

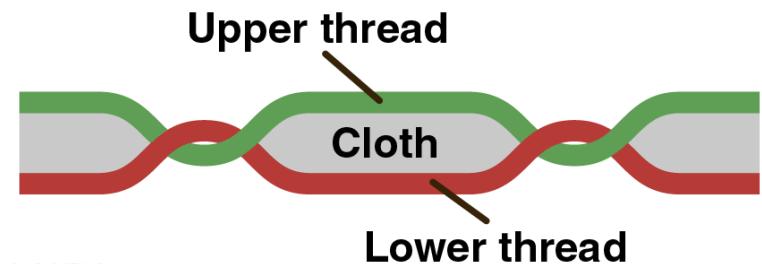
A close-up photograph of a sewing machine's needle and presser foot in action. The needle is threaded and moving rapidly. The presser foot is held down by a metal bar. The fabric being sewn is a dark, textured material, possibly denim or twill. A small, bright blue pin is visible near the bottom left corner of the fabric.

Machine Sewing

Soft Fabrication Skills

A Brief History

- Stitching awl: Central Asia, 45000 BCE
- Forms a lockstitch: an upper and lower thread are entwined to form a stitch
- Still used in shoemaking, leatherwork and sewing thick materials (canvas, denim)



Agateller for Wikipedia
Public Domain



<https://www.youtube.com/watch?v=d0SNwF86YvQ>

A Brief History

- Late 18th century during industrial revolution: mechanical device to aid sewing
 - Thomas Saint, 1790
 - Thimmonier, 1841
chainstitch design
 - Walter Hunt, Elias Howe, Singer
lockstitch design
- By mid 1800's sewing machines were rotary or treadle powered, all elements of modern sewing machines come about
- First electric home machine introduced by Singer in 1921

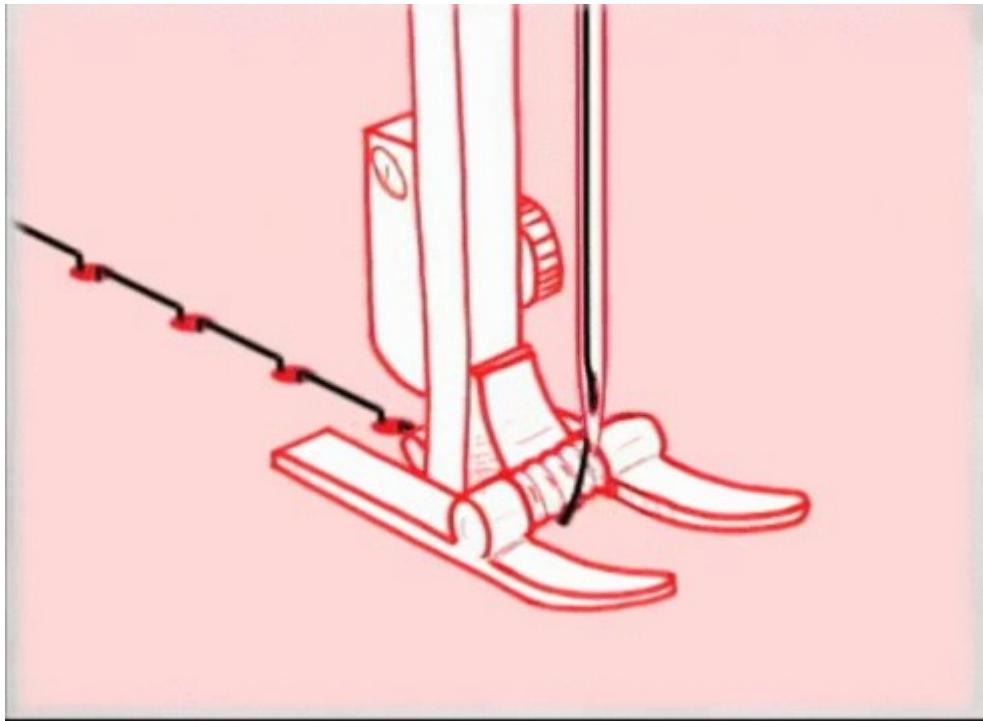


hand-cranked sewing machine,
Nothmann Brothers (German), 1900

http://www.exploratorium.edu/ronh/SLOM/0104-The_Sewing_Machine.html

history of sewing machines and detailed explanation of the mechanisms of sewing machine

How It Works



- Needle and bobbin thread come together to form a lockstitch
- Allows the stitch to be made anywhere on the fabric

Home Sewing Machines



mid 1950's - 60's



1970's - 1980's



2000s

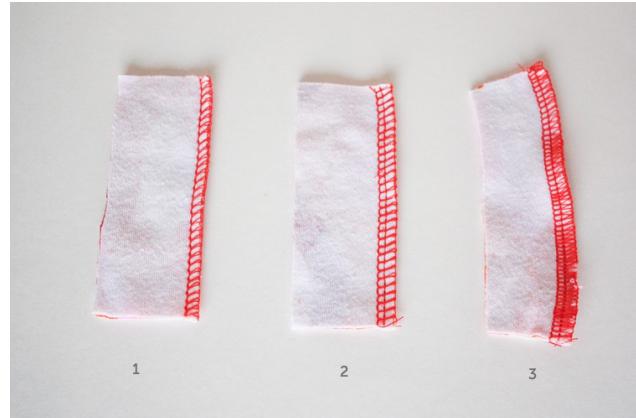
Other Sewing Machines



Embroidery machine



Serger



More Machines!

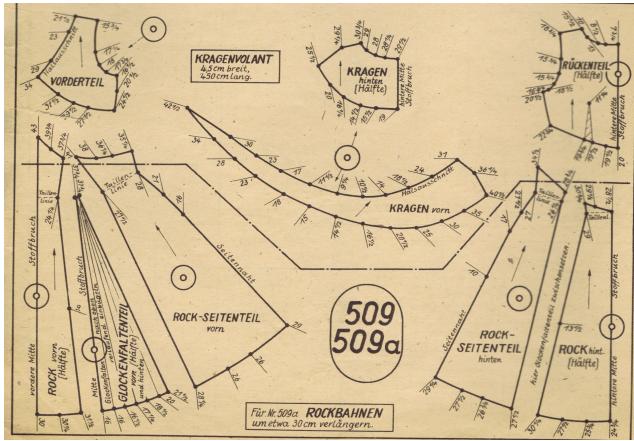


Long-armed quilting machine



Chain stitch sewing machine

Home Sewing Patterns



1860's: mass produced clothing patterns in a variety of sizes, made European styles available to US



Butterick, McCall's, Simplicity, Vogue

Flour sack dresses



1920's - 1950's, USA



clothes and other hand sewn items become more affordable
ready to wear clothing

Exploitative labor + environmental practices



Triangle Shirtwaist Factory fire,
NYC, March 25, 1911



Rana Plaza collapse,
Dhaka, Bangladesh, April 24, 2013

Hazmat / Protective Suits



Jill Andrews,
costume & wedding
dress designer
(elastics, rolls up
in one piece)

Allie Sibole, JHU
Bioengineering grad
student (zips off in
one piece)

Johns Hopkins University hosted a weekend-challenge to redesign suits for Ebola/infectious disease caregivers in 2014





Playtex® *Living*® Girdle
made of smooth liquid latex

MEV-11960385

news . . .

for teenagers, for young marrieds, and for their mothers, too: a Playtex girdle invention that becomes a part of you!

revolutionary . . . a new method of curve control that gives you own lines, slimmed down.

it's here now . . . a seamless, non-fabric girdle invention with an ALL-way stretch. Gives resilient control.

amazingly different . . . porous, like your own skin, Playtex lives and breathes with you.

- Here's a new principle in curve control . . . girdle and garters act in harmony to give you a slim hip-and-thigh line.
- Not a corset . . . not a stitched garment, but a revolutionary method of curve control that gives you your own natural lines, slimmed down! The secret is smooth liquid latex . . . no seams, no stitches, no boning! Porous, like your own skin . . . it gives you firm control with freedom of comfort.
- The Playtex® Living® Girdle is alive, resilient, luxurious . . . light as air . . . the ALL-occasion girdle with the ALL-way stretch. Gives you a "lift" . . . improves your posture . . . never tires you . . . doesn't ride up. Actually becomes a part of you.
- Saves your stockings . . . the new seamless garters give your stockings highly resilient support, preventing the jerking pull that causes "runs." Always fresh: rinse in suds, pat with a towel, and it's dry! Delicately flower-scented, in blossom pink. Extra Small, Small, Medium and Large. Your department store has these sizes. If not, use the coupon.

Only \$3.95

plus postage and handling

International Latex Corp., 350 Fifth Ave., New York 1, N.Y.
Please send me the following Playtex Living Girdles at \$3.95 each:

Quantity	Extra-Small	Waist 23-25" Hips 32-35"	<input type="checkbox"/> Check
Small	Waist 26-29"	Hips 33-39"	<input type="checkbox"/> Cash
Medium	Waist 29-31"	Hips 35-42"	<input type="checkbox"/> Money
Large	Waist 32-35"	Hips 41-45"	<input type="checkbox"/> Order

In silvery tubes

Address _____

Zone _____

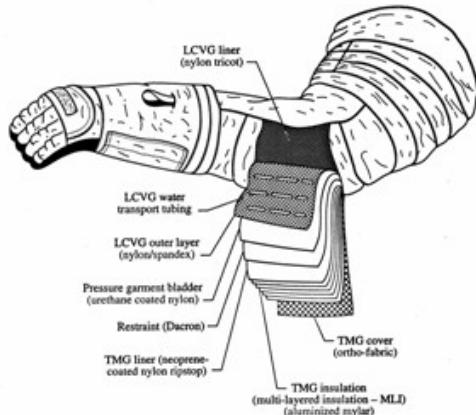
State _____

I E. Trade Mark Reg. U. S. Pat. Off. Copyright 1947 by International Latex Corp. No. 1110

FOTOSTOCK

© John Frost Newspapers / Mary Evans Picture Library

Sewing a Space Suit



Cross section of material layup used for fabric for the arms and legs of the spacesuit.



Dava Newman, Biosuit

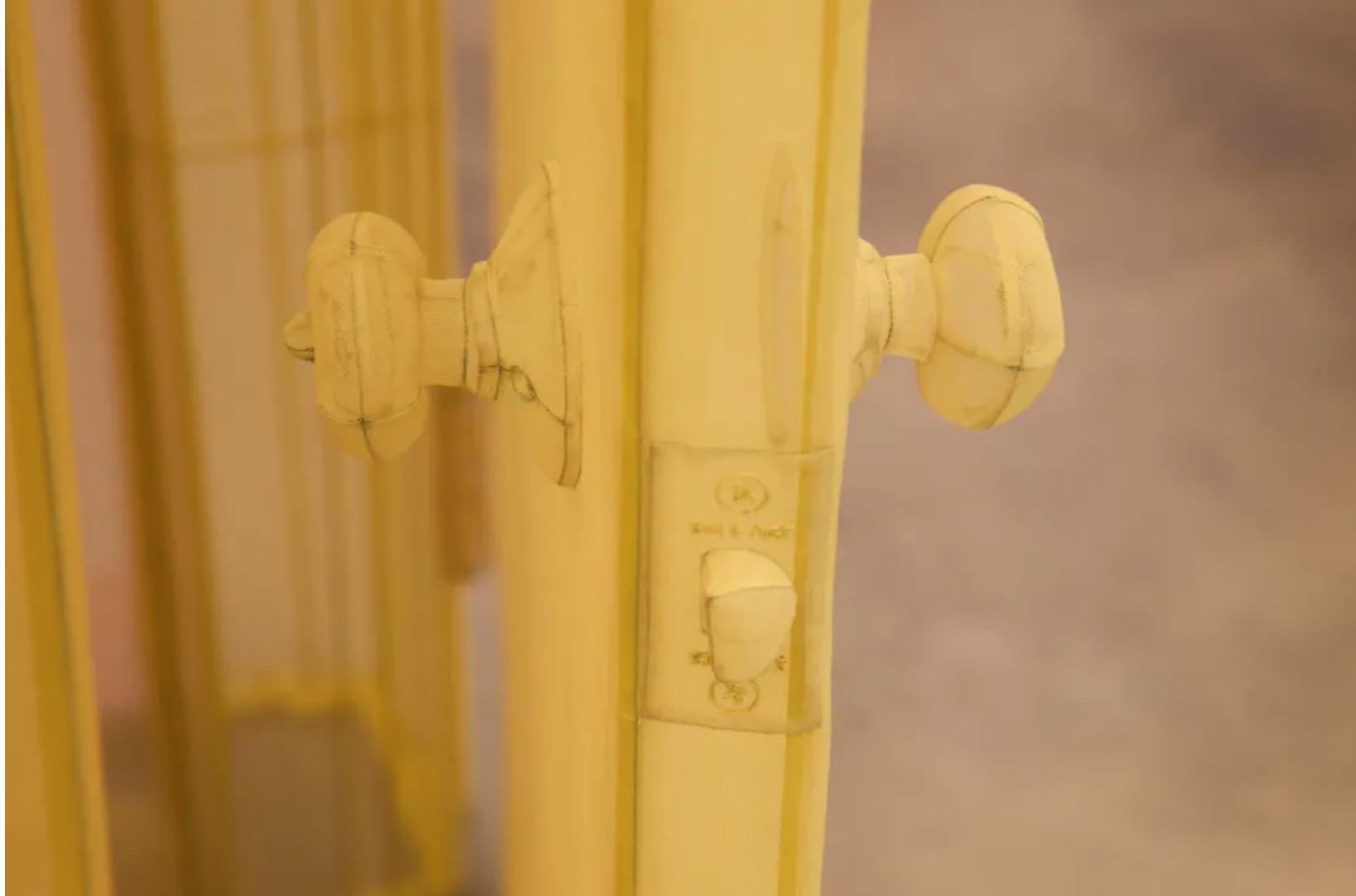
https://www.nasa.gov/pdf/617047main_45s_building_future_spacesuit.pdf

- Apollo spacesuit (1960's)
- Seamstresses from Playtex corporation
- Sewing process vs. engineering process
- Mobile Pressure suit? (1947 + 2007)
- cool reading!
- <https://www.youtube.com/watch?v=S1r3f4bkLYg>



Do Ho Suh - Staircase







Materials + Tools

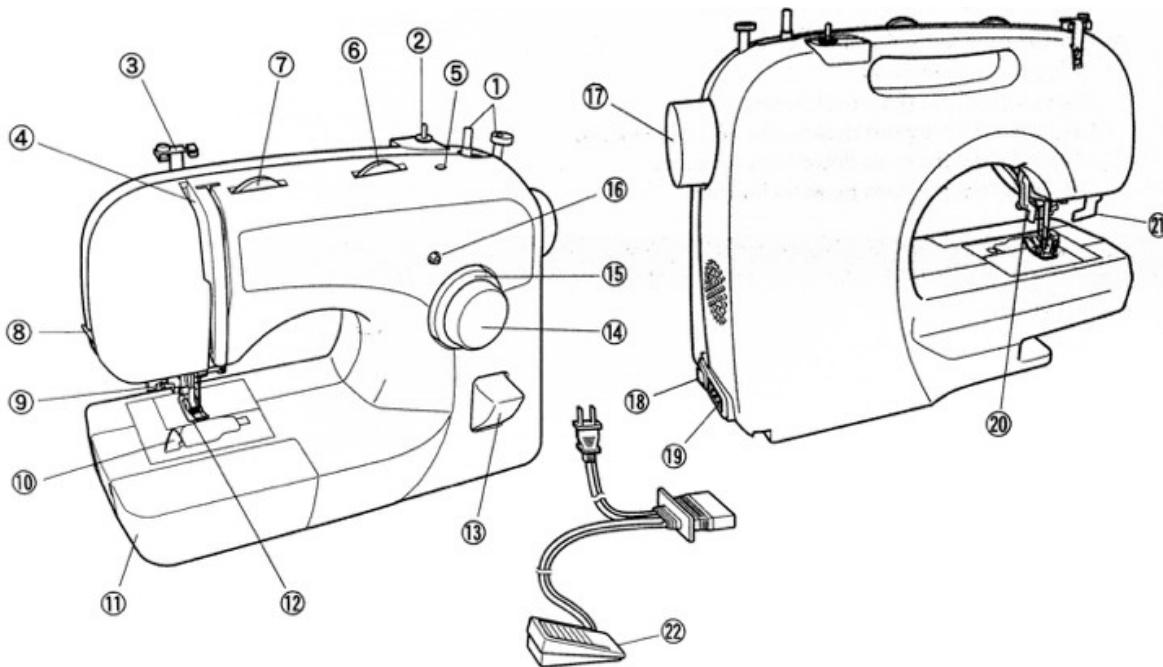


- machine with pedal
- fabric scissors
- pins
- thread on spool
- fabric/material!

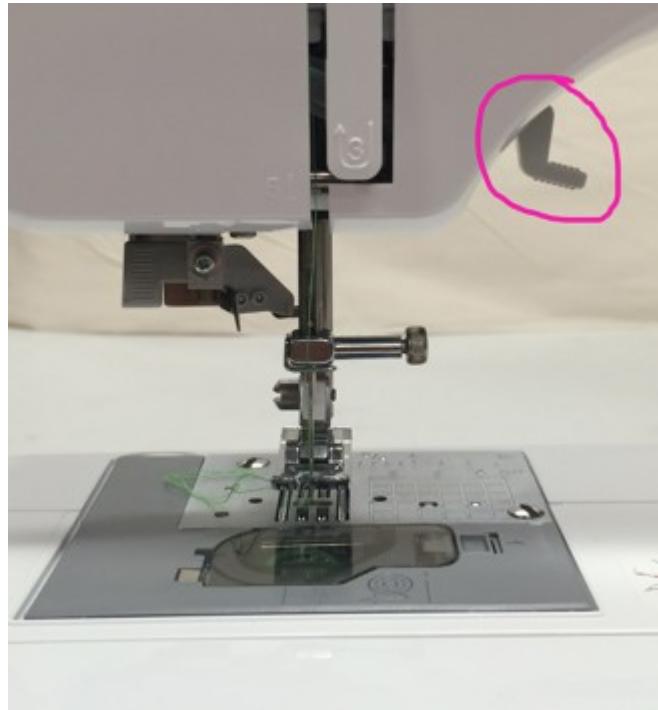
Safety and Precautions!

- Make sure long hair is pulled back and baggy/loose clothing is secured
- Keep foot off of pedal or turn machine off when making adjustments
- Be cautious when sewing thick fabrics - too much stress on the needle can cause it to break

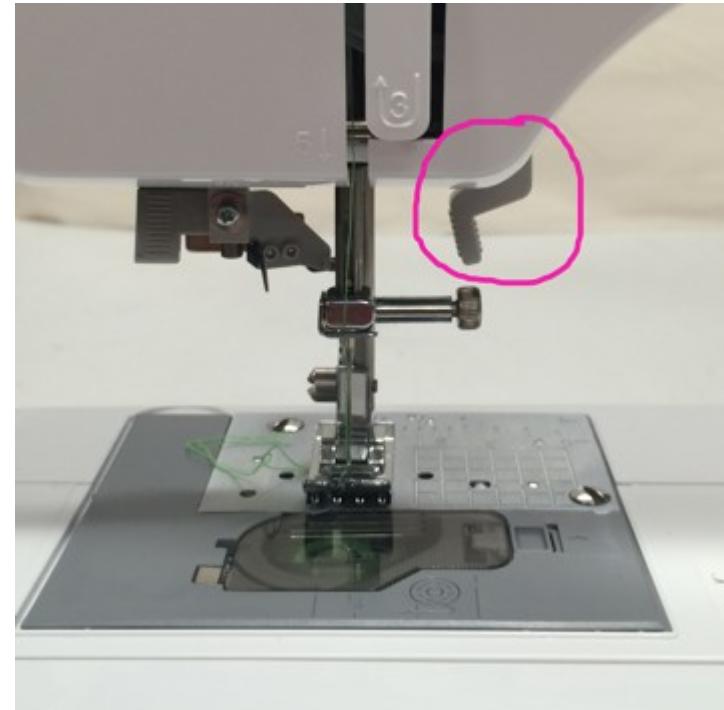
Machine Anatomy



Lowering/Raising Presser Foot



Lever is up, presser foot is up



Lever is down, presser foot is down

Handwheel

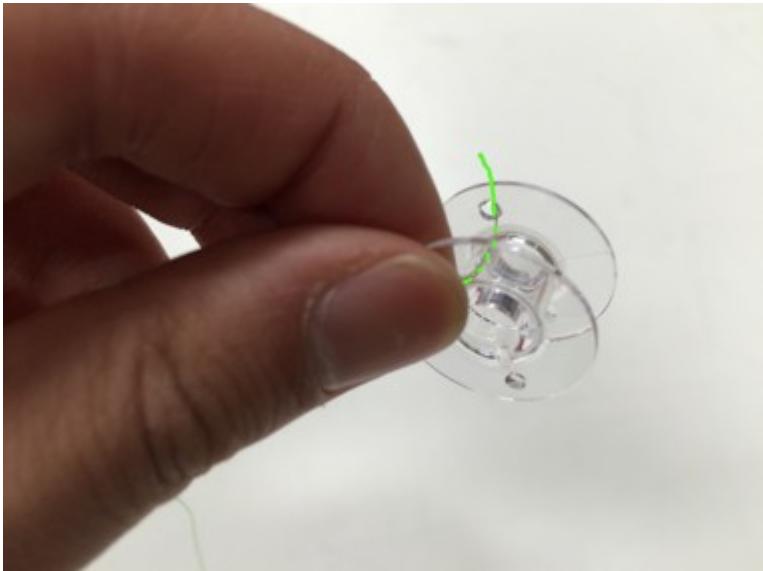


Winding the bobbin





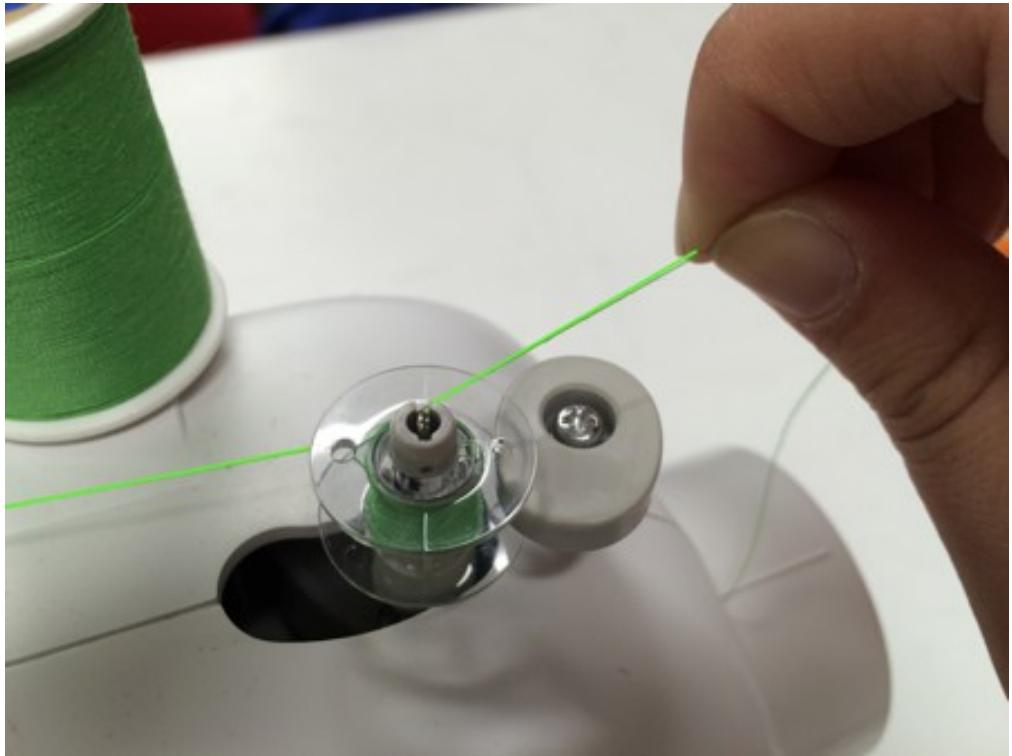
Feed the thread across the machine using the guides established by the circled numbers



Feed tail of thread through the hole on the top of the bobbin



Place bobbin on the grey rod below the spool

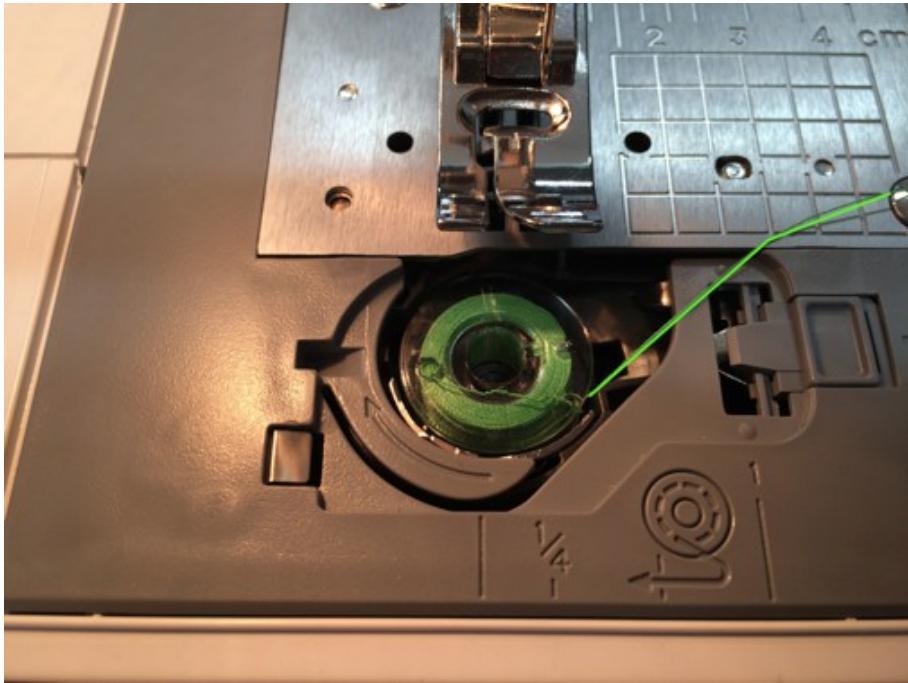


Push the bobbin over to the plastic stopper piece.

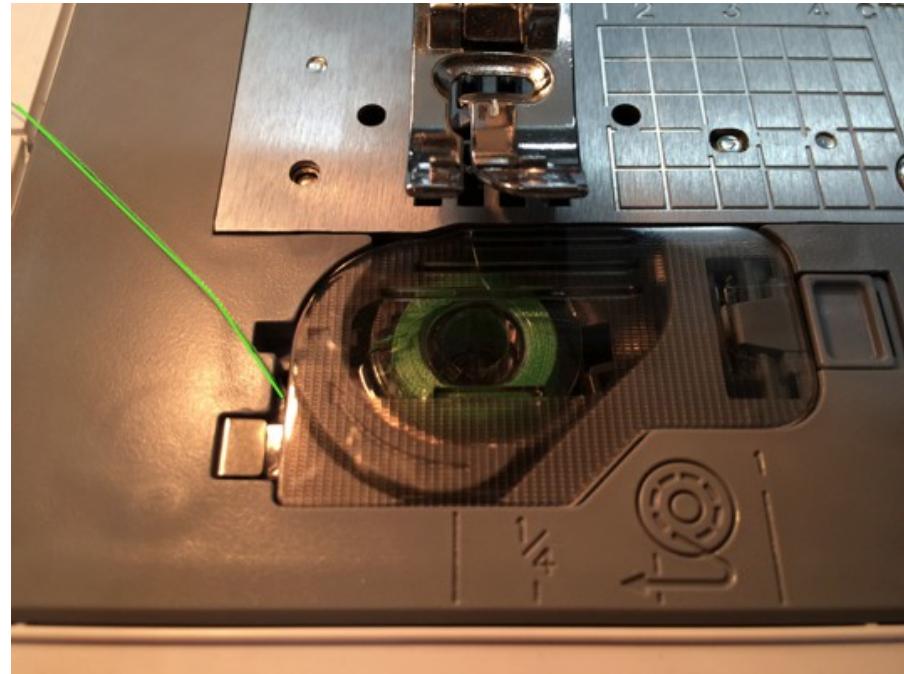
Hold the tail of the thread as you press down on the sewing machine pedal to fill the bobbin.

Make sure the tail does not get loaded into the bobbin!

When the bobbin is full, the bobbin will automatically stop.



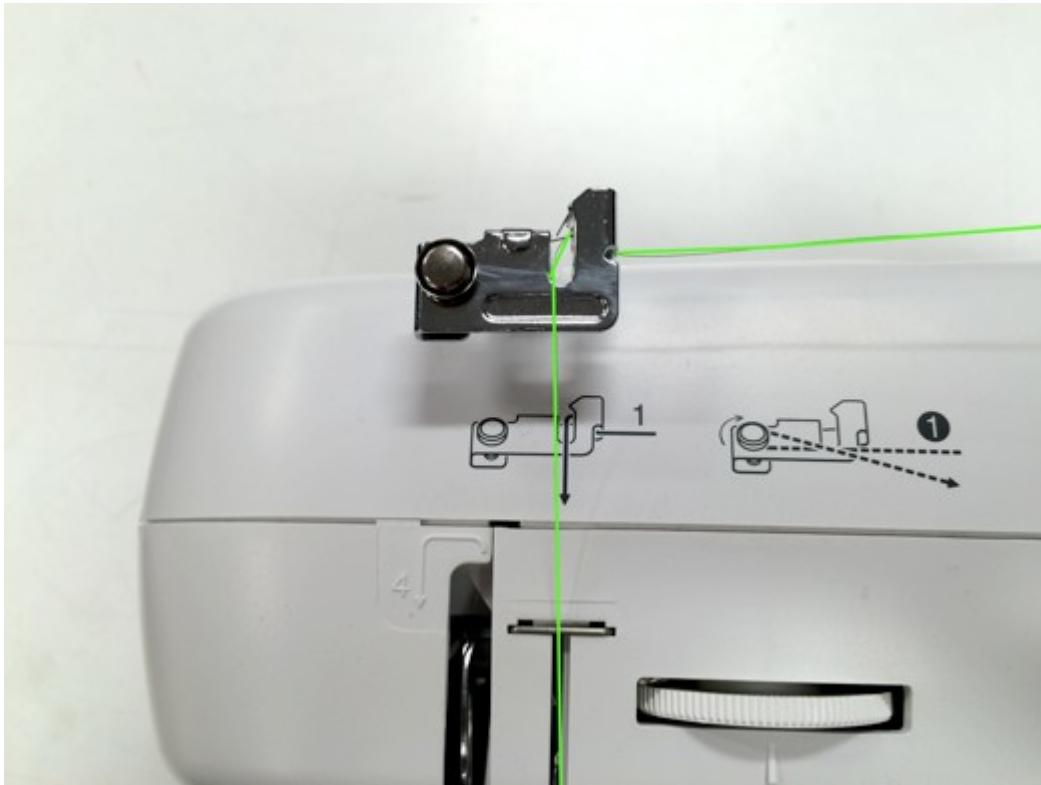
Insert the bobbin so that the bobbin rotates counterclockwise when you pull the thread



Bring thread under plastic arrow piece, leave ~3" tail, replace bobbin cover

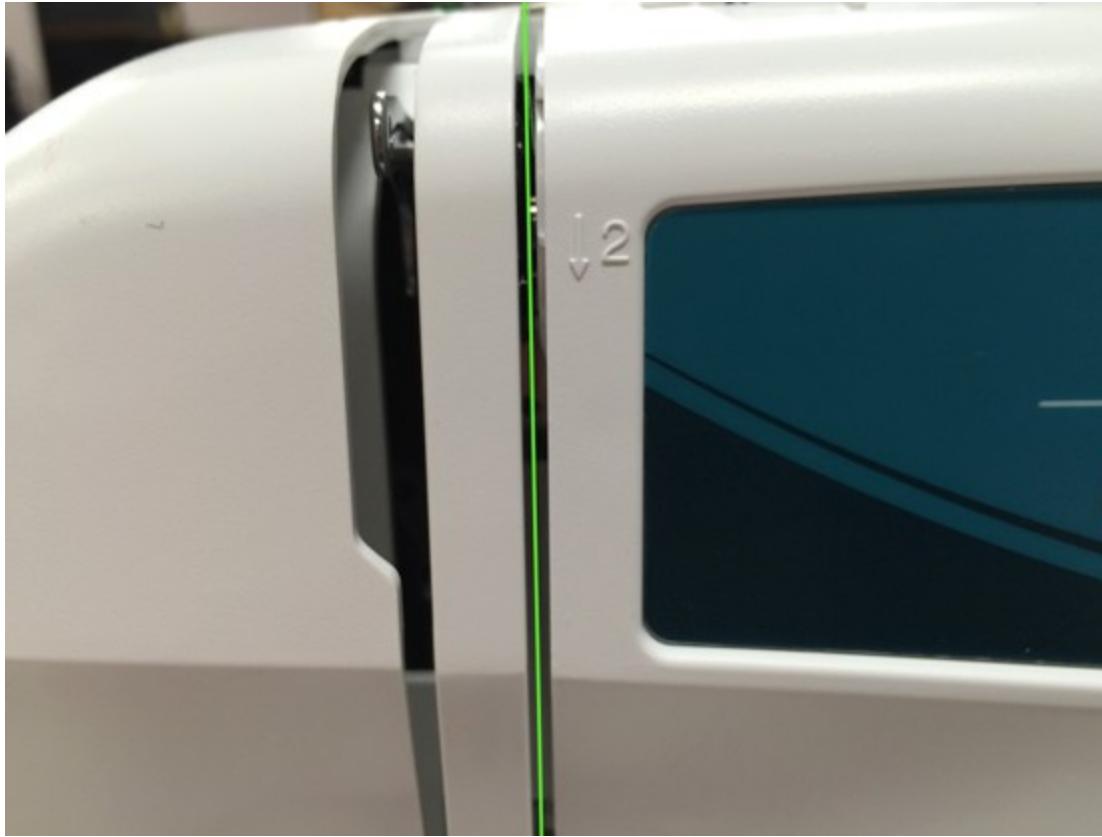
Threading the Machine



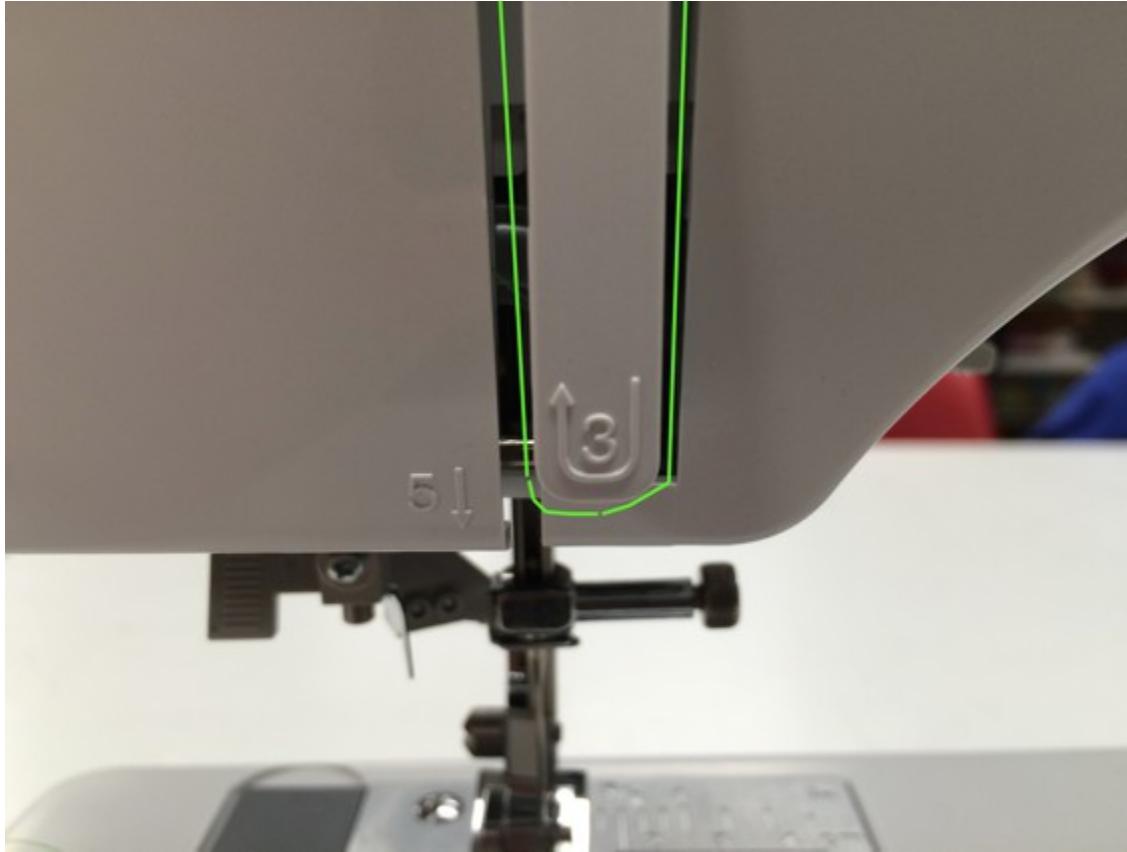


This time we are following the non-circled numbers.

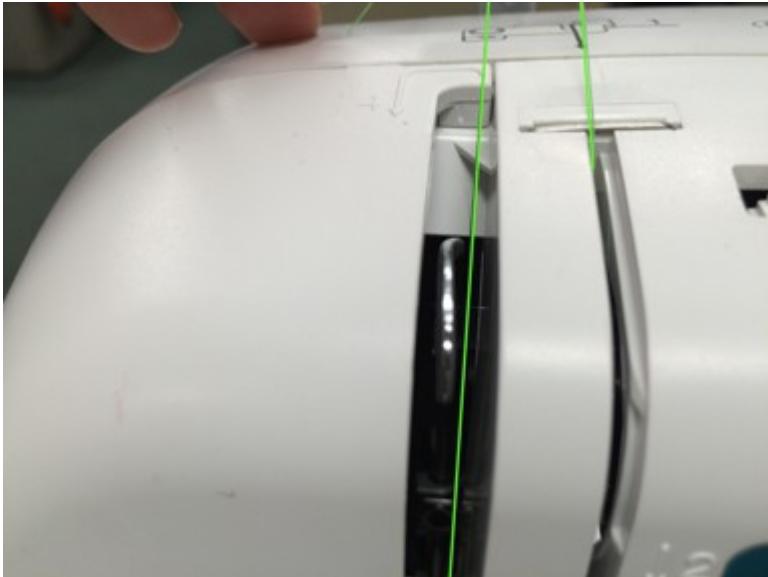
1. Pull the thread under the metal piece.



2. Bring the thread down the crevice

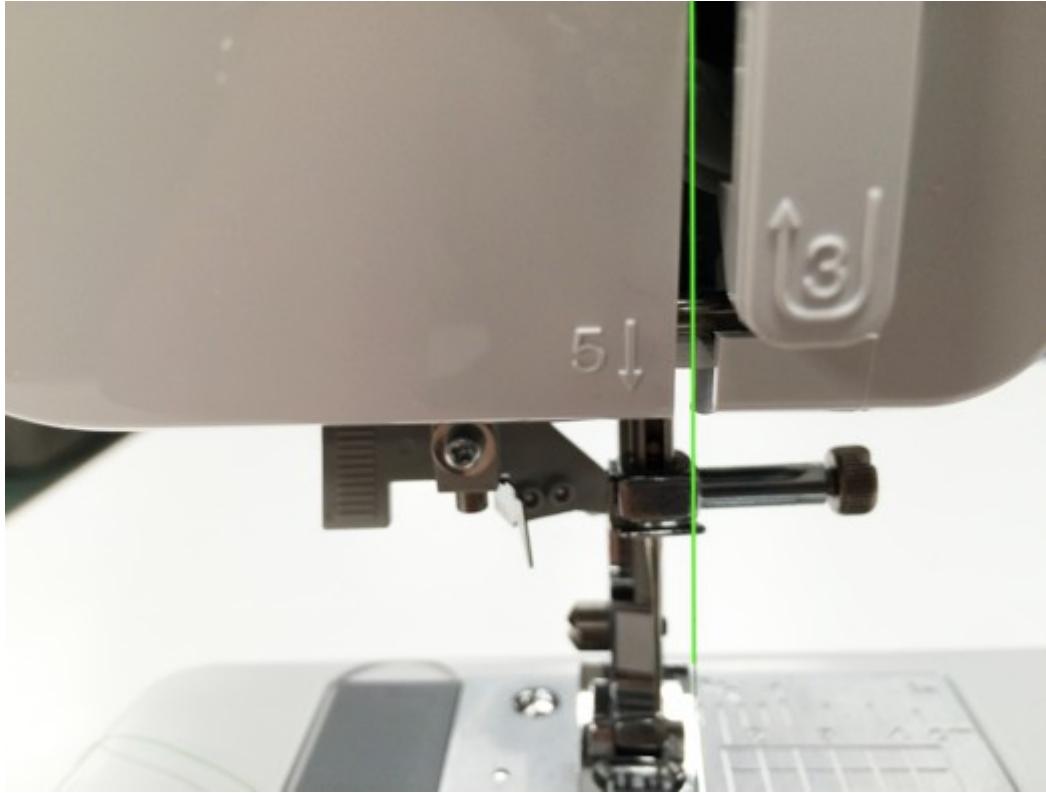


3. Make a U turn with the thread around the corner

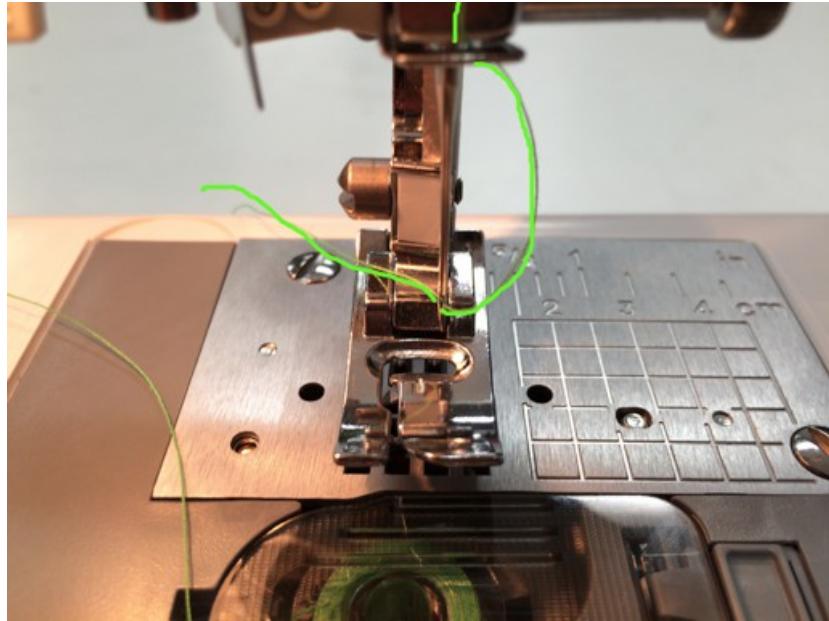
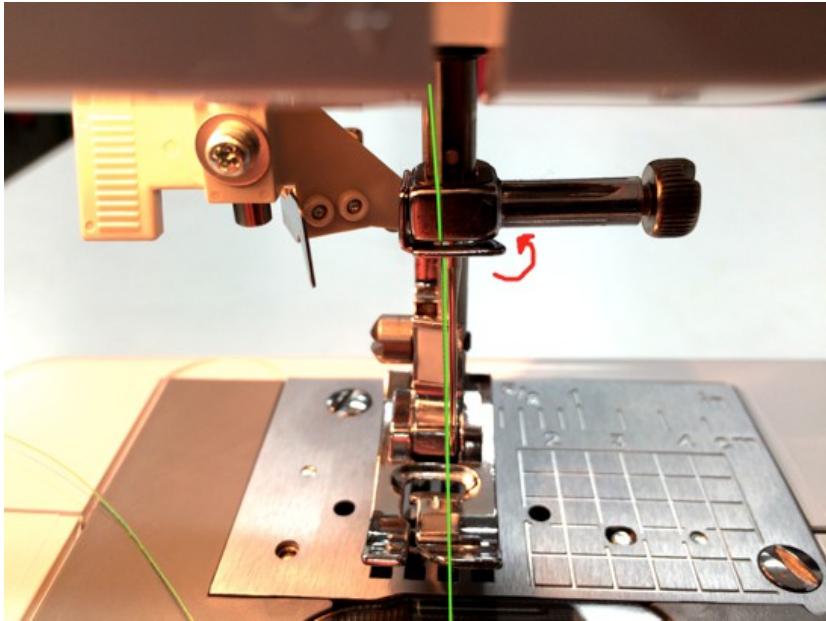


4. The thread is pulled up on the right side of the metal arm, then pulled around and down onto the left side so it is sitting in the hook

****tip**** use the handwheel to move the metal arm so it's easier to thread!

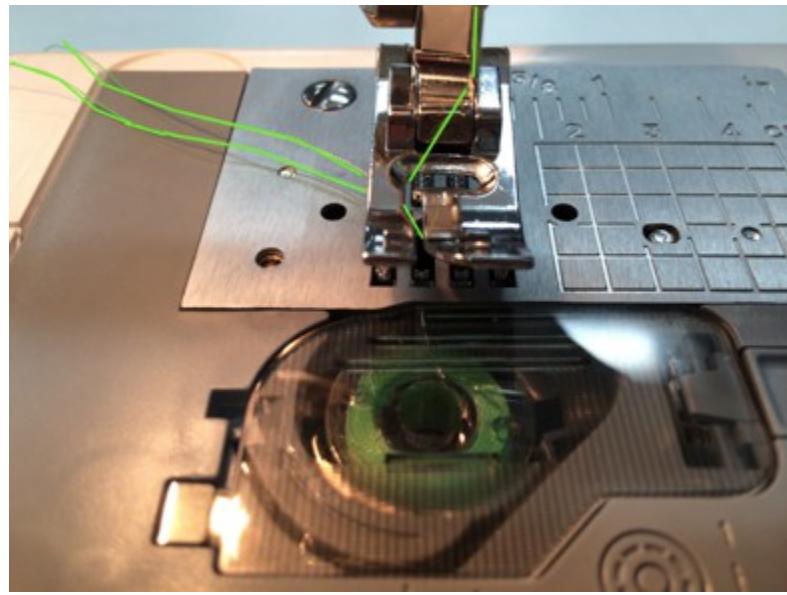
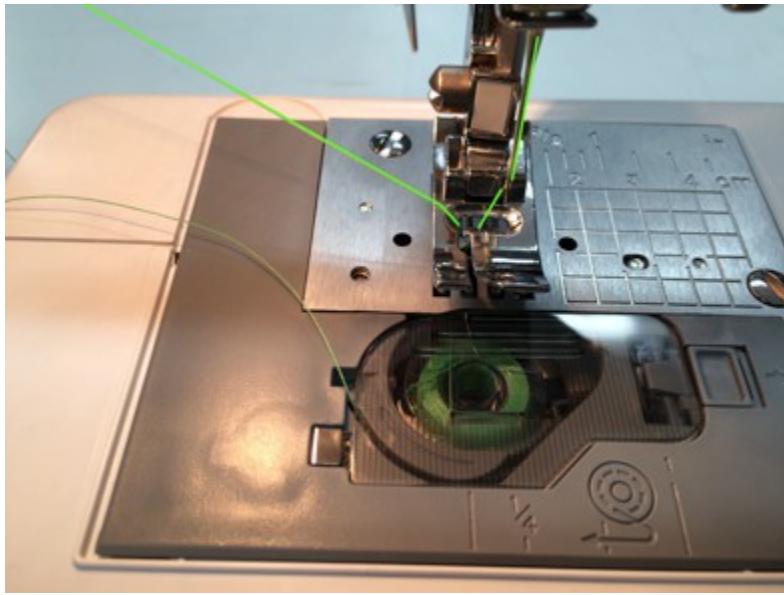


5. The thread is now hanging down by the needle area



6. Pull the thread down by the needle. Bring it around the right side of the metal so that it can sit behind the bar.

Thread the needle. Pull a ~4" long tail through the needle.
(the eye of the needle for a sewing machine is down by the point!)



Turn the handwheel on the right side of the machine.

The spool thread should catch onto the bobbin thread and pull it out through the bottom feed.

Straight Stitch Setting

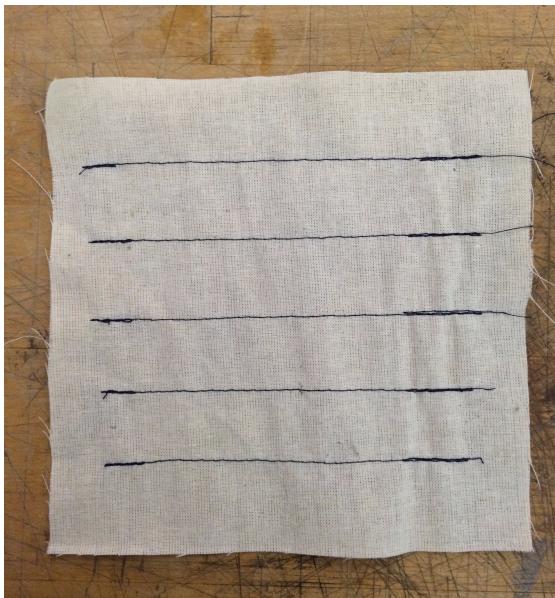


The inner selection dial is set to 2, the outside stitch length dial is set to 4.

The stitch width dial on the top of the machine is set to 0.

DEMO time!

Sewing Machine Samples



5 rows of straight
stitches



Turning corners:
concentric squares

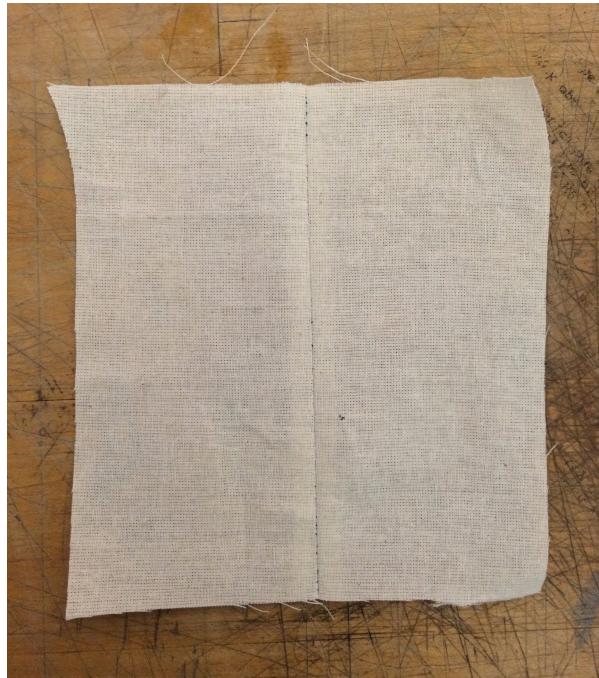


Making curves:
Concentric circles

Sewing Machine Samples

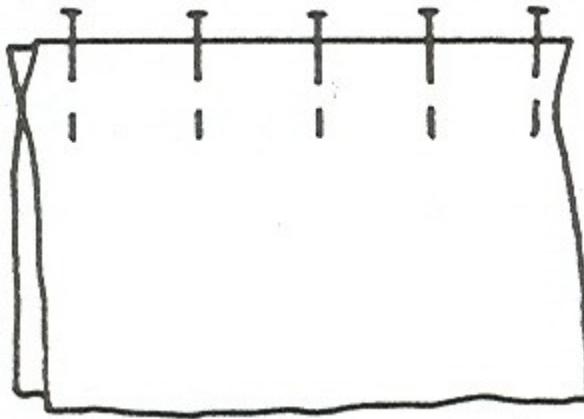


Stitch sampler



Sewing two pieces
together

Using Pins



Pins are usually placed perpendicular to the line that is being sewn.

Remove the pin before your needle comes to it!