

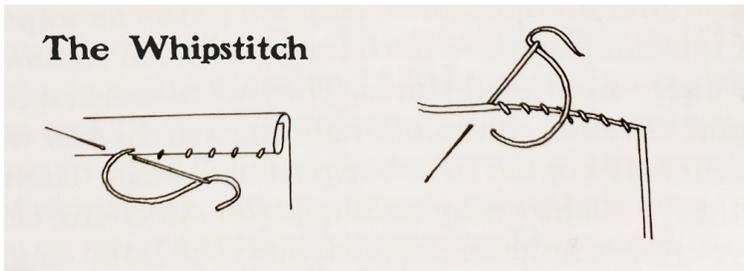
Itty-Bitty Cartridge Pleats:

An Introduction to Late Period Underwear and Sewing Techniques

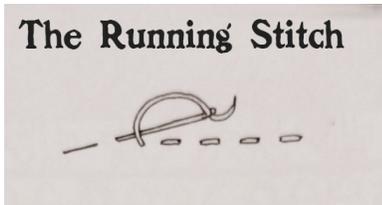
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Late period underwear, as with most clothing articles of the period, were designed to accommodate a much more gratuitous silhouette. In order to showcase wealth, it was fashionable to use as much textile as possible. Subsequently, undershirts and shift patterns are unique in this period as they gravitate to excess, fitting the garment to the body with pleats (at the neck and wrists). Men's shirts tended to be a 25-40" wide, while women's shifts were more likely to be even wider and were constructed from strips of fabric (I presume) to circumvent limits in place from standard loom widths. (Such patterns are included at the end of this packet)

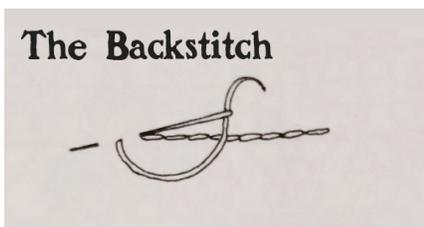
Sewing Techniques: (diagrams are borrowed from Janet Arnold's Patterns of Fashion 4, page 25)



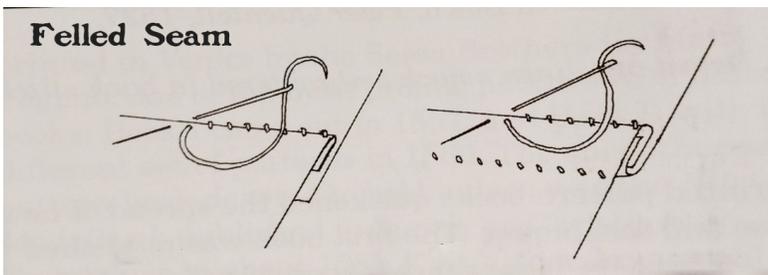
Whipstitching is one of the simplest stitches and is used most often to finish hems and join fabric along edges.



The running stitch is used in cartridge pleating but is also useful for securing fabric quickly. It is not a very strong stitch and is often used to hold a piece in place in cases where it will be secured better later. A running stitch can also be combined with an occasional backstitch to make it stronger.



The backstitch is a stronger version of the running stitch and can be used both decoratively and to join overlapping fabrics. Backstitches have a front and a back and the front is always prettier.



Felled seams are used to finish seams in unlined garments. They are made by folding the edge of two fabrics around each other. Each side is then stitched flat. Janet Arnold shows a variation utilizing whipstitches, I have seen extants that have used backstitches as well.



Cartridge pleating

Cartridge pleating is the most effective method of condensing large amounts of fabric and was the preferred technique for fitting clothing in the Renaissance Era. It was commonly used to fit cuffs, waistbands and necklines.

The compression rate for cartridge pleating is variable based on the thickness of the fabric and spacing of pleats. However, you will need a lot more fabric for this technique compared to knife or box pleating. Tighter spacing and thicker fabric, will result in tighter gathers and correctly spaced pleats should not show their support threads behind the mass of gathered fabric (see Figure 1.1).

For our class, we will be reducing about 12” of light to medium weight linen to roughly 2.5” of gathers. This ratio is sufficient for gathering undergarment necklines of similar weight fabric.

Materials:

fabric
needles (at least 3)
sturdy thread (upholstery or button will do)
a length of plastic canvas
a pencil

Step by Step

1. **Prepare the fabric.** Begin by preparing your linen. Double fold about 1” of fabric over and crease your fabric in place. Carefully whipstitch this section in place. (see Figure 2.1)



Figure 2.1

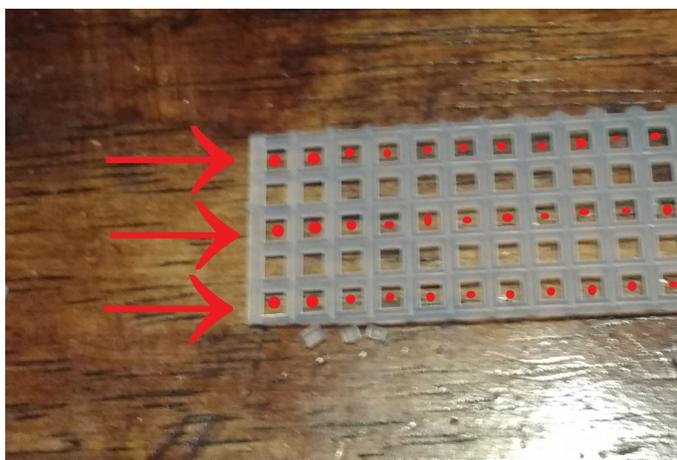


Figure 2.2 Plastic Canvas we will be using to set up our grid. Only mark the holes designated in red.



