

Threading the Needle

Stitching with Drill'd Ey'd Needles

I came across some old packs of James Smith Drill'd Ey'd Harness Needles and some packs of Drill'd Egg Ey'd Needles. *See photo* My interest was peaked and further reading was available about the background and history of needles, a condensed version you find below. I have used both types of needles and they perform well, when used with a well tapered thread needle “pop” and hand fatigue are reduced.

Harness Needles are blunted so they will follow the path of the awl strike, rather than cutting the leather making their own path. Blunted but still with enough point to easily draw blood if you poke yourself. Needles are numbered, smaller needles have a higher number. Largest needles are 000 and the smallest are 9. Needles can be matched in size for different threads, different threads are matched to the Diamond Awl strike and the number of stitches per inch to give the look preferred by the maker. In bygone days some Harness Makers were stitching as many 19 per inch, I have some 18 to the inch in my collection. *See photo*. According to R.A. Salaman in the *Dictionary of Leather-Working Tools, c.1700-1950* the Barnesly Shoemakers Catalog of 1892 had straight Pricking Irons up to 24 stitches per inch. Stitched with single strands of silk on the smallest possible needles using a 1 1/4” awls. Incredible!

Part 1 History of the Drill'd Ey'd Needle

In 1811 needles are made by pointing both ends of straightened wire the length of two needles. *See photo*. Pointing was hand work, the Pointers made a very good wage, due to stone dust from grinding meant they weren't at it long, about 12 years before they were unable to work due to respiratory problems (Pointer's Rot). Groups of wire were held in the hands then rolled between the fingers or palms as they were ground, the wire reversed for the other ends. Drilling was done by flattening the middle of the wire then punching two square holes with gutters. This makes two needles when the wire is cut. The needle is then filed round or redrawn thru a die to make round. The problem was excess flash and sharp edges at the punched hole caused the thread to wear and break. The needles needed to be deburred and polished. Drill'd Eye drilling (polishing) was done by hand by children on very fine countersink mills and grindstones spinning at high speeds. Punching round holes improved the needle. The hand work was still slow.

Abel Morrall patented a process to remove the flash and smooth the eyes of the needles and speed the making. After the needles were hardened and tempered the eye end was softened, long wires of hardened steel with a rough exterior like a miniature round file, thousands of needles were strung on the wire. The wire was agitated until the eye was smooth. This is The Improved Drill'd Ey'd Needle. In 1841 Oval shaped punches introduced the egg eye needle. The same wire drilling worked well and the needles were easier to use with a much bigger thread. By 1852 the Drill'd Egg Ey'd Needle was suggested for people of poor sight and looked down upon, by 1855 the Egg Ey'd Needles almost completely superseded Round Ey'd Needles. **“But it is still a question if any needle is so good in use as one with a perfect round eye, carefully drilled and then burnished by the best method known in the trade.”** Taken from the Sewing Machine Gazette.

The wires having been pointed, punched, filed, cut into two needles were heated then quenched to harden them, then tempered to about 600° F. This resulted very many curved needles. A separate cottage trade grew up, done by women in their homes with tiny hammers on small anvils - straightening needles. In Redditch and London in 1847 over 100 manufacturers employing over 10,000

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people were needed to point, drill, straighten & package 50 million needles per week! Incredible despite the amount of hand work. By the middle of the 1850's 100 million needles a week were being made.

Taken from the *History and Description of Needle Making* written by Michael T. Morrall in 1862. He was the son of the Holder of Drill'd Ey'd Wire Machine Patent Abel Morrall. Published to coincide with the Manufacturers Machinery displayed at the Great Crystal Palace Exhibition of 1851 (1st), the Dublin Exhibition 1853 (2nd), the International Great London Exhibition of 1862 (3rd)

Drill'd Ey'd and Egg Ey'd Needles were available from *CS Osborne Catalog No. 52*, Printed up into the 1930's. The Drilled Eye Harness Needles were dropped from *Catalog No. 53A* Published in 1942.

Lauchlan Harrison

Part 2 Pointing the Thread

The Drill'd Eye needles don't swell at the eye and the eye is smaller, so the thread must be finer to be threaded. The only way to thread the needle was to reduce the size and “point the thread”. This is done by scraping the thread with a blade. The scraping opens the twist and pares fluff of all the cords. This reduces the diameter of the thread cleanly so when it is re-twisted it is smooth and tapered. Skilled workmen would roll their own threads with a taper from floss by offsetting the ends of the cords.

The unwaxed thread is scraped with a blade. The Blade can be stationary and the thread pulled or the Blade can be moved down the thread. I pull the thread for the first couple of passes then scrape with the Blade, this seems to open the cords up better. In this example I used Barbour's 5 cord /18 See photo. This means there are 5 strands of #18 floss twisted into thread. It is best to start the scrape two or more inches from the end of thread, as the thread will shorten as the fluff is removed See photos.

The thread tip is gently scraped getting rid of the fluff and knots by slightly pushing the blade in the opposite direction to the twist the thread can be untwisted and scraped into the individual cords. The cords are thinned down and flattened ready for the waxing.

