
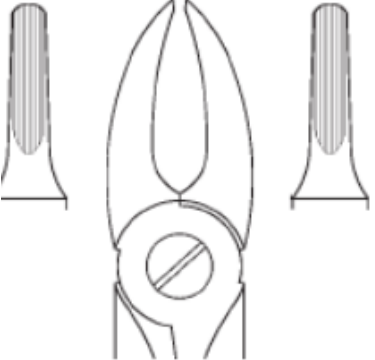

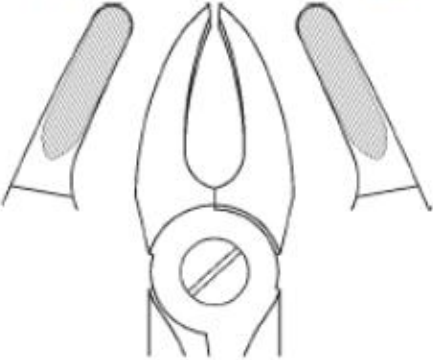

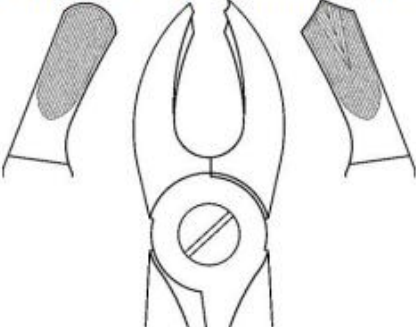



# Armamentarium for simple extraction

## Extraction forceps

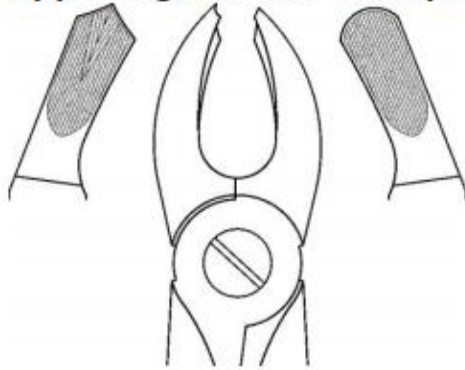
Instrument	Picture
<b>Basic Components of extraction Forceps</b>	 <p data-bbox="835 906 1486 950">Beaks      Joint      Handle</p>
<b>Upper Anterior Forceps</b> 	

Instrument	Picture
<p data-bbox="243 261 663 302"><b>Upper Premolar Forceps</b></p>  <p>The line drawing shows the Upper Premolar Forceps from three perspectives: a left side view, a central front view, and a right side view. The instrument features a curved beak with a pointed tip and a circular ratchet mechanism on the handle.</p>	 <p>A photograph of a single pair of Upper Premolar Forceps. The instrument is made of polished metal and has a curved beak with a pointed tip. The handle is textured and features a circular ratchet mechanism. The instrument is shown against a plain white background.</p>
<p data-bbox="233 784 642 824"><b>Upper Left Molar Forceps</b></p>  <p>The line drawing shows the Upper Left Molar Forceps from three perspectives: a left side view, a central front view, and a right side view. The instrument features a curved beak with a pointed tip and a circular ratchet mechanism on the handle.</p>	 <p>A photograph of two pairs of Upper Left Molar Forceps. The top pair is shown from a side view, highlighting the curved beak and the textured handle. The bottom pair is shown from a front view, highlighting the curved beak and the circular ratchet mechanism. The instruments are shown against a blue background.</p>

