



SILK WEAVING

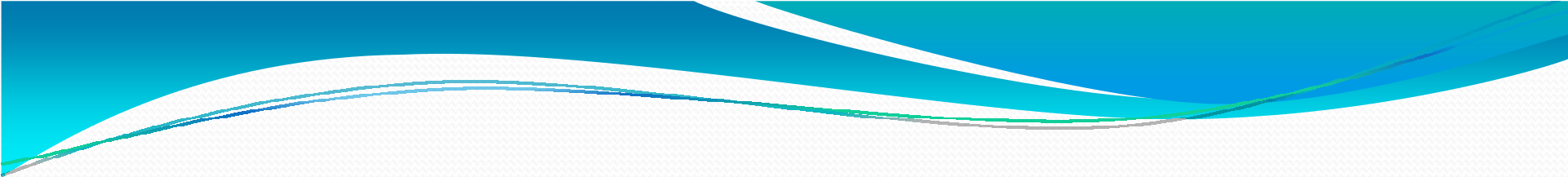
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Weaving is the interlacing of the two systems of yarns, which interlace at right angles to each other.

- **The lengthwise threads are called warp. Individually they are known as ends.**
- **The crosswise threads are called filling or weft or woof. Individually they are called as picks.**

The lengthwise edges of the fabric are called selvage or raw edge or self edge.



Preparatory Waving: The object of preparatory process is to prepare **warp and **weft** yarns for weaving.**

In silk weaving normally sectional warping is followed.

Warping consists of two parts. viz.,

1. Warping Creel

2. Warping Machine

Creel:

Creeling machine depends upon the system of weaving, investment and space *etc.*, eg., for power looms high capacity creel may be used.

Say creel with a capacity of 400 bobbins is quite ideal. The creel is horizontal type. There is a big platform either side of it there is a bobbin creel having spindles to hold bobbins. In the center there is a passage so that the worker can move about inspecting and arranging threads from bobbins.

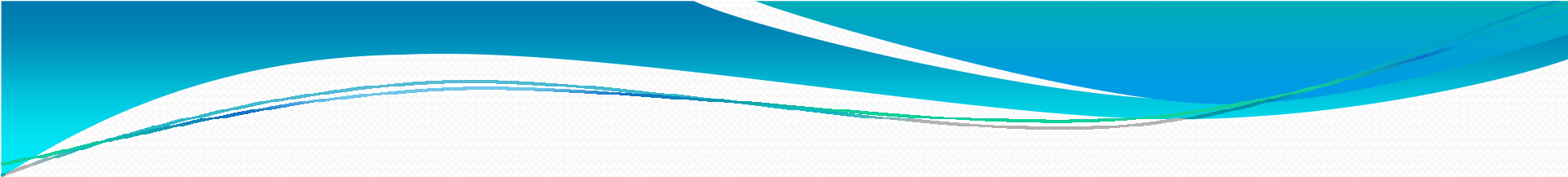


Thread from all bobbins are passed through various thread guides and single thread stop motion device *etc.*,

Afterwards threads are collected and passed through a **reed before making a section to be wound on the warping drum.**

After making certain length of section, number of each sections are prepared on the drum depending upon the total number of ends or width of the fabric required. For wider fabric, number of threads will be more and number of sections to be prepared on warping machine is also more.

eg., if creel capacity is 400 bobbins so each section will have 400 threads. If fabric width is 60", number of ends per inch is 100. Total number of ends required for the fabric will be $60 \times 100 = 6000$ ends that means 15 sections are prepared on the warping machine.