Figure 1.1 Albrecht Dürer self portrait detail showing fine cartridge pleating around the neckline of his undergarment.



*Note: This step is **optional** for experienced pleaters. I still use this method for areas that may be placed under stress (such as necklines which will be joined with stiff collars). We are choosing to do this here for learning purposes, as it will create a stronger but also larger pleat. Period gathers can be even smaller than this and in order to achieve such tightness, you will need thinner fabric and a smaller guide.*

2. Mark your grid. Press this portion flat and take out your plastic canvas. We will be using this as our grid to organize perfect stitch-holes. Lay this guide even with the top of your fabric (where you have folded) and with your pencil, mark every hole in the top, third and fifth rows until you reach the end of your grid. (see Figure 2.2)

Take your time! Be careful to keep your grid even with the top of your fabric and your pencil marks well defined. (twisting the pencil as you go helps)

3. Prepare your thread. Now thread your (three) needles with ample thread. (For this tutorial a full arm's length is sufficient, though for other projects I recommend your thread equal the goal length for your compressed fabric, plus about 8" for working room and tying off.) Double thread each needle and knot them at the ends. We do not want our thread to snap part way through, so make sure you are using something strong. (Upholstery or button thread are all acceptable, though in period they would have just used linen)

Secure and knot each of your needle threads to the left edge of your fabric at the first mark for each row.



Figure 2.3



Figure 3.1

4. Begin your stitching. Each dot represents an entry point or exit point for your needle. Work incrementally, being careful that all your needles follow the same in and out pattern. I normally work at about 4" at a time, pausing once I've gone so far on the top row to move downward, bringing each successive row up to speed as I move. I progress and pause in the same needle order each time to avoid tangling up my threads. Do not get tangled, *it's not fun.*



As you go, feel free to pull your stitches tight to see how your pleats are developing. You may have to tease your gathers in line by pulling your linen tight across the stitching until the fabric creases in just the right way. Dampening the fabric also aids in this process.



Figure 3.2

5. **Finish your pleats.** Once you have your stitches in place, pull the threads taut and watch as your pleats form up (this is the best part). Now is the time to adjust your fabric to your desired length and tie off your threads. Adjust your gathers and make sure they are nice, even and balanced.

Once knotted, your pleats will need further support to take the tension off your stitches. Lay a strip of fabric or a length of cord across your band of pleats and begin whip-stitching each gather to the support structure. (see Figure 3.2) This will help carry the load and will secure your pleat spacing permanently.

Adapting this method to other projects

Pleating in this way was popular for practically any fitted region of a garment and so the grid will need to vary depending on the location and purpose. If we were to pleat without doubling up the fabric (as we did in this tutorial) the stitch spacing would need to be contracted in order to achieve the same “fullness” (as is done for the cuffs in Figure 4.1). Here we still marked every hole of the plastic canvas, but each mark of the grid denotes only an exit for the needle rather than alternating in and out. This makes the stitching twice as tight and will serve to mask the thread appropriately. This spacing of pleats more closely matches the tightness found in period extants.(see Figure 4.2)

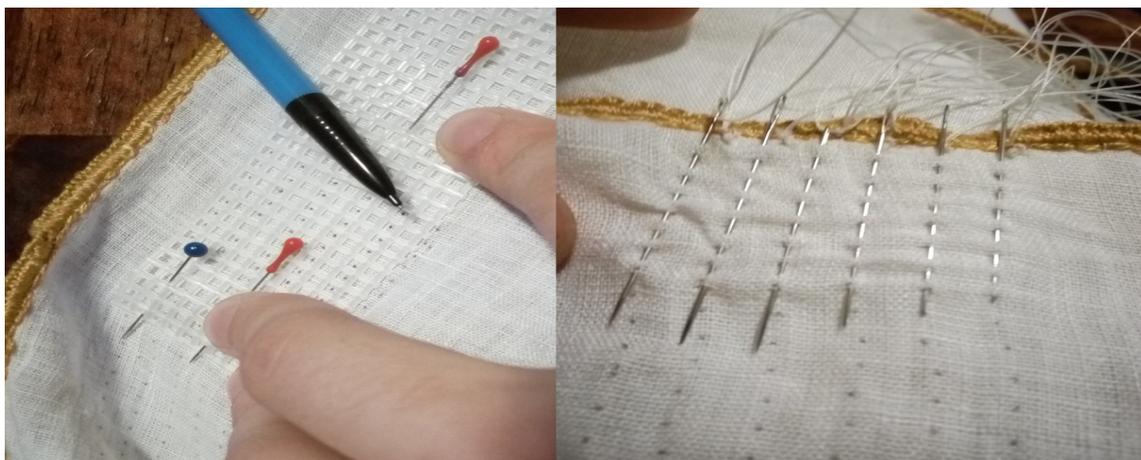


Figure 4.1 Cartridge pleating cuffs without doubling the fabric. Every pencil dot denotes an exit hole for the needle.





