

Bamboo splints making device for incense sticks⁴⁸

CONSOLATION

Usman Shekhani (51) hails from Kanker in Chattisgarh and earns his living through the repairing and sale of electronic goods. He has a Bachelors degree in arts. Usman has always been creative and won awards at science fairs while he was in school. His family has been involved in the business of repairing watches and electronics goods like dish antenna etc and Usman takes after his father in his interest in mechanical work. Usman's family consists of his wife, three sons and a daughter. His daughter is married. His eldest son has completed his post graduation and is now helping him in his business. His younger sons are studying in the 12th and 11th standards respectively.

Genesis Once a friend approached Usman and told him that he needs an incense stick making machine. Shekhani had heard about some power-driven machines which had been installed in a nearby village for cutting bamboo for agarbattis. The machines cost lakhs of rupees but they proved to be completely useless and when he visited the village he found that the machines were lying unused in the village gathering dust and rust. On enquiring about this he found that the quality of slices obtained from these machines was found to be unsuitable to the agarbatti industry and was thus summarily rejected and thereafter people had stopped using these machines. He examined the working of these machines in detail and found that even these machines had to be fed cut pieces of bamboo and the machine itself did not do the cutting. It only converted the pieces into thin slices, but these slices were often twisted or broken and of uneven thickness.

Continuing his search he visited Chennai, Bangalore and Hyderabad to gather information on how to get even bamboo

slices. He also visited Bhopal with this purpose and there he heard that one bamboo craftsman, Gulab Rao from Itarsi had installed a power driven machine costing Rs 35,000 at his home. He found the address and visited the person but was shocked by what he found. The machine was covered by rubbish and the owner said it had broken down within 15 days after he had bought it. He had bought the machine by taking a hefty loan and ever since he has been trying to repay the loan and now he is immersed in debt. Even his electricity connection has been cut and Usman found the family in darkness and tears.

Deeply moved by this tragedy Usman was determined to come up with an efficient machine for cutting bamboo that would be cheap, manually operated and affordable to the public at large. He promised Gulab Rao that one day something would come which would bring the cheer back to his face.

Usman's attempts at developing this device started in 2001. It took him more than two years to transform his idea into



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a feasible innovation. In his first attempt to make the device, he used a single steel blade, then two in series and thus he tried various combinations till he finally found that five blades in series gives the perfect results. Then he observed that there was a danger of cutting the fingers so he added a rubber roller push to hold the chip in place. He has developed several prototypes in his aim of improving his innovation and making it easy and efficient. The major problems he faced during the development of the innovation were finding material and instruments.



The Innovation

The unique handy cutter consists of a wooden bracket, high speed steel blades, adjustable screws and spring loaded pushing roller. The handy cutter comes with a set which includes a hack saw blade and frame, bamboo slice maker made of high carbon steel blade, big knife, scale and pencils.

Bamboo is cut transversely as well as longitudinally into the required size of small pieces using the hack-saw and knotted and un-knotted pieces are separately collected. The un-knotted pieces are used for making bamboo strips using a strip maker, which has also been specially designed and developed by Usman. It provides high quality bamboo strips at higher speed of production compared to the earlier methods. A strip is then passed through the roller and is guided towards the cutting blades where it is cut into five uniform sticks. The thickness of the stick can be varied by adjusting the blades of the strip maker. The number of chips and sticks depends upon the thickness, diameter and weight of the bamboo. Approximately forty sticks can be produced from one cylindrical bass of eight inches. The unique handy cutter can make about 2000 sticks per hour which is approximately four times what can be done manually with a knife.

The pieces containing knots are chopped by using chopper. Using traditional stick making techniques these pieces are converted to ice-cream sticks. Smaller sticks obtained from the unique stick maker are used for making buds and tooth picks. The cost of the machine is Rs 450 (including the set) and training charge is Rs 50. A bamboo plant which weighs six kilogram gives three kilograms of sticks and from the wastage of one bamboo, three bundles of 300 toothpicks can be made.

Advantages

This device helps in cutting a bamboo strip into five sticks at a time and thus improves the efficiency of stick making and reduces the cost per stick. The quality of sticks produced using this cutter is better than that made manually. In comparison with the motorised bamboo cutter this device is simple in construction and

doesn't have any movable part. In addition the device is inexpensive, easy to operate and easy to repair. This device can be used in remote areas where there is no electricity. The unique handy cutter takes full advantage of the natural qualities of bamboo and by using it slices of varying thickness can be obtained. There is no maintenance cost and it is portable and the output is world class. This device has received a very encouraging technical feasibility report from the Mechanical Engineering Department Laboratory, Rungta College of Engineering and Technology, Bilai, which states:

"The construction of unique stick maker is completely new and with the help of this machine one can convert 95% part of bamboo into useful product."

Contributing to the cottage industry sector

India is a land of many religions and people of all religions use incense sticks (Agarbattis) for worship. The agarbatti industry in India is a vast and flourishing one and employs a large number of people. Currently crude knives are used and the bamboo is sliced by hand, but this technique used for making the bamboo slivers is extremely primitive and does not give very satisfactory results as uneven pieces are produced. These are not acceptable to the agarbatti industry and hence their production and efficiency is affected. The other alternative is the electricity powered machine which costs around Rs. 80,000 and can produce 20 kg of sticks in a day, but which due to its cost is beyond the means of the common man.

The Indian government is supporting tiny and small scale industries to generate self employment and this device is an innovation that can be useful in establishing such an industry. A family can earn up to Rs.150- Rs.200 per day by using this machine, if the government provides a market for finished products.

According to Usman, bamboo is for poor people and keeping all these things in mind he developed this simple machine that everyone can afford and which is as effective as the costly machines and which can provide gainful employment to lakhs of rural people.

Current status

Usman gets orders through the Forest Department to give training to village societies on how to use his unique stick cutter and he also gives training on how to repair it. Till date he has sold around 1500-2000 machines and provided training to as many people. Usman also kept his promise to Gulab Rao and presented him a set. Usman wishes to specially acknowledge the support and guidance of Mr. Krishnamurti, Divisional Forest Officer, Madhya Pradesh who helped him on various occasions as well as arranged for public demonstrations of this machine. He also donated several of these machines to poor craftsmen to help them get employment. NIF has sanctioned Usman Shekhani a sum of Rs.75, 000 from the Micro Venture Innovation Fund for making prototype to conduct market survey for commercialisation of the innovation. NIF has also filed a patent application for this innovation.

A penchant for service

In addition to his work, Usman also provides training to villagers for various cottage industries like honey purification, making leaf plates (Pattal), bee-keeping, candle-making and animal husbandry. The machine used to purify honey is very costly. But with the method developed by Shekhani, one can process honey for just Rs.30. Usman is keenly interested in developing more such machines that will be useful in small scale industries and increase the efficiency of people working in these industries. He is currently working on an idea to develop a small handy oil expeller for highly priced nuts like Badam and spices like clove.