

## Metallic Loom for Carpet Weaving

### Background

Carpet looms are used for weaving woollen and silk carpets. During weaving different operations are carried out, such as tensioning of warp, shading, knotting, cutting, and beating. For these operations, some arrangements should be provided. While designing the loom structure, its strength, ease of operation, high productivity, ergonomics and cost should be considered so that they add maximum value for money. Carpet weaving is the process of interlacement of warp and weft in a fabric according to the graphic design. Here, warp means longitudinal threads that run parallel to vertical channel whereas, and weft means transverse thread that run across the fabric (Fig. 1). IIT Delhi had developed metallic carpet loom (Fig. 1) for woollen and silk carpet users at several states of India. Field trials indicate that the designed metallic looms in which one person can easily give tension in about 8-10 min. are very much acceptable to the users. Moreover, beam bending is also very small, providing uniform tension that improves the quality of carpets.

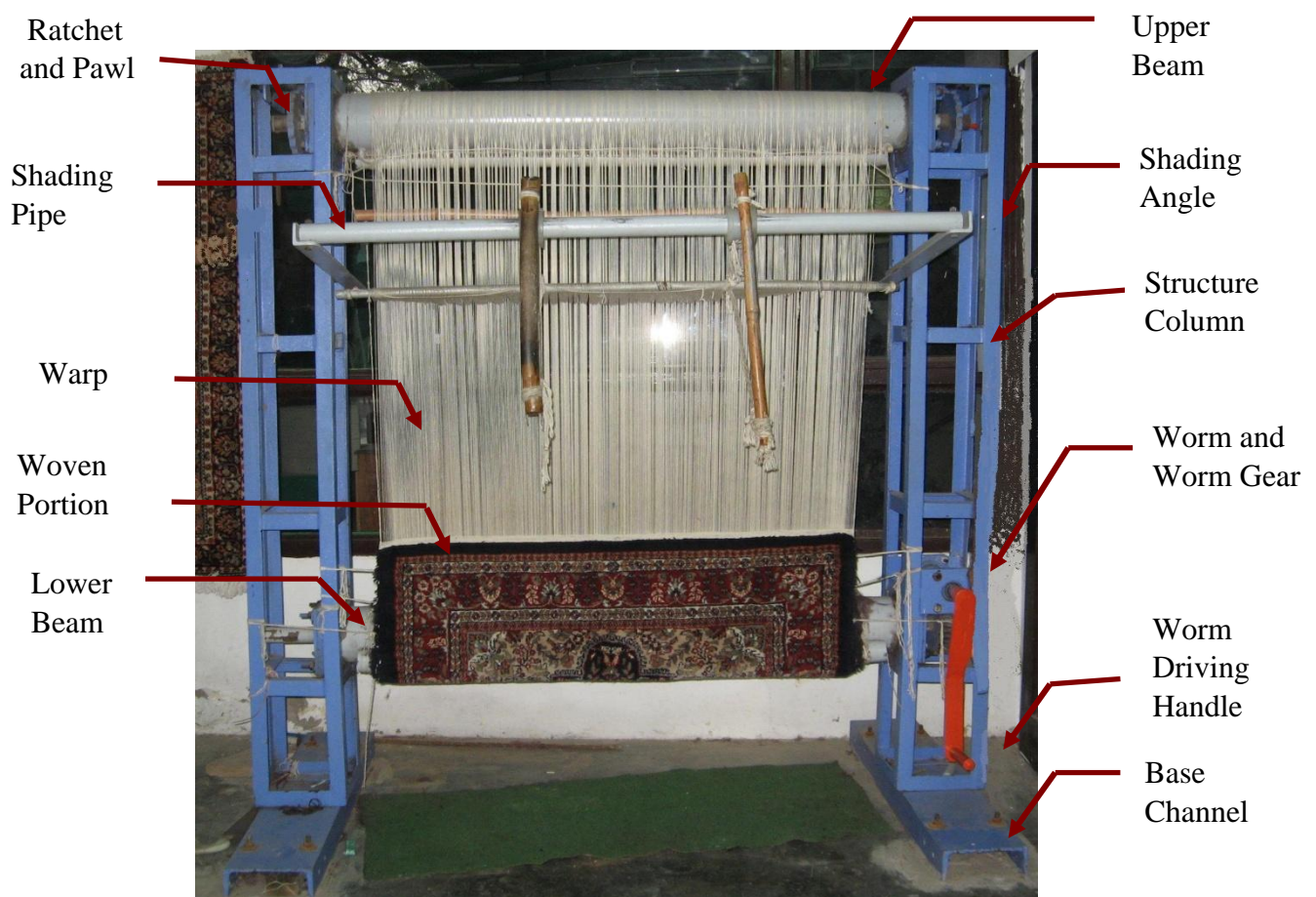


Fig. 1 Metallic Loom for Carpet Weaving of 4'x6'

### Some of the hand-knotted carpet producing areas of India are

- Uttar Pradesh: Bhadohi, Mirzapur and Agra (where 90 per cent of all carpets of the country are produced).

- Rajasthan: Jaipur, Jaisalmer, Ajmer and Barmer
- Madhya Pradesh: Gwalior
- Delhi (carpets as well as *durries*)
- Jammu and Kashmir (Persian designs), Ladakh (Tibetan designs)
- North-eastern states: Arunachal Pradesh, Sikkim and Manipur (Tibetan designs)
- Andhra Pradesh: Warangal and Elluru
- Tamil Nadu
- Karnataka

## Area of the Project

Carpet Industries

## Challenges

- The design of the metallic loom is not standardized.