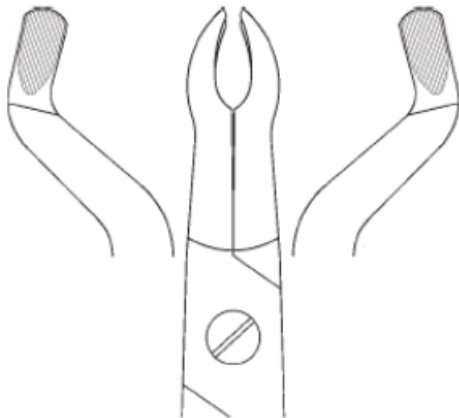
**Instrument**

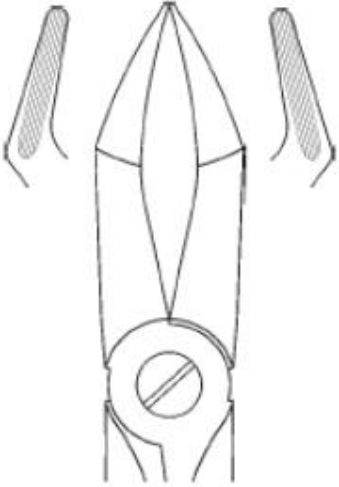



**picture**





**Upper Right Molar Forceps**

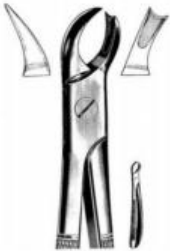







**Jockey Forceps  
(Upper Third Molar Forceps)**



Instrument	Picture
<p data-bbox="226 256 699 391"><b>Bayonet Forceps (Upper Posterior Remaining Root Forceps)</b></p> 	
<p data-bbox="233 954 657 995"><b>Lower Anterior Forceps</b></p> 	

Instrument	Picture
<p data-bbox="220 256 655 300"><b>Lower Premolar Forceps</b></p>  <p>The diagram shows a cross-section of the beak with a rounded, slightly curved tip and a small hook-like projection. Below it is a line drawing of the forceps head, showing the beak and the circular pivot point.</p>	 <p>A photograph of the Lower Premolar Forceps against a blue background. The instrument has long, curved handles with a textured grip. The beak is curved and has a small hook-like projection.</p>
<p data-bbox="247 787 655 831"><b>Lower Molar Forceps</b></p>  <p>The diagram shows a cross-section of the beak with a wider, more rectangular tip and a small hook-like projection. Below it is a line drawing of the forceps head, showing the beak and the circular pivot point.</p>	 <p>A photograph of the Lower Molar Forceps against a white background. The instrument has long, curved handles with a textured grip. The beak is wider and more rectangular than the premolar forceps. The brand name "Excelinnovative" is visible on the handle.</p>

Instrument	Picture
<p data-bbox="237 250 663 326"><b>Cow horn Upper badly decayed Right Molar</b></p> 	
<p data-bbox="249 659 625 695"><b>Cow horn Upper Left Molar</b></p> 	
<p data-bbox="285 1040 621 1076"><b>Cow horn Lower Molar</b></p> 	

## **Forceps Extraction Procedures**

### **Forceps handling:**

1. The forceps is hold in the palm of the right hand with the thumb finger supporting at its joint.
2. The little finger is placed inside the handles to open the forceps during its application.
3. When the tooth is gripped properly the little finger is placed outside the handles.
4. The forceps must be gripped as near as possible to the free ends of the handles to apply the maximum force.
5. In the upper premolars and molars forceps the curved side of the handles rest in the palm of the hand.

### **The forceps application:**

**The forceps blades are pushed apically along the tooth surface aiming to:**

1. Cut the gingival attachment to the tooth surface.
2. Have a deep grip at or below the CEJ of the teeth and to reach the furcation area in the multi rooted teeth.

### **The aims of the extraction movements:**

1. Dilatation of the bony walls of the socket (as the alveolar bone is a plastic tissue that yields under pressure).
2. Cutting the periodontal attachments along the root surface.
3. Dislodgement of the tooth out of the socket.

### **The principles of extraction movements:**

□ Generally in all teeth (Maxillary and Mandibular) the initial extraction movement is outwards (Bucally / labially) and then inwards movement (Palataly/Lingualy) to luxate the tooth in the socket. The final or delivery movement should be outwards and occlusaly i.e. outwards and downwards in the maxillary teeth and outwards and upwards in the Mandibular teeth.

□ **This general rule has two exceptions:**

1. In case of extraction of the maxillary central incisor and the Mandibular second premolar (rule of 1/5) the initial movement is rotation (due to the conical shape of their roots).



2. In case of extraction of the Mandibular second and third molars the initial movement is inwards or lingually because the buccal cortical plate of bone is reinforced by the external oblique ridge while the lingual cortical plate of bone is thinner and less resistant.

