

CHAPTER SIX

BASIC SAILMAKING

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0601 TYPES OF MATERIAL

a) **Canvas** – is a cloth woven from yarns, which can be made from fibres of flax or hemp. It can be treated to provide flame-resistance, water-repellent and rot-resistance capabilities. The strength of any type of canvas is obtained through the different types of weave in the manufacturing process. Canvas supplied by the Royal Navy is provided in different weights, No 1 being the thickest and heaviest and No 7 the thinnest and strongest.

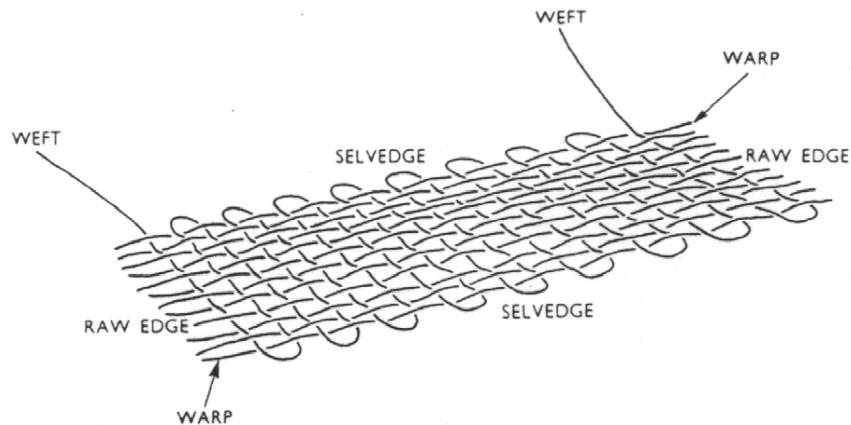
b) **Cotton** - there are several types available ranging from heavy to light material.

c) **Synthetic Fabrics** - manufactured from materials such as Nylon and Polyester. The yarns and cloth are heat set at manufacture to prevent stretching.

d) **Coated Fabrics** - Nylon, Terylene and natural fabrics can be coated with various substances to produce fabrics which combine the advantages, such as lightness, strength or cheapness, of the base fabric with additional advantages conferred by the coating. The principal coatings in use are PVC (Polyvinylchloride), Neoprene, Polyurethane, other synthetic rubbers and natural rubber, each of which has particular advantages for the user of the finished fabric.

0602 MAKE-UP OF CANVAS

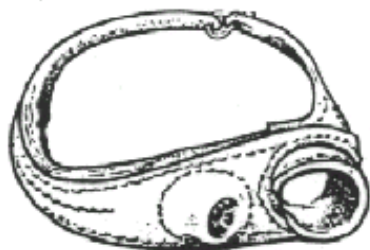
The threads that run across the breadth of the canvas are called the weft, and those which run throughout its length and are rove alternately over and under the threads of the weft are called the warp. As the weft is continuous and unbroken the canvas does not fray at the selvages (sides of each strip), but it will fray at the ends of each strip and wherever it may be cut; such an edge is known as a raw edge and is never permitted in sailmaking, either when sewing canvas or in the completed job.