The wax is applied to the thread by pulling it between your thumb and a beeswax block, put a fair amount of pressure on the thread and pull it through as many times as needed to get a firm tight thread. If you smell the beeswax you are on the right track.

The ends are re-twisted, but not too tightly, this is important not too tightly, if too tight the thread will curl and bunch. The tip is clipped off to get rid of “angel hair” see photo.

The needle is threaded and pushed on the past the taper, the needle is poked through the taper about half way down to the end.

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The remaining tip of thread is twisted harder and the needle is poked thru the thread. This is the famous double lock \$ sign. By pulling the tail down the needle and over the eye it locks the thread in place. If over twisted the thread will curl in the eye and create problems pulling the lock over the eye.

This places the thread lock halfway down the taper, so when the thread is doubled over the eye the total diameter is the same as the thread. This makes the needle and thread pass much easier thru the cut made by the awl. While not as strong as the whole thread it is strong enough to last until the stitching is completed.

Advantages are many: easier pulling, less need for the pliers, less “needle pop” on the reverse side, small awl cuts, smaller awl, easier awl strike, neater stitches, better thread lock in the leather, better water resistance.

In Part Three Stitching with Drill'd Ey'd Round Needles I'll use some of this 5 cord linen thread to stitch some different Stitches per inch using the same awl.

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Part 3 Harness Stitching

I'll use some of this 5 cord linen thread to stitch 8 to 14 per inch using the same awl. Stitching finer than 6 per inch is generally done with finer thread and a smaller awl. You can use your regular 2 1/2” awl but if you push to far it will make the hole larger than needed. As the stitches get finer the angle of the awl has to change slightly to allow the leather between the stitch remain as large as possible. This angle is important as at some point the number stitches per inch will weaken rather than strengthen the seam.

I'm using some kangaroo leather, two pieces of 4 oz veg tanned contact adhesive glued together. I struck a line with my compass set at the thickness of the glued piece. I then used some HFO Stationary Wheel Prickers to do 7, 8 & 10 stitches per inch. The Awl is about 2 3/4” and set in a horn handle. The front of the ferrule is padded with a disc of leather to prevent marking the piece if there is an overstrike.

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The piece should be set as deep in the jaws of your clam as possible to get a clean strike while not digging into the wood. The jaws of a harness makers horse are normally angled to give the maker a better view of the pricks so that the awl strikes can be lined up. The thin leather likes to bend out of the way of the awl strike so it is necessary to lift your arm quite high to get a parallel needle path.



Jaws of Harness Makers Horse



HF Osborne Stationary Pricking Wheels

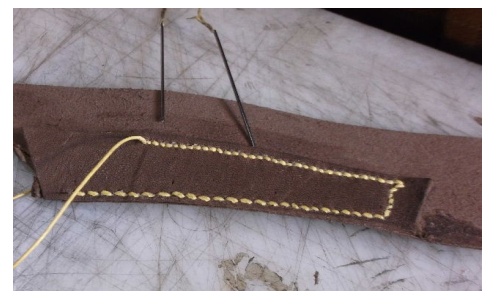
To achieve a tight fit for the two threads the awl strike has to be just wide enough but not so tight that the needles can't pass or that need to be pulled thru the leather with a pair of pliers. The awl is tapered so practice different depths of strike to give the best result. The best practice is to stitch toward yourself when possible this gives you a good view of the pricks and when you pull the stitches up you can see the “plumpness” of your last stitch.

After you pull up the stitch give the needles a spin to keep the thread well twisted but not so much the thread curls back on itself. The wax will wear off the threads during the stitching if you prefer you can re-wax at any time. I pricked out the side and lower line of stitches with 12, 13 & 14 stitches per inch. As the stitching gets finer normally I would switch to finer thread, the finer thread gives a better view of the angle of the awl strike and the resulting “dogleg” and makes the stitch line more pleasing to the eye.

The threads can be made to cross in hole by “throwing” the stitch, the thread on the back of the piece placed over the needle so the needle is pulled thru the loop. This technique will take some of the “dogleg” out of the front stitch and make the stitch on the back less straight. It makes both lines

of stitches look similar. The example piece is a thrown stitch you can see it best in the larger stitches 8 per inch. When the stitches are very close together with heavy thread it is less apparent.

The best thread size for a given stitch size is a personal choice but in rough terms 6/18 & 7/18 cord threads for 4 & 5



Front View



Back View



Line of Pricking from 7 to 14 per inch

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stitches per inch. 5 cord for 6, 7 & 8 per inch 4 cord for 8, 9 & 10 per inch. 3 cord for 9, 10 & finer. The weight of leather can make a difference the heavier threads may look clunky on a fine leather but look great on 8oz – 10oz. The contrasting colour like the example yellow on brown will highlight the stitching, showing both good and bad so practice is essential.

Please comment or ask questions about the needles, thread & stitching, I'm available most days thru email or telephone.

Lauch Harrison FCSCCL