**The function of the left hand:**

1. Retract the tongue, cheeks and the lips from the site of extraction for accessibility and to prevent their injury.
2. Supports the alveolar bone around the tooth to be extracted in mandible and maxilla.
3. Supports and fix the mandible during the extraction of the mandibular teeth to prevent dislocation of the temporomandibular joint.
4. The supporting fingers should feel and monitor the yielding of the alveolar bone during the extraction movement. So the magnitude and the direction of extraction force are adjusted accordingly.
5. Compression of the dilated socket after extraction to decrease the size of the blood clot and help in rapid uncomplicated healing.



## The correct handling of extraction forceps

Picture	Comment
 A close-up photograph of a hand wearing a white surgical glove. The hand is holding a pair of extraction forceps. The thumb is positioned on the upper handle, and the index and middle fingers are wrapped around the lower handle. The ring and pinky fingers are curled inward, tucked under the lower handle. The forceps are held in a way that demonstrates the correct grip for opening and closing them.	<ul style="list-style-type: none"><li>• Showing the proper forceps handling prior to its application on the tooth.</li><li>• Note the position of the small finger which is used to open and close the forceps handles.</li></ul>
 A photograph showing a dental procedure. A patient's mouth is open, and a gloved hand is using extraction forceps to grasp a tooth. The hand is holding the forceps with the thumb on the upper handle and the index and middle fingers on the lower handle. The ring and pinky fingers are tucked under the lower handle. The forceps are being used to pull the tooth out of the socket.	<ul style="list-style-type: none"><li>• Showing the proper forceps handling during tooth extraction.</li><li>• Note the removal of the small finger from inside the forceps handles</li></ul>

## Retraction & Support using the left hand



Retraction & support in lower left region.



Retraction & support in lower anterior region.



Retraction & support in lower right region



Retraction & support in upper left region.




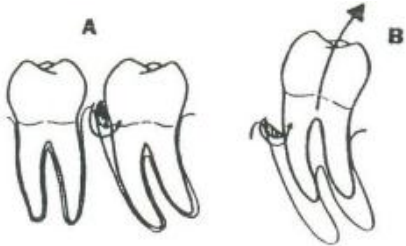

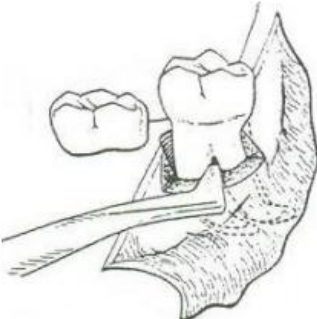
Retraction & support in upper anterior region.



