

Measurement of yarn count:

1. Wrap reel and balance method.
2. Quadrant balance method.
3. Knowles balance.
4. Beesleys balance.
5. Sliver, roving count by measuring drum.
6. Count data system.
7. Auto sorter by Uster.

1. Wrap reel and balance method



By this standard method, of count testing, the count of any type of a yarn can be calculated.

Principle: The count of yarn is numerical expression which indicates coarseness or fineness of yarn. There are two system of determining yarn count,

i) Indirect system, $N = \frac{w \times L}{l \times W}$

ii) Direct system, $N = \frac{W \times l}{L \times w}$

Where, N = the yarn number or count.

W = the weight of the sample.

w = the unit weight of the system.

L = the length of the sample.

l = The unit length of the system

Working principle:

- At first wrap reel was adjusted accordingly and yarn was Passed from the cone through the guides.
- The length of the sample was measured by the wrap reel counter.
- In case of cotton, the circumference of wrap reel is 1yd and required yarn is 120 yards. Again in case of jute, wrap reel circumference is 2.5yds and required yarn is 300 yds.
- In case of cotton, wrap reel is driven by motor and in jute wrap reel is manually operated. In case of cotton wrap stops automatically when the specified amount of yarn is wound on it.
- Then the sample is weighted by balance.

The operation is repeated 12 to 16 times and taking their means, count is calculated in direct system

Wrap reel and a Knowles balance

It is used to read count system directly (see figure).

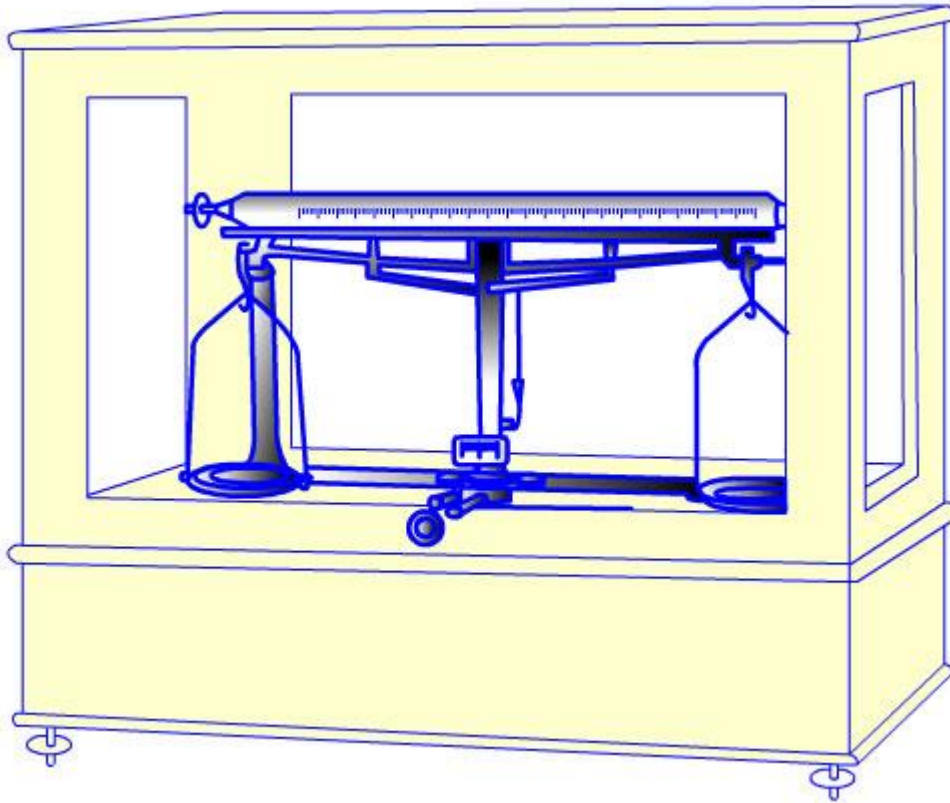


Fig: The Knowles balance

- A beam balance is used, behind which a separate rod of hexagonal section with five of the faces is lettered from A to E and engraved with a count scale to cover a certain range.
- In the left hand pan a lettered weight is placed and on the beam a small lettered rider.
- Suppose a cotton yarn is to be tested and is judged to be about 36s.
- Face B of the scale is turned to the front, weight B is placed in the left-hand pan, and rider B put on the beam.
- The position of the rider to be adjusted until the beam is balanced.
- Then read the count directly from the scale.
- This balance can be, of course, be designed to suit count systems other than that of cotton.

Wrap reel and a quadrant balance

It is another type of direct reading instrument (see figure).

