- **Maple:** The back, sides, and neck of most violins, violas, cellos, double basses and many guitars are made from maple.

Picture 1.22. The view of maple

- **Padouk:** Guitars and bodies of some instruments are made of padouk.

Picture 1.23: The appearence of padouk

- **African Walnut:** Pianos and bodies of some other instruments are made of African Walnut.

Picture 1.24: The texture of African Walnut

- **Cypress:** It is used for guitar's side and back of the body.


Picture 1. 25: The appearance of Cypress

- **Zebrano (olive):** It is native to South Africa. It is used for body of *bağlama* and side of guitar.


Picture 1.26: The appearance of olive

1.6. Types of Planes

1.6.1. Standard Block Plane:

It is used to make musical instrument at the beginning of the workpiece.

Picture1.27: Standard Block Plane

1.6.2. Low-Angle Block Plate (End Grain):

It is used to shave musical instrument's body, neck and side.

Picture 1.28. End grain

1.7. Measuring, Marking and Checking Tools

They are used to measure, mark and control to carry out the processes of making musical instrument correctly considering the standards.

Picture 1.29: Measure, marking and control tools

1.7.1. Rulers

They are used to measure inner and outer parts of the things you are working on.

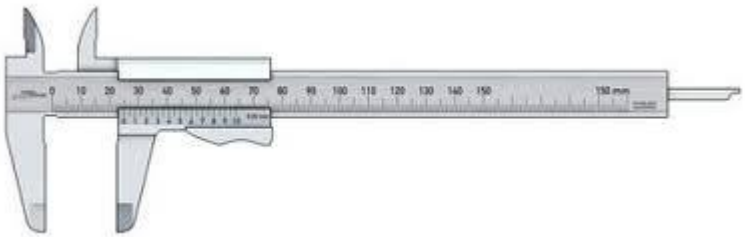
- **Carpenter's rule:** It is used to measure the height of timber.

Picture1.30: Carpenter's rule

Steel Rule: They are used to measure inner and outer parts of the things you are working on.

1.7.2. Vernier Calipers:

They give a direct reading of the distance measured to high accuracy. They can measure internal, external diameter, width and the depths of an object.



Picture 1.31: Vernier Calliper

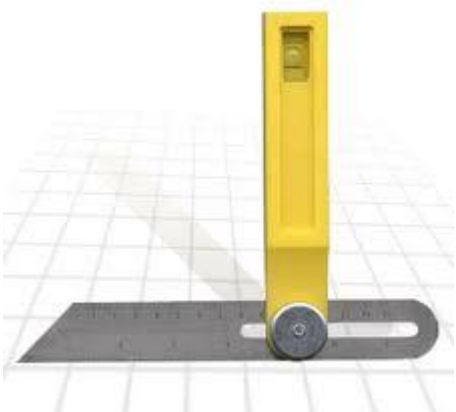
1.7.3. Set Squares:

They are used in measuring, marking angles and control operations, technical drawings with the aim of providing a straightedge at a right angle or other particular planar angle to a baseline. They are made of hard wood or metal.

- **90 degree Set Square:** It is used in marking and controlling right angles.

Picture1.32: 90 degree Set Square

- **Bevel Square:** They are used to mark and control each degree angle.



Picture1.33: Bevel Square

1.7.4. Mortise Gauge:

It is used to make edge canal in making musical instrument.

Picture 1.34: Mortis Gauge

1.7.5. Gauges:

It is used to check the surface smoothness of body and neck in building musical instrument.

1.7.6. Compasses:

It is used to inscribe circles, segment on lines, transfer measures, copy curved shapes; spring calliper.

Picture1.35: Compass

1.7.7. Scriber and Bradawls:

Scriber is a rod with a tip cast steel and has conical body. It is used in making musical instrument when applying marquetry to body and neck. Bradawl is a tool for making holes in wood.

Picture1.36: Scriber and Bradawls

1.7.8. Reamer and Pencil Sharpeners:

They are used to create accurate sized holes.

Picture1.37. Reamer and Pencil Sharpener

1.8. Saws

Saw is a tool for cutting by the use of a toohed blade .

Picture1.38: Saws

1.8.1. Tenon Saw (Dovetail Saw):

It is used to cut tenons, dovetails for motrise or tenon joinery in musical instrument construction.

Picture1.39: Tenon Saw (Dovetail Saw)

1.8.2. Backsaw:

It is used to cut tenons in joinery in musical instrument construction.

Picture1.40. Backsaw

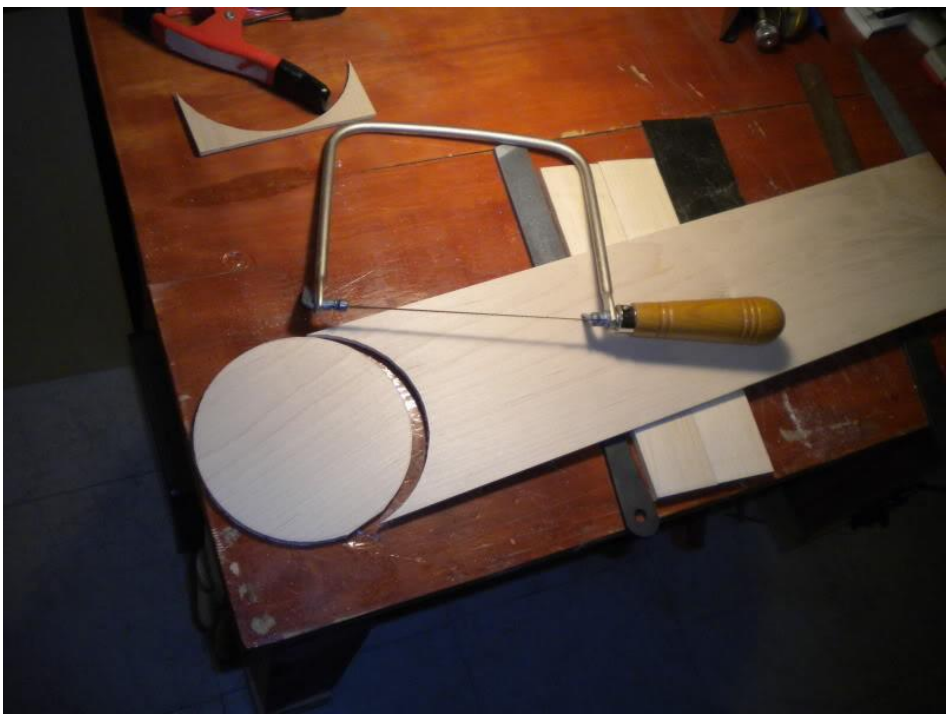
1.8.3. Gent's Saw:

It is the most common handsaw type used to cut small workpieces in various directions.