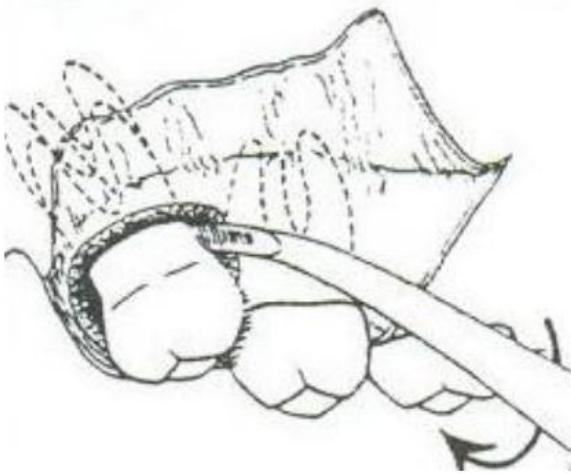

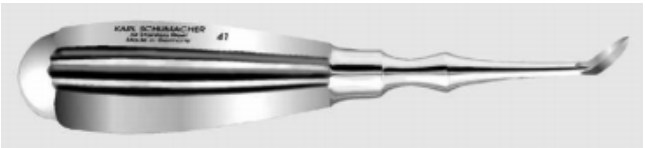


Retraction & support in upper right region


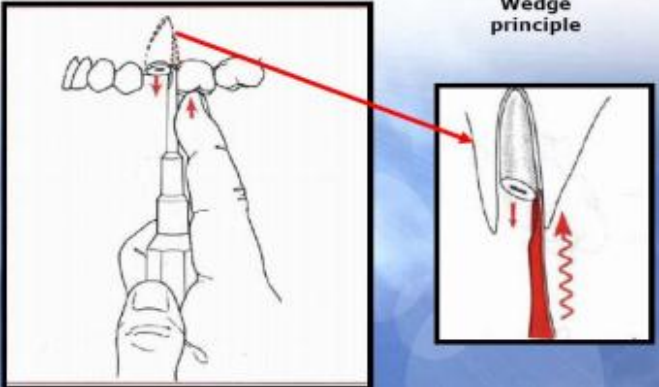

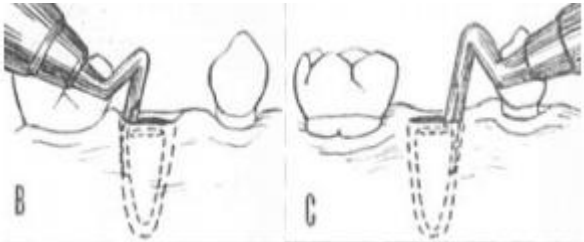
## Elevators


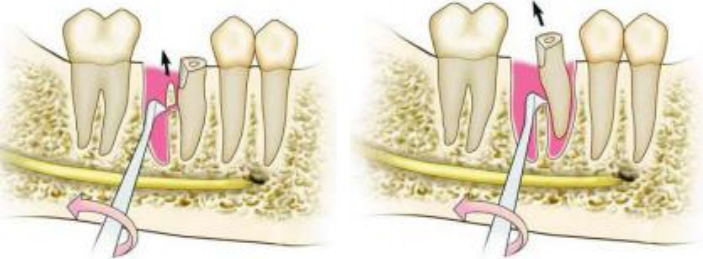

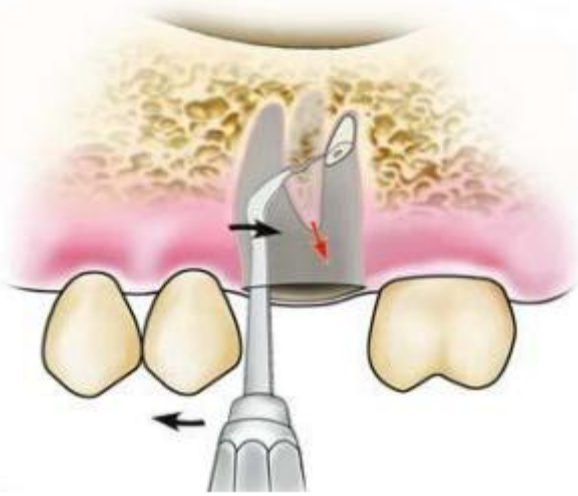
### 1) Elevators used with Teeth

Elevator	Picture	Use
<p style="text-align: center;"><b>Straight Elevator</b></p> <ul style="list-style-type: none"> <li>• Serrated blade.</li> <li>• Universal (right &amp; left).</li> </ul>		<ul style="list-style-type: none"> <li>• <b>Used for</b> luxation and elevation of lower last molar tooth with distally curved roots.</li> <li>• <b>Mode of action:</b> wedge and lever principle.</li> <li>• <b>Point of application:</b> mesial application of force.</li> <li>• <b>Fulcrum:</b> interdental bone. Never use adjacent tooth as fulcrum to avoid its luxation.</li> </ul> <div style="text-align: center;">  </div>
<p style="text-align: center;"><b>Buccal Applicator</b></p> <ul style="list-style-type: none"> <li>• Type of cross bars.</li> <li>• There is an obtuse angle between the shaft and handle.</li> <li>• Blade is triangular in shape.</li> </ul>		<ul style="list-style-type: none"> <li>• Used for luxation &amp; elevation of lower last molar tooth with vertical root.</li> <li>• Mode of action: wheel and axel.</li> <li>• Point of application: buccal application of force where its tip is placed in bifurcation or in percese point which is created in trunk of tooth using surgical round bur.</li> <li>• The thick buccal plate of bone could be used as a fulcrum.</li> </ul> <div style="text-align: center;">  </div>