Detail on Neckline from MET extant camicia



Detail on cuff from MET extant

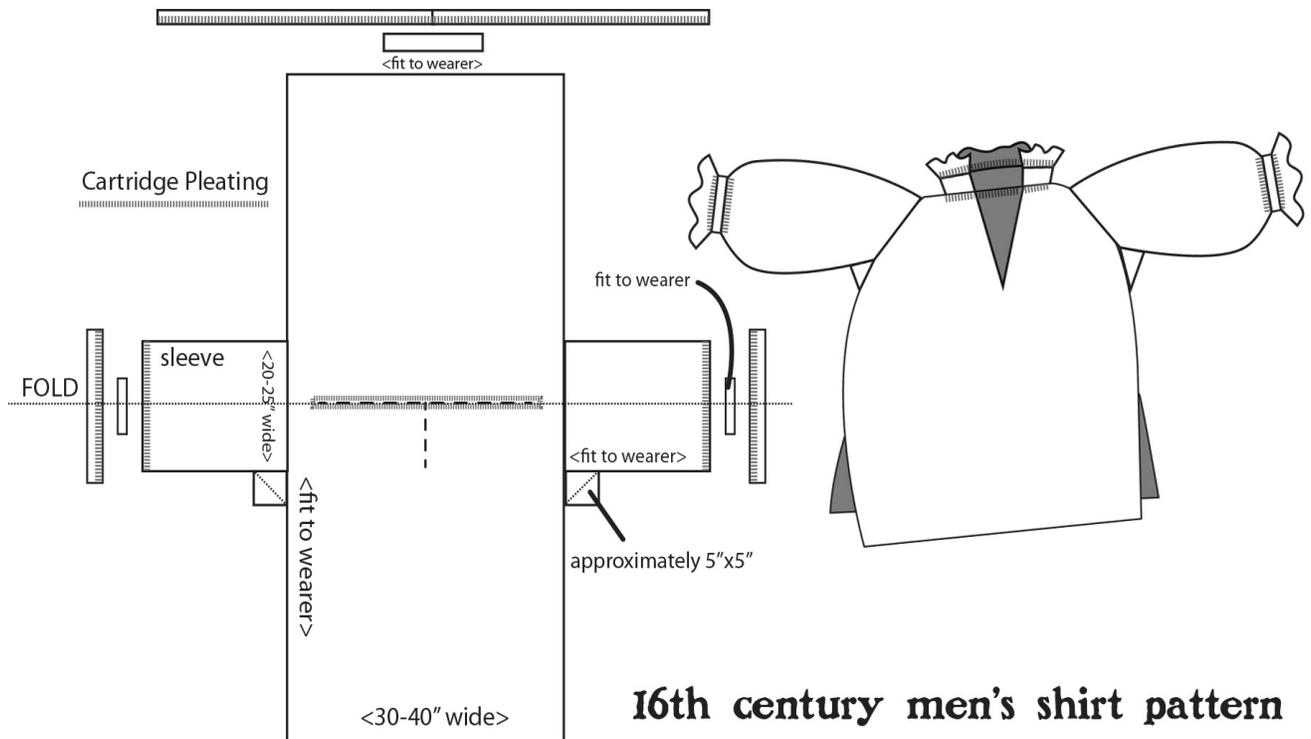


Detail on cuff from MET extant

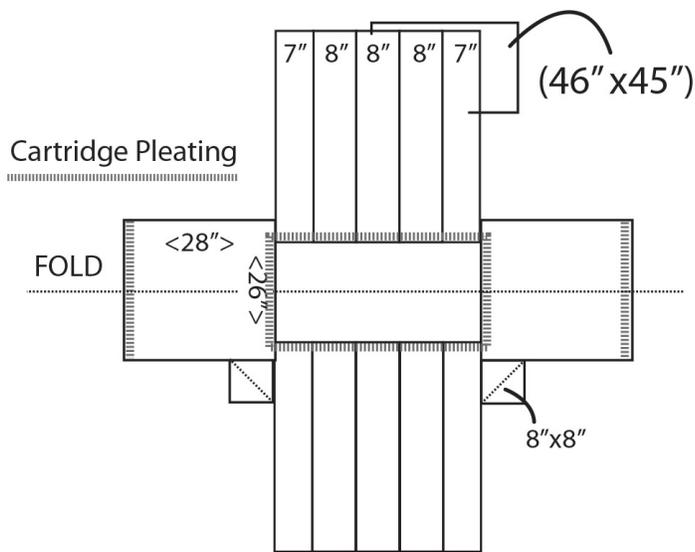


Detail on felled seam from MET extant





16th century men's shirt pattern



Women's Camicia Pattern Based on MET Extant