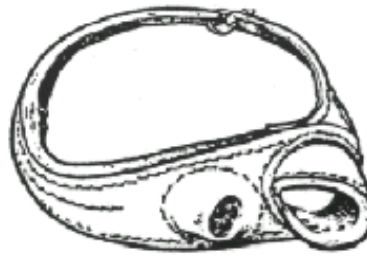
0603 SAILMAKERS TOOLS

- a) **Hand Sewing Needles** - these are known by their numbers - No 17 being the smallest. The most common sizes used as sailmaker's needles are No 17 and a No 14.
- b) **Hand Sewing Palm** - the sailmaker's palm replaces the thimble used in domestic sewing and is used to push the needle through the material. Palms are of two types, the seaming palm which is used for ordinary sewing and the roping palm used with the heavier needles and twine to sew rope and canvas.
- c) **Sail Hook** - is a metal hook secured to a lanyard and used to hold one end of the canvas while sewing. It acts as a 'third hand' for the sailmaker.
- d) **Rubber** - this is a metal tool with a wooden handle, used to flatten out the stitching of a round seam after sewing and also to rub down a turned-in edge before sewing.
- e) **Sailmaker's knife** - an open bladed knife used for cutting material.
- f) **Pricker** - a round metal spike with a wooden handle, used for making small holes in canvas.
- g) **Splicing Fid** - made of a hard wood and used for splicing rope and opening out cringles.
- h) **Punches and Dies** - supplied in various sizes they are used to fasten metal grommets to canvas.
- i) **Grommets** - consist of a metal eyelet and a spur-toothed washer which are used to put a solid eye into canvas or other material.

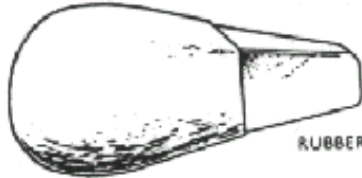
Examples of Tools



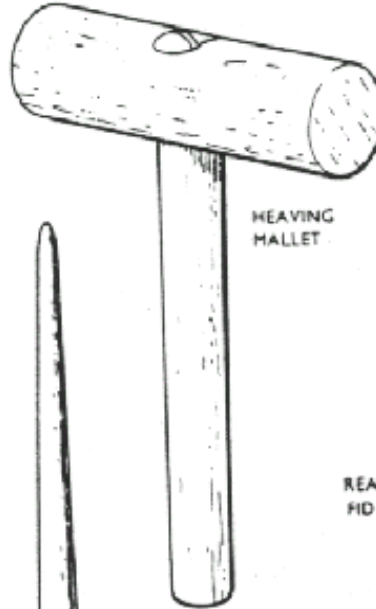
SEAMING PALM



ROPING PALM



RUBBER



HEAVING MALLET



SHOEMAKER'S KNIFE



SAIL HOOK



PRICKER



CANVAS PIERCER



No. 14 NEEDLE



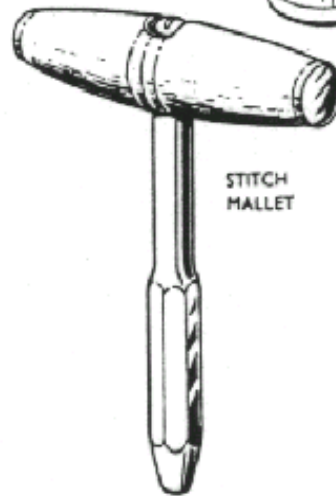
No. 12 NEEDLE



SPLICING FID



REAMING FID



STITCH MALLET

0604 SEWING SKILLS

0604.1 Hand Sewing

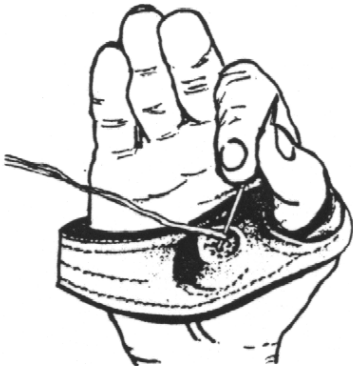
Before starting to sew, the palm should be adjusted so that it fits the hand comfortably. A palm which is too tight or stiff, is likely to cause cramp in the hand and this can be prevented by soaking the palm in hot water to make it pliable.

When making stitches, the point of the needle should be held between the forefinger and the thumb, the middle finger being used to guide the eye of the needle to the pellet of the palm each time the needle is pushed through the material.

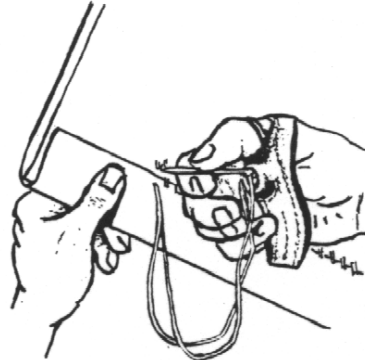
Stitches should be hand taut (an approximate pull of 7 lb) and each stitch must be as taut as the others. When sewing with twine it should be well rubbed with beeswax which helps to preserve the twine, prevent tangles while sewing and lubricate the twine so that it will pass through the material more easily.

