M-1 FSD.

* Figuring with extra threads:-

- Extra warp
- Extra weft
- Both

Effects: spot
stripe
continuous

Extra warp - [2 series warp
1 series weft

Extra weft - [1 series warp
2 series weft

Both - [2 series warp
2 series weft

Extra warp fabric [→ Ground warp
→ Extra warp

:- Long floats

- Bold colour should be appear so we use base colour as light. we can cut & remove the extra threads
- It is used in ladies dresses, sarees & mainly in borders & pallu
- Extra thread are arranged in loose means we call it as continuous
- Extra thread are arranged in loose means we call it as intermittent
- Extra thread which are present in the back of fabric called 'Supplies'

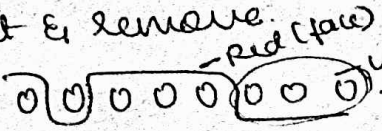
Classification:-

1) continuous [Extra warp
Extra weft

2) Intermittent [Extra warp
Extra weft.

Methods of handling supplies:-

1) cut & remove.



→ white + Red → light pink

If we din't cut extra thread in back means appearence is different.

2) Allowing it to float
   - In ground structure

3) Auxillary figure
   - Interlaced with ground structure to reduce auxillary motion.
   - Lining is provided if extra thread are necessary.

4) Special thread
   - Addition series of warp & weft yarn is used
     they fly to hide the special thread.

comparision of extra warp & extra weft :-

Advantage of extra warp:

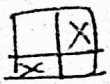
- Productivity of extra warp is high
- No special picking, box, uptake motion, necessary
- theoritically no limit on no of colours
- Intermittent spot effect of stripe pattern can be produced by using extra warp than extra weft.

Adv of weft :

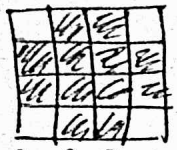
- low
- Special picking, box, uptake necessary
- Limited colours
- not suitable for skip pattern.

warp backed	weft backed
1) High production	low
2) two beam required	one beam
3) warp faced	weft faced
4) less bulky	more bulky
5) Regular picking	Box motion.
6) Difficulty to change patterns	Easy to change patterns
7) Strong & costly warp required	cheap, bulky, coarse weft
8) 2 series warp 1 series weft	1 series warp 2 series weft

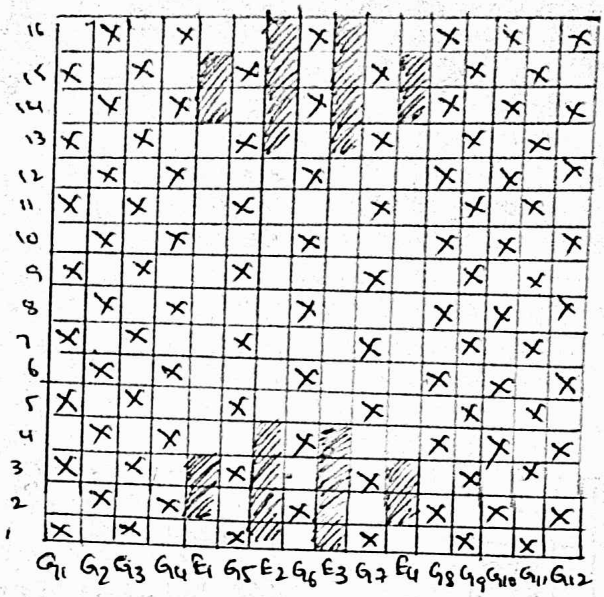
Extra warp:-



Ground weave



E1 E2 E3 E4



- Extra warp up
- Extra ground
- Ground warp up (Ground plain weave)

Extra weft:-

Chintzing effect:-

use of multicolour weft yarn to produce spot effect

Normal	chintzing	not chintzing		chintzing	
Red	White	G+R Green	Red	G+R Grey	Red
Red	Red	G+R Red	Green	G + G+R Green	Grey

Backed cloths :-

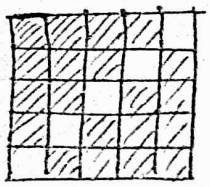
warp backed – 2 series of warp 1 series of weft

weft backed – 2 series of weft 1 series of warp.

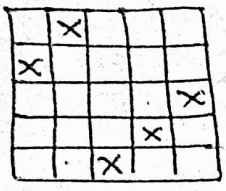
- Extra wet
- Bulky.

2 series – [face / Back.

Warp Backed :-

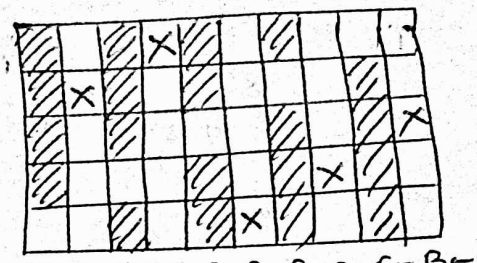


F1 F2 F3 F4 F5



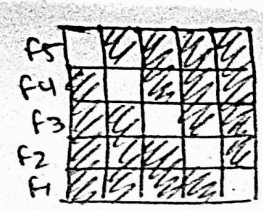
B1 B2 B3 B4 B5

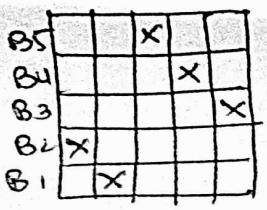
1F : 1B

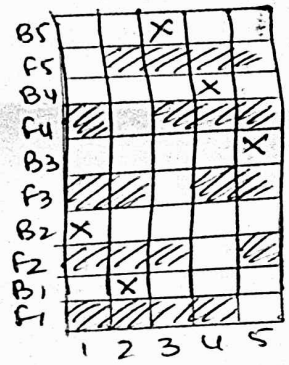


F1 B1 F2 B2 F3 B3 F4 B4 F5 B5

Weft Backed :-







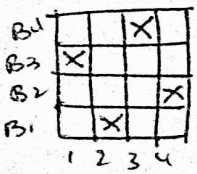
Floating to be matched

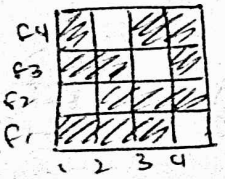
↓

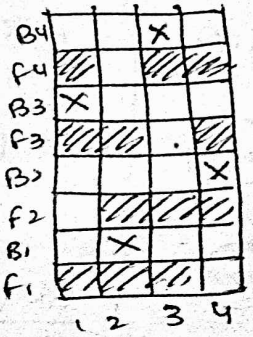
such a way that floats of face & back warp should hide the interlacing point.

* Reverside :-

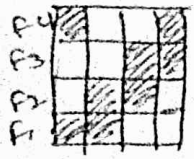
weft back weaves

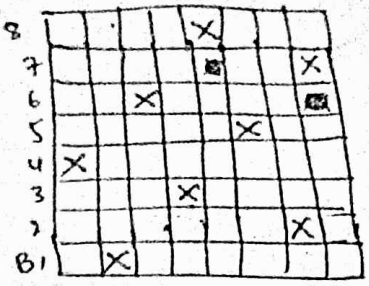




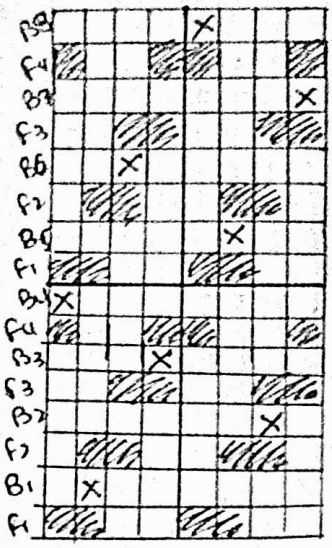


Weft backed structure with twill :- 2/2 twill

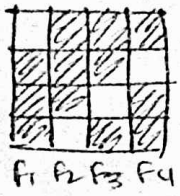


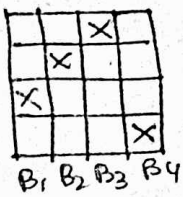


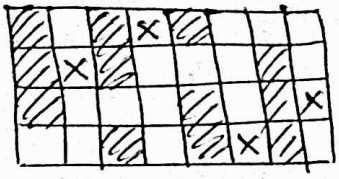
Sendsateen



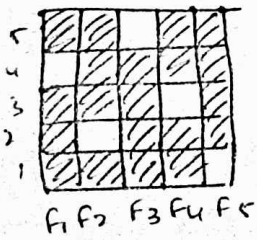
warp backed :-

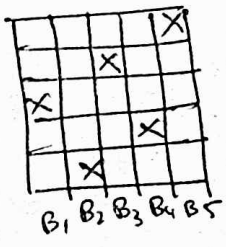


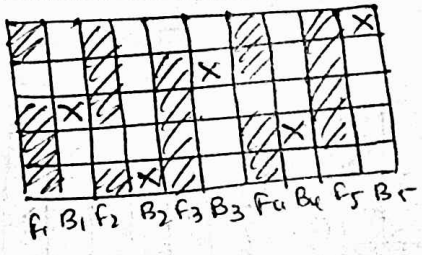




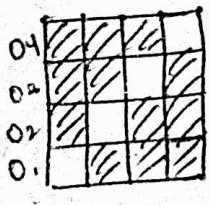
5 endsateen :