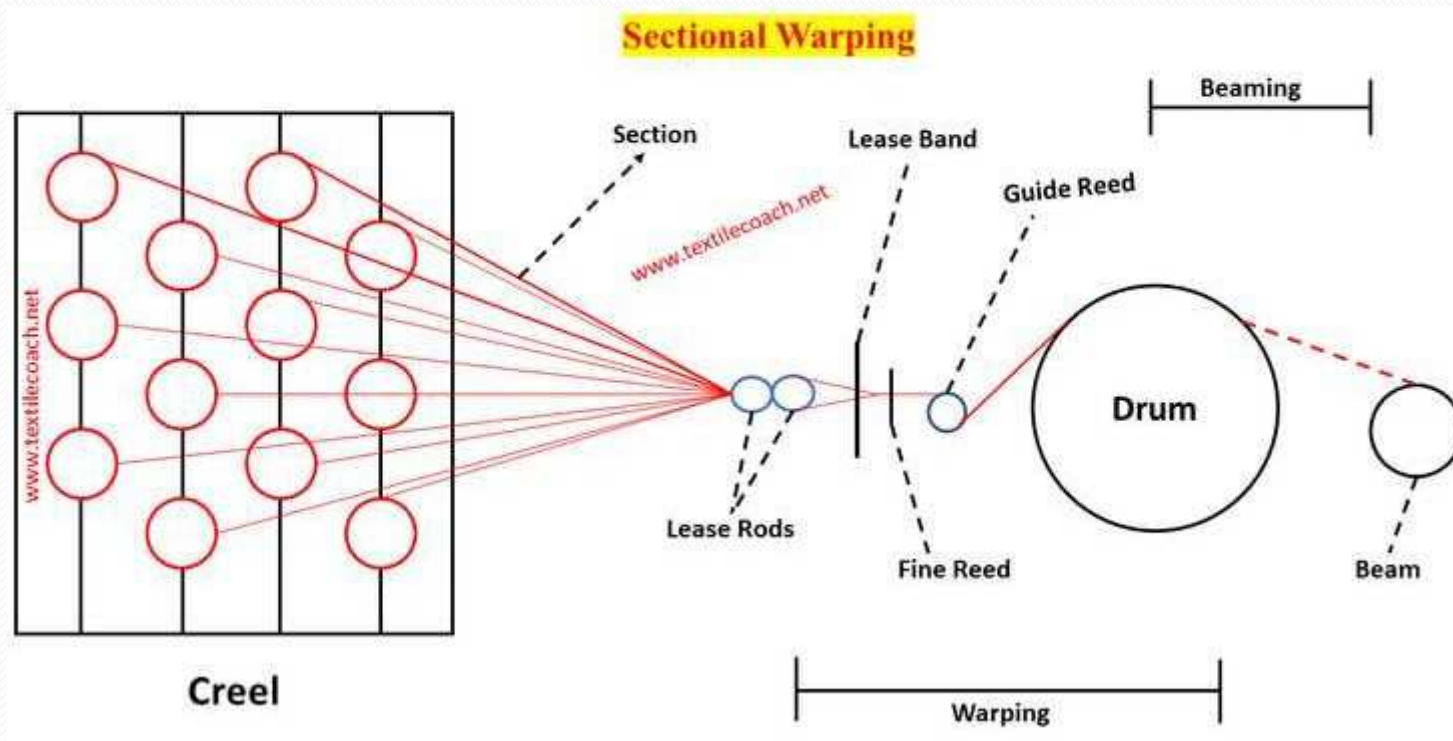
In case of handlooms small warping device is used. Sometimes warp prepared by hand process combining the number of threads making into sections or ball and finally warping sheet is prepared for handloom weaving.

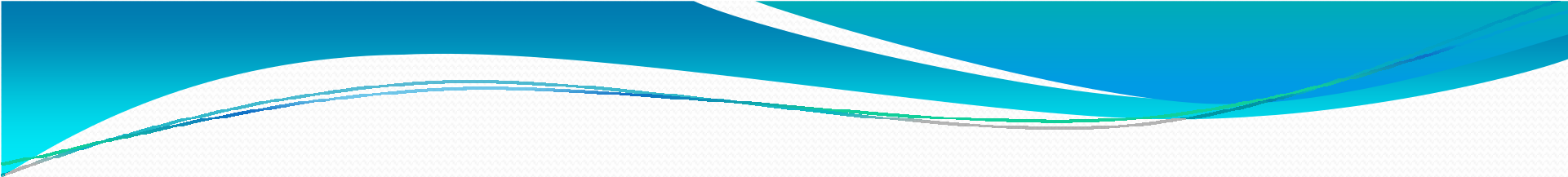


Beaming: The winding of sectional warp from warp drum to the weavers warp beam is called beaming.

It is done by passing the ends over a whip role, over and under the lease rods and then through the current of heddle eyes of the respective heddles, it is then drawn through the reeds.

