Short Communications

Use of MS paint for 'weave and colour pattern' designing

R G Panneerselvam[a]

Department of Weaving, Indian Institute of Handloom
Technology, Varanasi 221 002, India

The possibility of using MS paint, the drawing accessory of MS window, as a simple 'weave and colour pattern' designing software to prepare simulations of shot, stripe, cross over and check fabrics with required weave and colour pattern has been explored in the study. Usefulness of different menu and tools of MS paint has been observed with another perspective. The steps involved in preparing different styles of warp and weft colour patterns in required number of ends and picks per repeat respectively has been studied. Preparation of simple weaves, viz. plain, twill, sateen and its derivatives has also been done. The procedures involved in overlapping/merging the required colour pattern with desired weave have been recorded systematically. It is observed that without making any additional programming, the existing menu and tools of MS paint are directly useful to design a repeat of any weave with any colour pattern and then repeat it into required number of times to get the colour simulation of desired fabric. It is noted that MS paint could be used as simple designing software by the beginners in textile designing who intend to design 'weave and colour pattern' for the decentralized handloom and powerloom textile units at any place using any computer operated by MS window.

In textile industry, variety of woven fabric structures are produced using different shedding devices, viz. Heald –Treadle, Heald – Dobby, Harness – Dobby and Harness – Jacquard combinations. Out of these, Heald –Treadle and Heald – Dobby combinations produce simple basic woven structures and simple geometrical figures in shot, stripe, cross over stripe and check colour patterns[1]. The Harness – Dobby and Harness – Jacquard combinations produce simple and elaborate curved figures in simple colour patterns. Therefore, in textile industry two different types of designing software are in use, (i) named as

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[a]E mail: rgpanneer61@gmail.com

dobby software to create weave and colour patterns for treadle and dobby weaving and (ii) named as Jacquard software for creating the Jacquard designs and developing its graph with different weave combinations.

In textile industry, different types of computer aided dobby designing software are being used. Dobby master (Wonder Weaves system 2009)[2], Design Dobby (Textronics CAD/CAM Solution for Textiles, 2010)[3], and ArahWeave (Arahne CAD/CAM for Weaving, 2015)[4] are the few examples for dobby designing software. Dobby designing software is cheaper than jacquard designing software because it is very simple in its tools, options, and operations. The dobby softwares[2-4] are basically to perform two functions, namely colour pattern designing and weave creation. In general, to perform these two functions, different options and tools available in all the dobby designing software are also grouped into two categories. The first set is the basic drawing, editing tools with menu options to prepare simple weaves, viz. plain, twill, sateen, all its derivatives and their combinations. The weave is then ornamented with required colour pattern to produce shot, stripe, cross- over stripe and check effects using the second set of options, tools and menus. The warp and weft colour patterns, thus created, get automatically merged with the marks and blanks of weave pattern respectively because of the built in programme in the software. The dobby designing software modules are also provided with weave library, colour library and yarn library[5]. This work is the continuation of earlier study[6] of 'Use of MS paint for jacquard graph designing and printing'.

MS paint is a default accessory provided in Microsoft Windows operating system to draw simple drawings in pixel form. In this study, an analysis has been made on how to use different tools and options of MS paint to perform the basic two functions, viz. weave preparation and colour pattern designing. A methodology has also been derived to merge / overlap the weave with colour pattern to get the desired simulation of fabric.

Experimental

Different Steps Used

Following are the different steps of the new methodology derived from the analysis of MS paint

to prepare weave marks, create colour patters and overlap / merge the weave and colour pattern for creating fabric simulation with check colour pattern of desired weave:

(i) Tabulating the repeat of warp and weft colour pattern in ends and picks respectively. Deciding the weave or combination of weaves.
(ii) Preparing the repeat of warp colour pattern file as per the ends of each colour.
(iii) Preparing the repeat of weft colour pattern file as per the picks of each colour.
(iv) Preparing the weave file equal to the repeat of ends and picks of colour pattern.
(v) Merging the weave file with the warp and weft colour pattern files to get a repeat of weave and colour pattern file.
(vi) Repeating the weave and colour pattern file to get the simulation of fabric.