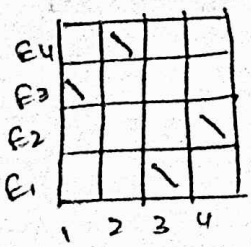


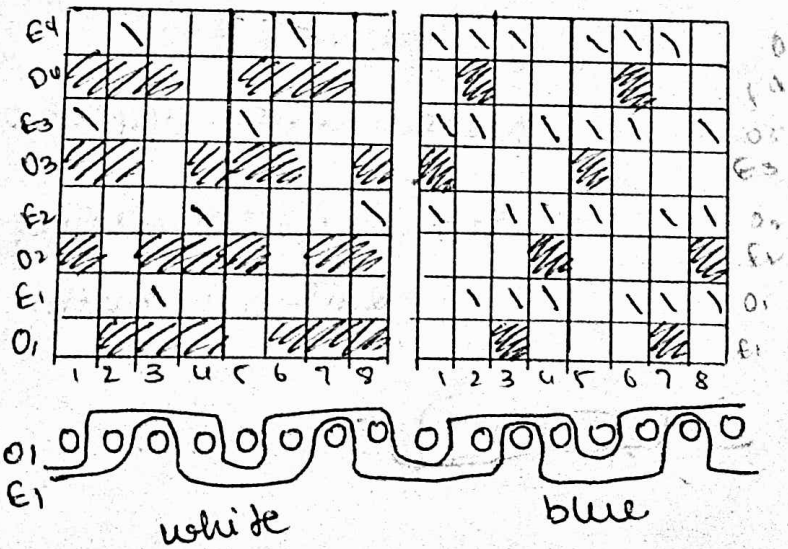




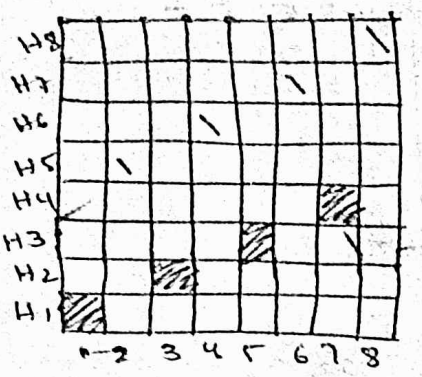
*Interchanging weft backed fabric

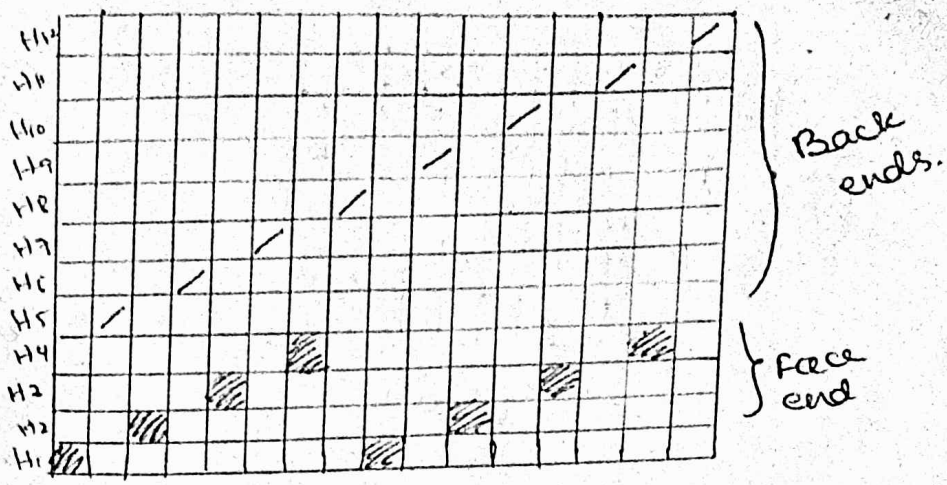


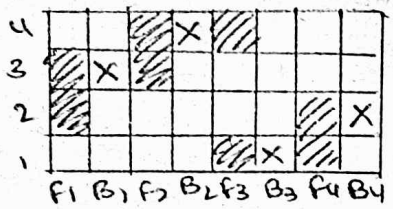


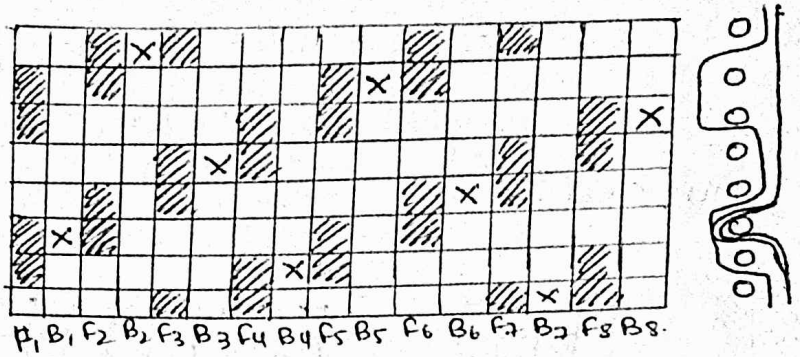


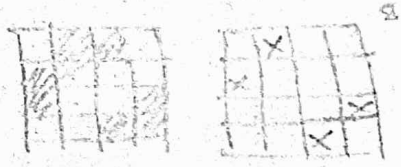
* Drafting & Bearing :-



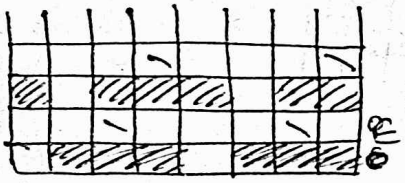


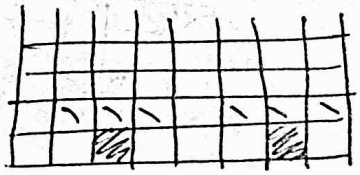


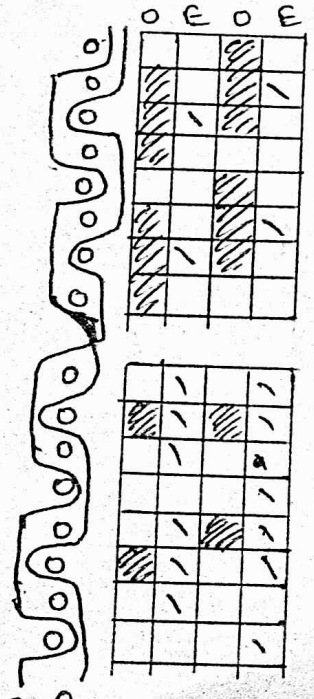




* Interchanging backed cloth :-







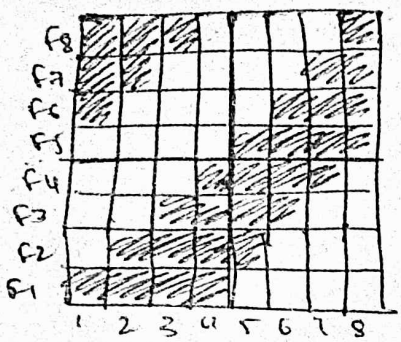
Applications :

- Net interlacing
- prevented from appear on face of backside
- Hidden - meant for adding extra weigh, bulk & warmth.

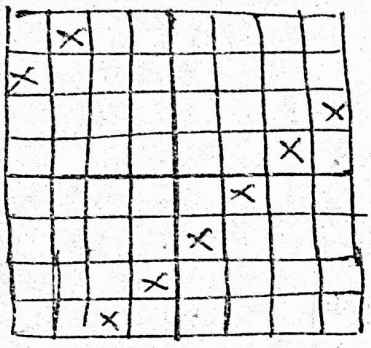
* Backed weaves & fabrics

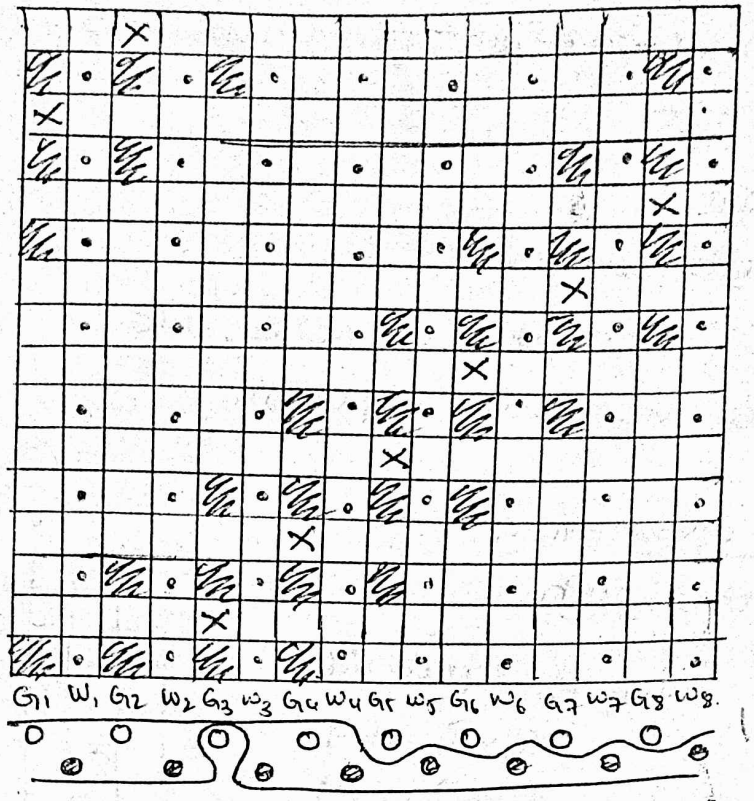
- Weft-backed warp wadded threads.

⊠ - face weft up
⊠ - Back weft up
□ - weft down
⊡ - face weft up in wadded thread.



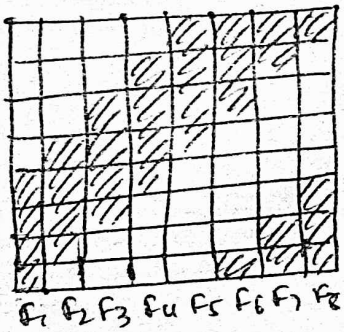
16

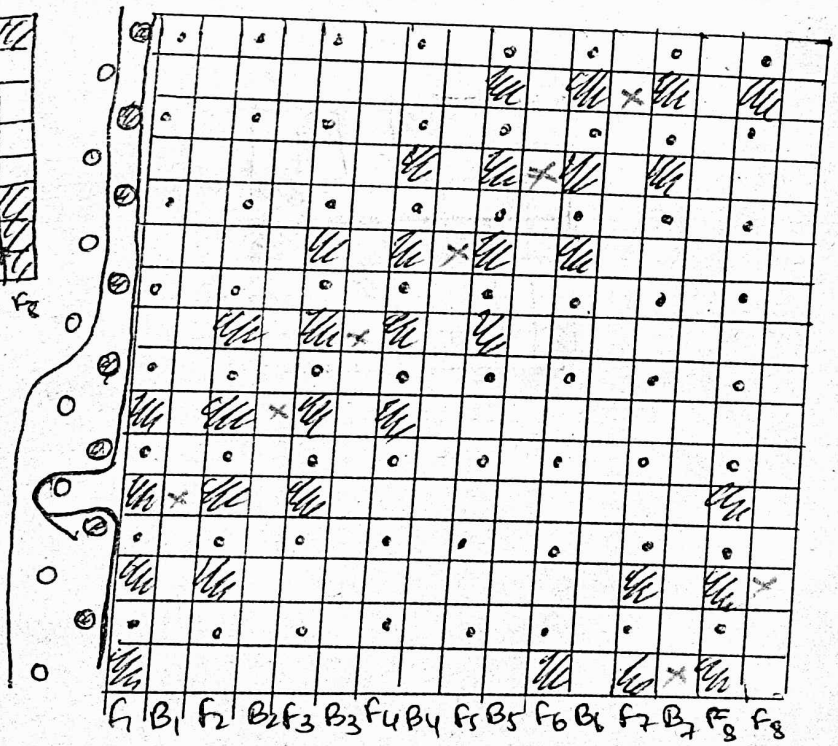




16

— Warp backed with weft wadded thread.





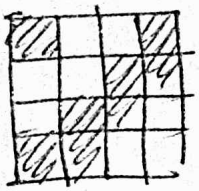
16

Imitation backed cloth:-

- closely resemble backed cloth.
- Each thread interlace on both sides
- Heavy single cloth with fine surface } Bulky, thick, heavy, warm
- Elastic, soft
- one beam
- No multiplex box
- Inferior quality yarn can not be used.
- Solid colour effect not possible.

*Construction of Imitation:-

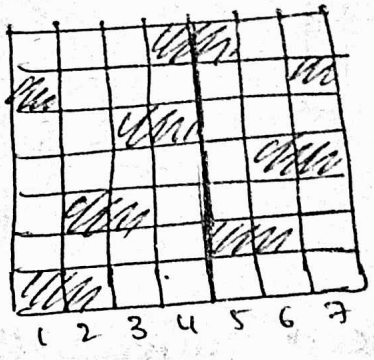
- weft backed cloth:



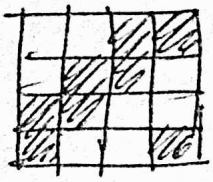
twice the repeat size ± 1

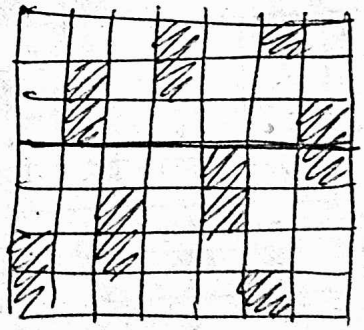
$(4 \times 2) - 1 = 7$

$(4 \times 2) + 1 = 9$



- warp backed cloth:-





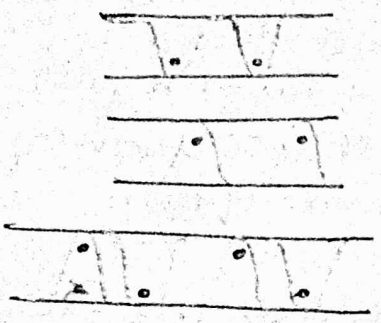
FSD-II

Module 2 :-

* Double cloths

Classification :-

1) Self stitched :-

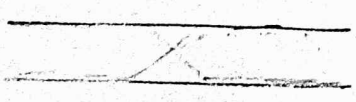


- These fabrics contain only the two series of threads in both directions & the stitching of the face cloth layer to the back layer is accomplished by occasionally.
- Draping a face end under a back pick or by lifting a back end over a face pick.

2) Centre stitched :-

- In these fabrics a third series of thread is introduced either in the warp or weft direction whose entire function is to stitch the two separate layers of cloth together.
- The centre threads lie b/w the face & the back cloth & for the purpose of stitching oscillate at regular intervals b/w the face & the back thus achieving the required inter-layer cohesion.

3) Double cloth by thread interchange :-



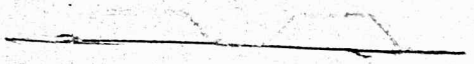
- These structure are similar to the 1st category.
- Is as much as they do not contain an additional series of stitching threads.
- However they are distinguished from the self stitched fabrics by the fact that the self stitching ~~fabrics~~ of the face & back cloth is achieved by frequent & continuous interchange of some thread elements b/w the two cloth layers.
- Thus, is same positions of the cloth, the face ends may be made to intermingle with the back picks & the back ends with the face picks as illustrated schematically at E.

the points at which the threads interchange represents the stitch point.

4) Double cloth by double interchange:-

- In this class of constructions the principle of the interchange is taken one stage further than the third category & complete cloth layers are made to change places as shown in fig.
- As stitching b/w the two fabrics occurs only at the point of cloth interchange the degree of cohesion in this type of cloth depends on the frequency of the interchange.

5) Alternate single & Double cloth:-



- In some fabrics the constituent thread components are occasionally merged together into a heavily set single cloth & occasionally are separated into distinct layers to form figure areas of open double cloth on the firm single cloth ground.
- usually the effect depends upon a degree of distortion as the damned single cloth areas tend to spread out, thus affecting the appearance of the double cloth 'pocket'.

