



National
Foundation

Innovation

Consolation Award

Utilities and General Machineries: Bullocks life saving system, vanrai bicycle pump and other innovative devices



Shri Chandrakant V. Pathak

Bullocks life saving system, vanrai bicycle pump and other innovative devices

The innovation by Shri Pathak about 'bullocks life saving system' is simple, wherein sturdy accessories have been designed for the bullock carts to update their safety to currently needed levels. Since most carts have to share the roads with fast-moving vehicles and need to travel during nights, headlights, taillights and brakes are considered essential to avert accidents. While the power for the lights can be easily obtained using a bicycle dynamo mounted on one of the wheels, a brake drum enveloped by a flat belt is introduced in the axle. Generally, bullock cart carries 1.5 to 2.0 tonnes of sugar cane or other load. On a downward slope, the entire load falls on the shoulders of bullock. To stop the cart one has to pull the rope often causing nose bleeding. He has developed a 'Flat Belt Brake System' fitted to the rubber tyre so as to help in regulating the speed and stopping the cart without causing injury to bullock. His second innovation is the Vanarai bicycle pump. This water pump is mounted on the carrier over the rear wheel of a bicycle. It is used for lifting water for various purposes



C V Pathak (60 years), social worker. Basically, he is a mechanical engineer and had worked on many technical issues like irrigation projects, and export-related works. He decided in 1982 to devote himself fully to social work and joined Sakal Relief Fund. This gave him the opportunity to visit many disadvantaged regions around the country. He saw people suffering from poverty because of non-availability of proper technology. Once, he came across two bullock-cart accidents. One had occurred due to inability to stop the moving bullock cart on a slope. The other was because a truck driver could not see the cart soon enough on a highway in the night. He found such accidents were quite common and had left many people dead in the past. He decided to do something about this, using his engineering knowledge. After many failures, he succeeded in finding appropriate solutions to these problems. He also found that using bullocks for agricultural and other operations was proving to be expensive. He started working on innovative products, which were energy-efficient and appropriate for the rural and urban poor. Some of his innovations include bicycle-mounted water pump, bicycle-

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like development of dry land, as a fire extinguisher, for construction work, use in gymnasium and for irrigation. The bicycle is taken to the water source, parked and peddled on its stand to operate the pump. His other innovations such as bicycle-mounted spray pump, stump-drip-irrigation system, vegetable grinder, sprinkler, flourmill, etc., are well received by the common people.

Modern bicycle dryer is another very useful innovation. The dryer consists of two buckets fitted on the rear wheel of bicycle with the help of v belt, that passes over the pulley. The outer bucket with a tap remains stationary while, the inner perforated bucket rotates as the wheel rotates. While in motion the inner bucket with wet clothes loses water through the perforated areas to the outer bucket. In the process, clothes get dried quickly without the use of any electricity. It is a low cost and simple to use technology.



mounted spray pump, stump-drip-irrigation system, flourmill etc.

Modern Technical Centre was established in 1964 with an aim to train students with technical education who have passed seventh standard but could not afford further education. The best way was to provide them with technical training so that, they could be employed in the industries. It was a non governmental organization and the quality of training was so good that, many of the students got absorbed in companies such as Telco and Kirloskar.

The center also started imparting training to deaf and disabled students as turner and fitters. To facilitate this, Mr Pathak had himself undergone a short term training course.

With the change of time and technology, there was a reduced demand for technically trained staff and more demand for computer trained staff. Also Mr. Pathak was more occupied with Sakal Relief Fund. This almost led to closing down of the center for a short while in 1992.

Subsequently, Modern Technical Center changed its focus from providing training to coming out with innovative solutions to different problems and providing technology based solutions on alternative source of energy. Situated in the old city of Pune, Modern Technical Center today is open for innovators



to do their experiments. Mr. Pathak has offered his centre to innovators to stay there, develop their concepts into products and try to disseminate them. In collaboration with NIF and GIAN-West, it is likely to be the incubation center for some technologies not only from Maharashtra but from other regions of the country also. Having come up from a very poor family background, Shri Pathak has created a unique platform for creating solutions for poor. Both his sons are engineers, well placed and happily married. Today, he dreams of providing replacements to electrical operated bore well pumps and making small hydro-rams so that the water problem for the poor families of tribal hilly regions are solved. NIF has supported some of his work technically and financially for the new developments.