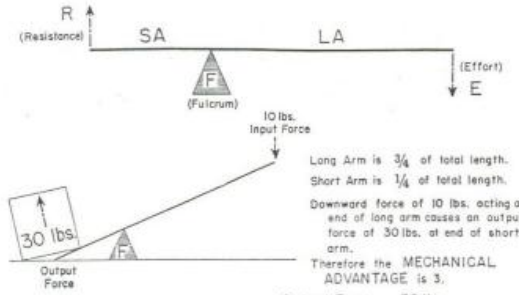
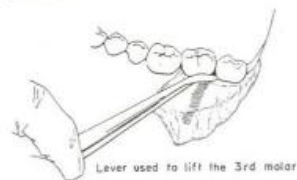
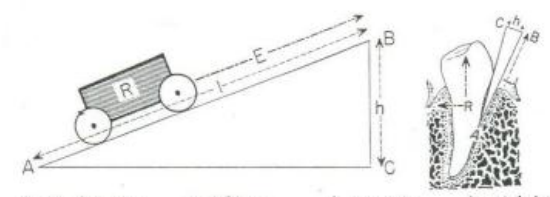

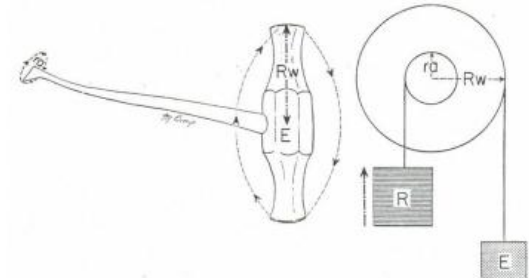
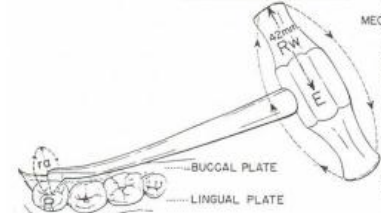
Elevator	Picture	Use
<p><b>Miller</b></p> <ul style="list-style-type: none"> <li>• There is one for left and one for right.</li> </ul>		<ul style="list-style-type: none"> <li>• Used for luxation and elevation of upper last molar tooth.</li> <li>• Mode of action: wedge and lever.</li> <li>• Point of application: mesial application of force</li> <li>• Fulcrum: interdental bone.</li> </ul>
<p><b>Modified miller</b></p> <ul style="list-style-type: none"> <li>• The difference between this elevator and curved apexo is that apexo has a groove in its blade.</li> </ul>		
<p><b>Potts Elevator</b></p>		
<p><b>Crane Pick Elevator</b></p>		<ul style="list-style-type: none"> <li>• Used for luxation of upper and lower 8</li> <li>• Mode of action: wheel &amp; axel</li> <li>• Point of application: bifurcation or percuse point.</li> </ul>

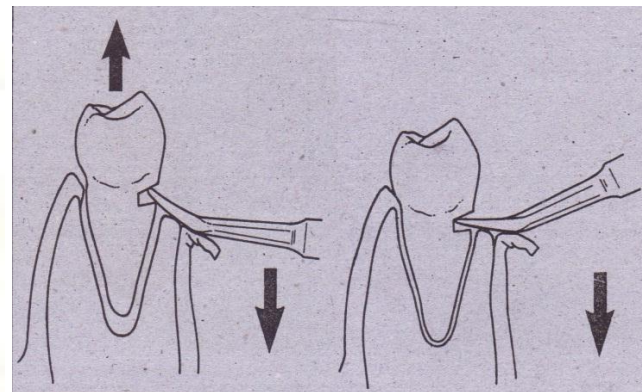
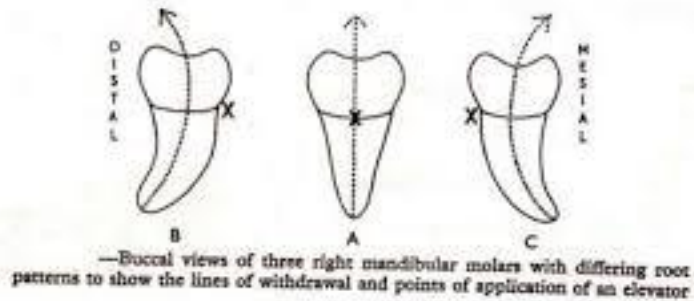
## 2) Elevators used with Roots & Root Fragments