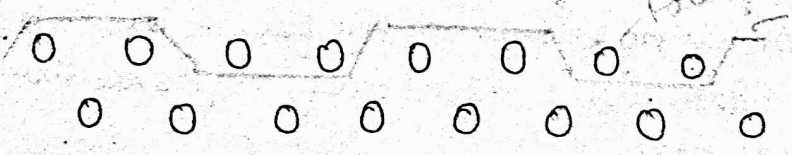
6) Tubular cloth:-

- In addition some cloths are produced on the double cloth principle of construction but due to the deliberate absence of stitching b/w the layers become single cloths upon their removal from the loom.

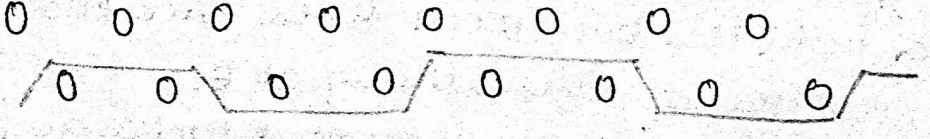
Two such constructions, the double width & the tubular cl are shown respectively at the above figure.

* Self stitched double cloth:-

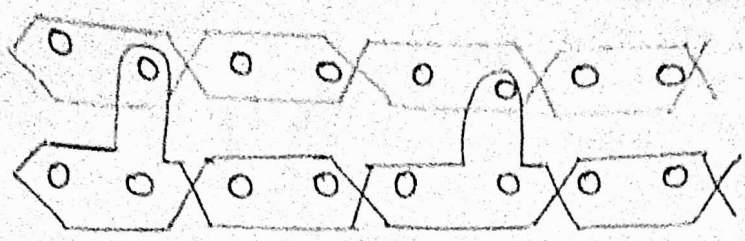
A)



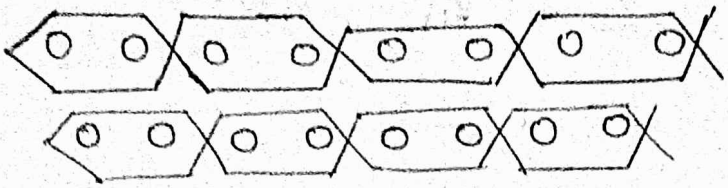
B)



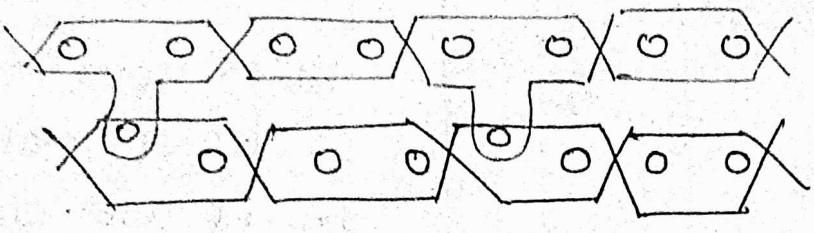
c)



d)



e)



- The self stitched double cloths is composed of two series of weft & two series of warp threads.

One series of each kind forming an upper of face fabric & the other on under of back fabric.

- It is necessary for the face picks to be arranged in definite order with the back picks & the face ends with the back ends.

- The two series of ends required to be drawn through the heards & manner in such a manner that one series may be operated quite independently of the other series.

- Separate weaves are required for the two fabrics, which may be either like or different from each other.

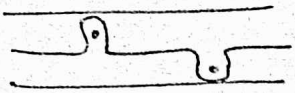
then by interweaving the face picks only with the face ends according to the face weave & the back picks only with the back ends according to the back weave, two distinct fabrics are formed one above the other.

* ~~Interchanging double cloths~~ :-

-

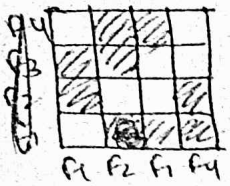
* Centre-stitched Double cloth:-

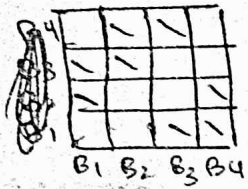
- centre warp stitched fabric - weave = $\frac{2}{2}$ twill (face & back)

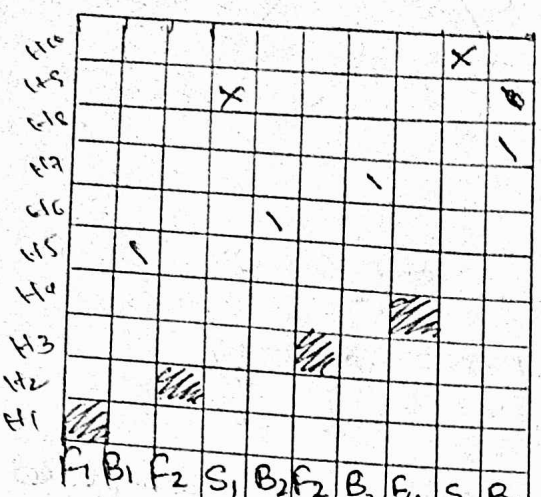


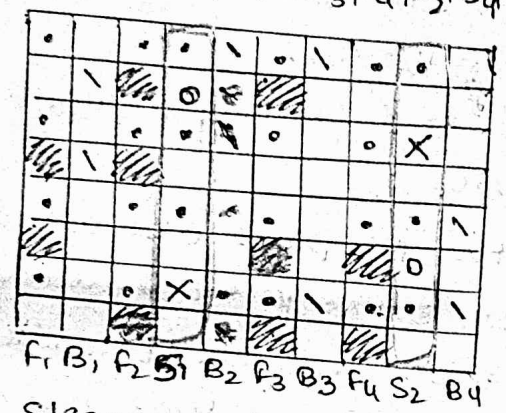
- thread ratio: 1F:1B

- Ratio:- 4 Face; 4 Back; 2 stitch









- ▨ - FE upon FP
- Ⓓ - BE upon BP
- ⊙ - FE upon BP
- ⊗ - SE down on BP
- Ⓓ - SE upon FP

Warp direction: Strong
fine
Natural colour

Weft stitched: less picks
strong yarn
No Jacks

Rules/conditions for perfect placement of stitching point:-

1. BE (FE) must be at that place away from Back side (Face) of the cloth
2) It must surface the two long warp floats of face cloth.
3) The face (Back) pick over which back (face) end is raised must be absent from the face cloth.
4) It must be pulled down at a point where it is covered by two adjacent weft floats at back side (face)

* Self-Stitched :-

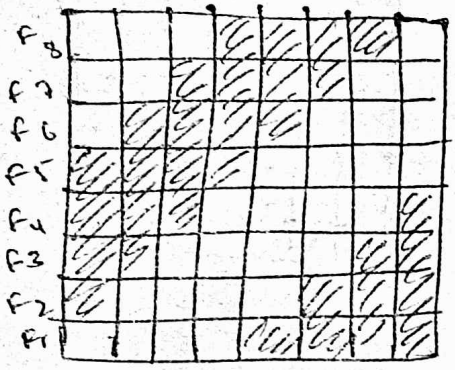
- Weave - Face $\frac{4}{4}$ twill
  Back $\frac{4}{4}$ twill
- Thread ratio :- 1F : 1B
- Stitching: Back end upon face pick.

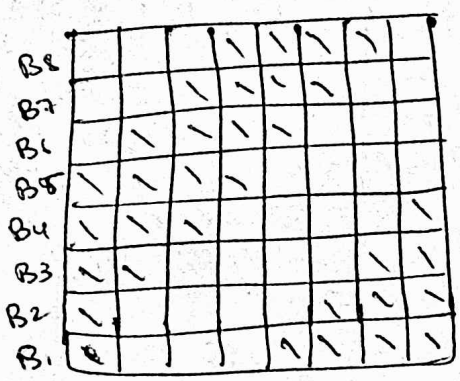
▨ - FE upon FP

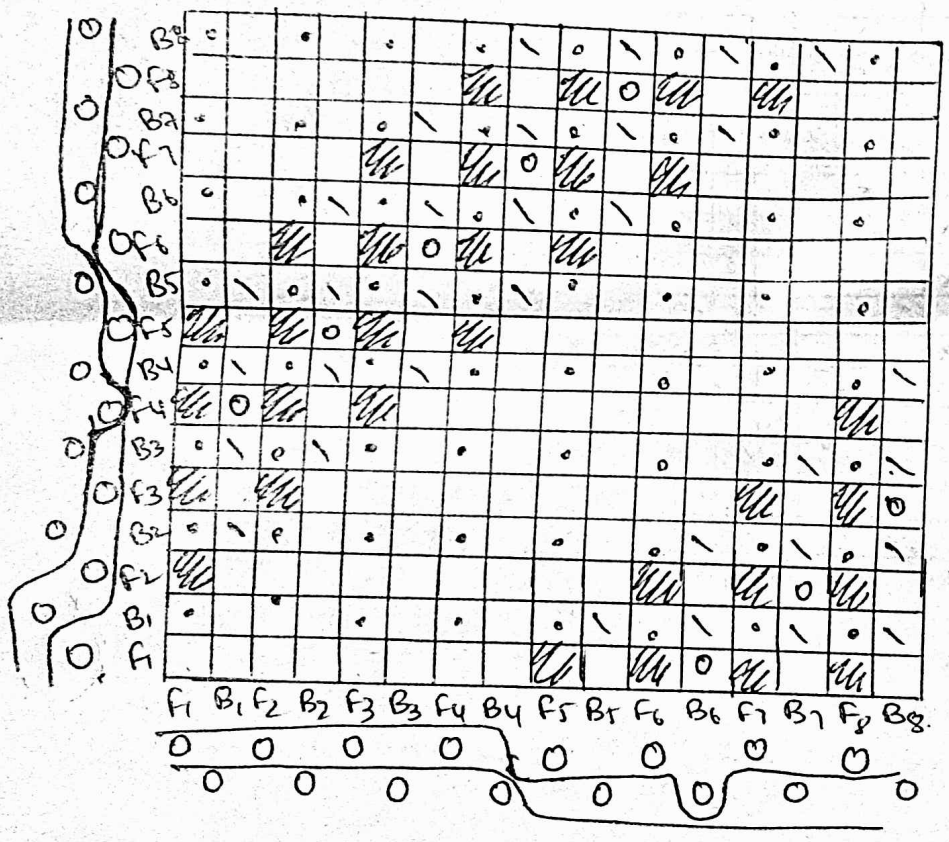
▨ - BE upon BP

▯ - FE & BE down

⊙ - BE upon FP.







* Reversible dey stitched Double cloth:-

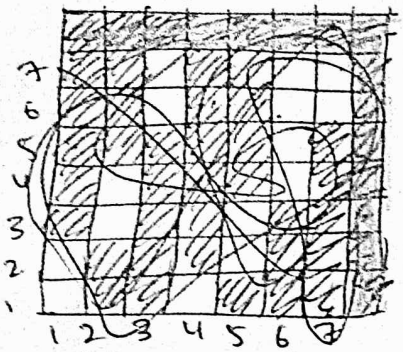
Thread ratio: 1F:1B (warp & weft)

weave: $\frac{5}{2}$ face

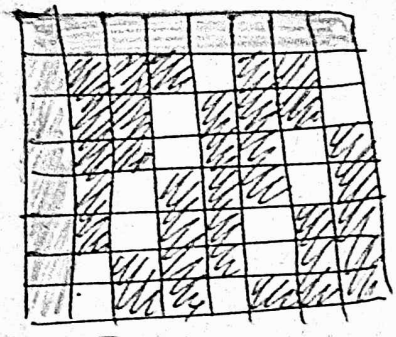
$\frac{2}{5}$ Back

Stitching B.: Back depend upon face pick

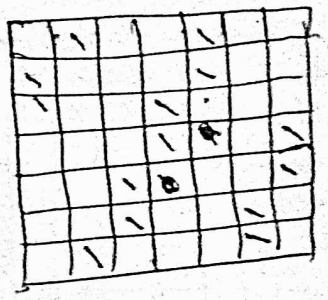
(A)



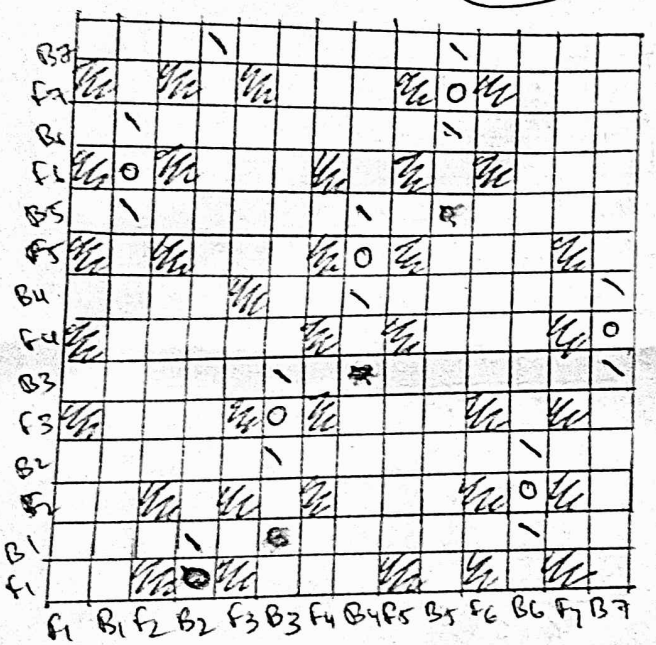
(B) 5/2



(B)



(A+B)

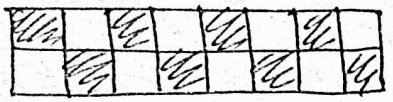


* Interchanging double cloth:-

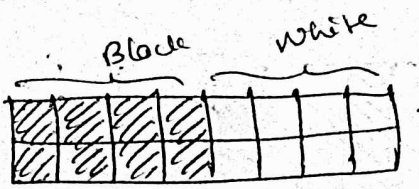
1) colour
2) separating lift.