DIAGRAM SHOWING OVERALL WEAVING PROCESS





Pirn winding: Pirn winding is necessary to prepare weft yarn. Small pirns are prepared so that it is mounted in the shuttle. Generally pirns are bigger in power looms.

Pirn winding machine is used for power loom weaving. Pirn winding machine may be automatic or non automatic. Whereas for handloom pirn is smaller, preparation is ordinary and hand operated charaka is used for the preparation. The automatic pirn winding machine has all the features of controlling tension, distribution of coils and also has instantaneous stop motion device in the event of thread breakage.

EMPTY SHUTTLE

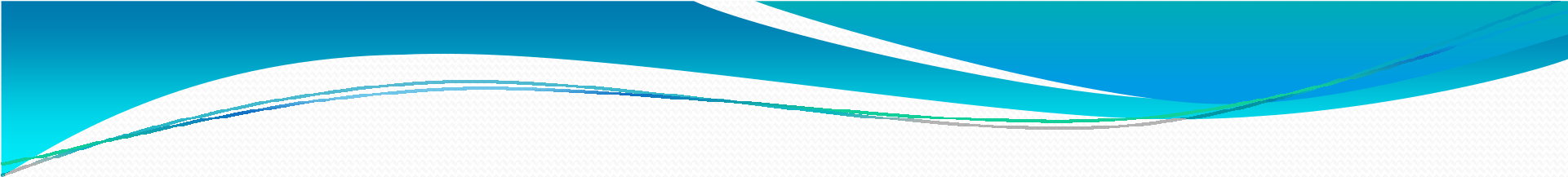


PIRNS



PIRN FILLED IN SHUTTLE



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- **Drawing:** It is done from warp beam. The ends pass over a whip roll, over and under the lease rods and then through the correct heddle eye of the respective heddles, it is then drawn through the dents of reeds. The drawing of threads from reed is called reeding.
 - **Gating:** It means fixing of the warp beam, heddle shaft and reed on the loom are at right height and angle is called gating.



Weaving Mechanism: The actual mechanism of weaving is involved in primary and secondary motions. The chief motions of the loom are

Primary motions:

- a. Shedding**
- b. Picking**
- c. Beating up**

Secondary Motions:

- a. Let off**
- b. Take up**

Auxiliary Motions:

- a. Warp stop motion**
- b. Weft stop motion**
- c. Shuttle trap motion**
- d. Shuttle change motion**
- e. Weft replenish**

