

Details of Innovations in weaving developed by Mr. P.A.Sekar

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List of Innovations : 1. Power loom warping machine for Tie & Dye
2. Power loom warping machine for Tie & Dye (Reversible)
3. Handloom warping machine for 20 meter short warp
4. Automatic warping machine for saree (Mechanism)
5. Automatic warping machine for saree (Electronics)

Accolades

State level Award : Chinnikrishnan Innovation Award 2015

National Level award : 2013 gold Award organised by
Department of Science & Technology
Confederation of Indian Industry
All India Counsel for Technical Education

Video link : <https://www.youtube.com/watch?v=rtj8nM02DA>
<https://www.youtube.com/watch?v=yLUycxPsOck>



(Photo of powerloom warping machine for Tie & Dye)



Powerloom Warping Machine :

**Photo of Power loom warping machine for Tie & Dye (Reversible)]
Advantage of my invention**

For power looms weaving community in rural area

- a) My invention increased the productivity from 30 lease warps to 100 lease warps
- b) Its eliminate the process like Rewinding from warping drum by 4 person manually and to produce 30 no's lease warp which will be 12 km in length and we need to wind in shape of "8" by walking to and fro.

- c) It increases the weaver's revenue from Rs 300 per day (for 4 people) to Rs 1000 per day (for 1 person) in rural villages.
- d) Electronic counting device show the no of meters warp.
- e) Sensor read the number of rotation and electronic contractor point will automatically shut down every 100 meters for puni changes purpose
- g) Previously they are using 1 hp motor for warping drum machine but to in the innovative machine ¼ hp motor is enough.

ENTIRE PROCESS OF SAREE MANUFACTURING IN POWER LOOM

The grey yarn (Row Yarn) is brought (spined) from the cotton through the spinning mill, which was been winded on in round from called Hank.

The hank (Yarn) were coloured after the warm processes. Sizing (Glazing) the yank is dried in sun light after the (Glazing) sizing.

Yarn Winding

The yank's made up become single thread because the yanks are bits which cannot be used appropriately. The winding executed with the help of winding machine to tin bobbin (height 7" & 3" dia) for 6200 meters.

Warp Preparation for dye & Tie Purpose

Conventional method	Innovation (Powerloom warping machine)
100 tin bobbins required each bobbins winded 6200 meters yarn.	100 tin bobbin required each bobbins winded 6200 meters yarn
400 meters should be winded in circular frame (warping machine) releasing from 100 tin bobbin	Directly winded in 8 shape in the new power loom warping machine.
Every 100 meters should watch stop then make the puni	No need to watch it will stop at certain point with help of electronic contact point.
That 400 mts winded yarn should rewinded from that circular frame (Warping machine) manually.	This manual process of rewinding is eliminated
That 400 meters rewinded yarn like under 8 shape wind process its became 7 feet lengths	This rewinding process is eliminated
Now we are to collect the 8 shaped yarn (Kanni, lease or warped yarn for Dye & Tie.	Now we here to collect the 8 shaped yarn (Kanni, lease for dye & tie)

First well tied up at 7 feet winded kanni (lease) by polythene for 4 inch. Next 4 inch will be free than next 4 inch will be tied up by polythene cover like these will be followed end of the kanni.

Dyeing (Colouring) these kanni with tied polythene cover goes under to dyeing process is colouring.

Remove the tied polythene cover from that kanni now you come find out covered area is white uncovered area in coloured.

Beam Warping

36 coloured kanni's (here) used for beam warping preparation. Total number of yarn for beam warp is 3600 yarn. Length is 400 meters (if sizing beam warping 2000 meters beam warp)

Weaving

400 meters beam warp using for weaving that saree.

Impact on society

Prior to this invention power loom sector followed convert the yarn in to warp, this warp has to fit in the loom after weave the warp finally we will get the sarees.

Earlier Yarn to warp conversion process is very difficult, for making one warp, 30 lease warp is required, (one lease warp length is 400 mts)

We need to wind 30nos 400 mts lease warp on the warp drum which is in cylindrical shape,

After this 30 nos 400 mts warp has to rewind by 4 person manually.

Which will be 12 km in length we need to wind in shape of "8" by walking to and fro

A whole family has to do this process for 12 hours to complete this entire at last we will get 300 rupees as wages (for each one warp lease Rs 10) for entire family

With this amount meeting the family day to day expenses is very difficult

For betterment of weaving community I have invented two power loom warping machines.

In old process the weaver family need to work for 12 hours to wind 12 km lease warp (30 units).

Because of my invention an individual can make 100 units lease warp in 12 hours without much difficult (Removing process – Rewind by 4 person manually and making shape of "8" by walking to and fro)

Due to my invention a single weaver is getting 1000 rupees on daily basis

It shows that my invention as create the revolution in the power loom weaving industries and highly appreciated by weaving community.

3. Handloom warping machine for 20 meter short warp



The people from handloom plan to leave their profession as they struggle because of low income, hard work, less productivity more time consumption so it makes me to invent and innovative to blossom the industry where as stimulate the confident away from labyrinth life. I hope this industry change may be the millstone of past 60 years.