1) change in position of separating lift:-

producing a vertical stripe effects
↳ complicated figures produced

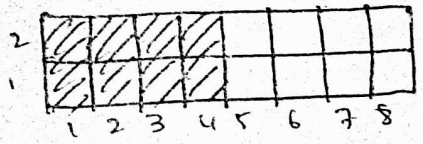


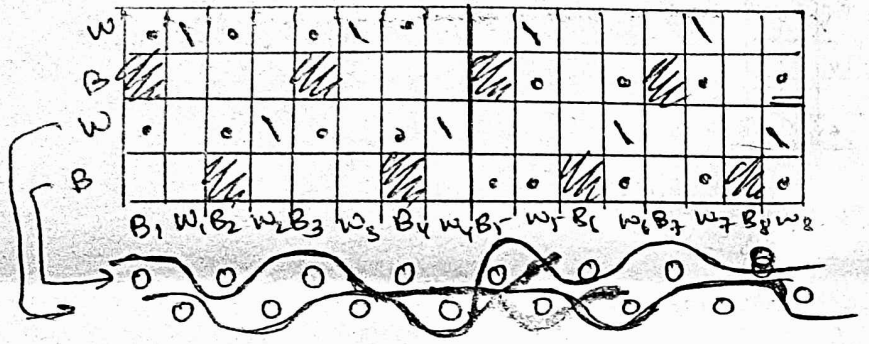
- plain weave

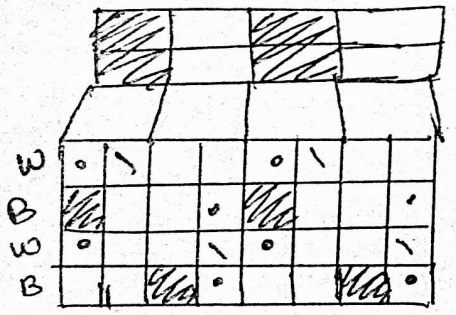


- stripe weave

Ex:- Stripe weave





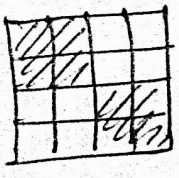


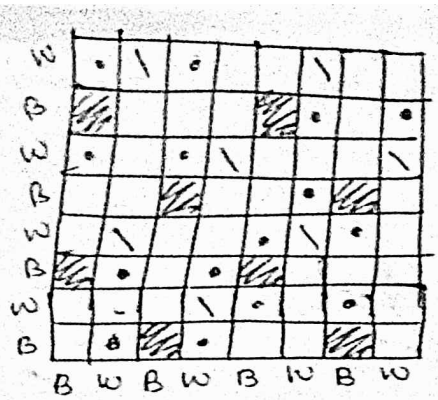
then stripe ↓ pin stripe.

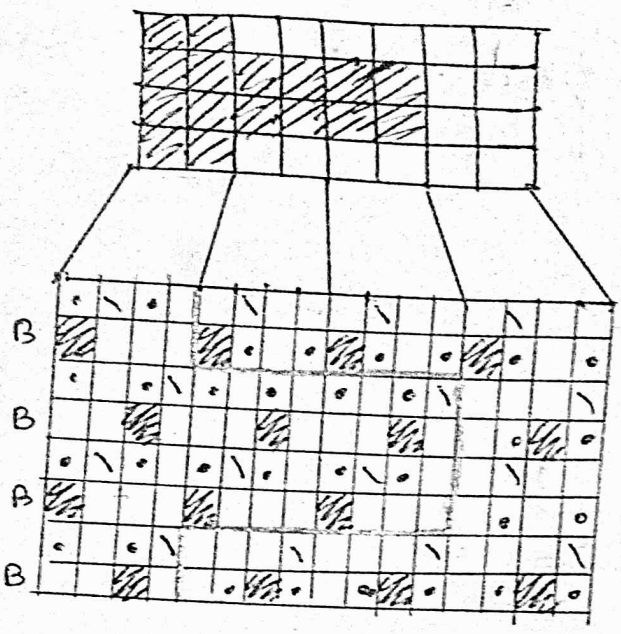
⊡ - separating lifts

Horizontal weave

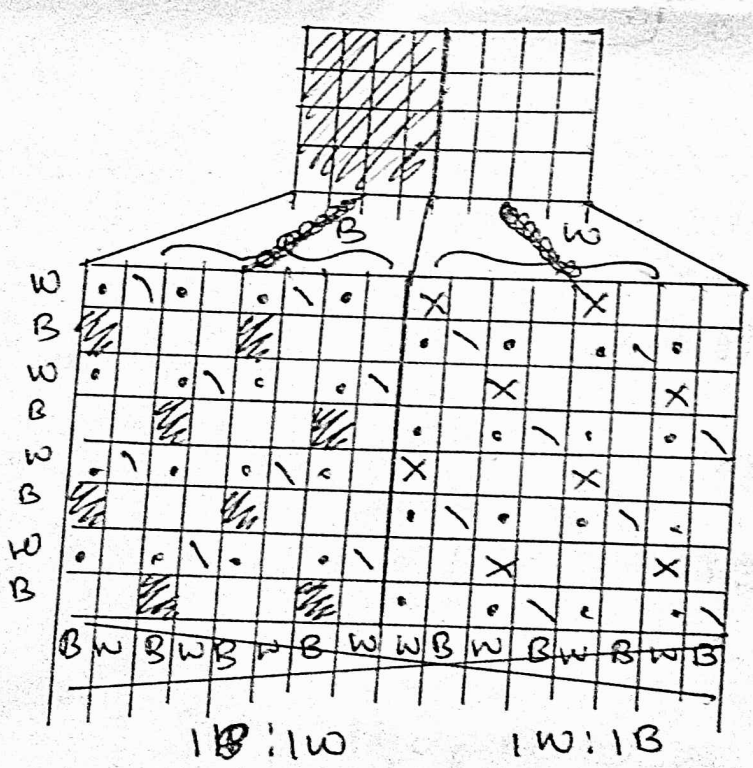
change in position of ⊡ → separating lifts







Change in colour arrangement.



MODULE-3

* Gauze and leno structures:

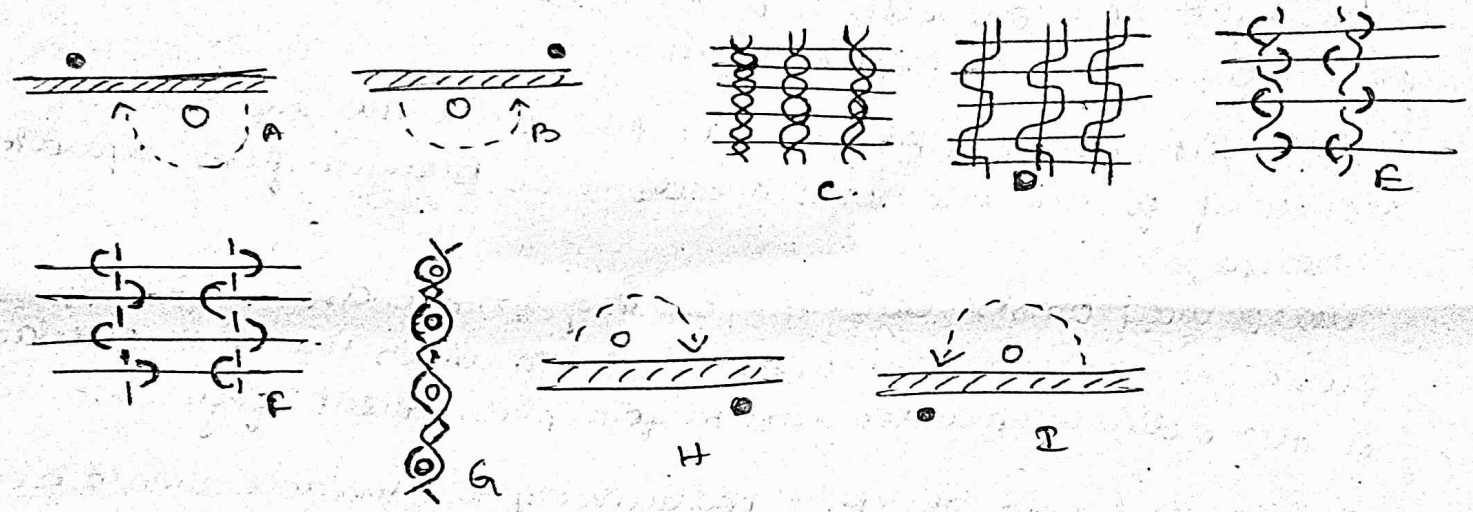
- In gauze & leno weg. certain ends - termed crossing ends - are passed from side to side of the standard ends, and are bound in by the weft in three positions.
- The crossing & std ends may be arranged with each other in various proportions, as 1&1, 1&2, 1&3, 2&2, 2&3 etc.
- An essential condition is that each group of crossing & standard ends must be placed in one split of the reed.
- A crossed system of interlacing can be obtained when all the warp is brought from one beam & in some cases this is essential in order to produce the desired effect.
- Effects with such a difference in the take up are produced that is necessary for the two series of ends to be brought from separate beams.
- warp may consist entirely of crossing & std ends or stripe of these may be combined with stripes in which the ends interlace in the ordinary manner so as to form plain, twill, figure etc
- In open perforated structure particularly the threads should be as smooth, as uniform in thickness & with as little loose fibres on the surface as possible.
- As the warp yarn in leno weg are subjected to a higher degree of friction & greater stress, their average strength should be higher than the minimum required for normal weg.
- The fabrics produced by this method are employed for curtainings, sheetings & for blouse & dress materials as well as for various industrial use such as filter cloths, sieves & sieves these great merit lies in a very considerable stability of the interlacing combined with its open nature.

The size of the interstices can be determined precisely & will remain stable & uniform even under a degree of pressure

- The yarns used most frequently in the manufacture of these fabrics are cotton, open rayon, staple, cotton/polyester blends, filament polyamide & polyester, glass & occasionally silk. Due to the friction associated with this system of warp yarns susceptible to static electrification should be well protected either by lubrication or by other techniques of static elimination.

* The principle of leno structure:-

Leno may be applied to all structures in which some ends are transferred from one side to the other of the standing or std. ends the term gauze is reserved for open structure produced in a plain or similar simple leno interlacing.



- At A & B respectively cross sectional views of two successive sheds are given in which at A the crossing end forms the top shed on the left of the std & at B on the right of the std end.

- In plain leno, using the bottom dropping system illustrated at A & B. the crossing end is up & the standard end down on every pick but in b/w each successive shed the crossing end crosses under the std end prior to each lift & the weft is held b/w the half-twist of the crossing end

- The interlacing diagrams C & D shows the appearance of plain leno structure, the former obtained when one beam is used & the distortion of both the set of ends is equal & the latter distortion of both the set of ends in equal, & the latter

· achieved when the weaving ends are placed on a lightly tensioned beam & therefore, bend prominently & the standard ends lie straight being placed on a heavily tensioned beam

- The cell-edge of the weaving end may occur under the std end as shown at A & B which as stated is termed bottom dawping & it may occur over the std end which is termed as top dawping.

