

*Final Report of Sub-Project*  
**A Device for Making Tulsi Mala Beads**

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By

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## 1. Background and Need

In the meeting with participants of Short Term Management Development Programme for Rural Enterprises held on 18-11-2011 at Indian Institute of Technology (IIT), Delhi, Ms. Salho Hembrom of Lupin Human Welfare & Research Foundation, Bharatpur, Rajasthan presented a *Tulsi Mala* Beads making device. She told that in the *Brij* area around Mathura, Brindavan and Bharatpur some women were engaged in making beads of *Tulsi mala* from the stems of Tulsi plant. She had mentioned that in 18 villages of Bharatpur district of Rajasthan about 400 ladies engaged in the profession of making *Tulsi mala* were organized by Lupin Human Welfare & Research Foundation, Bharatpur into Shelf Help Groups (SHGs). The users had devised their own adhoc arrangements for turning, drilling, polishing and cutting of beads from the stem of Tulsi in which the randomly selected DC motor was being used for making beads of *Tulsi mala*. This is shown in fig. 1. In the device the motor was held in hand for forward and backward movement while working, which created many problems. The process is cumbersome; the productivity is low and the quality inconsistent. She expressed the need for developing a low cost device to carry out the above operations effectively and thus increase their productivity and quality of the product. One battery of 12 Volt was provided to each worker, which was costly (approx. Rs. 600/-). Lupin Human Welfare & Research Foundation had suggested exploring the possibilities to connecting a group of 4-5 workers with single power supply.

## 2. Preliminary Investigations and Problem Formulation

In Bharatpur District of Rajasthan, some women were engaged in making beads from the stem/twigs of *Tulsi plant*. They make *Tulsi Mala* beads, sale these Malas (Garlands) and earn their livelihood. They were using a wooden structure, a device in which a tailstock was fixed on right side of a wooden base. A DC Motor connected with a 12 Volts DC Battery was used in the device. The motor was held in hand for forward movement while turning, boring and cutting of beads from stem of *Tulsi*. The user sits on the ground, bend her body towards the device

while working and hold the DC motor along with the stem holder (Chuck). She presses her thumb and finger to stop the movement of chuck for taking the bead out of the tailstock. The users feel irritation due to vibration by holding the DC motor in her hand, stopping the chuck connected to motor and pain in the neck and back due to continuous bending the body while working. Besides, the productivity was low. The problems had been technically analyzed and observed that the DC motor provided for operating the device was randomly selected without consideration of actual power requirement.

### **3. Objectives**

- To study the functioning of existing device.
- Selection of DC motor as per the load requirement.
- Designing of appropriate device.
- To explore the possibilities of connecting 4-5 devices with a single power supply.

### **4. Action Plan**

- 1) Field visits and studies
- 2) Design checks of the *Tulsi Mala* making Device
- 3) Prototype fabrication
- 4) Modifications according to feedback
- 5) Final prototype connecting 4-5 devices with a single power supply.

### **5. Deliverables**

An improved device for making beads of *Tulsi mala* would be developed. Such 4-5 devices would be connected with a single power supply. Thus a group of 4-5 workers would work on a single power supply. This will reduce the cost of device, reduce drudgery, increase efficiency and overcome pain of the users. After introduction of improved device more people would adopt the profession.

### **6. Duration:** Six months.

## 7. Action Taken

The details of the processes required on the *Tulsi stem* had been clearly understood in consultation with the workers. The conceptual design of the device was visualized. RuTAG-IIT Delhi studied the problems and developed an improved device (Prototype) for making beads for *Tulsi Mala*. Earlier the DC motor which was held in hand, causing lot of strain, drudgery and inconsistency is now pushed forward and backward on a platform/guide made for the purpose. The prototype was tested for the required operation. The design was finalized after testing by the users in actual field condition. The model of improved device was handed over to Lupin Foundation on October 10, 2012 for testing in the field conditions and to collect feedbacks from the users. The CAD model and the new device are shown in figs. 2 and 3, respectively.