When turning in the edge of canvas before sewing a seam, it is necessary to rub down the new edge with a rubber or other suitable tool (the back of a knife blade will do), this keeps the fold in position while sewing. The process is also carried out after the seam has been sewn to make the seam lie flat.

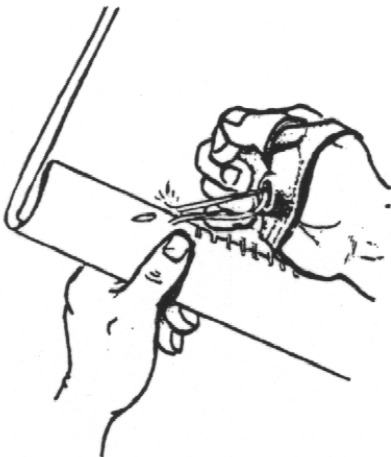
Holding the Needle



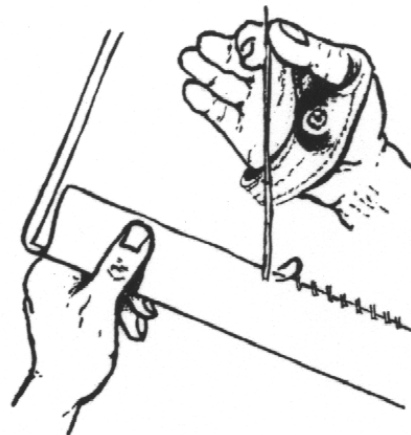
Inserting the Needle



Pushing the Needle through

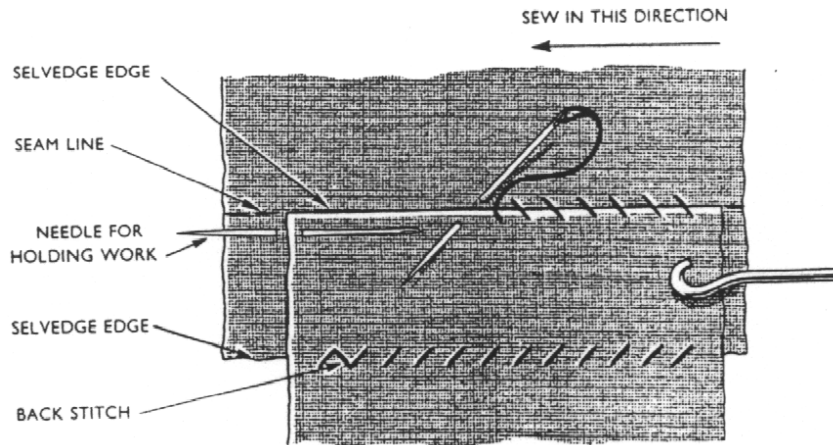


Completing a Stitch



0604.2 Flat Sewing

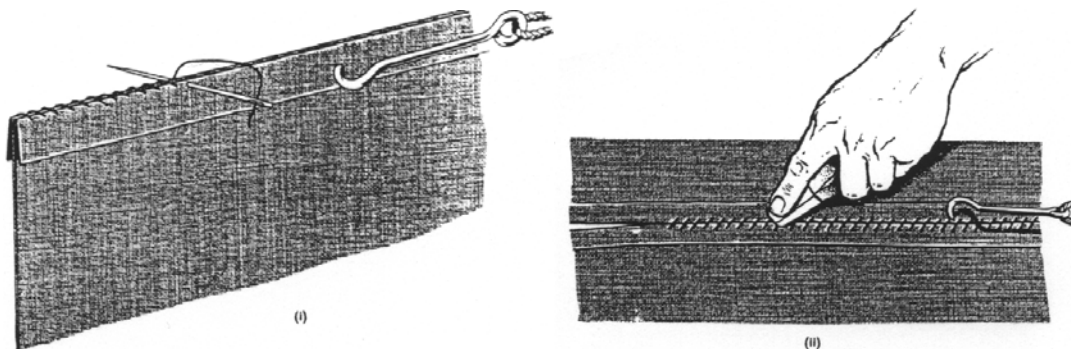
This is a simple method of joining two pieces of fabric when strength is not particularly required. Place the selvedge of one piece of canvas onto the seam line of the other, hook both pieces of canvas on to a sailmaker's hook, keep the cloths flat on the knee and sew away from the hook using approximately 3 stitches to 25mm (1 inch). The needle should pass through the single cloth close to the selvedge and seam line and up through the two cloths close to the other side of the selvedge. The job should then be reversed and the other selvedge sewn to the other seam line.