- The latter case is illustrated by the two successive shed diagrams given at H & I which show a situation exactly the reverse of the one depicted at A & B

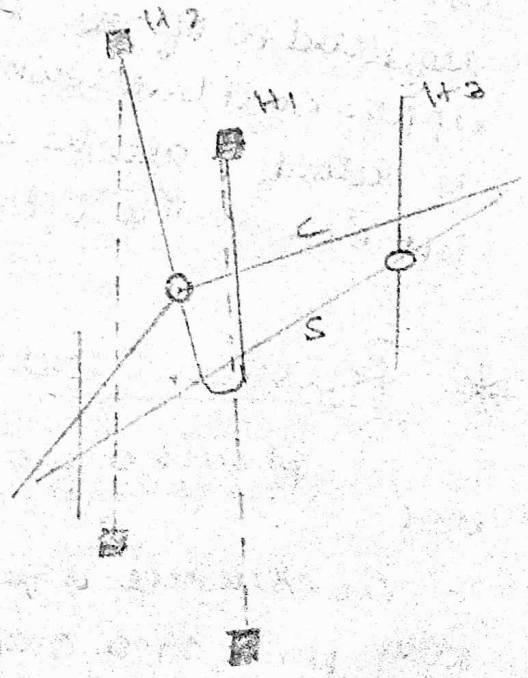
At H the weaving end forms the bottom shed to the right & I to the left of the std end which on each pick remains in the top shed.

- Thus, in top dawping the weaving ends are drawn and the standard ends up on every pick but as the weaving end is transferred alternately from one side of the std to the other b/w each pair of sheds the weft is held securely in the half twists of the weaving end.

* Basic sheds of leno weaving:-

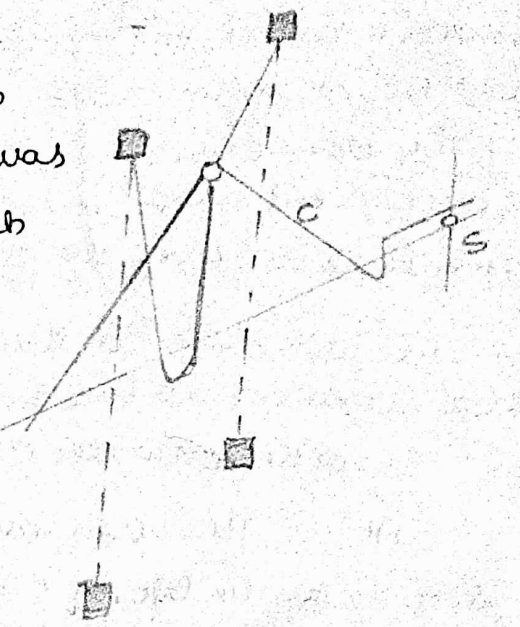
Open shed

If it is assumed that they are drawn on the left hand side then each lift of the weaving end on the left will be quite a normal lift, as no transfer to the 'wrong' side of the std is involved, provided that the heald which holds the weaving end on the otherside of the std releases it & held on the weaving end temporarily. This is ensured by the deep & the shed on the left thus formed is illustrated at B the fig. & is known as open shed.



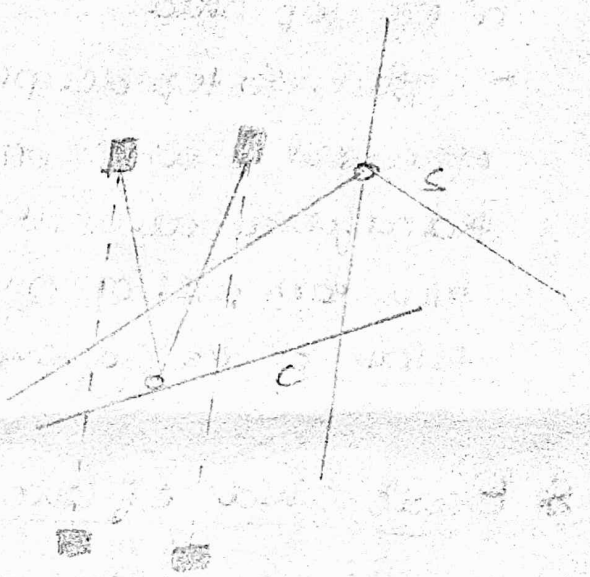
Crossed shed:-

Making the crossing end left on the right involves first piling it across from the normal side i.e, the side on which it was drawn through, to the 'wrong side which again is accomplished with the aid of the deep. & this shed is known as crossed shed



plain shed:-

In this the left has been designated as the normal, & the right as the abnormal side the situation would be leveled if the crossing ends were originely drawn through from the beam on the right hand side of the std ends instead of on the left.



On both the leno sheds the std ends is bottom denting remains down. if however, on some picks of the construction it is required to lift the std end to form the upper shed line whilst leaving the crossing end down then the std heald is raised & all the elements which control the crossing end are left down. The lift of the std end which is termed the plain shed.

* Russion Cords:-

- Shows a leno & plain weave stripe fabric termed as russian cord.
- The structure is quite solid & consists usually of a no of ends wng plain in a stripe arrangement interspersed by ends in a strongly contrasting colour which produce a leno stripe.
- The leno stripe contains one & two thick std ends or larger no of fine std ends over which the crossing end

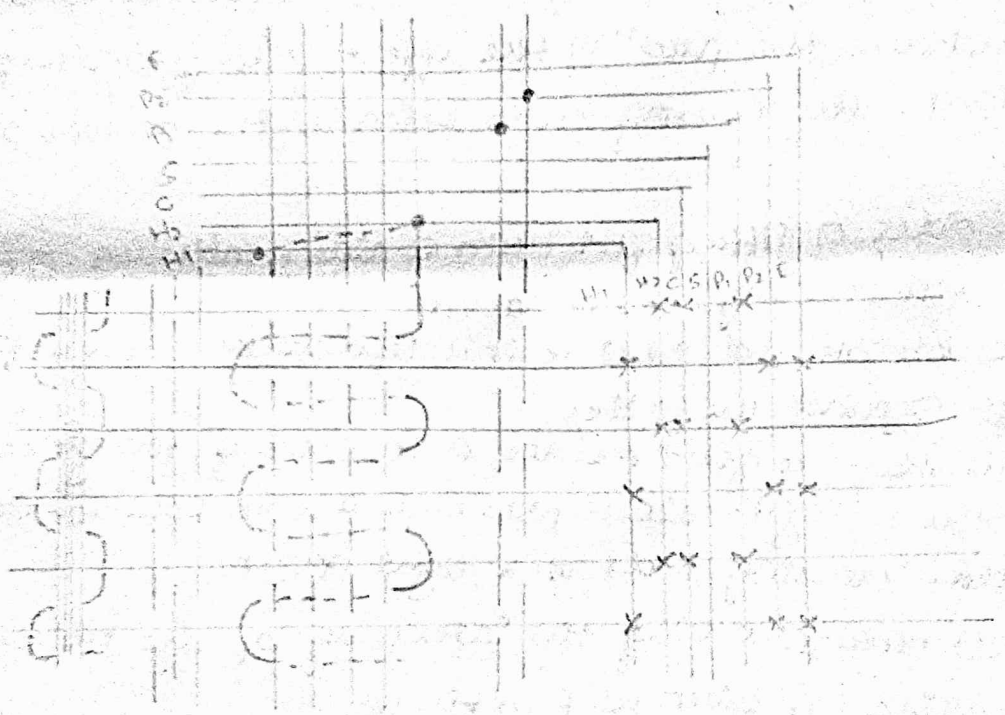
passes from side to side on succeeding picks.

- The weft in the leno stripe is entirely concealed the surface being formed by a distinctly bulging cord effect.

- The face side of the cloth is given in the interlacing diagram at R in fig. but the fabric is normally woven face side down with a bottom shedding arrangement.

- It will be noted from the diagram that the crossing ends form crossed & open sheds on alternate picks & therefore, the two lifting heads of the leno assembly work exactly as in the plain leno.

- Cords as wide as 6mm have been successfully woven in flat steel heald assemblies using the simple heald with an eyelet.



Simple Net leno :-

- The term net or spider leno is commonly applied to those styles in which the crossing ends are mostly floated on the surface of the cloth & are interlaced so as to form waved lines.

- The effect formed by the crossing ends is usually a chief feature of the pattern. & these ends, therefore require to be of special material, colour & thickness so that they will show in clear contrast with the ground.

- Each group of std ends generally forms a compact ground structure across which the warp ends are traversed, the latter ends being really introduced on the extra warp principle.

An open structure is however, sometimes given to a fabric by suitably arranging split b/w the groups of ends.

- Figure illustrates a style in which the weaving ends are all drafted in same direction across four std ends. A portion of the structure showing how the threads interlace is represented at I, while the draft is given at T & the lifting plan at L.

- The std ends as is very frequently the case in these styles, work two ends together in plain order throughout, so that they will spread out as much as possible & they are also kept as straight as possible in the cloth. so that the maximum amount of flatness will be given to the weaving ends.

- Illustrates the prodⁿ of the effect wrong side up with a bottom warp, the weaving ends being lifted on one pick in every five.

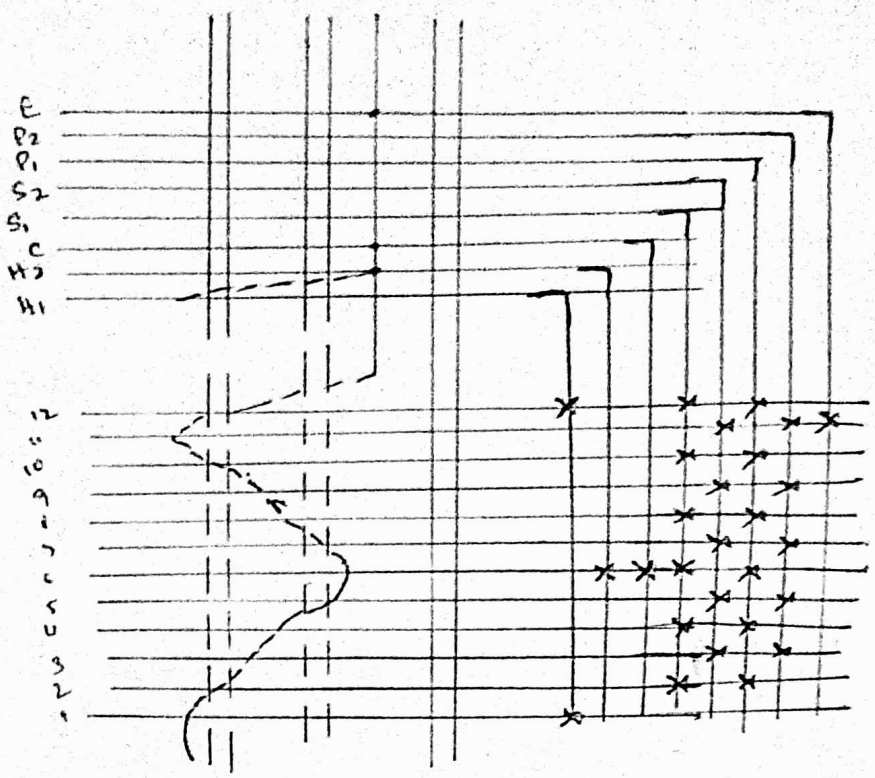
- The order of lifting fit with a plain interlacing of the std ends three while a weaving end is raised

- The double std end next to it is left down. & the former is held by the weft against the latter

It illustrates a good method of colouring the ground of a net leno style. Here light coloured ends are introduced on a dark ground & dark weaving ends on a light ground.

