

Twill weaves in Double Weave

A loom with 8 or more shafts is required to produce double weave with both layers in twill structure. In this discussion the threading is straight draw on 8 shafts with dark warp threads on the odd numbered shafts and light colored warp threads on the even numbered shafts.

Threading

Shaft #	8	□	□	□	□	□	□	L
	7	□	□	□	□	□	□	D
	6	□	□	□	□	□	□	L
	5	□	□	□	□	□	□	D
	4	□	□	□	□	□	□	L
	3	□	□	□	□	□	□	D
	2	□	□	□	□	□	□	L
	1	□	□	□	□	□	□	D

The tieup (or peg plan) is easy to develop. This example is for 2/2 twill in both layers of the double weave, with the dark warp threads 1357 in the top layer and the light threads 2468 in the bottom layer. The first diagram shows the shafts to be raised to weave the top layer and the second diagram shows the shafts to be raised to weave the bottom layer. The third diagram puts the first two together and adds with dots the shafts of the top layer that must be raised to weave the bottom layer.

The Development of the Tieup for 2/2 Twill Double Weave

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	1	□	□	□	□	□	□	□																																																																																																																																																																																																																		

The third diagram can be shown with numbers either as a tieup or a peg plan diagram.

Tieup

Shaft #	8	□	□	□	□	8	8	□
	7	□	□	□	□	7	7	□
	6	□	□	□	□	□	□	□
	5	□	□	□	□	5	5	□
	4	□	□	□	□	□	□	□
	3	□	□	□	□	□	□	□
	2	□	□	□	□	□	□	□
	1	□	□	□	□	□	□	□

Peg Plan

Shaft #	1	2	3	4	5	6	7	8
	1	□	3	□	□	□	□	□
	1	2	3	4	5	□	7	□
	□	□	3	□	5	□	□	□
	1	□	3	4	5	6	7	□
	□	□	□	□	5	□	7	□
	1	□	3	□	5	6	7	8
	1	□	□	□	□	□	7	□
	1	2	3	□	5	□	7	8

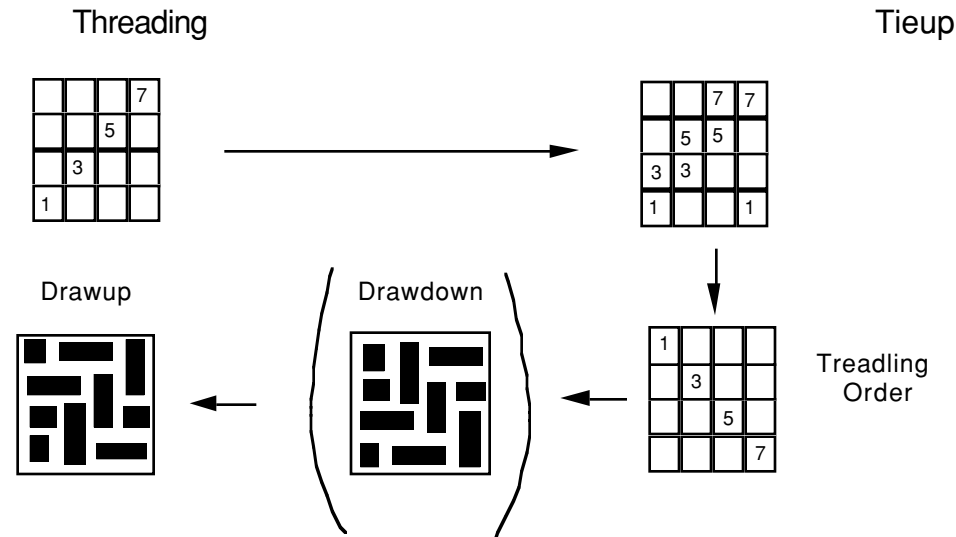
It is helpful to look at the first two grids from the tieup development in a slightly different fashion so that the drawdowns for the two layers can be presented separately. Remember the view is looking at the two layers from above. The top layer is discussed first.

Separation of the Tieups for Top and Bottom Layers

		7	7
	5	5	
3	3		
1			1

		8	8
	6	6	
4	4		
2			2

The usual method of progressing from the threading to the tieup, to the treading, to the drawdown looks like this. The drawup is also shown because that is what a weaver see as the weaving develops on the loom.



What does the bottom layer of the double weave look like when the woven cloth is turned over? There are several things that must be considered. First the threading is opposite in direction from what it is when looking from above. Second the tieup diagram changes to its complement because the warp threads that were not raised in the previous diagram appear to be raised when viewed from below. Therefore the tieup diagram takes this form.

		8	8
	6	6	
4	4		
2			2

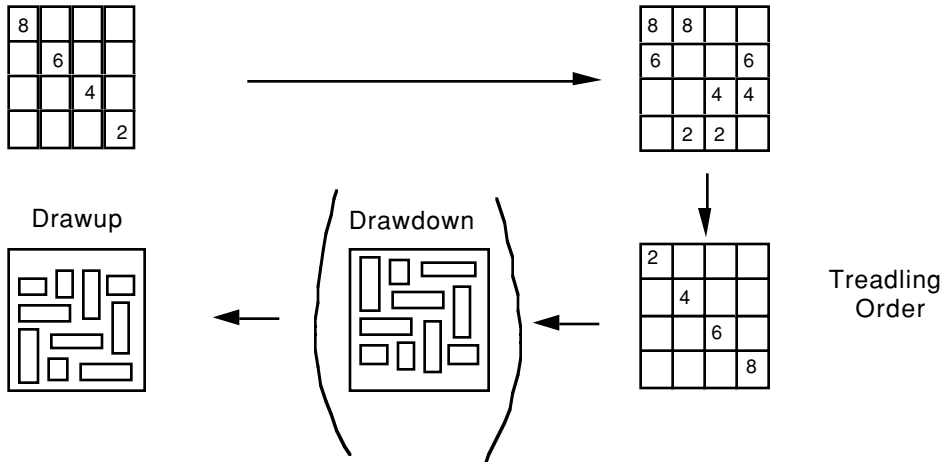
→

8	8		
6			6
		4	4
	2	2	

Now the path from threading to drawdown can be carried out for the bottom layer with the recognition that the threading diagram must be reversed because the warp runs 8642 from left to right when viewed from below rather than 2468 from right to left when viewed from above.

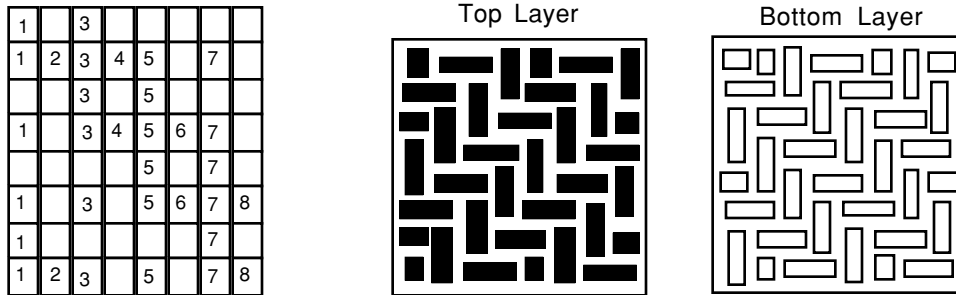
Threading

Tieup



There are a large number of color and weave twill patterns that can be developed by using a given peg plan (in this example 2/2 twill structure in both layers) by changing only the treadling order. In examples 4 and 5 below, the peg plans have been changed. The color order for the warp and weft remain the same for all the examples, that is DLDL.

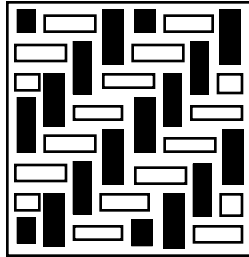
1. Peg Plan 1. 2/2 twill in both layers.



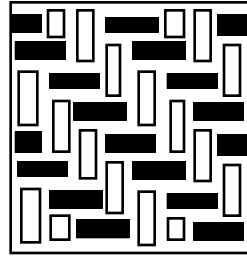
2. Peg Plan 1. 2/2 twill in both layers. Changing the treading order places the light weft in the top layer and the black weft in the bottom layer.

1	2	3	4	5	6	7	8
1		3					
1		3	4	5	6	7	
		3		5			
1		3		5	6	7	8
				5		7	
1	2	3		5		7	8
1						7	

Top Layer



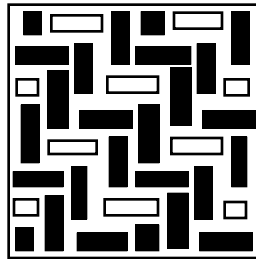
Bottom Layer



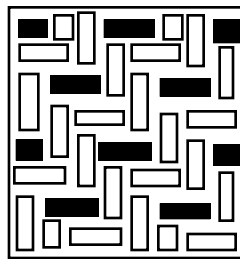
3. Peg Plan 1. 2/2 twill. Another change in the treading order

1		3					
1	2	3	4	5		7	
1		3	4	5	6	7	
		3		5			
				5		7	
1		3		5	6	7	8
1	2	3		5		7	8
1						7	

Top Layer



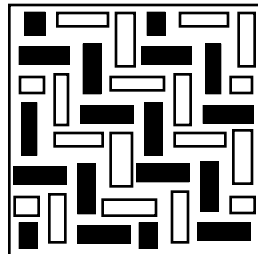
Bottom Layer



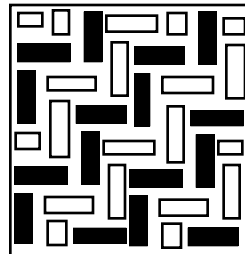
4. Peg Plan 2. 2/2 twill in both layers. Warp threads 1458 in top layer.
Warp threads 2367 in bottom layer.

1			4				
			4	5			
1	2	3	4	5			8
1		3	4	5	6		8
				5			8
1							8
1			4	5	6	7	8
1	2		4	5		7	8

Top Layer



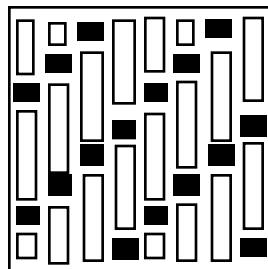
Bottom Layer



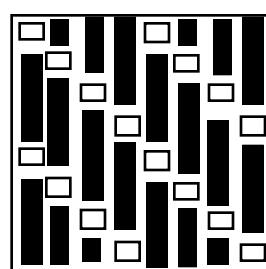
5. Peg Plan 3. 3/1 twill in top layer. 1/3 twill in bottom layer.

	2		4		6		
1	2		4		6		8
			4		6		8
	2	3	4		6		8
	2				6		8
	2		4	5	6		8
	2		4				8
	2		4		6	7	8

Top Layer



Bottom Layer



The window design in double weave only requires an 8 shaft loom if both background and patten are woven in plain weave. If you want to weave the background in plain weave and the window in a twill weave, the window design then needs a 12 shaft loom. If you want to weave both the background and the window in twill weaves, the window design calls for a 16 shaft loom.

Window Design in 12 Shaft Double Weave

A border or frame can be added to any of the 8 shaft designs already presented. The easiest thing is using shafts 9-12 to add the border because then any of the 8 shaft peg plans from earlier in this project can be used directly. The threading would have this two block threading format. Notice that it is possible to have plain weave structure in both blocks A and B. Block B can also be woven in twill weaves.

12 Shaft Threading

		Block A				Block B								Block A							
Shafts	12			1	2															1	2
	11			1	1															1	1
	10			1	0															1	0
	9			9																9	
	8																				8
	7																				7
	6																				6
	5																				5
	4																				4
	3																				3
	2																				2
	1																				1

Two peg plans are needed. The first weaves plain weave for both background and pattern in a 4 pick weft sequence. The second weaves plain weave for the background and twill for the window. The peg plan for example twill # 2 is used and the peg plans for shafts 5-8 are separated from the peg plan for shafts 9-12 as a matter of convenience.

The Peg Plan to Weave Plain Weave for the Background

1				5				9				
1	2	3		5	6	7		9	0	1	1	
		3				7				1	1	
1		3	4	5		7	8	9		1	1	2

The Peg Plan to Weave Plain Weave for the Background and Twill for the Pattern

1	2	3	4	5		7		9				
1		3						9	1	0	1	1
1		3	4	5	6	7				1	1	
		3		5				9		1	1	2
1		3		5	6	7	8	9				
				5		7		9	1	0	1	1
1	2	3		5		7	8			1	1	
1						7		9		1	1	2

Schematic Representation of the Window Design