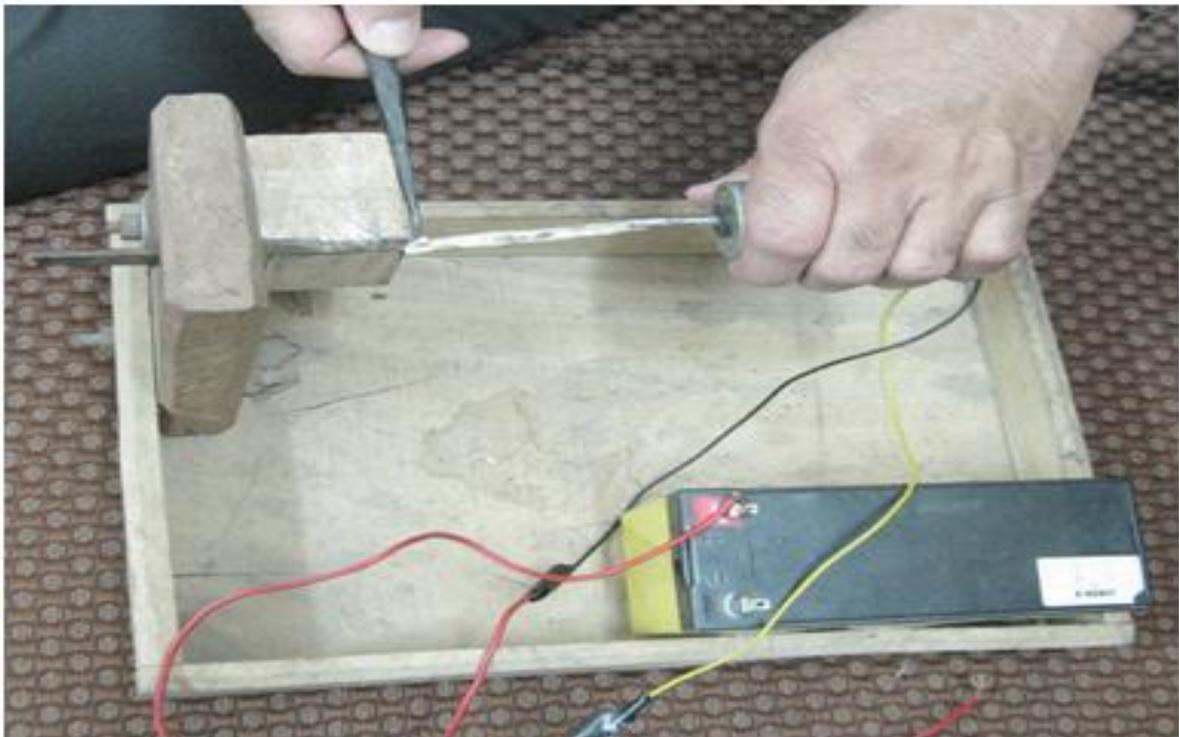


Fig. 1 Existing (old) device for making Tulsi Mala beads

Users were very happy working on this improved device. Smt. Omvati Devi of Nadbai village, Bharatpur district told that her family operates this device even for about 12 hrs a day without any tiredness and earn Rs.1100-1200/- per day

while the earlier machine was giving only Rs.300-400/- per day and could not work more than eight hours a day.