Entire Process of Handloom Warping (Lungi)

The grey yarn (Row Yarn) is brought (spined) from the cotton through the spinning mill, which was been winded on in round from called Hank.

The hank (yarn) were coloured after the warm process.

Sizing (Glazing) the yank is dried in sun light after the (Glazing) sizing

Yarn Winding

The yank's made up become single thread because the yanks are bits which cannot be used appropriately. the winding executed the help of winding machine to tin bobbin (height 7" & 3" dia) for 6800 meters.

Conventional method	Hand loom Automatic Warping Machine (lungi)
30 tin bobbin required each bobbin winded 6200 meters yarn	30 tin bobbin required each bobbin winded 6200 meters yarn
15 X 15 X 15 feet Circular frame rotate forward by hand.	Automatically rotate forward
Stop that big warping drum at at certain limit to change the puni	No need to stop
Puni has to change manually	Puni will change automatically
its turn backward also by manually	Rotate backward automatically.
360 times rotation followed like this	
Warp is the final production	Warp is the final production

Street Sizing

4800 yarn 20 meter length warp glazed the street and dried under sun light

Beam warping

20 meter warp would be winded on the beam by manually

Handloom Weaving

Lungi is weaved by the 20 meter winded yarn warp beam

Impact on society

After hearing the news of this innovation the handloom sector people will get relief who has been weaving manually for over 60 years. Generally in handloom before weaving, the warping process is primary. There is a main warping drum height 15 feet, length 15 feet, breadth 15 feet like a cylinder rotating one time forward and one time backward totally 340 times by manually is called sectional warping.

If we operate per day in 12 hours will produce only 3 warp max Rs 180 only as wages (for each warp the used get Rs. 60)

In this handloom community were not getting enough income, less productivity and high work load due to this younger or future generation are not interested in taking up this handloom profession if it continues in future will not exist.

They come forward and requested me to replace the existing manual operation in to automatic machine.

It took me two years to invent this machine with lot of hardships

After my invention the weavers getting Rs 900 as wages per day by making 15 warps.

Advantages of innovations for hand looms weaving community

- a) My invention increased the productivity from 3 sectional warps to 15 sectional warps.
- b) Previous drum Warping machine run forward a rotating by hand which 15 feet length 15 feet height 15 feet breathe and Puni prepared by manually and The next rotation backward also manually and A warp needs 360 rounds forward and backward by manually. But in my innovative machine its eliminate manual rotation and puni prepared work everything is automated.
- c) 400 Sqft requirement to install for Manual machine but 100 sqft space requirement for our automatic warping machine. Also my machine can / are able to move place to place easily. the height of existing Machine is 15 feet that should operation by manually which construct 4 feet down (Basement) to operate
- d) It increases the weaver revenue from Rs 180 to Rs 900 per day.

4. Automatic warping machine for saree (Electronics)



Advantage of warping machine for saree (Electronics)

- a) Increased production capacity.
- b) Increased wages.
- c) Eliminating manual operations.
- d) Increased length of warp.
- e) Warp counting electronic device will show the length of warp winded
- f) Reverse and forward functions are fully made by Electronics rotating counter and contractor point and relay.
- g) Suppose yarn is suddenly cut and warp drum should rewinded, that reversed no counted automatically reduced in the electronic devise.
- h) To change of length of warps, simply fix no of count in electronic devise Display.
- i) The memory of no of warp count will retain in the device.

I made two way power supply one is to main motor and another one is to the Electronic device and while switch off power supply to the motor it won't disturb electronic device so its continuously monitor no of count

5. Automatic warping machine for saree (Mechanism)



Advantage of warping machine for saree (Mechanism)

- a) Increased production capacity
- b) Increased wages
- c) Eliminating manual operations
- d) Increased length of warp
- e) Reverse and forward functions are fully made by mechanism using Gears and change over lever.
- f) Change the no of tooth count of Gears its automatically Change of length of warps

Generally in handloom before weaving, the warping process is primary. There is a main warping drum like a cylinder, rotating 10 rotation forward and same rotation backward totally required times by manually is called sectional warping .

If they operate per day in 12 hours, will produce only 3 warp max Rs 180 only as wages (for each warp the used get Rs 60)

Impact on rural weaving community

1. Automatic warping machine for saree (Mechanism)

2. Automatic warping machine for saree (Electronics)

In my automatic warping machine reverse & forward rotation will be automatically and other function what are all doing in manually that are all automated like puni changes and rotation limit

Increased production

In manual operation, weaver are making upto 3 warps per day in 8 Hours and it's very difficult to make it

While using our automatic warping they can produce upto 15 warps per day in the same 8 Hours.

Increased wages

Previously they are earning Rs 180 only per day (Rs. 60 × 3 warps) by manual operation but while using our automotive warping machine they can earn Rs 900 per day (Rs. 60 × 15 warp).

Eliminating Manual operations:

In previous operation all functions are made fully by manual only, but in our machine eliminate all those manual operation and it change to fully automated like reverse forward changes and puni changes and display of no of count .

Warp length measurement:

Previous manual operation, they are warping upto 48 meter only but in our automatic warping machine they can warp upto 150 meter, its times more to previous warp length