Elevator	Picture	Use
<p><b>Straight Apexo (Coupland)</b></p> <ul style="list-style-type: none"> <li>• Blade has a groove to accommodate root.</li> </ul>		<ul style="list-style-type: none"> <li>• Used for luxation and elevation of fractured roots of maxillary anterior and premolars.</li> <li>• Mode of action: wedge. They are forced between the root of the tooth and wall of socket.</li> <li>• Point of application: mesial and distal parallel to the long axis of the root.</li> </ul> 
<p><b>Curved Apexo</b></p> <ul style="list-style-type: none"> <li>• Used for luxation and elevation of fractured roots</li> </ul>		<ul style="list-style-type: none"> <li>• Used for luxation and elevation of fractured roots of all mandibular and posterior maxillary teeth.</li> <li>• Mode of action: wedge. They are forced between the root of the tooth and wall of socket.</li> <li>• Point of application: mesial and distal parallel to the long axis of the root.</li> </ul> 

Elevator	Picture	Use
<p data-bbox="296 232 569 261"><b>Socket applicator</b></p> <ul data-bbox="201 269 600 375" style="list-style-type: none"> <li data-bbox="201 269 531 298">• It is type of cross bar.</li> <li data-bbox="201 306 600 375">• Has right angle between shank and hand.</li> </ul>		<ul data-bbox="1176 232 1896 456" style="list-style-type: none"> <li data-bbox="1176 232 1896 375">• Used for luxation and elevation of remaining root of lower molars (multirooted teeth) when only one root is remaining (empty socket exist). Contraindicated in maxilla.</li> <li data-bbox="1176 383 1650 412">• Mode of action: wheel and axel.</li> <li data-bbox="1176 420 1688 449">• Point of application: empty socket.</li> </ul> 
<p data-bbox="359 922 443 951"><b>Cryer</b></p> <ul data-bbox="201 959 569 1027" style="list-style-type: none"> <li data-bbox="201 959 569 1027">• Has a triangular blade, and hand of apexo.</li> </ul>		<ul data-bbox="1176 922 1896 984" style="list-style-type: none"> <li data-bbox="1176 922 1896 984">• Same as socket applicator but it gives lower controlled force. So used in maxilla.</li> </ul> 

# Principles of Action of Elevators

Lever Principle	Wedging Principle	Wheel & Axle Principle
 <p>R (Resistance) SA LA (Effort) E</p> <p>(Resistance) SA LA (Effort) E</p> <p>F (Fulcrum)</p> <p>10 lbs. Input Force</p> <p>30 lbs. Output Force</p> <p>Long Arm is <math>\frac{3}{4}</math> of total length. Short Arm is <math>\frac{1}{4}</math> of total length.</p> <p>Downward force of 10 lbs. acting at end of long arm causes an output force of 30 lbs. at end of short arm.</p> <p>Therefore the MECHANICAL ADVANTAGE is 3.</p> <p>MECHANICAL ADVANTAGE = <math>\frac{\text{Output Force}}{\text{Input Force}} = \frac{30 \text{ lbs.}}{10 \text{ lbs.}} = 3</math></p> <p>The lever is the simplest machine used to change the direction or magnitude of a force.</p> <p>R-Resistance; E-Effort; SA-Short Arm; LA-Long Arm.</p> <p>Formula of Levers: <math>R \times SA = LA \times E</math>.</p>  <p>Lever used to lift the 3rd molar</p>	 <p>R-Resistance; E-Effort; l-Length; h-Height.</p> <p>Formula for Wedge: <math>E \times l = R \times h</math>, or <math>\frac{R}{E} = \frac{l}{h}</math></p> <p>MECHANICAL ADVANTAGE = <math>\frac{l}{h}</math></p>  <p>MECHANICAL ADVANTAGE = <math>\frac{l}{h}</math></p> <p><math>l = 10 \text{ mm.}</math> <math>h = 4 \text{ mm.}</math> <math>\frac{l}{h} = \frac{10}{4} = 2.5</math></p> <p>Therefore : MECHANICAL ADVANTAGE = 2.5</p>	 <p>R-Resistance; E-Effort; <math>R_w</math>-Radius of Wheel; <math>r_a</math>-Radius of Axle.</p> <p>Effort x Radius of the Wheel = Resistance x Radius of the Axle</p> <p>Formula of the Wheel and Axle Work Principle: <math>\frac{R}{E} = \frac{R_w}{r_a}</math></p> <p>MECHANICAL ADVANTAGE = <math>\frac{R_w}{r_a}</math></p>  <p>MECHANICAL ADVANTAGE = <math>\frac{R_w}{r_a}</math></p> <p><math>R_w = 42 \text{ mm.}</math> <math>r_a = 9 \text{ mm.}</math> <math>\frac{R_w}{r_a} = \frac{42}{9} = 4.6</math></p> <p>Therefore: MECHANICAL ADVANTAGE = 4.6</p> <p>Each pound of pressure applied to the crossbar is multiplied 4.6 times.</p> <p>BUCCAL PLATE</p> <p>LINGUAL PLATE</p>