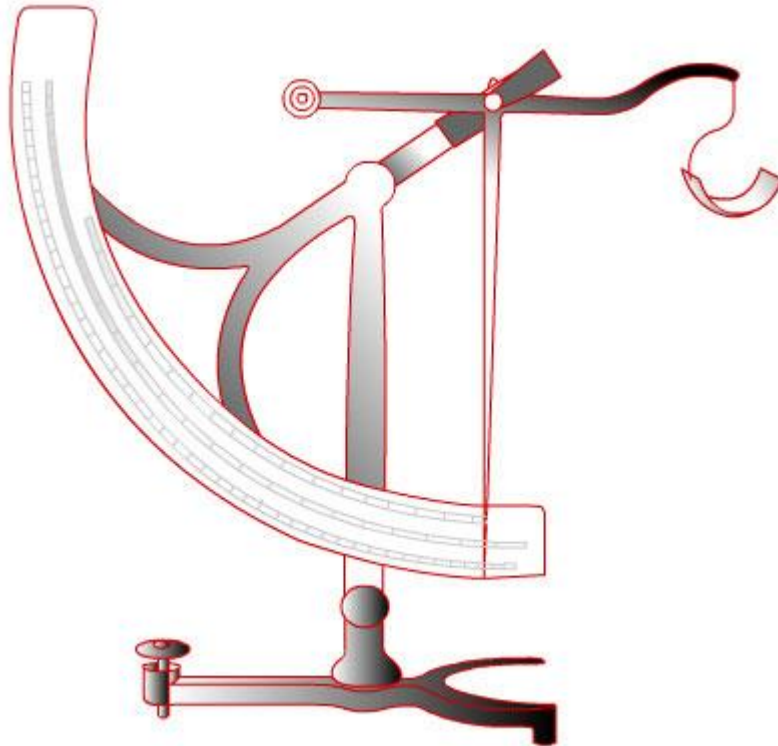


Fig: The Quadrant balance

- ▶ A given length is measured out and suspended from the hook, the count is then read directly from the quadrant scale.
- ▶ The versatility of this type of balance is improved by engraving the scale with more than one series of values.
- ▶ For example, one scale may read from 0.1 to 1.0 to give the hank of a 4 yard sample of sliver.
- ▶ Second scale may read from 0.1 to 0.6 for 20 yard samples of roving.
- ▶ Third scale may read from 4s to 80s for 840 yard samples of yarn.
- ▶ The scales just mentioned are in the cotton count system, but other quadrant balances are available for different ranges and different systems.

Beesley Balance

- It is used to directly read the count when the sample size is small. The instrument shown in figure.

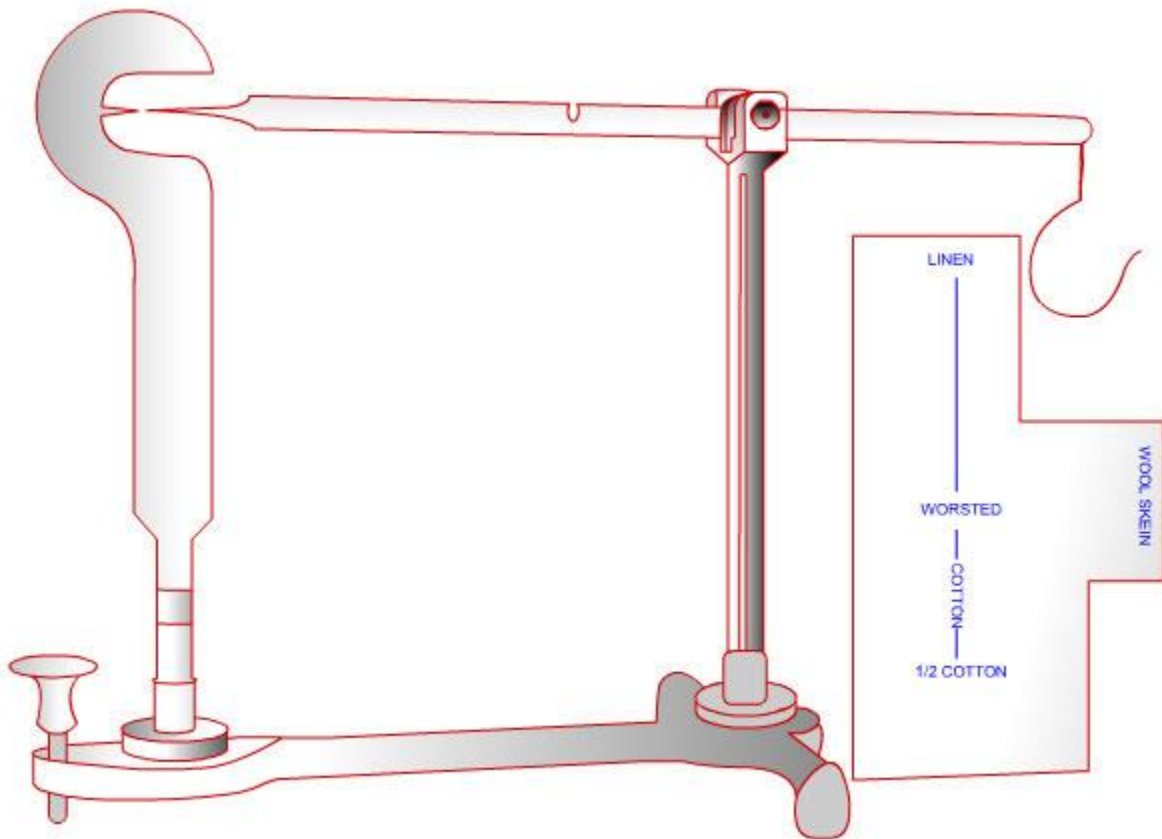


Fig: The Beesley balance

- This instrument consists of a simple beam is initially leveled to bring the pointer opposite a datum line.
- A standard weight is hung in a notch on the beam arm on the pointer side of the pivot.
- A template is used to cut short lengths of yarn, the length depending upon the count system required.
- These short lengths are added to the hook until the pointer is opposite the datum line.

- ✔ The count is the number of the short lengths required to balance the beam.
- ✔ When used in the analysis of small samples of fabric, a rough estimate of the crimp should be made and the count corrected.