## Salient Features

- Easy to assemble.
- **Long life:** Rigid metallic structure for long life.
- **Environment friendly:** Fabricated using metals only. No use of wood. Hence, environment friendly.
- **Locking device:** Stronger locking devices on both sides of upper beam, and one side of lower beam.
- **Aesthetics:** Colourful and modern design.
- **Maintenance:** Minimum maintenance required.

## Advantages

- **Strong:** High strength and rigidity due to seamless tubes for lower and upper beams. More stiffness allowing more tension in the string (Tana).
- **Ease of operation:** Easy and fast tensioning with the help of worm and worm gear arrangement.
- **Less effort:** Only one person can generate tension in the String (Tana). Smooth rotation of worm due to roller bearing. Bush bearing at the beam's ends provide smoothness.
- **Human Safety:** Reliable than wooden looms.
- **Easy and effective shading:** Polypropylene shading rollers which give easy shading action.

## Project Timeline

- Problem Identification: 2008-2009 (Earlier duration at IIT Delhi was during 2000-2003).
- Design Improvements and manufacturing: 2010-2012.
- Dissemination: 2012 onwards.

## Impact of the Technology

- Design of the metallic loom is standardized.
- Increased productivity due to lesser tensioning, shading, loading, and unloading times.
- Feasible for both individual weavers and clusters.

## **Success Stories**

- Metallic Carpet Looms were installed in Bhadohi, Uttar Pradesh; Valsad, Gujarat; Dharamshala, Uttarakhand.
- Vendors developed for manufacturing and assembly.
- Distributed more than 200 looms at several places in Jammu and Kashmir (Appendix-I)

## **Current Funding**

Office of the Principal Scientific Adviser (PSA) to the Govt. of India [Earlier during 2000-2005 and 2008-2009, which were funded by Development Commissioner (Handicrafts), Govt. of India, Ministry of Textiles, West Block –VII, R. K. Puram, New Delhi–110066].

## **Collaborations/ Field Agency**

- Rajasthan Carpet and Woolen Products Development Society (R.C.W.P.D.S), Jaipur, Rajasthan (Earlier during 2008-2009, it was Indian Institute of Carpet Technology, Bhadohi, U.P.)
- Genius Engineers, Sec-3, Dwarka, Near Delhi Public School, New Delhi.
- M/s. D. M. T. Hydraulics, 46/1153 – A, Jagdish Pura Road, Opp. Prabhu Talkies, Agra, U.P.

## **Tentative Cost of Metallic Loom is around Rs. 37,000/-\***

\* This cost does not include GST, freight, installation and other levies.

## Appendix-I

### List of the Centres where Metallic Looms were installed at J&K

Serial No.	Name of the Centers	No. of Looms Installed	Remarks
1.	A.T.C. Muslimabad, F.A.C. Srinagar	05	A.T.C. → Advance Training Centre
2.	A.T.C. Checkpora, F.A.C. Srinagar	05	
3.	P.T.C. Bonapora, F.A.C. Srinagar	06	
4.	P.T.C. Primpora, F.A.C. Srinagar	06	P.T.C. → Primary Training Centre
5.	A.T.C. Gulshan bag, F.A.C. Srinagar	05	
6.	P.T.C. W.W. Gutlibag, F.A.C. Srinagar	06	
7.	A.T.C. Tangan, F.A.C. Srinagar	05	F.A.C. → Field Administrative Cell
8.	A.T.C. Satsuo, F.A.C. Srinagar	05	
9.	P.T.C. Bugroo, F.A.C. Srinagar	06	
10.	A.T.C. Tumlahll, S. C. Pulwama	05	
11.	P.T.C. Zainpora, S. C. Pulwama	06	
12.	A.T.C. Padjampora, S. C. Pulwama	05	
13.	P.T.C. Mauran, S. C. Pulwama	06	
14.	P.T.C. Hanjikhhallo, S. C. Pulwama	06	
15.	A.T.C. Pakharpora, S. C. Pulwama	05	
16.	P.T.C. Balihanam, S. C. Baramulla	06	
17.	P.T.C. Deever, S. C. Baramulla	06	
18.	P.T.C. Achaval, S.C. Anantnag	06	
19.	A.T.C. Shangas, S.C. Anantnag	05	
20.	P.T.C. Chhaterbal, S.C. Anantnag	06	
21.	P.T.C. Bargam, S.C. Anantnag	06	
22.	P.T.C. Lissar, S.C. Anantnag	06	
23.	A.T.C. Quaimoh, S.C. Anantnag	05	
24.	P.T.C. Nambal, S.C. Anantnag	06	
25.	P.T.C. Shashi Zampa, S.C. Leh	06	
26.	P.T.C. Chushot Garadong, S.C. Leh	06	
27.	P.T.C. Chushot Shamma, S.C. Leh	06	
28.	P.T.C. Chushot Yarlok, S.C. Leh	06	
29.	P.T.C. Tashi Gastal, S.C. Leh	06	
30.	P.T.C. Tashi Thongsmon, S.C. Leh	06	
31.	P.T.C. Wakha, S.C. Kargil	06	
32.	P.T.C. Hagnis, S.C. Kargil	06	
<b>Sub Total</b>		<b>182</b>	
33.	DCH Office, Srinagar	06	
34.	-- do --	06	
35.	-- do --	06	
<b>Total</b>		<b>200</b>	