Results and Discussion

Tabulating Repeat of Warp and Weft Colour Pattern (First Step)

When the new pattern is prepared, the first step is to decide complete repeat of warp and weft colour patterns. Then the warp pattern is clearly written in the tabular form, showing the colour and number of ends in each colour. Similarly, the weft pattern is also clearly written in the tabular form, showing the colour and number of picks in each colour. After writing the pattern in row wise, the total upto each row is also indicated by totalling all the previous rows. The total in each row is indicated as (a), (b), (c)……(n). Then, the weave is decided. When the pattern is prepared as per the fabric sample already woven, the sample is analyzed to record the colour pattern of warp and weft. The weave of the sample is also analyzed and recorded.

In the first example, it is taken to develop the new fabric sample of 'plain weave' as per the colour pattern given in Table 1. Two weft patterns are indicated. First one is different from warp pattern both in threads and colours. The second one is same as warp pattern both in threads and colours.

Preparing Repeat of Warp and Weft Colour Pattern Files (Second and Third Step)

The steps followed in preparing the repeat of warp colour pattern using the different tools, options and menus of MS paint are narrated in the flow chart given in Fig. 1 and preparing the repeat of weft colour pattern are narrated in the flow chart given in Fig. 2. The screen shots of few stages in preparing warp and weft colour pattern files are shown in Figs 3 (a) – (f).

Preparing the Weave File (Fourth Step)

Go to 'Attribute option' and change the size of new file / image to 100×100 which is equal to total ends and picks of the colour pattern. Keep the image in 8th zoom level and open the grid (ctrl+g). Using pen and taking black colour, create a repeat of the plain weave. Complete the plain weave in 100×100 using select, copy and paste options. Save the file as weave (plain).bmp [Fig. 4(a)]. In the weave file, black indicates warp up and white indicates weft up. In Fig. 4(a), the MS paint window shown is in 8th zoom level.

Merging the Weave File with the Warp and Weft Colour Pattern Files (Fifth Step)

In the first stage, open warp pattern.bmp file. Select the 'Select' tool and 'Transparent option' in tool box. Change the back ground colour as black in the colour box which is by default in white colour. Keeping the cursor over the image, right click and select 'Paste from' option in the menu [Fig. 4(b)]. From 'Paste from' window, select weave (plain).bmp file and open it. By doing so, the plain weave file get overlapped/merged with warp pattern file in the back side [Fig. 4(c)]. The black marks (warp up) of the weave file get replaced by the warp colour pattern in

Warp pattern	Total from starting	Weft pattern - 1	Total from starting	Weft pattern – 2 (same as warp pattern)	Total from starting
Colour 1 - 50	50 (a)	Colour 5 - 42	42 (a)	Colour 1 - 50	50 (a)
Colour 2 - 10	60 (b)	Colour 6 - 10	52 (b)	Colour 2 - 10	60 (b)
Colour 3 - 04	64 (c)	Colour 7 - 06	58 (c)	Colour 3 - 04	64 (c)
Colour 2 - 04	68 (d)	Colour 6 - 06	64 (d)	Colour 2 - 04	68 (d)
Colour 4 - 14	82 (e)	Colour 8 - 14	78 (e)	Colour 4 - 14	82 (e)
Colour 2 - 04	86 (f)	Colour 6 - 06	84 (f)	Colour 2 - 04	86 (f)
Colour 3 - 04	90 (g)	Colour 7 - 06	90 (g)	Colour 3 - 04	90 (g)
Colour 2 - 10	100 (h)	Colour 6 - 10	100 (h)	Colour 2 - 10	100 (h)
Total ends - 100 (x)		Total picks -100 (y)		Total picks - 100 (y)	

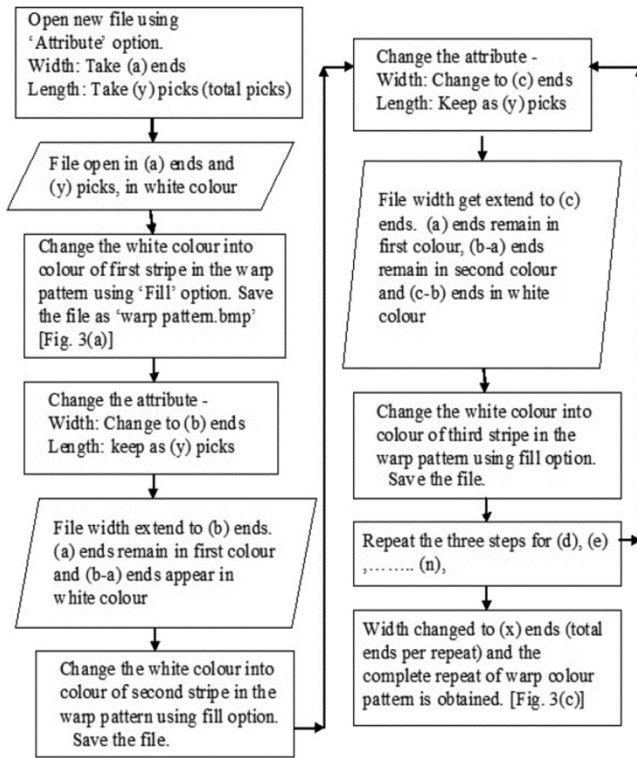Table 1 — Details of warp and weft colour pattern