Picture1.41: Gent's Saw

1.8.4. Fret saw (Coping Saw):

It is used to make a cage, open rosette channels and make f holes in musical instrument construction.



Picture1.42: Coping Saw

1.8.5. Keyhole Saw (Compass Saw):

It is used in making marquetry for body and neck of the musical instrument.

Picture1.43: Keyhole Saw

1.9. Chisels

Chisel is a tool for removing waste wood, metal from tenon, mortise and kerf places. They are used to carve and cut.

Picture1.44: Chisels

1.9.1. Bevel Edge Chisels

Picture1.45: Bevel Edge Chisel

Picture1.46: Carving with Bevel Edge Chisel

1.9.2. Bent Gouges

Picture1.47: Carving curved surface

1.9.3. Straight Gouges

Picture1.48: Types of Straight Gouges

1.10. Strike and Connecting Tools

They are delivering an impact to an object and driving wooden joints together in constructing musical instrument.

1.10.1. Hammer:

They are used for driving nails, removing nails, beating metal bottomed tools.

Picture1.49: Hammer

1.10.2. Soft-faced hammer (Mallets):

They are used as a strike tool when required bruise and high impact strength**.**

Picture1.50: Wooden and Plastic Mallets

Picture1.51: Driving fret by use of plastic mallet

1.10.3. Plier:

It is used to remove nail, cut nails and wires.

Picture1.52: Plier

1.10.4. Long Nose Plier:

It is used to hold, bend, remove various metals and cut nail,wire.

Picture1.53: Long Nose Plier

1.10.5. Screwdrivers:

It is a basic tool to prepare jig, and used in connecting while making forms in building musical instrument.

Picture1.54: Flat Screwdrivers

1.10.6. Wrenches:

Screwdrivers set is used in measuring neck of acoustic and electro guitars and joining allen, auger.

1.11. Tools For Holding

In the construction of musical instruments to be able to glue the workpiece, glued surfaces generally need to be supressed for a certain period of time to each other under certain pressure. We call these tools clamps to perform holding.

Picture1.55: Holding Tools

1.11.1.Clamps:

Generally, different types of sensitive clamps are used in making musical instrument.

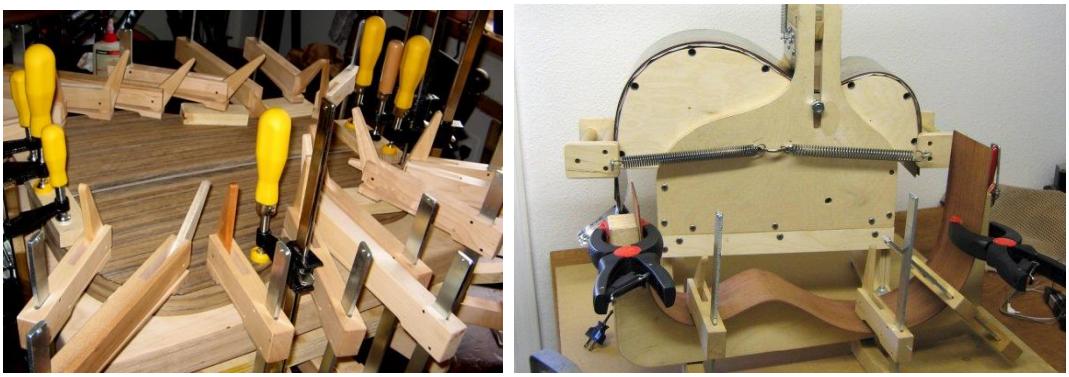
- **C- Clamp:** It is used to glue the two pieces of wood together because it can sequeeze away from the edge.

Picture1.56: C Clamp

- **Iron Screw Clamp:** They are commonly used as they allow amazingly wide range of applications.


Picture1.57: Iron Screw Clamp

- **Eccentric Clamp:** It is for light to medium clamping pressures.



Picture1.58: Application of Eccentric Clamp in Making Guitar

- **Bar Clamps:** They allow finely-fitted small and delicate work pieces like guitar, lute's back and front parts to be clamped for fitting and glueing.

Picture1.59: Bar Clamps

1.11.2. Spring Clamps:

They provide quick and stable clamping pressure and glue while making guitar, viola and bağlama's support bar.

Picture1.60: Spring Clamp

1.11.3. Pro-grip Clamp:

It can be used as circular saw gide and router guide for viola, *bağlama* and other instruments' sensitive and oval parts where can't be clamped.

Picture1.61: Pro-grip Clamp

1.11.4. Sellotape and Rubbers:

Generally, they are used to squeeze convex workpieces when it is impossible to use clamp.

Picture 1.62: Sealing Guitar Body with Sellotape

1.12. Wooden Surface and Edge Shape Terms

1.12.1. Chamfer (Bevel):

In building musical instrument, it is a flat surface, bevel made by cutting off the edge or the corner of a block of wood. Also, it helps to protect the piece.

Picture1.63:Chamfer(Bevel)

1.12.2. Dowel:

A wood pin used to align and hold two adjoining pieces. Generally, they are made of beech tree.

Picture 1.64: Dowel

1.12.3. Sliding Dovetail:

It is used to join body and neck in musical instrument construction.

1.12.4. Molding:

It is an indented profile placed on the edge or the face of wood throughly for decorative design.

1.12.5. Fretwork:

It is processed by using different materials on neck and body parts of the musical instruments.