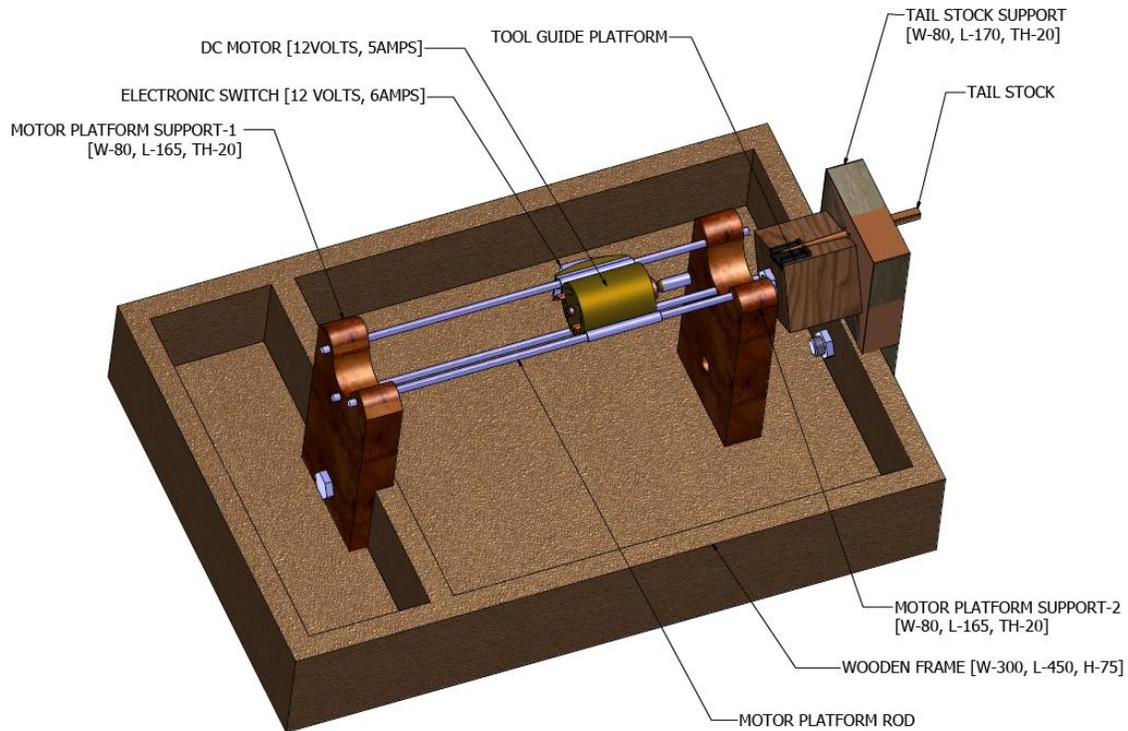


Fig. 2 CAD model of improved device of making Tulsi Mala beads

The Device was demonstrated in the Vatsalya Mela organised on 15-11-2012 at Delhi Haat by the Ministry of Women and Child Welfare and was highly appreciated (Fig.4 & 5). It was also demonstrated in National Fair – India Innovation Initiative, i3 2012 held on 3rd December 2012 at Nalanda Ground, IIT Delhi and appreciated by the visitors (Fig. 6).

One more version has been developed for fixing on a table and to be operated sitting on a chair. Four numbers of the machines could be fixed on a table and all four motors could be connected with a single DC power supply.

The devices are being manufactured by a Carpenter and sold in the Nadbai village of Bharatpur district.

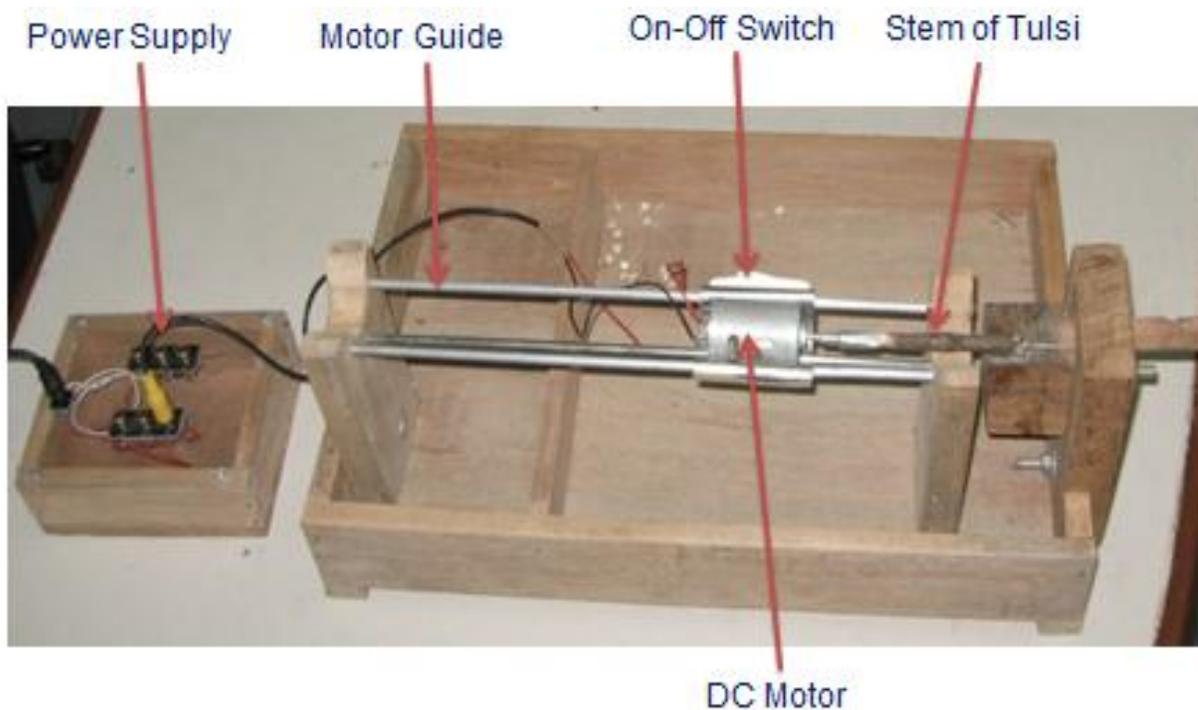


Fig. 3 Improved device of making Tulsi Mala beads



Fig. 4 Prof. R.R. Gaur Chairman Core Group, RuTAG-IIT Delhi handing over the device for making Tulsi Mala Beads to Mrs. Salho Hembrom of Lupin Foundation, Bharatpur.



Fig. 5 Smt. Ombati Devi, Bharatpur, working on the device of making Tulsi Mala Beads in Vatsalya Mela on 15-11-2012 at Delhi Haat.



Fig. 6 Visitors in National Fair – India Innovation Initiative, i3 2012 held on 3rd December 2012 at Nalanda Ground, IIT Delhi seeing the demonstration of Device of making Tulsi Mala Beads.

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