0604.3 Round Sewing

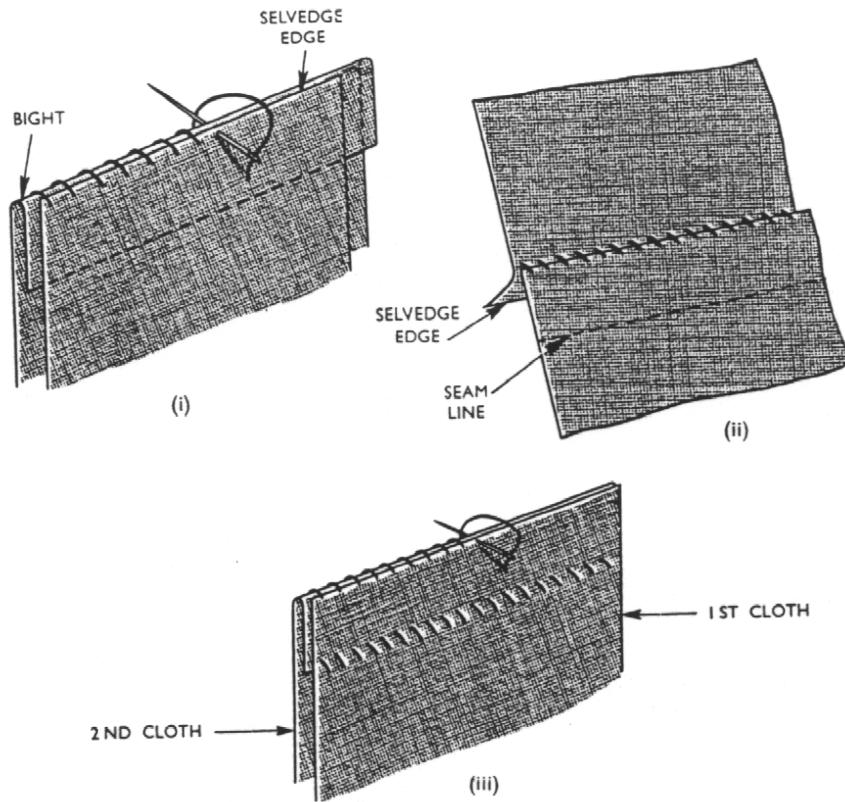
Because the stitches in round sewing pass through more parts of the fabric this gives a stronger joint than flat sewing.

- a) **Single Last** - to sew, turn both cloths at the edge about 13mm and rub down; place the two cloths together with the turned-in edges outwards, fasten both cloths to the sailmaker's hook, start sewing at the end furthest from the hook and work towards it. The stitches should be made by passing the needle through all four parts of the canvas about 3mm from the edge and back over the top making three or four stitches to every 25mm (1 inch). When finished, open out the two cloths and rub down the seam to flatten it out. This seam can also be sewn with the turned-in edges of the cloths towards each other.