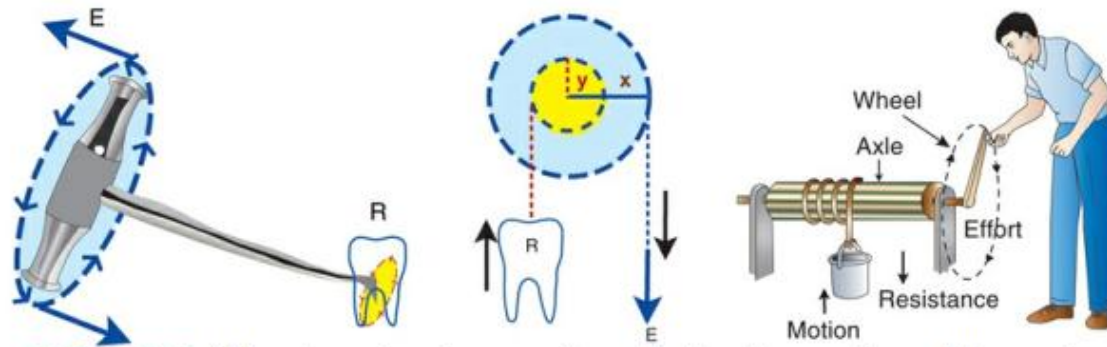




**Fig. 5.19:** Lever principle of elevation

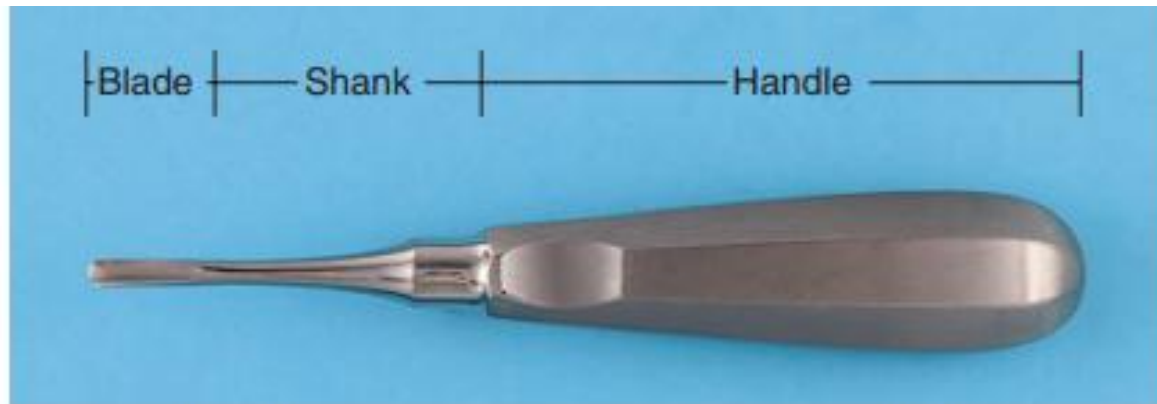






**FIG. 17.16** Wheel and axle.  $x$ -radius of wheel;  $y$ -radius of the axle,  $E$  = effort,  $R$  = resistance, mechanical advantage of crossbar is





**Fig. 7.30** The major components of an elevator are the handle, shank, and blade.



## Rules governing the use of Elevators

- 1) Never use the adjacent tooth as a fulcrum, unless the tooth is to be extracted too.
- 2) Never use the buccal plate of bone as a fulcrum except in case of removal of lower third molar.
- 3) Never use the lingual plate of bone as a fulcrum.
- 4) Always use finger guards to protect the surrounding soft tissues from being injured in case the elevator slips.
- 5) Be certain that forces applied by the elevator are under control
- 6) Correct handling of elevator as in picture:

