

# Manufacturing a Fancy Stripe Crepe De Chine

Layout and Calculations for a Silk and Rayon Mixed Fabric

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The creation of fancy weaves elevates weaving from a purely mechanical process to an art where the intelligence of the operator, combined with the precision of the mechanical operation of the loom, produces an article superior in type as compared to the average plain weaves. This is particularly the case when the fancy article consists of two or more materials, different in their characteristics, and a combination weave pattern is required to get the desired effect. The fabric shown herewith illustrates such a fancy cloth.

Without question the making of such types of fancies requires a skilled operator to weave the cloth without imperfections, as not an end must be missing anywhere, particularly in the velvet cut stripe, as each end in that stripe is tightly interwoven to support the firmness of the fabric and hold the rayon end in its appointed place. These ends have to be cut by a special machine consisting of knives or blades to produce a velvet-like appearance after the goods are woven and before they are dyed and finished.

In view of the fact that two beams are required in the making of this cloth, one beam for the all-silk crepe and another beam for the rayon stripe, special care must be taken in deciding how to loom these two beams and the position each warp is to fill. In this particular case the rayon beam must be on top and almost in a straight line with the harness at rest to allow the rayon ends free play, permitting shedding with the least friction or pull, and

without lease rods if possible. The arrangement for retaining the proper position of the rayon beam should permit the beam to be so adjusted as to permit the yarn to move direct from the beam to the heddles.

A movable guide roller covered with soft felt should be mounted under the warp ends, barely touching the yarn, and close to the beam so that a constant level will be maintained. The position of the beam must be readjusted as the warp diminishes in size during the weaving process, in order to retain a constant level of the warp ends from the beam to the heddles in the harness and to relieve the pressure of the yarn on the guide roller.

The race plate on which the shuttle travels to and fro must be covered with durable soft felt, in which the rayon warp ends are imbedded during shedding while the shuttle travels across.

To avoid entanglements of the rayon yarn during the shedding, the rayon ends must be separated from the silk ends coming from the other beam. The entanglements usually occur between the harness and the reed. A false reed, separating the rayon yarn and attached close to the reed, will insure a free action of the rayon yarn and give good results in the production of large yardage per day.

Another important factor is the reed. Whenever rayon is employed, as in this case, a flexible reed with a 75% opening and  $3\frac{1}{2}$ " deep inside must be employed. The reed must be placed deep enough in the race plate on the

loom so that the rayon will pass unobstructed through the most flexible part of the reed, allowing knots to pass through more readily.

As the rayon employed in the cloth discussed in this article is of a heavy size (300 den.) it is most important that the reed be ordered as suggested above. Following is a detailed analysis of the construction of the fabric with full explanations, item by item, covering the necessary information required for the manufacture of this article.

allowance must be made for the take-up in weaving for each beam, which varies according to the texture of the cloth and the weave employed.

In warping the rayon the usual type of horizontal mill warper can be used. A V-shaped creel arranged so that all the bobbins, when placed on the pins, will be at the same angle as the leasing reed should be used. Deviation from this rule has a tendency to put more friction on the bobbins.

*Construction of Sample:*—Width of cloth finished, 40 inches.

Ground on Beam 1; Reed 32 dents per inch; Material  $4/2$  ends per dent = 128/2 ends per inch  
 Stripe “ “ 2; “ 32 “ “ “ ; “  $4/1$  “ “ “ = 128/1 “ “ “  
 Edge “ “ 1; “ 32 “ “ “ ; “  $4/3$  “ “ “ =  $64/3$  “ or  $32/3$  ends on side  
 Filling, 68 picks per inch; 1 end per pick, shot 2 picks right and 2 picks left twist.

*Materials to be used:*

For Ground on Beam 1; 20/22 den. single raw Double Ex. Japan  
 “ Stripe “ “ 2; 300 den. 44 filaments raw rayon, 7 turns, Grade A  
 “ Edge “ “ 1; 2 thd. 13/15 den. organzine boil-off.  
 “ Filling; 6 thd. “ “ Grand Ex. Jap., 60/65 turns, r. and l. twist crepe

*Warping disposition:*

Width in reed, raw state, 45.50 inches. The raw width of 45.50 inches includes an allow-

It is very essential that light weight bobbins with a thin barrel and flat heads be used. They should not be over 3 ounces in weight.