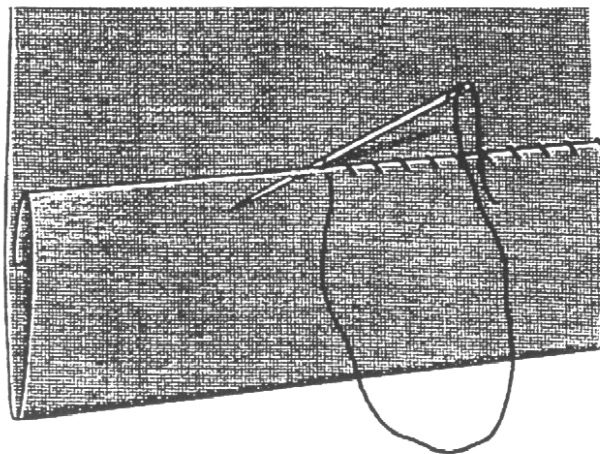
- b) **Single Round Seam** -to sew a round seam, turn in one cloth at the seam line, rub down and place the rubbed-down edge on the selvedge of the other cloth with the turned-in part towards it. Fasten both cloths to the sail hook with the unfolded cloth

towards you and sew towards the hook making approximately four stitches to 25mm (1 inch), the needle passing through all three parts of the material and back over the top. After sewing open out the cloths and rub down the seam.



0604.4 **Tabling**

Tabling is the name for the double thickness of material at the edge of a job similar to the hem in a garment. Besides giving a neat finish to the article, it prevents the edge, and particularly a raw edge, from fraying, and gives added strength where it is necessary to fit grommets, cringles, etc. Tabling is made by turning in the edge of the material, and then turning in the edge again underneath its own part and sewing the folded edge to the material as in the diagram below, then sewn as a flat seam.



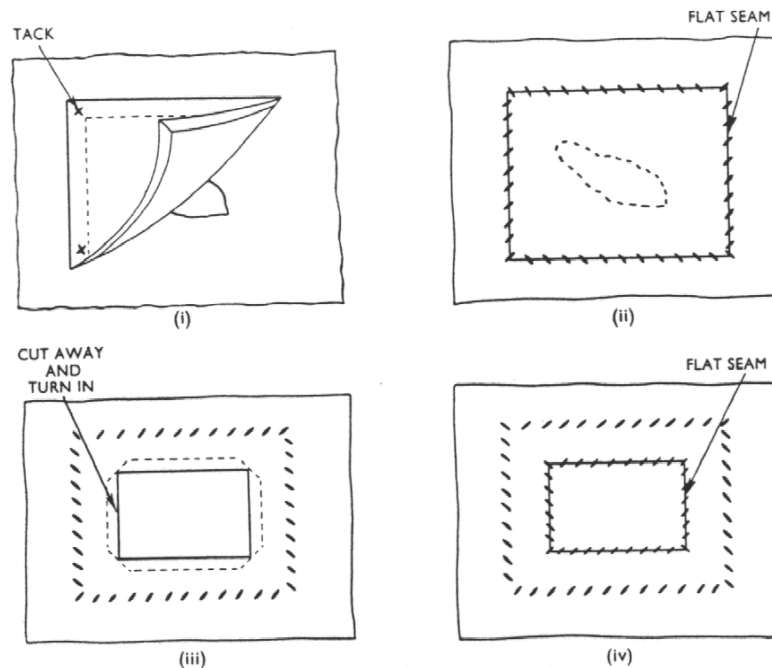
0605 REPAIRING CANVAS

Damage to canvas is likely to be in the form of a tear or a hole. If a hole is very large, extending over half the width of a cloth, it will be advisable to replace the whole width of the cloth.

0605.1 Patching

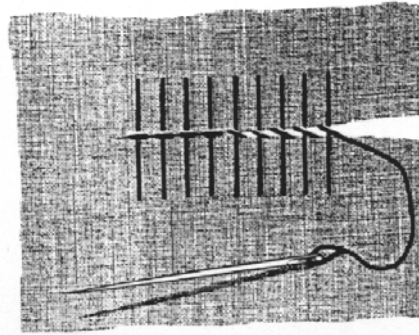
A piece of canvas of the same grade as the damaged canvas is cut to a size which, when laid over the hole, extends 50 to 75 mm beyond the limits of the hole in all directions. Lay the patch over the hole so that the warp threads run in the same direction as those of the canvas being repaired, then put a small stitch in each corner to hold the patch in position. Turn in 13mm on all sides of the patch, mitring the corners, and sew the patch on to the canvas with a flat seam, taking care to secure the corners properly. If one edge of the patch is selvedge there is no need to turn it in.