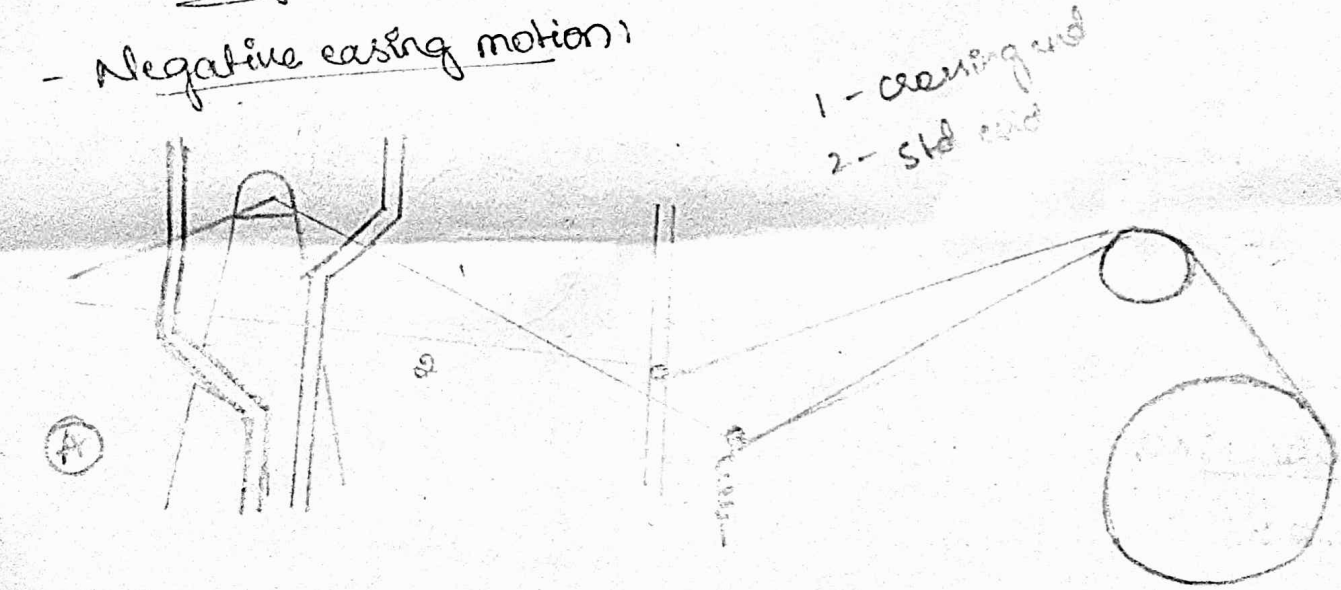
- A flat view showing the interlacing of the threads in the beard leno stripe. is given at P in the fig.,

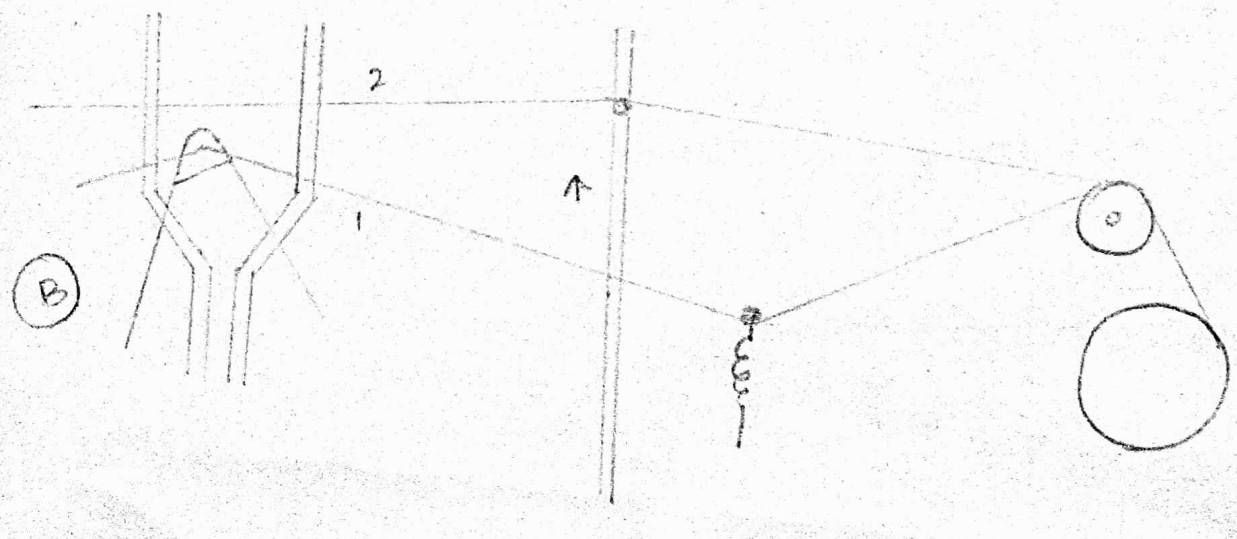
In this case the effect being shown face side up although normally it would be produced face side down using the bottom warping system.



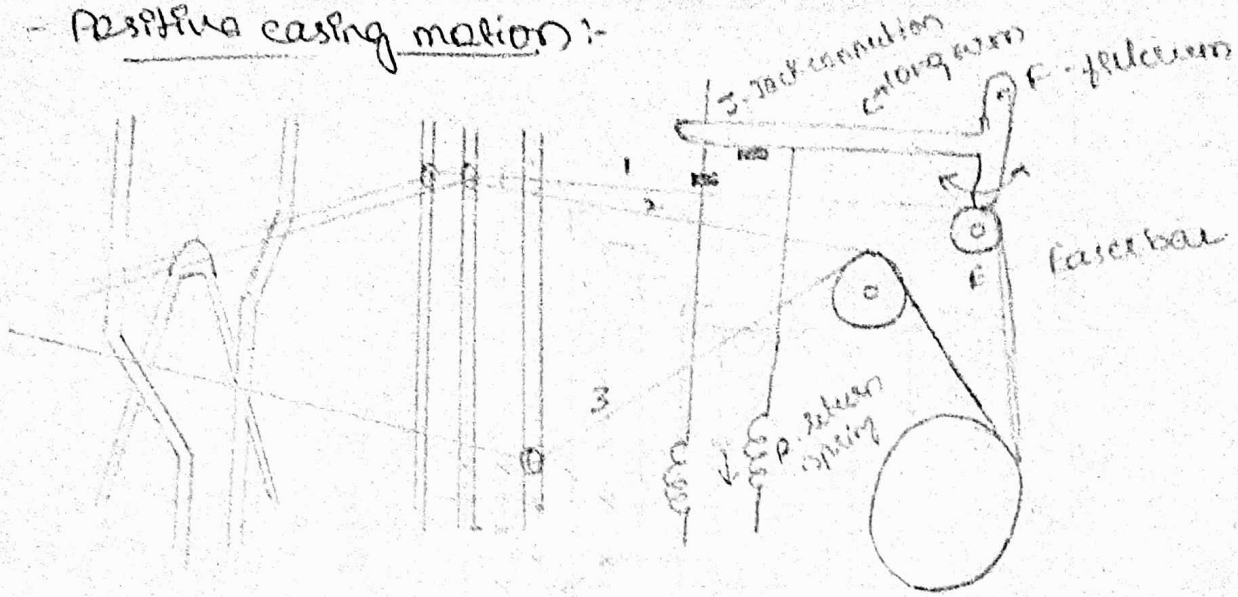
* Easing action shaker device :-

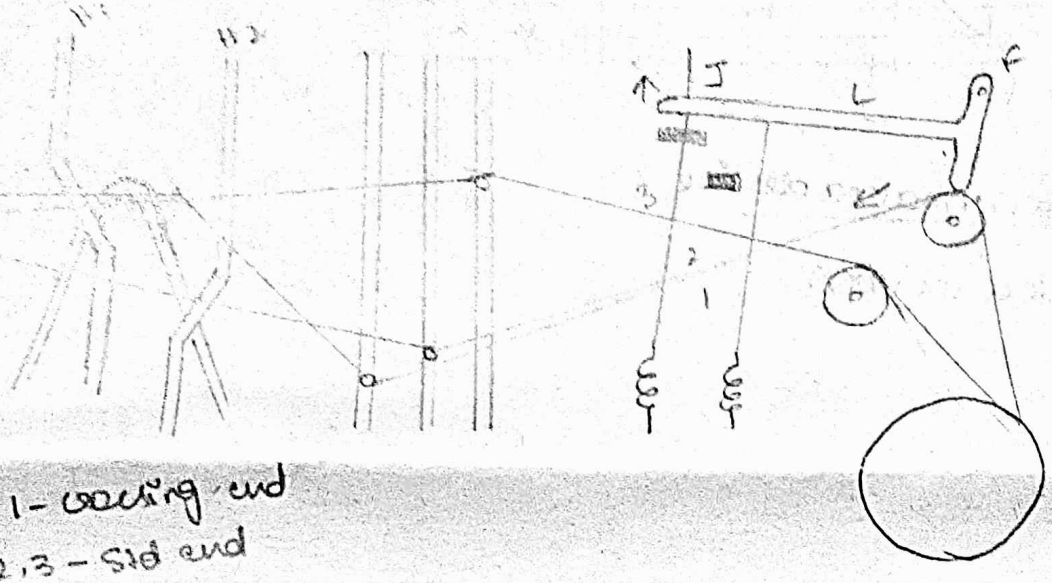
- Negative easing motion :





- Positive casing motion :-

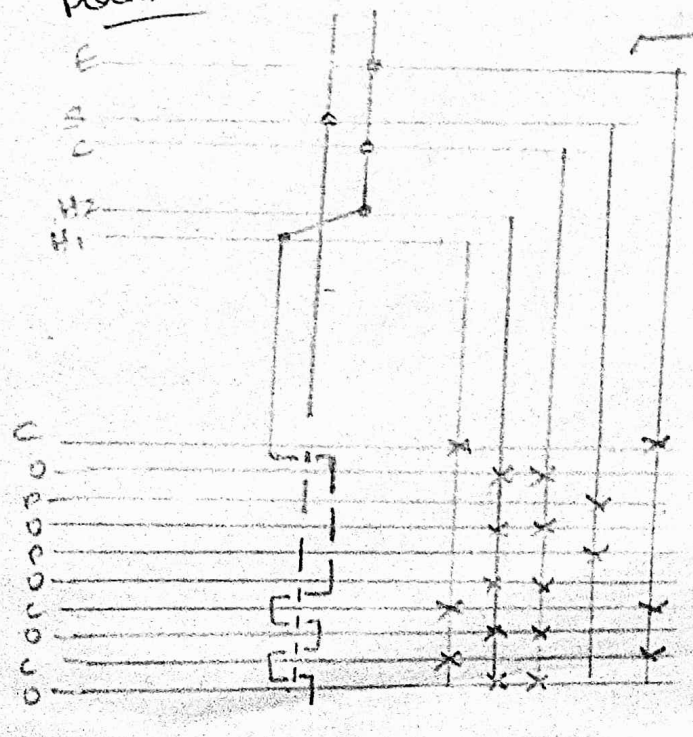


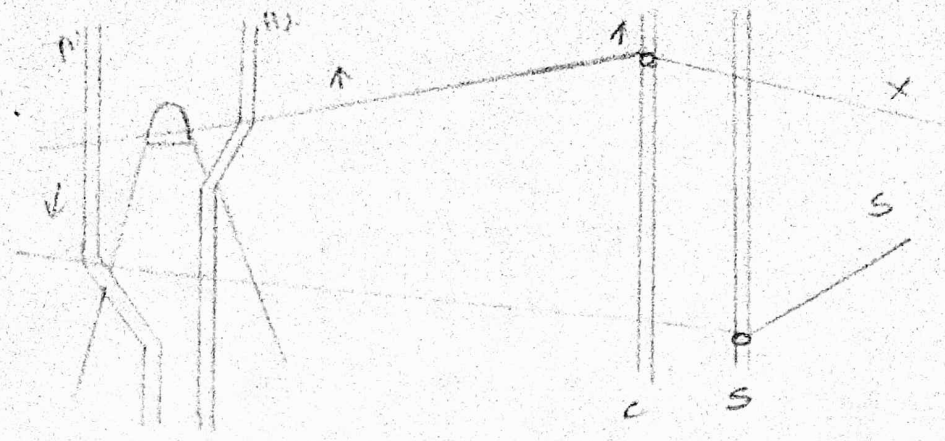


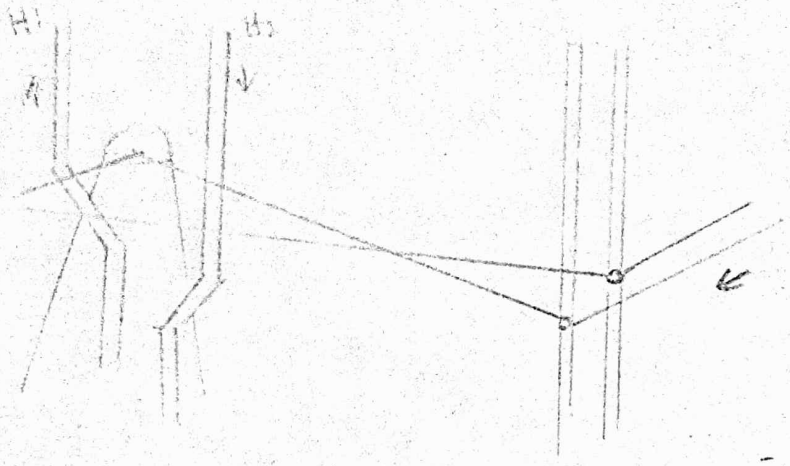
1 - casing end
2,3 - slid end

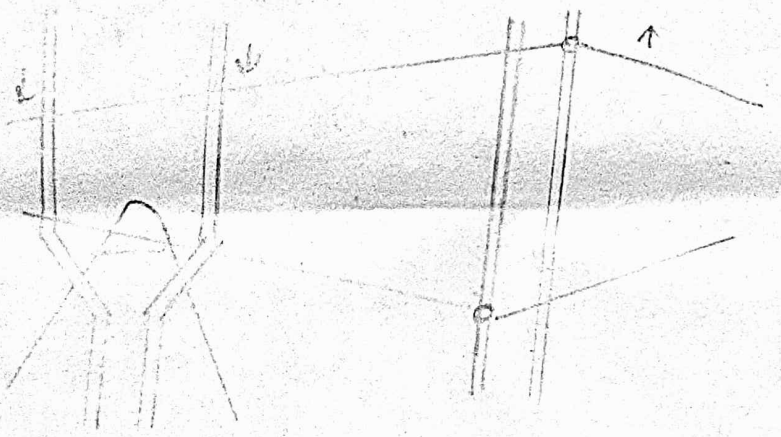
* Lens weaving :-

Plain lens :-




H1
H2
X
S
C
S


H1
H2



M-4 FSD-II

* Weft Pile fabrics:-

- These fabrics incorporate two types of weft & one type of warp threads.
- A deep box is necessary, if the pile weft differs in count or colour from the ground weft.
- Weft pile fabrics contain a much greater proportion of weft threads as compared to warp threads.
- High density of weft picks which in the finest fabrics may reach 200 picks per cm.
- The high weft thread density is possible by having low warp set with higher tension of warp.
- Due to the high warp tension, positive shedding mechanism are used
- Highest qualities of cloth require specially constructed heavy weaving machinery.
- Low & medium quality cloth can be prepared on high speed automatic looms using reeds with special deep dent wires. picks per cm 50 to 100.
- they have long floats of weft which may be cut or uncut so in warp rib is used. plain is used for ground.
- cotton, rayon, worsted or mohair may be used
- Ring yarn is used.
- A different form of pile surface is produced by raising & cropping during fabric finishing operations but in this case the surface is formed of projecting fibres and not of projecting threads & the term nap rather than pile is more appropriate for cloths of this type.