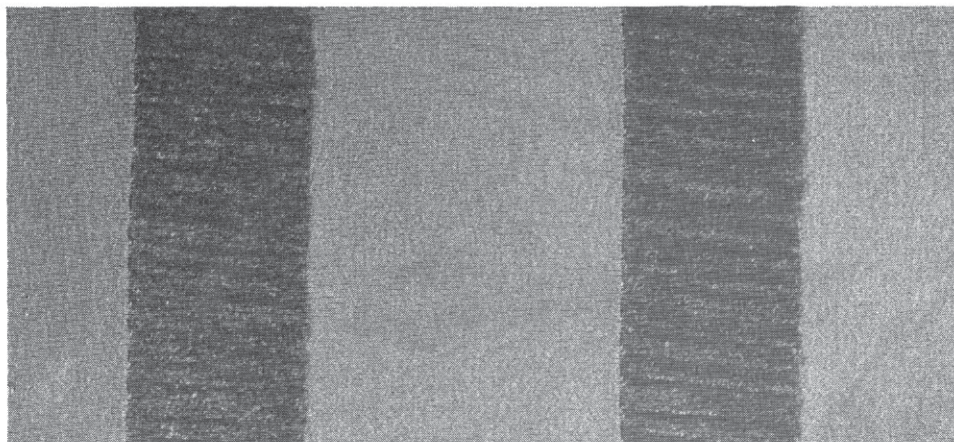


Figure 1.  
Crepe de Chine with Rayon Stripe.

ance of 13.75 per cent for shrinkage of the finished cloth.

Woven length, raw state, 100 yards. Due

Size of bobbins  $3 \frac{4}{8}$  in. over all, inside of flanges  $2 \frac{7}{8}$  in., diameter of flanges,  $2 \frac{4}{8}$  in., diameter of barrel  $1 \frac{4}{8}$  in. Bobbins softly

wound on the edges must not be used and all bobbins must be of the same weight.

*Warp particulars:*

Beam 1

Reed 32, 4/2, ground, length 107 yds.

“ 32, 4/3, edge, “ “ “

Beam 2

Reed 32, 4/1, stripe, length 110 yds.

Skein dressed, special process

## The Entering

For the entering of the warp ends in the heddles of the harness a special drawing-in draft is required. Eight shafts are used, four shafts for beam one and four shafts for beam two, drawn skip draft in two sets of harness.

In the diagram at Figure 2 the circle stands for the edges; the dot stands for the ground; and the cross stands for the stripe. Regular flat steel heddles are used for silk and open eye flat steel heddles for rayon.

### Warp Layout

8 dents edge 32/3, 2-thread 13/15 organ			
32 dents ground 128/2, 20/22 Japan raw			
32 dents {	ground 1/2, 20/22 Japan raw	} 32 ×	} 15 ×
	stripe 2/1, 300 den. rayon		
	ground 2/2, 20/22 Japan raw		
	stripe 2/1, 300 den. rayon		
32 dents {	ground 1/2, 20/22 Japan raw		
32 dents ground 128/2, 20/22 Japan raw			
8 dents edge 32/3, 2-thread 13/15 organ			

*Total ends to cover the entire 45.5 inches of reed width:*

The Ground:  $5760/2 = 11520/1$  ends of 20/22 den. Japan

The Stripe:  $1920/1$  ends of 300 den. Rayon, grade A

The Edge:  $64/3 = 192/1$  ends of 2 thd. 13/15 den. Organ Boiled-off

In creeling place on each pin first a felt washer, followed by a small iron washer or porcelain washer and then the bobbin. The warp should be made in a dry atmosphere and finished the same day if possible; this is rather important.

In beaming use a beam with large smooth flanges. The beam must be set to the exact width of the warp. Use plenty of soft beaming paper, as stiff paper causes the ends to roll on the smooth face of the paper. The atmosphere must be dry.

In cleaning the warp, ordinary knots must not be made; make weavers knots. In case of skein dressed rayon, start beaming with a good strong tension to straighten out all slack ends, and keep the tension even through the entire beaming process. Never increase the tension after starting. By even tension is meant the adjusting of same as the warp increases in diameter on the beam.

## Weave Pattern

The weave pattern at A in Figure 3 is designed to illustrate the cloth as it comes off the loom. Pattern B is designed to fit the harness to weave the cloth.

To illustrate further the action of the ends in the shafts in which they are drawn, the following information will be of service:

End 1 is drawn in on 4th shaft

End 2 is drawn in on 2nd shaft

End 3 is drawn in on 3rd shaft

End 4 is drawn in on 1st shaft

End 5 is drawn in on 8th shaft

End 6 is drawn in on 6th shaft

End 7 is drawn in on 7th shaft

End 8 is drawn in on 5th shaft

This constitutes the repeat of the pattern on a harness drawn skip draft, which is the modern way to obtain best results in weaving.

There is half as much friction of the ends between the heddles themselves and the ends side by side.