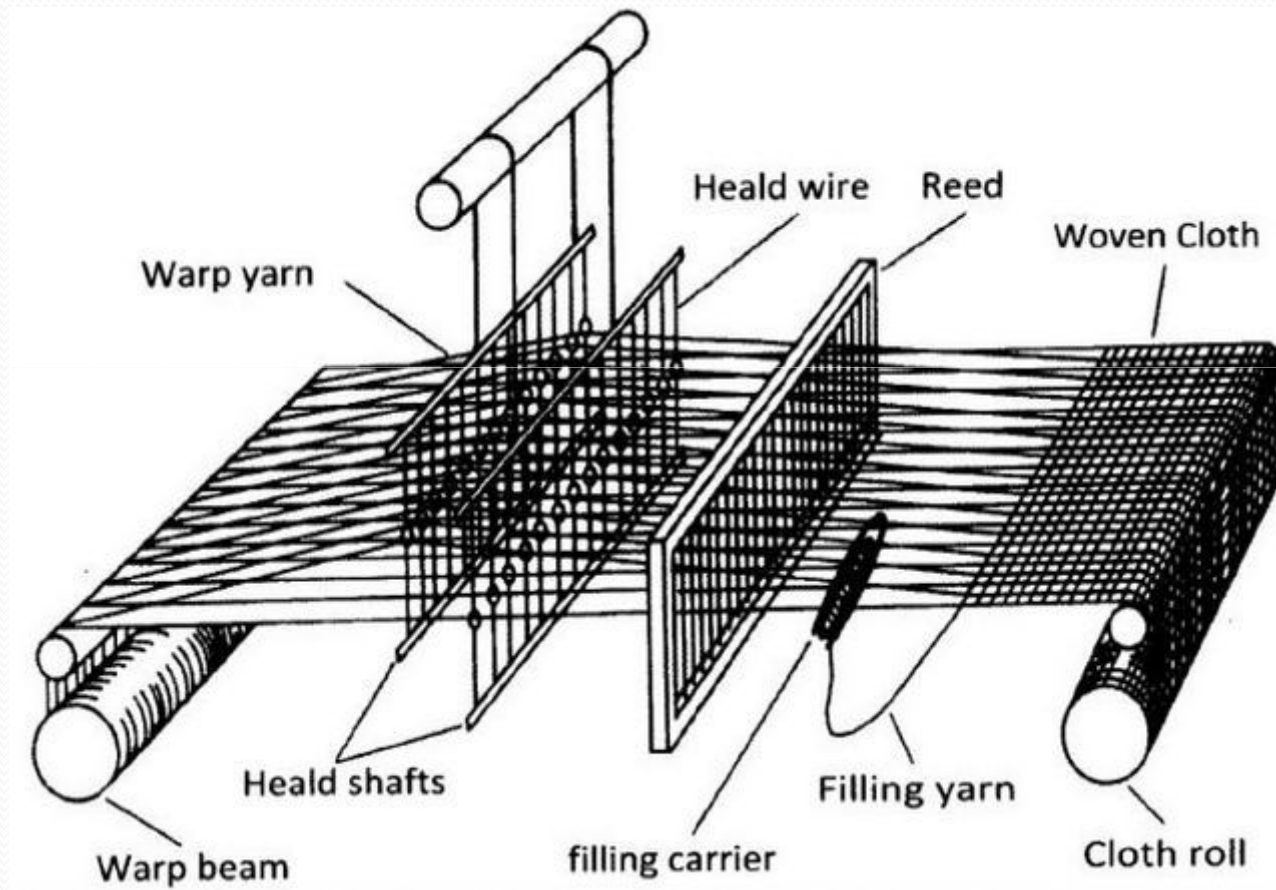
Primary Motions:

- 1. Shedding Motion:-** The division (separating) of warp ends into upper and lower system of thread to permit the shuttle to pass through the space that has been formed. The warp ends are drawn through heddle eyes. A shed is formed with each turn. Sheds should not be too large but sufficient for shuttle motion.
- 2. Picking Motion:-** This is the actual passing of the shuttle through the shed of the loom. The shuttle passes over the lowered ends of the shed and under its raised ends. The shed allows the shuttle to pass through it and thereby make it possible for the shuttle to deposit the pick or filling yarn. A single crossing of the shuttle from one side of the loom to the other is known as pick.
- 3. Beating Up:-** It consists in beating up the last pick of the weft to the fell of the cloth with the help of reed in the slay. A slay swing forward to beat the last pick of weft and goes backward to allow a shuttle to pass through shed.

Secondary Motions:

- **Let Off Motion:-** The Let-off motion is an arrangement to let the warp from the weaver's beam at uniform rate thus maintaining the appropriate warp tension throughout the weaving process.
- **Take Up Motion:-** The take up motion is to draw a fabric to the cloth roller regularly and withdraws the cloth from the weaving area at a regular or constant rate so as to give the required pick-spacing (in picks/inch or picks/cm) and then winds it on to a cloth roller.

DIAGRAM SHOWING WEAVING PROCESS





In India, handloom weaving is dominating and 95% of our silk goods are produced on handlooms. Handloom silk industry is at large in Tamilnadu, Karnataka, Andrapradesh, Uttarpradesh, West Bengal, Assam and Kashmir.

At present about present 5% of the silk goods are produced on power looms. Since handloom weaving sector needs cheaper silk irrespective of quality, charaka silk reeling is still predominant in India. Out of the total silk fabrics produced about 70% production is of sarees in India.

Power Loom: There are 14,000 power looms are engaging in the silk weaving. Most of the big units are in government sector. However, small unit of about 10 power looms are in private sector.

In power loom there are two types of looms. One is over pick type and another is under pick type. Under pick type is more suitable for silk weaving.

The weavers warp beam (containing longer length of warp) can be prepared elsewhere on warping machine and with that weaving can be continued for even months together. In power looms pirn is also bigger, so that quantity of yarn available in each pirn will be more. Production is about 10-15 meters per day (8 hours).



THANK YOU