1.13. Jigsaw

It can be used to cut slice and side in musical instrument construction. Also, it can be used to do inlay and decorative patterns.

Picture1.65. Cutting with a jigsaw

1.13.1. Corded Saw:

It is used in musical instrument construction inlay and decoration parts.

-

Picture1.66. Corded saw

1.14. Hand Milling Machine

It is used to form edge groove. It should rotate around 2000-3000 rpm. They are machines to mill edge and shape surface.

Picture1.67: Hand Milling Machine

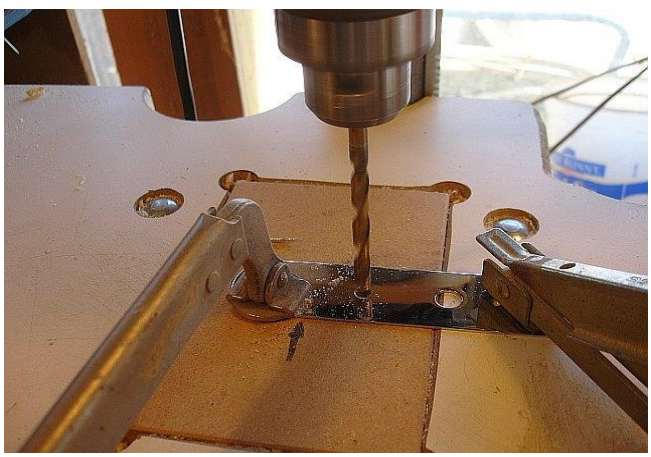
1.15. Drills

Drills are tools to chamfer dowel's top and auger in musical instrument construction.

Picture1.68: Drills

1.15.1. Twist drills

Picture1.69: Twist drill



Picture1.70: Twist drill

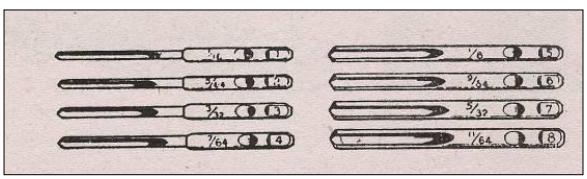
1.15.2. Forstner bit

Picture 1.71: Forstner bit

1.15.3. Centre Bit

Picture 1.72: Centre Bit

1.15.4. Spoon Drills



Picture: 1. 4. Spoon Drills

1.15.5. Expanding Drill

1.16. Corded Drill

A corded drill allows you to make screw, dowel pin, etc. holes when it is impossible or ineffiecient to use drill.

Picture1.73: Brace

Picture1.74: Cordless Drill

1.17.Woodworking Joints

They are joining pieces of wood according to the type of the work, the characteristics of the material and the way of making. Therefore, different joinery techniques are used to meet differing requirements.

1.17.1.Doweled Butt Joint

Picture1.75. Doweled edge joint

1.17.2.Tongue and Groove

They are edge joints used in building boat and decorating work.

Picture1.76.Tongue and Groove

1.17.3.Dovetail Joint

It is mostly used to make neck and mount the neck to the body.

Picture1.77. Mounting the guitar neck to the body

Through Dovetail

Picture: 1.78. Through Dovetail

Half-blind Dovetail

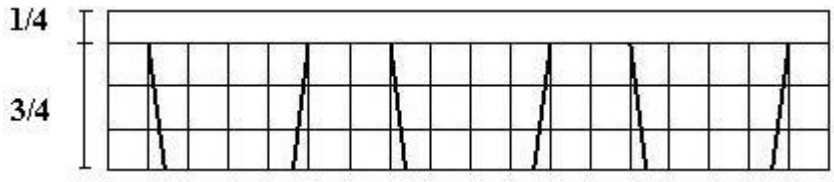


Figure 1. 5. Pin join

- Secret Mitred Dovetail: It offers the strength found in the dovetail joint but is totally hidden from both inside and outside corners. It is used in the highest class of work. It is difficult and takes time.

Sliding Dovetail: It is the most proper joint used in making instrument neck. With fine marking, aesthetic and good results can be obtained.

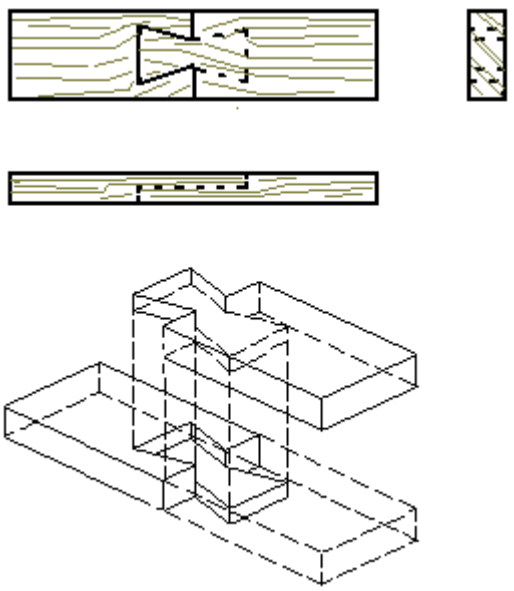
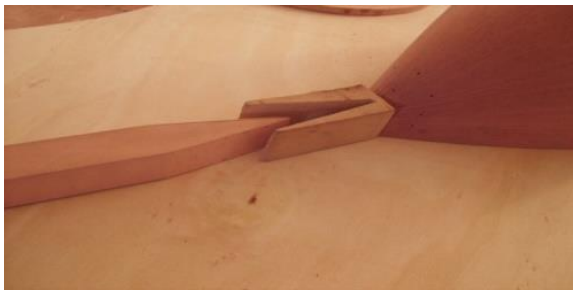


Figure 1. 6. Secret double-lapped dovetail

1.17.4. Hook and butt joint

It is mostly used in curved boat. It is the oldest technique used to make *bağlama*.



Picture1.79. Hook and butt joint

1.18. Burnıshıng tools

It is called burnish, final trimming and removing process before top surface processes.

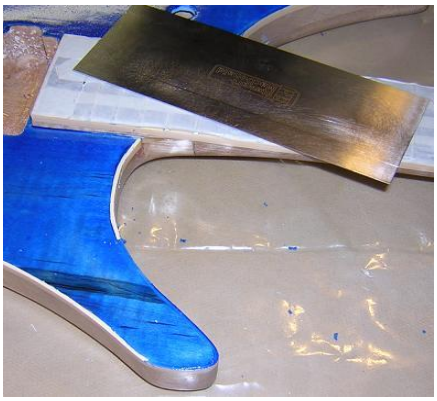
1.18.1. Rasp and Files

Rasp and files are used to cut curved, cornered or fine surfaces that are impossible to file and sharp saw, card scraper.

Picture: 1.80. Rasping neck

1.18.2. Card Scraper

Card scraper is medium tool steel burnishing tool, and it is used to burnish, scape hardwood solid or veneered surfaces.



Picture1.81. Card scraper

1.18.3. Sandpaper

It is used to remove small amounts of material from surfaces, either to make them smoother, remove a layer of material (e.g old paint), or sometimes to make the surface rougher.

Picture 1. 82: Sandpaper

1.19. Electric Sander

These power tools, used in sanding, especially give good results in sanding large and intricate pieces.

Picture1.83: Electric Sander

1.19.1. Finishing Sander

Finishing sander is used to sand varnished dry and wet surfaces at finishing.

Picture 1.84. Finishing Sander

1.19.2. Belt Sander

Picture1.85. Belt Sander

1.19.3. Disk Sander

Picture 1.86. Disk Sander

APPLICATION ACTIVITY

The Steps of Process	Suggestions
➢ Find the English equivalents of the terms below: ➢ Testere ➢ Pah ➢ Kerpeten ➢ Yıllık halka	➢ While reading, try to predict the terms that you do not know.
	➢ Find the English equivalents of the terms you can't predict from technical dictionaries.
	➢ You can find detailed information about the terms from the text.

CHECKLIST

If you have the behaviors listed below, evaluate yourself putting (X) in “Yes” box for the skills you have acquired within the scope of this activity, otherwise put (X) in “No” box.

Evaluation Criteria		Yes	No
1.	Have you learnt the sections of a tree?		
2.	Can you distinguish tree defects?		
3.	Can you identify measuring, marking and checking tools?		
4.	Can you identify striking and connecting tools?		

EVALUATION

Please review your "No" answers in the form at the end of the evaluation. If you do not find yourself efficient, repeat the learning activity. If you give all your answers "Yes" to all questions, pass to the "Measuring and Evaluation".

MEASURING AND EVALUATION

Evaluate the given knowledge, if the knowledge is TRUE, write “T”, if it is FALSE, write “F” to end of the empty parenthesis.

QUESTIONS		TRUE	FALSE
1.	Walnut is used to make musical instrument.		
2.	Standard block plane is used to make musical instrument whe you have just started to do it.		
3.	English equivalent of testere is three.		
4.	It is rasp which is used for holding.		

EVALUATION

Please compare the answers using the answer key. If you have wrong answers, you need to review the Learning Activity. If you give right answers to all questions, pass to the next learning activity.

LEARNING ACTIVITY–2

AIM

You will be able to define and use words for the musical instrument making machines at the end of this activity.

RESEARCH

- Search the basic definitions and terms about tools and machines used in making musical instruments.
- Prepare a report of your findings.
- Make a presentation to your teacher and your friends in your classroom.

2-POWER TOOLS IN THE CONSTRUCTION OF MUSICAL INSTRUMENTS

2.1. Bandsaw

2.1.1. Main Frame

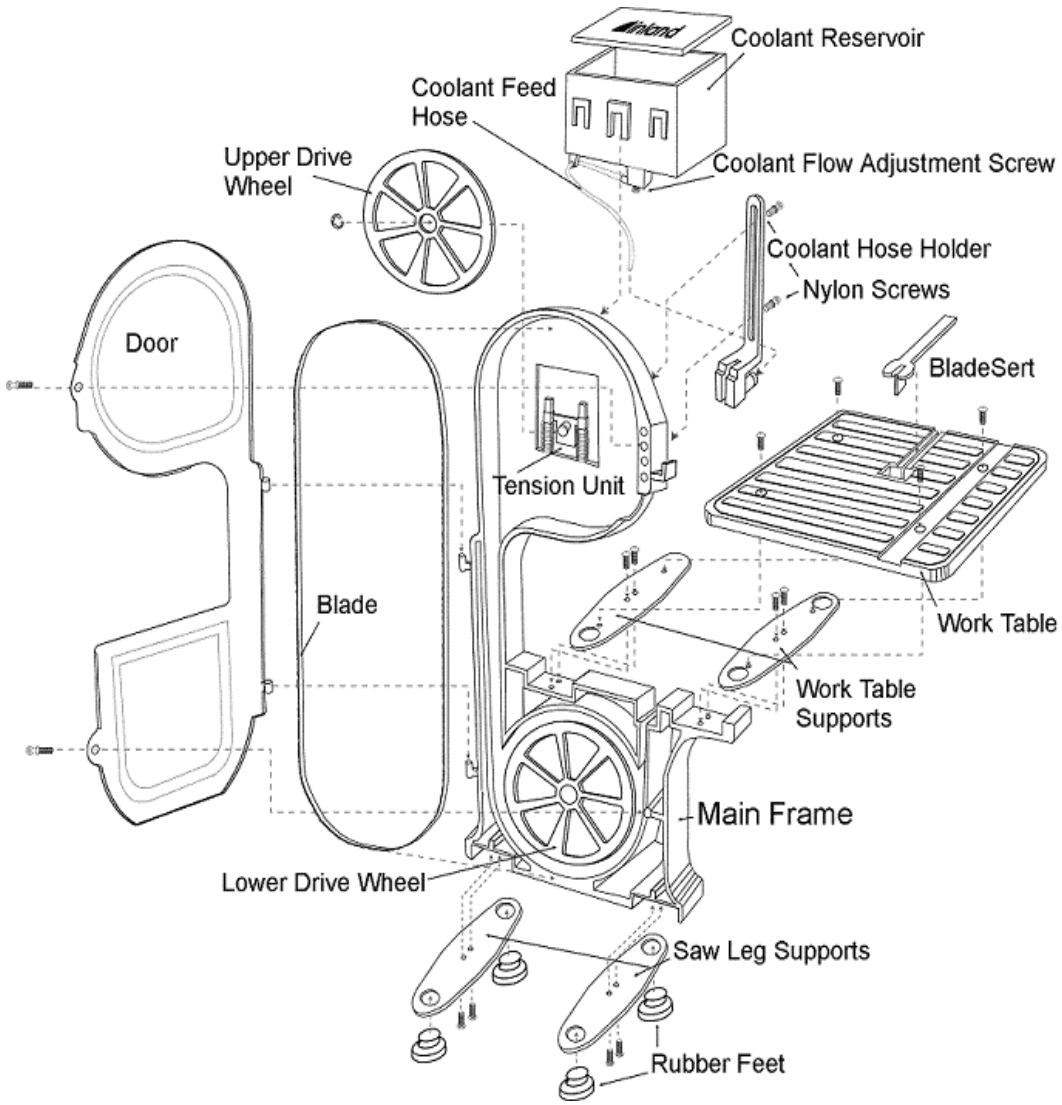
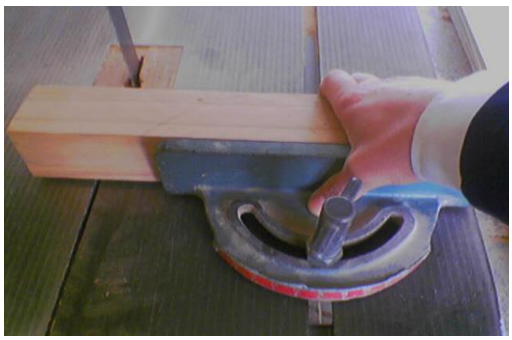


Figure 2. 1: Bandsaw

2.1.2. Table



Picture 2. 2:Table

2.1.3. Fence

Picture2.3:Fence

2.1.4. Drive Wheels

Picture 2. 4: Upper and Lower Drive Wheel

2.1.5. Guide Blocks

Figure 2. 5: Upper Guide Assembly

2.1.6. Saw Blade

Picture 2. 6: Saw Blade

2.2. Jointer

Jointer is used in processes as removing slight warps and cutting flat surfaces, opening face alcove for marking or rasping from requiring angle. It is a power tool used for *bağlama* neck and smoothing rough parts.

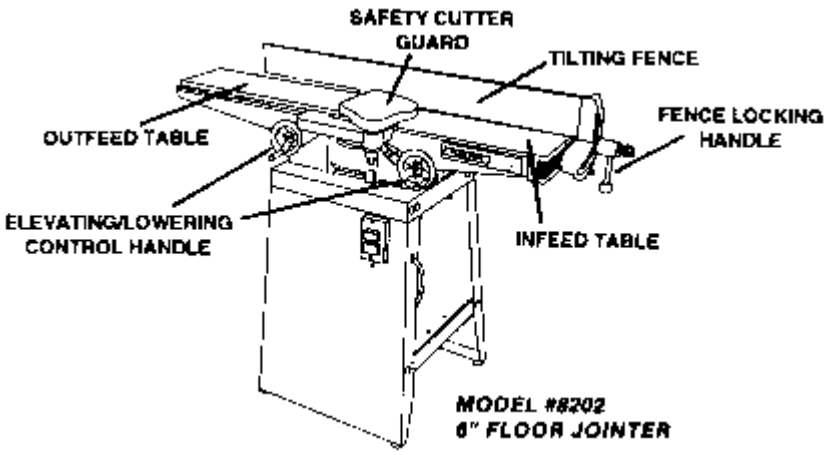


Image l.2.1: Jointer

2.2.1. Cutter head

Picture 2. 7: Jointer

2.2.2. Infeed Table

Picture 2. 8:Infeed Table

2.2.3. Outfeed Table

Picture 2. 9:Outfeed Table

2.2.4. Mill and Blades

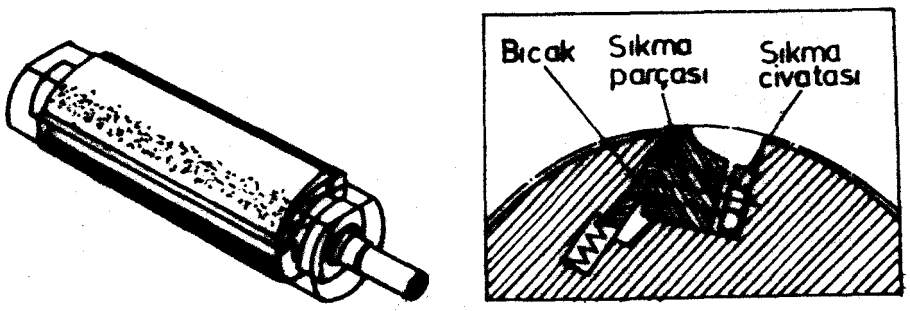


Figure 2.2: Jointer mill and blade

2.2.5. Fence

Picture 2.10:Fence

2.2.6. Safety Cutter Guard

2.3. Circular Sawing Machine

It is used to mark all musical instruments' necks, cut rasped workpieceses' length, width and thickness considering desired measure and angles.

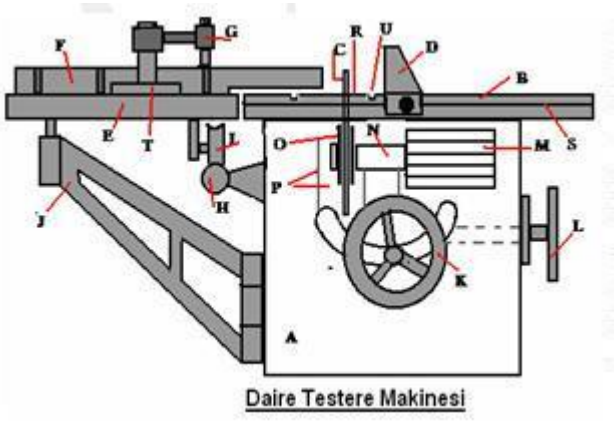


Figure: 2. 3. Circular Sawing Machine

A. Frame
B. Table
C. Saw
D. Fence
E. Moveable Table
F. Moveable table fence
G. Pressing tool
H. Moveable table mill
I. Mill Wheel
J. Moveable table leg
K. Height adjustment flywheel
L. Angle adjustment flywheel
M. Motor
N. Mill
O. Flanges
P. Sawdust void
R. Saw void
S. Ruler
T. Moveable table control assembly
U. Sliding fence duct

2.4. Wood Turning Lathe

A lathe is a machine tool which spins a block of material to perform various operations, such as facing, taper turning, threading, chamfering drilling, boring, knurling of deformation with tools that are applied to the workpiece to create an object which has symmetry about an axis of rotation. For example, it is used to make auger, *bağlama* neck and body segment, *kabak kemane* neck.

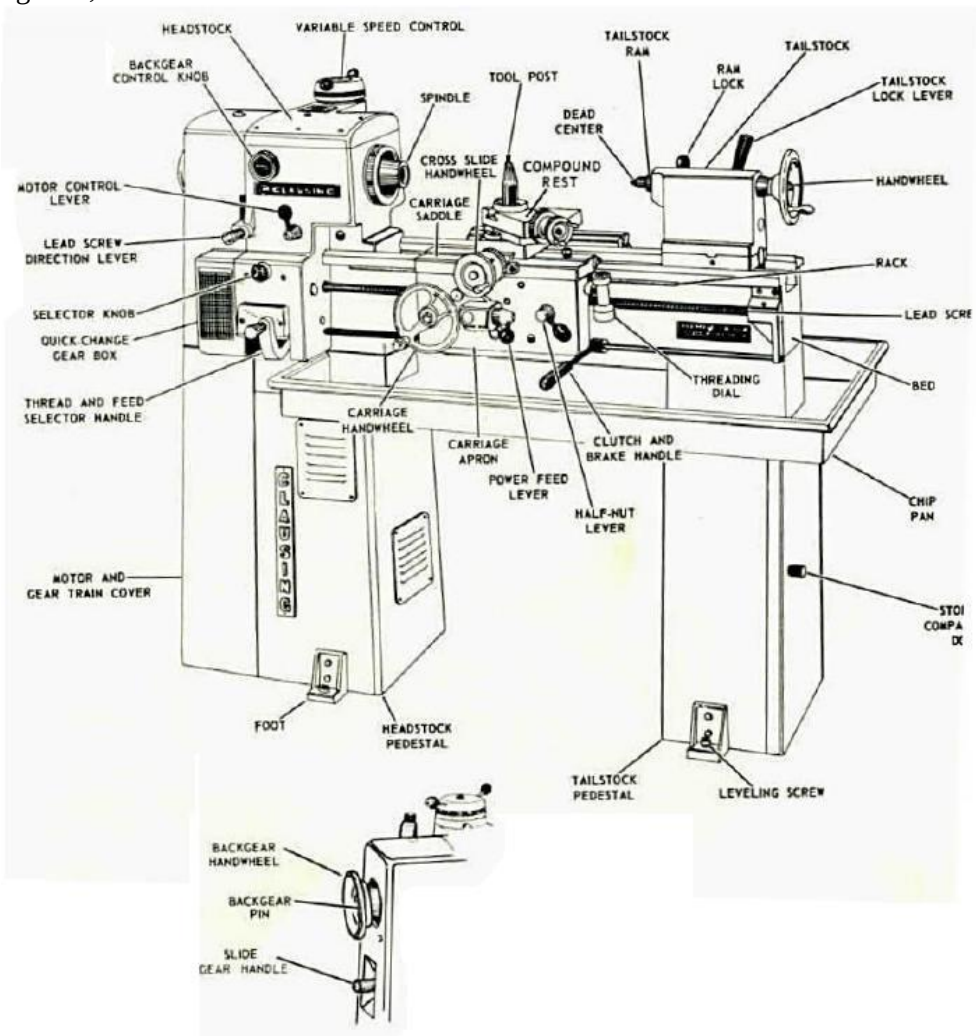


Image 2. 4: Wood Turning Lathe and its parts

2.4.1. Wood turning tools

Figure2.5: Types of wooden turning tools

- They are;
  - The gouge
  - Skew point
  - The parting tool
  - Square point
  - Round point
  - Spear point

2.5.Boring Machines

Different types and forms of boring machines are used to drill or bore angled holes and sand curved surfaces.

2.5.1. Horizontal Boring Machine

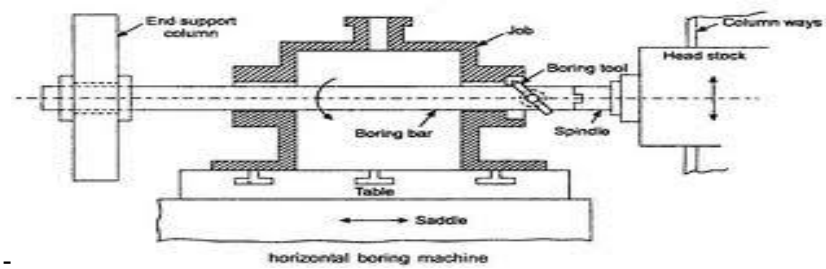


Figure: 2.6. Horizontal boring machine

- Its parts

- Table
- Mill
- Drill

2.5.2. Vertical Boring Machine

1- Top cover (pulley safety guard)
2- Drive belt and drive belt pulley
3- Motor
4- Drill chuck
5- Feed handle
6- Table
7- Column
8- Table locking clamp
9- Base
10-Power switch