Fig. 1 — Flow chart showing the steps in preparing the warp colour pattern file
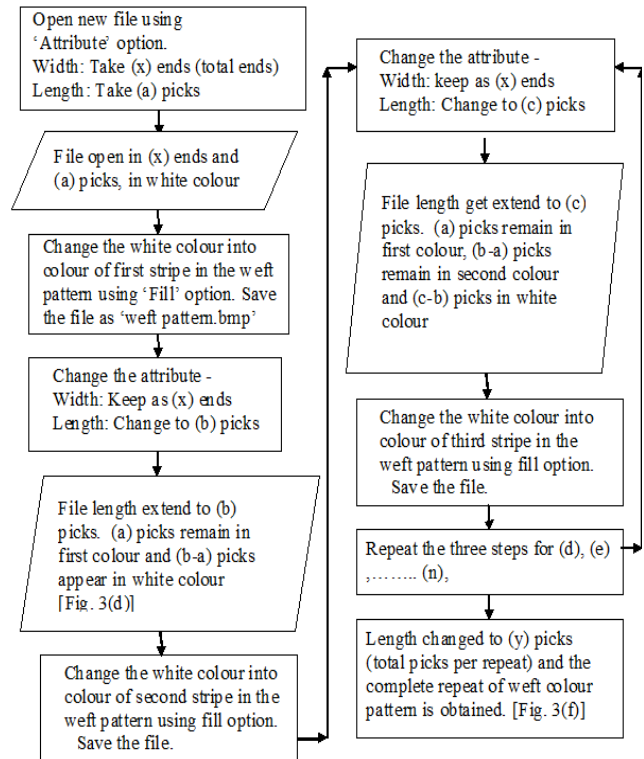

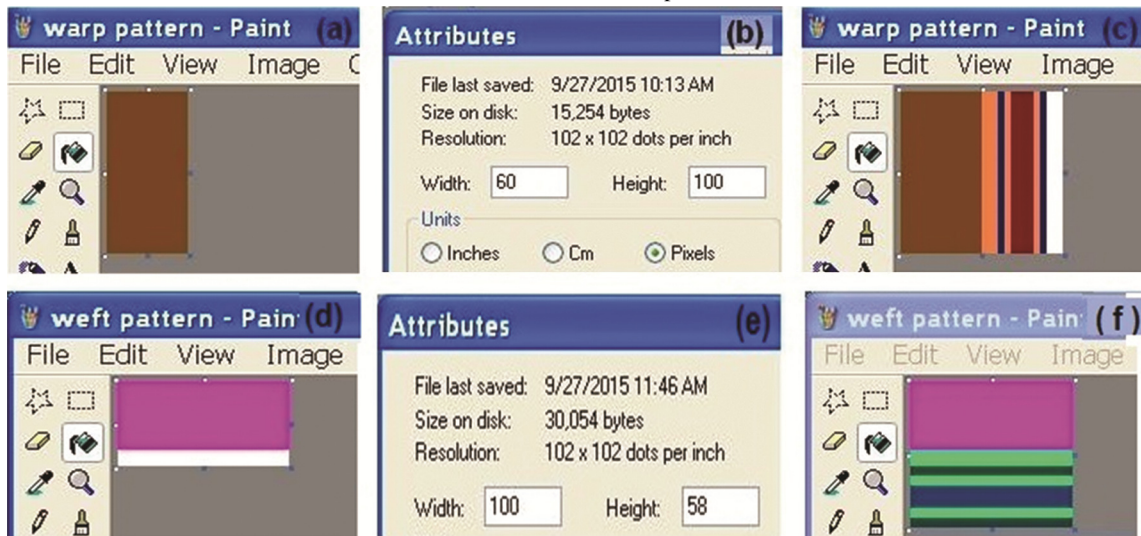Fig. 2 — Flow chart showing the steps in preparing the weft colour pattern file

Fig. 3 — Different steps in preparing the warp and weft colour pattern files

respective places leaving the white marks of weave file as it is. This happens due to keeping black colour as back ground colour. Copy this new file by doing right click, selecting 'select all' and then 'copy' options from the menu [Fig. 4(d)].