Velveteens may be classified:

1. All over or plain velveteens in which the surface is uniformly covered by the pile.
2. weft plushes - similar to above but arranged to produce much longer tufts & used mainly for upholstery purposes.
3. corded velveteens - Also known as corduroys and fustians in which the pile runs in orderly vertical cords of varying width.
4. figured velveteens - In which pile figure is produced on base ground

All the above groups may be further sub-divided into plain back or twill back structure depending on the type of weave in which the ground picks interlace with the warp.

All over or plain Velveteens:-

- This class of velveteens has a perfectly uniform surface the foundation texture being entirely covered by a short pile in which the projecting fibres are of equal length.

1. The weaves that are used for the ground & pile respectively.
2. The ratio of pile picks to ground picks.

The factors together with the ends & picks per cm of the cloth, influence the length, density & fastness of pile.

- The ground weaves mostly used are plain, 2&1 twill and 2&2 twill the last weave being employed for very heavy structures.
- The interlacing of the pile is almost invariably based either on the plain weave, a simple twill, a sateen or a sateen derivation.
- The pile & ground picks may be arranged in any reasonable proportion, but generally a particular ratio is most suitable for a given weave.

Plain back Velveteens:-

- In each design the no of pile picks to each ground pick is equal to the no of picks in the repeat of the pile to the no of picks in the repeat of the pile base weave.

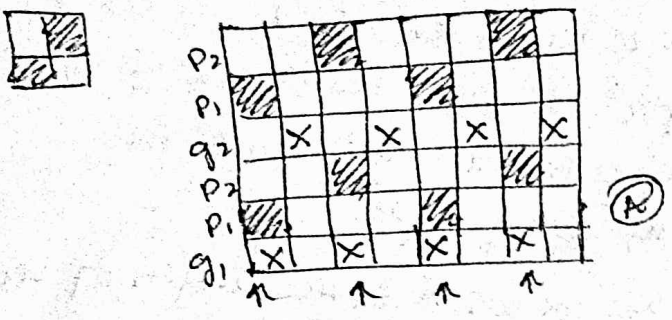
There is a convenient ratio, but other proportions of pile to ground picks are quite easily arranged in the same weave.

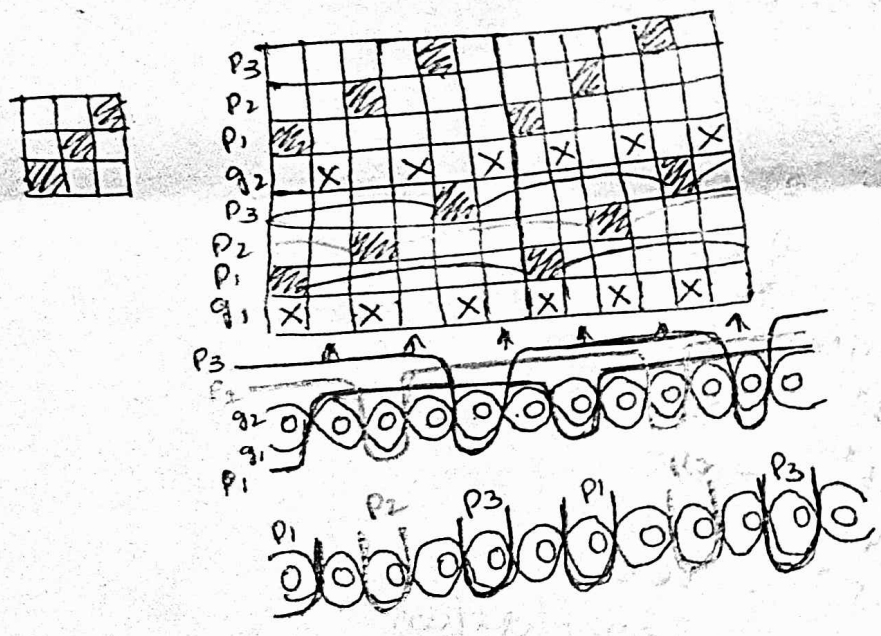
Thus each plan is on twice as many ends as the base weave. Design A is arranged 2 pile picks to 1 ground pick and the pile weave is based on the plain weave which yields a weft float of three. In a finely set cloth the pile from this design is short and poor, but at low warp settings a fairly good result is obtained.

1 ground : 2 pile

X - End up on ground pick

▨ - End up on pile pick.





Length of pile:-

- parameters : Float length ↑ pile length ↑
  Ends/inch ↓ pile length ↑
- length of pile varies according to the ends/cm of the cloth & the no of ends over which the pile weft floats.
- An ↑ed length of pile is obtained either by reducing the ends per cm or by increasing the no of ends over which the pile weft passes.

and conversely, a decreased length results from increasing

the ends per cm of from reducing the pile float.

Density of pile:-

- The density of the pile varies according to the thickness of the weft, the length of the pile & the no of tufts in a given space.
- A ↑ in the thickness of the weft tends to make the pile coarser, but other things being equal the density is increased.
- A long pile causes the surface of the cloth to be better covered, & thus gives a fuller handle than a short pile.
- The greater the length the pile is however, the fewer are the no tufts formed by each pile pick, & with the same no of pile picks per cm, an ↑ in density, due to ↑ in length, will be counteracted by a reduction in the no of tufts.

It is, therefore, customary for an ↑ in the length of the pile weft float to be accompanied by an ↑ in the no of pile picks per cm.

Assuming:

1) Warp count - 20/2 tex 2) weft - 12 tex
3) Picks/cm - 32 piles 4) Ends/cm - 28.

① Plain - pile picks/cm - 64
② ½ twill - 2:3 - 96
½ twill - 1:4 - 128
4end satin - 1:4 - 128
5 satin - 1:5 - 160.

* No of tufts/cm² = $\frac{\text{EPCM} \times \text{Pile picks/cm}}{\text{End in repeat of pile weave}}$

① $\frac{28 \times 64}{4} = 448$ ② $\frac{28 \times 96}{6} = 448$ ③④ $\frac{28 \times 128}{8} = 448$

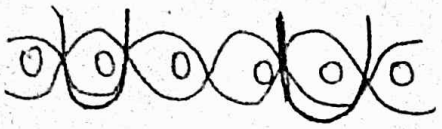
⑤ $\frac{28 \times 160}{10} = 448$

* Pile picks/cm ↑ density ↑

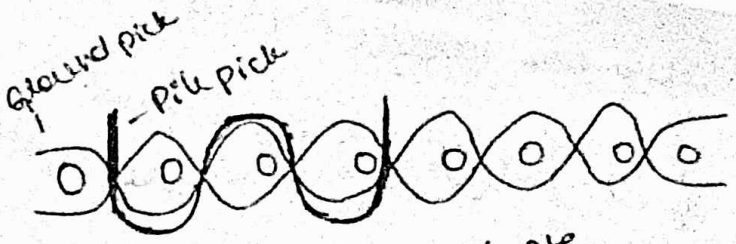
Density $\propto$ EPcm & pile picks/cm

$\propto \frac{1}{\text{End in repeat}}$

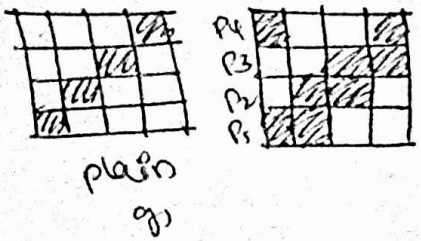
Fast pile structure:-

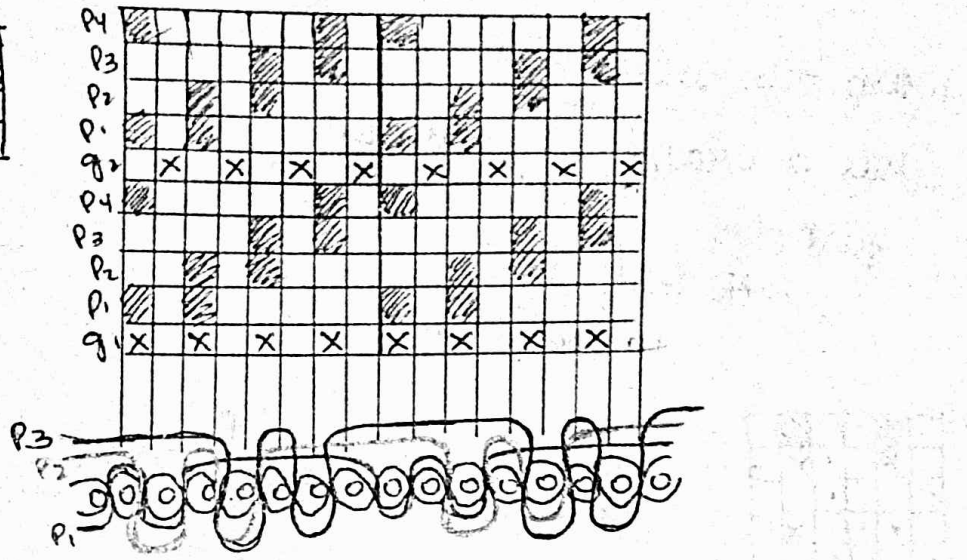


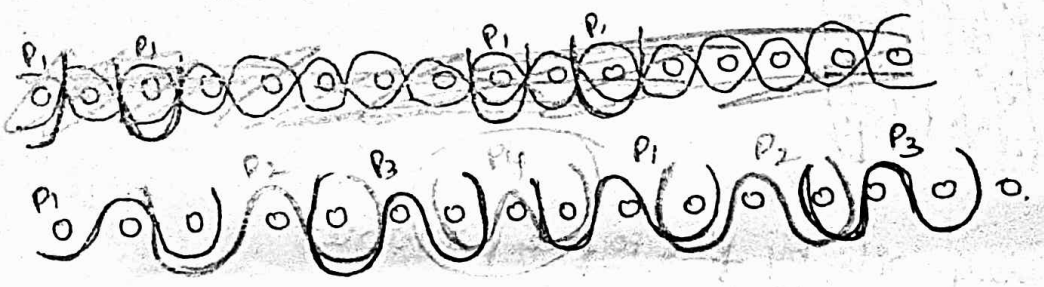
In this pile are come out easily



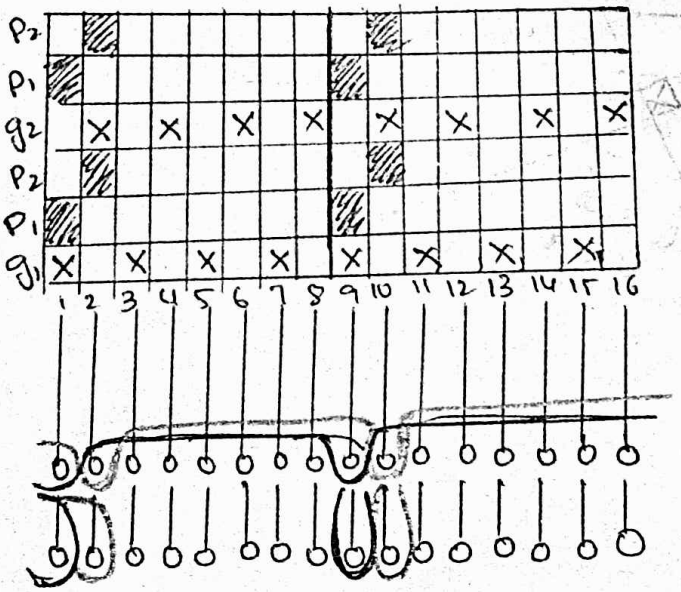
Modified weave - Fast pile the shape of pile is "bad" instead of "o(o)o"







Corduroy (corded velveteens):-



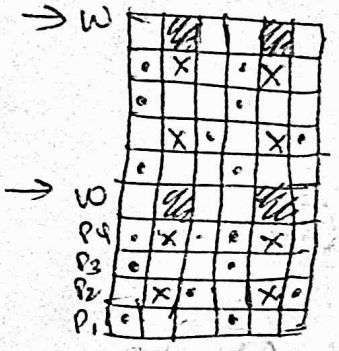
* Warp pile fabrics:-

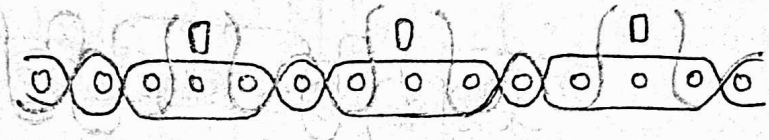
1) Wire method
2) Face to face method.