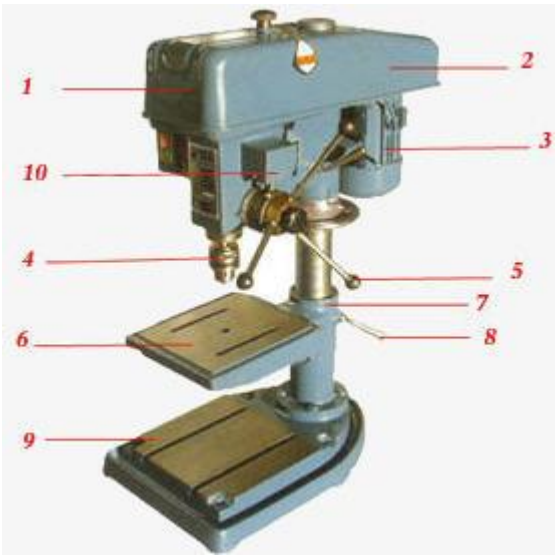
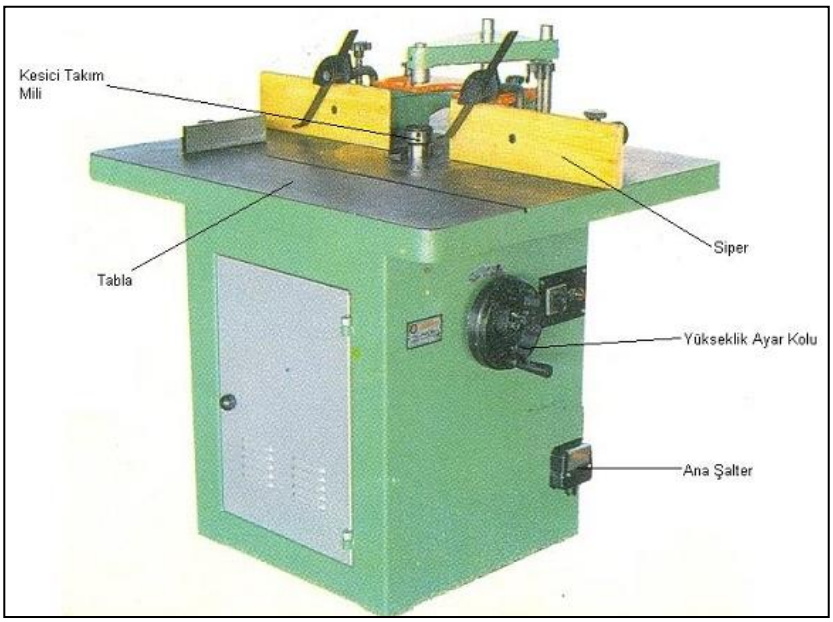


Figure 2.7: Drill press

- Its parts
  - Base
  - Column
  - Table
  - Top cover
  - Drive Belt and drive belt pulley
  - Mill and Chuck
  - Drills

2.6. Horizontal Milling Machine

It is used to form all the musical instrument neck part.



Picture2.11: Horizontal milling machine

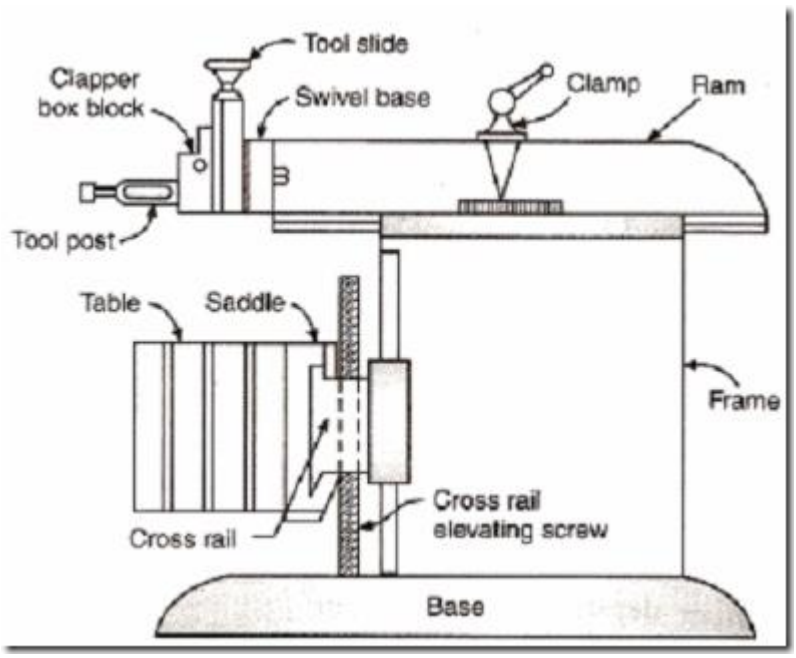


Image 2. 8: Horizontal milling machine

2.7. Vertical Milling Machine

It is used in machining to form stringed instruments' front and back parts. For example, it is used to make contrabass front and back table.