In the second stage, open weft pattern.bmp file. Select the 'Select' tool and 'Transparent option' in tool box. Keep the back ground colour as white colour (default). By right clicking over the file, select 'paste' option in the menu [Fig. 4e)]. By doing so, the new file copied earlier in first step, get overlapped / merged with weft pattern file in the back side. The white marks (weft up) of the new file get replaced by the weft colour pattern in

Fig. 4 — Different steps in merging the weave file with colour pattern file

respective places. This happens due to keeping white colour as back ground colour. The file, thus obtained, is the addition of warp colour pattern and weft colour pattern files merged with the marks and blanks of weave file respectively. Save the file as final repeat.bmp file [Fig. 4(f)]. This is the complete repeat of desired weave and colour pattern file. All the files shown in Fig. 4(b) – (f) are shown in 2nd zoom level. The flow chart given in Fig. 5 narrates the steps followed in merging the weave file with colour pattern file.

Repeating Weave and Colour Pattern File to get the Simulation of Fabric (Sixth Step)

Open final repeat.bmp file. Select all and copy the file. Increase the size of file to the multiples of ends and picks per repeat. Say 300×300. Paste the final repeat file, number of times, in width and length way. This file is the colour simulation of fabric of disered weave and colour pattern. Save the design as 'check fabric 1(plain).bmp' [Fig. 6 (a)]. The simulation of plain check fabric obtained by
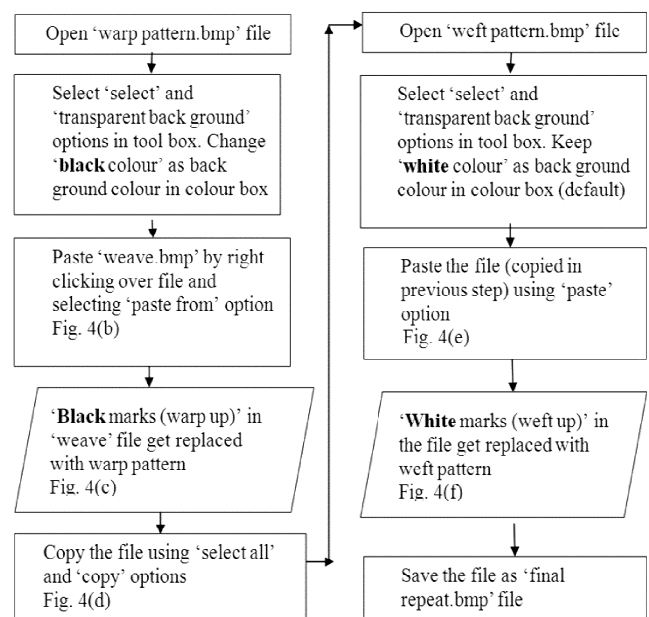

Fig. 5 — Flow chart showing the steps in merging the weave file with warp and weft colour pattern files

the combination of similar warp and weft colour pattern is given at Fig. 6(b). A plain stripe fabric simulation obtained by the combination of warp colour pattern combined with mono colour in weft is given at Fig. 6(c). All the screen shots of MS paint window as shown in Fig. 6 are in 1st zoom level.

In MS paint, the size of the colour simulation of fabric is seen on the monitor depends upon the monitor resolution. The three repeats of simulation which is pasted in 300 pixels in width (ends) and 300 pixels in height (picks) as described above is seen in 3" × 3" size in the first zoom level, if the monitor resolution (pixels per inch) is 100 (300/100 = 3 inches). When the

simulation is printed, the size of simulation printed depends upon the printer resolution. Say, if the printer output is set 100%, the fabric simulation of 300 × 300 size, is printed in 3" × 3" size (300 /100 = 3 inches) which is 'plain -check fabric print out'.

Examples

Using 1/3 twill weave [Fig. 7(a)], a check fabric simulation is developed [Fig. 7(b)]. The warp and weft colour patterns used for developing the simulation of twill check fabric are same as the second plain check fabric. From the 1/3 twill check fabric simulation, it is clearly seen that the weft
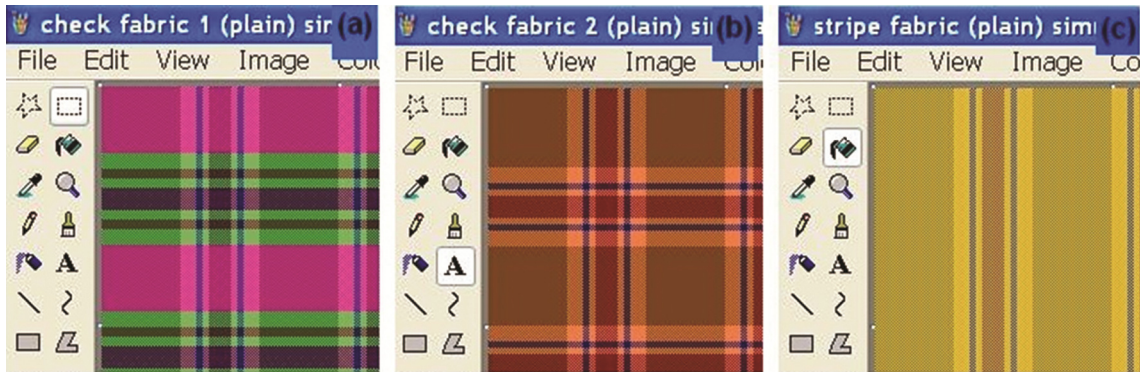

Fig. 6 — Fabric simulations of two different check fabrics and a stripe fabric
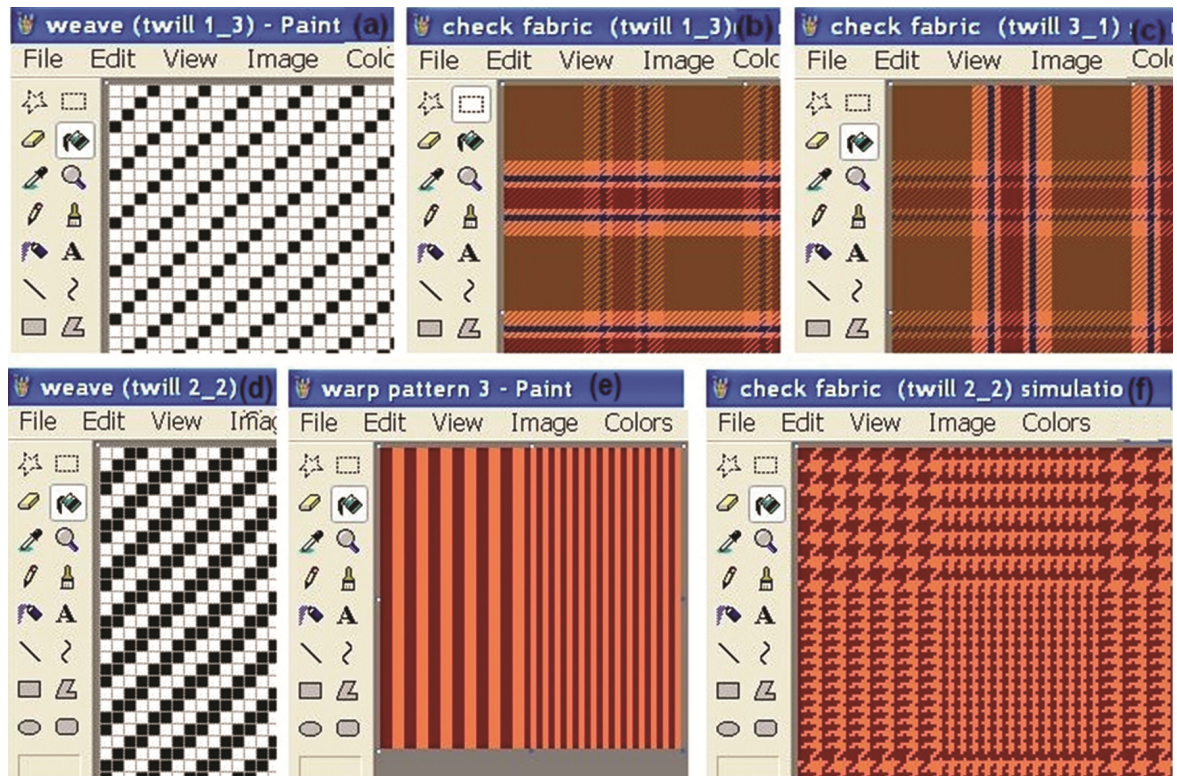

Fig. 7 — Examples (1/3 twill, 3/1 twill and 2/2 twill)

Table 2 — Comparison between weave and colour pattern designing using dobby designing software and MS paint

Dobby designing software	MS paint
• To be separately purchased and loaded. .	• One of the accessories of MS windows operating system.
• Mostly single user software and operates with password protected.	• Can be used by all.
• Costly.	• Cheaper.
• Useful for	• Useful for
➢ Learned designers.	➢ Practicing designers / students
➢ Designing simulation of intricate weave and colour pattern.	➢ Designing simulation of simple weave and colour pattern.
➢ Electronic dobby	➢ Mechanical dobby
➢ Higher capacity of healds and harness designing.	➢ Lower capacity of healds and harness designing.
➢ Electronic card punching machine.	➢ Mechanical lattice pegging.
➢ Organised textile mill sector.	➢ Unorganised cottage handloom and powerloom sector.

stripe is more prominent than warp stripe, being 1/3 twill is weft face weave. The second twill check fabric of 3/1 twill weave [Fig. 7(c)] is produced by using again 1/3 twill, following the reverse selection of back ground colour while merging. That is, in the first stage, white colour (default) is kept as back ground colour (instead of changing to black) and in second stage, it is changed to black (instead of keeping white). From the 3/1 twill check fabric simulation, it is clearly seen that the warp stripe is more prominent than weft stripe, being 3/1 twill is warp face weave.

Using 2/2 twill weave [Fig. 7(d)] and the group colour pattern [Fig. 7(e)], a 'colour and weave effect' fabric simulation is produced [Fig. 7(f)]. The colour pattern is 4 dark , 4 light – 6 times (48 threads) and 2 dark, 2 light – 13 times (52 threads), which is repeating totally in 100 threads. The weft colour pattern is same as warp colour pattern. In Fig. 7, the weaves are in 8th zoom level. The simulations of 1/3 twill and 3/1 twill are in 1st zoom level and the simulation of 2/2 twill is in 2nd zoom level.

The designers can prepare different weaves taking a particular size as maximum (say 240 × 240), save it and keep all in a weave library folder. These weaves are retrieved when ever required for any colour pattern. The size of the weave file is altered to match with the repeat of colour pattern. The designers can use the options either from menu or short cut keys as per their convenience. Preparing the simple fabric simulation of weave and colour pattern is only discussed. The advantages of designing simulations of weave and colour pattern using MS paint over dobby designing

software are compared in Table 2.

The analysis is a new method derived to prove, how effectively the existing MS paint tool can be used as simple designing software, to develop the simulation of fabrics in required weave and colour patterns. From the study, it is found that MS paint is a simple and economical dobby designing software for the beginners in textile designing who wish to design fabrics with new weave and colour pattern for mechanical heald and dobby shedding used in the decentralized handloom and powerloom textile units. Hence, the fabric pattern designers, before going for any pattern designing software, can thoroughly practice to use MS paint by following the simple steps, for creating warp pattern, weft pattern and weave; its merging and repeating to get the simulation of shot, stripe, cross over and check effect of any simple weaves like plain, twill, sateen and its derivatives. The students of textile designing can practice their new ideas at any time using any computer operated with MS windows. Producing simulation of fabric with required material and count of yarn along with the interlacing of threads is also possible in MS paint by following other methodology.

References

1 Grosicki Z J, *Watson's Advance Textile Design* (Woodhead Publishing Limited, Cambridge, England), 2004, 144.
2 http://www.wonderweaves.com/Product-Dobby-Master.html (downloaded on 12.03.2015).
3 http://www.textronic.com/cad-design-dobby.html (downloaded on 09.02.2015).
4 http://www.arahne.si/making-a-simple-dobby-fabric-sp-13444.html (downloaded on 06.01.2015) .
5 Ashis Mitra, *Int J Curr Res Aca Rev*, 2 (6) (2014) 41.
6 Panneerselvam R G, *Indian J Fibre Text Res,* 38 (2) (2013) 186.