1) Warp pile - wire method:-

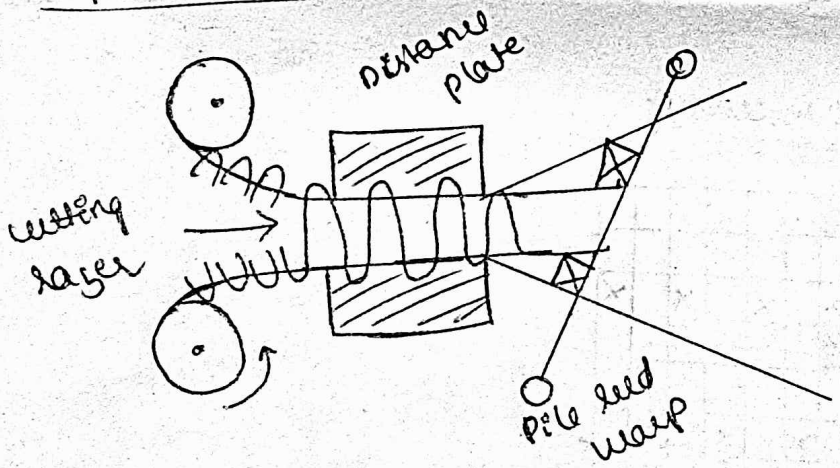
Ground weave - 3/1 warp rib

Pile
ratio :- 2g : 1P
4 weft : 1 wire





2) Warp pile by face to face principle:-

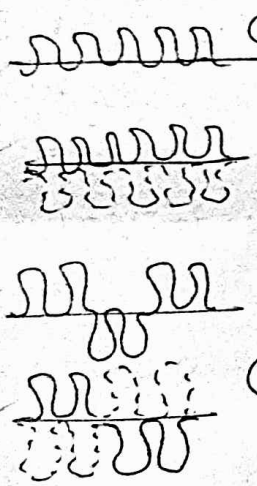


M-5 FSD-II

* Terry pile structure :-

- Terry pile is also known as the turkish towelling is a class of warp pile structure in which certain warp ends are made to form loops on the surface of the cloth.
- only 1 series of weft threads is used but the warp consists of 2 series of thread the ground & the pile.
- The loops may be formed on one side only & on both sides of the cloth thus producing single sided & double sided structures respectively.
- Any one pile thread may alternate b/w the face & the back of the cloth a possibility that is frequently utilised for the purpose of ornamentation.

Schematic diagrams,



(A) The single sided.

(B) The double sided continuous terry

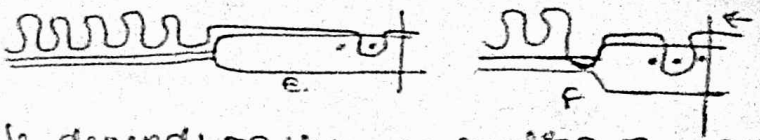
(C) Alternating b/w the face & Back

(D) 2 differently coloured sets of threads

All the structure apart from A, are reversible

- A structure is used for production of mats, curtains, ladies over coat & dressing gowns
- B, C & D structure represent typical towelling which form by far the most important outlet for these fabrics.
- looped structure is eminently suitable for towelling purposes as the long, free floats of yarn, if made from absorbent materials. are capable of picking-up readily large amounts of moisture.
- Where rayon staple yarn are also employed and whilst they possess adequate moisture absorption capacity their ability to resist frequent laundering is poorer than that of cotton yarns.

Formation of the pile :-



- Formation of terry pile depends on the creation of a gap b/w the fell of the cloth & two succeeding picks of weft.

The gap, the length of which depends on the height of pile required, results in the formation of uninterlaced warp floats.

- To form the gap 2 succeeding picks are beaten up short of the true cloth fell & produce a temporary false fell as indicated schematically at E in figure.

- On the third pick of the group full beat up takes place the three picks being pushed forward together to the true fell position.

During this action the three picks are capable of sliding b/w the ground ends, which are kept very taut as depicted at F.

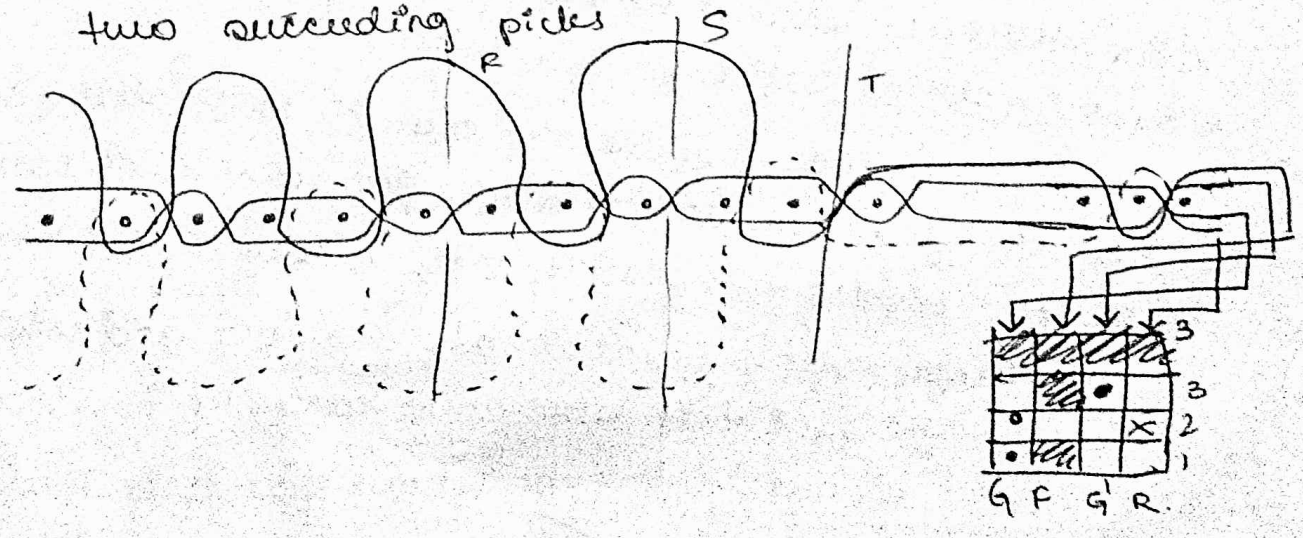
- However, they cannot slide similarly b/w the pile ends, firstly, because they are structurally locked with them and secondly, because the pile warp at the moment is slack.

Therefore, as they are pushed forward after the third pick they pull a length of pile warp from the beam and at the same time force the excess length of pile yarn in front of them into a loop.

- The gap is created by a variety of devices which can be divided into two main classes.

① Those in which the reed is drawn back the required distance before reaching the fell on the two picks in question.

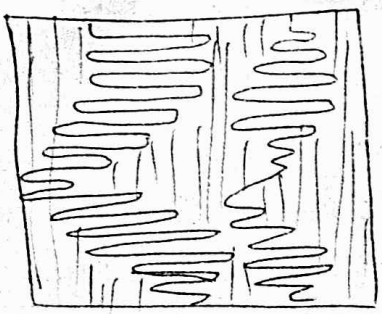
② Those in which the fell of the cloth itself is made to recede away from the on-coming reed during the insertion of the two succeeding picks



*Tappet weaving :-

- It is basically classified as extra warp structures in which the extra material forms an opaque figure on an open, semi-transparent ground.
- The fabrics are particularly popular in the middle east where they are often used as shawls & other traditional items of attire.
- The ground weave is usually plain & is constructed in 2 or 4 healds with the aid of a -ve tappet assembly.
- The ornamentation of ground fabric consists of coarsed or cord ends, coloured stripes & other such devices which do not call for the use of additional shedding mechanisms in the forms of dobbies or Jacquards.

On this plain ground the extra warp thread (known as whip threads) figure in a manner entirely foreign to warp threads by traversing horizontally across the ground ends. Each such traverse forming one float of a figure which is build entirely from a succession of these traverse laps.



- As the crosswise movement of the whip thread takes place under the ground warp line & the action occurs b/w pick, two points become obvious.

1) The fabric is woven face side down.
2) no interlacing of the float is possible in the middle of its traverse. the floats can be bound only at each extremity which really imposes a certain limit on the extent of each traverse.

- From this description it is clear that two distinct and independent movements of the whip thread are necessary the horizontal or figuring movement which produce the float and at the end of each traverse. a vertical or stitching movement which binds this float to the ground down & thus determines its extent & position.

Swivel weaving:-

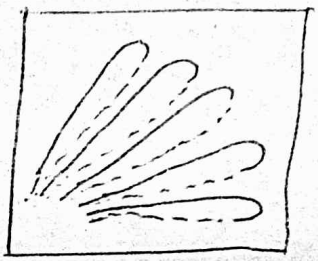
- The term swivel is sometimes applied to the type of loom in which several narrow fabrics such as hat-bands, ribbons, tapes etc. are independently formed alongside each other
- Thro machine a separate shuttle is employed for each fabric but there is no fly shuttle. & the goods are now generally described as smallwares.
- In broadloom swivel weaving, however, a no of small shuttles work in conjuction with an ordinary fly shuttle. the latter inserting a ground weft which forms with the warp a foundation cloth upon which the swivel shuttles produce figures in extra weft.
- The chief purpose of the swivel arrangement is to produce the ornament with the least possible waste of the extra yarn.
- Each figure. and in some cases each part of a figure is a horizontal line of the cloth. is formed by a separate shuttle
- The extra weft there being introduced only where required with little material extending b/w the figures on the reverse side of the cloth.
- In addition to the great saving of the figuring yarn, the swivel method has the advantage over the ordinary system of extra weft figuring that each shuttle may contain a distinct colour, while the figures have a richer & fuller appearance on account of the weft being thrown more prominently on to the surface
- The addition of swivel mechanism, however, makes the loom much more complex, consequently there is reduced speed & output.
- The cloths are woven wrong side up & there is therefore, the disadvantage that defects caused by broken threads more readily escape observation; on the other hand, weaving

- The cloth right side up would necessitate the build of the warp being laked on the swivel pick.

Compared with lapet figuring in which the floats of a thread cannot be stitched b/w the enbenites, swivel figuring produces much neater effects, as any form of weave development can be applied.

- Effects are readily produced that appear and handle very similarly to style in which the pattern is formed after weaving by embroidery.

In swivel effects the figuring threads are always laid & traversed parallel with the weft threads of the foundation cloth & at right angles to the warp threads.



the swivel fabrics are produced at a very slow rate & have been superseded by similar construction which can be more easily made on modern embroidery frames.

Narrow fabrics:

- Narrow fabrics were initially used in the garment industry on hats, in military uniforms.
- Nowadays soldiers will also find narrow fabrics in their pack webbing & parachutes as well as their waist Belts, Helmets, and body armor.
- Any textile material which is not more than 45cm in width with two selvedges.
- We can use cotton, satin, velvet, Nylon, Glass, polyester, Rubber, Teflon, Jute, Kevlar etc as materials.
- Narrow fabrics forms of Ribbons, laces, cords, Tapes, labels webbings, wicks, elastics ropes, straps, Trims etc.
- This fabrics are durable, rot resistant, Heat resistant,

Stretchable and Ablation resistance.

Applications:-

- Used in Automobile Industry
- used in sports
- used in medical & Health Industry
- used in furnitures