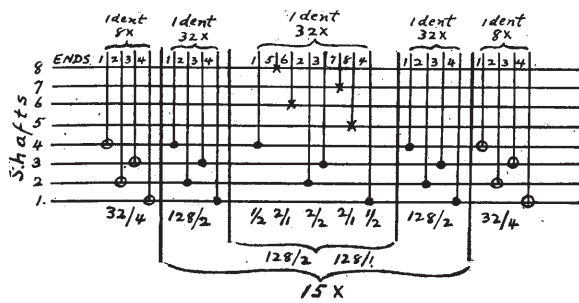


Figure 2  
Diagram showing Draft

Among some mill men the impression still prevails that such a draft is bewildering to the ordinary type of loom operatives. But the author of this article has positive proof that the loom operator, once being made acquainted with the working of the draft and the advantage of producing more yards by it readily adapts himself to the new method, provided the skip draw is not made too complicated. It will be noted on this draft that there are two sets of harness, each set adapted to the warp that is drawn in, and each set is entered skip.

The harder weave is on the front shafts, numbered 1, 2, 3, 4. The easier weave on the back shafts numbered, 5, 6, 7, 8. This makes the shedding of the hard weave much

easier, and that is important. In order to ease the shedding of Nos. 5, 6, 7, and 8 shafts, the shedding of the Nos. 1, 2, 3 and 4 shafts must be as low as permissible, or just high enough to let the shuttle slide through, barely touching the upper shed. The shuttles must be free from any defects that might obstruct the free passage of the shuttles through a low shed. Likewise the timing of the shed and the throw of the shuttle is important. Let the shuttle pass through the shed at the point of maximum opening, and see that all warp ends are in perfect alignment. This is important for low shedding.

A perfect alignment of warp ends in a shed can be obtained by raising each shaft to its proper level in an open shed. Not infrequently it happens that an end running from a piecing bobbin, to replace a broken warp end in the harness, comes off with slack tension and may cause trouble in the shed and likewise produce an imperfection in the cloth. Such methods must not be permitted for rayon weaving. In place of piecing bobbins, a few extra ends should be warped on to the warp and left unentered in the harness to be used in emergency; that is, when an end becomes lost or broken to replace that lost or broken end until it is found again in the nest cross or when the paper comes off.

This procedure will insure an even tension for the replaced missing end and avoid trouble

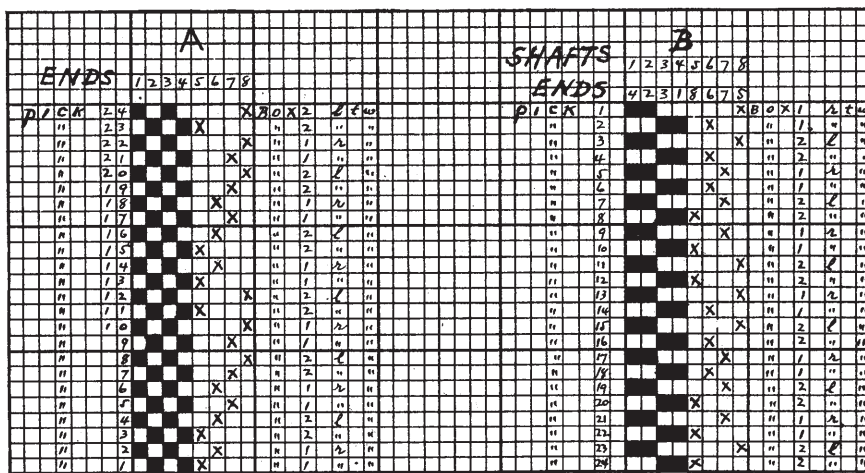


Figure 3  
Cloth Weave and Harness Chain

in the harness, the shedding, and consequently in the cloth.

It must be remembered that in order to accelerate production every precaution must be taken to insure that the warp ends move freely through the eyes in the heddles, and that there is no friction of the ends in the harness caused by crowded heddles or bent and misshaped heddles. It is likewise preferable to run the rayon warp used for the stripe without too much tension on the beam, to prevent splitting of the filaments of the rayon ends. When the loom is stopped over night, the weaver should tighten the warp before start-

ing, to prevent slack ends in the cloth.

The speed for this type of cloth, owing to the heavy stripe with the additional interbinding of the ground ends in the stripe, is about 135 picks per minute.

No fluctuations of humidity should be allowed in this case. Being a combination of silk and rayon, a 50 to 60 per cent humidity will be a satisfactory condition if uniformly maintained.

The cost per yard of this fabric figures \$2.08, which is the mill net cost. Mill profit and selling expense must be added to complete the selling price.