The work is then turned over and the edges of the hole are trimmed with a knife so as to leave a strip 40mm wide (50mm in No 2 canvas) all round inside the line of stitching. Cut the corners so that 13mm of the strip can be turned in and sewn down with a flat seam.



0605.2 Darning

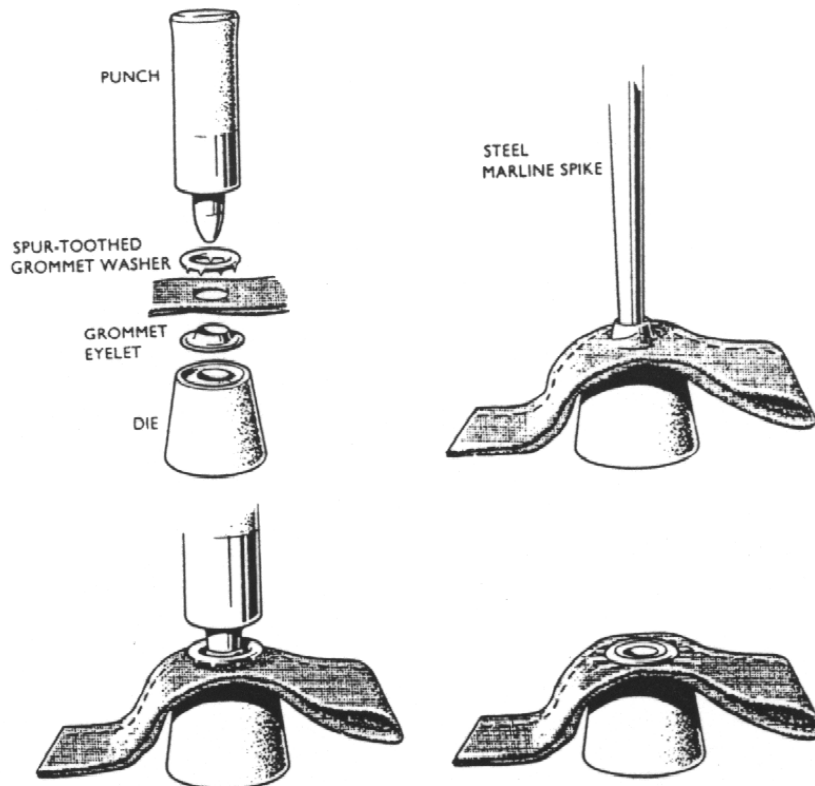
This is used for repairing small tears. The canvas is held so that the tear points directly at the sailmaker. The first stitch is made by bringing the needle up through the canvas, just to the left of the end of the tear, then down through the canvas on the right side and up through the tear, and then through the bight of the twine so formed. Subsequent stitches are made by passing the needle down through the tear, up through the canvas on the left side, down through the canvas on the right side, leaving a small bight in the twine, then up through the tear and the bight. Each stitch is drawn taut as it is finished, and the darn consists of a series of locked stitches sewn closely together.



0606 GROMMETS

If a hole were cut into material and used without strengthening, the material would quickly tear; so it is strengthened with a grommet of metal or rope.

a) **Metal Grommets** - are normally made of brass in two halves. A hole is first made in the material with a piercer or wad punch. The appropriate die, the spur-toothed grommet washer, the hole in the material and the grommet eyelet are aligned with a metal or wooden spike (not a fid). The punch is then hammered down so that the spur teeth grip the cloth and the shaft of the eyelet splays out and grips the material between the two halves.



b) **Rope Grommets** - are made from a single strand of rope. To 'work an eye', place the grommet on the material, mark inside the circumference and cut out this circle. Sew the grommet to the material on the same side as any roping, passing the needle down through the material outside the grommet and up through the hole until the grommet is well covered by the twine.