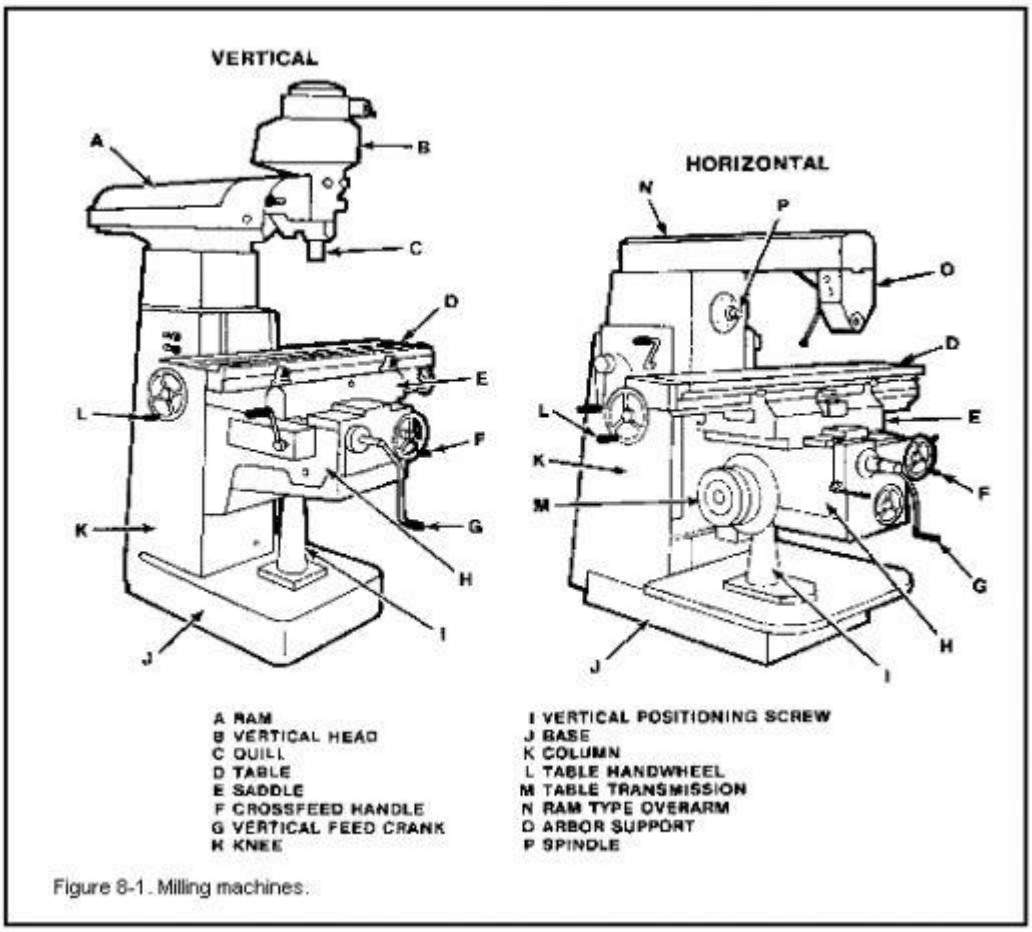


Image:2.9: Vertical milling machine parts

2.8. Sanding Machines

They are used to keep all instruments' sides and uncurved cover thickness equal.

2.8.1. Tilting Belt Sander machine

Tilting belt sander is generally used to burnish wide plane surfaces.

Picture2.12:Tilting Belt Sander Machine

2.8.2. Oscillating Spindle Sanding Machine

Picture2.13: Oscillating Spindle Sanding Machine

2.8.3. Piano Key Type Sanding Machine

Picture2.14: Piano key type sanding machine

APPLICATION ACTIVITY

Steps of Process	Suggestions
➢ Write the parts of a bandsaw.	➢ While reading, try to predict the terms that you do not know.
	➢ Find the English equivalents of the terms you can't predict from technical dictionaries.
	➢ You can find detailed information about the terms from the text.

CHECKLIST

If you have the behaviors listed below, evaluate yourself putting (X) in “Yes” box for the skills you have acquired within the scope of this activity, otherwise put (X) in “No” box.

Evaluation Criteria	Yes	No
1. Have you learnt basic definitions and terms about tools and machines used in making musical instruments?		
2. Have you learnt different types and forms of boring machines		
3. Have you learnt the parts of circular sawing machine?		

EVALUATION

Please review your "No" answers in the form at the end of the evaluation. If you do not find yourself efficient, repeat learning activity. If you give all your answers "Yes" to all questions, pass to the "Measuring and Evaluation".

MEASURING AND EVALUATION

TRUE-FALSE

Evaluate the given knowledge, if the knowledge is TRUE, write “T” , if it is FALSE, write “F” to the end of the empty parenthesis.

QUESTIONS	TRUE	FALSE
1. Upper pulley is a part of the jointer.		
2. Torch is a part of woodturning lathe.		
3. Drill is a part of boring machine.		
4. Footswitch is a part of bandsaw.		

EVALUATION

Please compare the answers using the answer key. If you have wrong answers, you need to review the Learning Activity. If you give right answers to all questions, pass to the next learning activity

MODULE EVALUATION

PERFORMANCE TEST (MEASURING THE SKILLS)

Evaluate the skills you have achieved according to the criteria below.

Evaluation Criteria	Yes	No
1. Did you use measuring, marking and checking tools?		
2. Did you use holding tools?		
3. Did you identify the parts of machines?		

EVALUATION

Please compare the answers using the answer key. If you have wrong answers, you need to review the Learning Activity. If you give right answers to all questions, pass to the next learning activity.

Fınd 12 englısh equıvalents of turkısh terms about makıng musıcal ınstruments from rıght to the left, from left to the rıght, top to bottom, bottom to up and cross.

S	I	D	W	T	Y	W	Y	U	T	M	U	H	Y
K	O	R	F	V	O	A	Q	S	M	F	B	W	P
G	H	I	T	X	G	L	A	X	K	U	Z	H	M
E	V	L	V	Z	Q	N	P	Q	B	N	Y	Q	P
N	T	L	G	D	Z	U	M	C	L	Q	O	B	L
A	U	G	L	X	C	T	C	L	W	Y	X	T	I
L	S	X	E	N	C	T	M	A	C	H	I	N	E
P	Q	F	Q	E	W	R	L	M	G	Z	C	S	R
F	Q	Z	E	C	Y	E	A	P	U	M	H	Y	G
Z	Ç	R	G	K	P	E	T	X	F	Q	I	X	Y
P	T	P	C	G	B	A	Q	C	W	G	S	Z	C
W	X	G	G	T	E	T	H	A	M	M	E	R	U
R	E	V	I	R	D	W	E	R	C	S	L	U	Y
A	Ü	D	P	Ü	W	D	U	Q	U	F	S	X	W

AĞAÇ – ÇEKİÇ – BUDAK – SAP - CEVİZ AĞACI

OYMA KALEMLERİ – MAKİNE - RENDE – MATKAP

TORNAVİDA – İŞKENCE - KERPETEN

ANSWER KEY

LEARNING ACTIVITY – 1 ANSWER KEY

1	**True**
2	**True**
3	**False**
4	**False**

LEARNING ACTIVITY – 2 ANSWER KEY

1	**False**
2	**True**
3	**True**
4	**False**

REFERENCES

- Waring, Denis, Musical ınstrument design, 1996.
- Robinson, Trevor, The amateur wind instrument maker, 1981.
- Havighurst, Jav, Making musical instrument, 2000.
- Waring, Denis, Making wood folk ınstruments, 1991.