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FOR

ALL WORKMEN, PROFESSIONAL AND AMATEUR.

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Pages 6-7

Knotting, Splicing, and Working Cordage.

WORK - March 21, 1891.

KNOTTING, SPLICING, AND WORKING CORDAGE. BY LANCELOT L. HASLOPE.

INTRODUCTION.

Antiquity of Art of Knotting - Cordage, to What Applied - Laying Fibres of Rope-Yarns - Strands - Principle of Rope Making - Réaumur's Experiments on Laying-up Fibres of Rope - Size of Rope - Calculation of Strain.

The art of knotting has been said to be "probably as old as human fingers," and there is no doubt that mankind must always have used some kind of knot to join the-sinews of animals, fibres of plants, or strips of hide that, in ancient days, formed a substitute for the endless variety of cordage in use in the present day. It is needless to enlarge on the importance of a knowledge of knotting, as hardly a day passes, even in private life, but we have to make a knot of some kind: and, of course, to the fisherman and seaman, whether amateur or professional, the subject is one of paramount interest. This being so, it seems strange that so little, comparatively speaking, has been written on the subject. I trust these articles will go far to remedy this defect, and to supply what I believe to be a real want. Even those of my readers who have not much occasion for working cordage will, I think, still find the

subject an interesting one. They will be surprised to find what a large number of knots the skill of man has invented, many of them being highly ingenious, and capable of being used in various ways for decorative as well as useful purposes. The importance of being able to make a knot rapidly and correctly, and, at the same time, the one best suited for the purpose for which it is intended, cannot be over-estimated. Human lives, to say nothing of property, have over and over again been sacrificed to ill-made knots, and I believe there are few things of an ordinary kind that will better repay the trouble of learning than how to work cordage successfully.

The generic term cordage comprehends a vast variety of different kinds of rope, from the cable of a man-of-war to the fine "snooding" of the sea fisherman. It is also composed of a great diversity of materials. The most common substances from which it is made are hemp, flax, cotton, manilla, and coir. It is outside our present purpose to go into the process of the manufacture of rope in anything like detail, but the succeeding pages can hardly be fully understood without some knowledge of the construction of cordage; I shall therefore give a few particulars as to the various parts that form a rope.

If the fibres of which a rope is composed were laid parallel to one another and fastened at the two ends, the combined strength of these fibres would be better utilised than by any other means - in other words, they lose strength by being twisted or "laid up." But, on the other hand, the length of the fibres being at most but a few feet, their utility in this state is very limited, to say nothing of the inconvenience of using them in this way. To obviate this difficulty, the fibres are first twisted into "yarns;" these, again, are laid up into "strands," a strand being formed of several yarns; and, finally, three or more strands are formed into a rope. As I have before said, the strength of a rope is diminished by the twisting of the yarns, and this being the case, it is important the yarns should be very carefully laid up, so as to bring an even strain on every part. This should be borne in mind when rope is chosen. It should also not be laid up too hard - that is, it should only have sufficient twist in it to prevent the fibres from being drawn out without breaking; anything more diminishes unnecessarily the strength of the cordage, and should be avoided.

Ropes are generally made of three strands laid right-handed, or "with the sun," as it is termed aboard ship. They are then called "hawser-laid." If they are made of four strands laid right-handed, they are termed "shroud-laid." A cable-laid rope is made of three hawser-laid ropes laid up left-handed; it therefore contains nine strands. It will be seen from the foregoing that the size of a rope is regulated by the quantity of yarns that compose the strands, and not by the number of strands that it contains.

The principle of rope making is very readily shown by holding the ends of a piece of twine or whipcord, about a foot long, in each hand and twisting it so as to increase the lay. If the twine be now slackened by bringing the hands nearer to one another, a loop will first form in the middle of the twine, and it will continue to twist itself up into a compact cord which will not unlay, as the tension to which the strands have been subjected causes friction between them, which holds them together. In other words, the tendency of each part singly to unlay, acting in opposite directions, is the means of keeping them together when joined. Some very interesting experiments were made by Réaumur, the purposes of which were to ascertain the loss of strength occasioned by laying up the fibres of various substances, one or two of which I shall give.

1. A thread, consisting of 832 fibres of silk, each of which carried 1 dram and 18 grains, broke with a weight of 5 lbs., though the sum of the absolute strength of the fibres is 104 drams, or upwards of 8 lbs. 2 oz.
2. A skein of white thread which bore a weight of 9 lbs., when twisted into a cord of two strands, broke with 16 lbs.
3. Three threads were twisted together, their mean strength being nearly 8 lbs. It broke with 17½ lbs., whereas it should have carried 24 lbs. These experiments abundantly prove that though we gain in convenience and portability by twisting the fibres, we lose greatly in the strength of the resulting rope.

In speaking of the size of a rope, the circumference and not the diameter is alluded to. Thus, a three-inch rope would be less than an inch in diameter.

It is often required to know the amount of strain that we may fairly expect a rope to bear. I therefore give an useful formula for calculating it.

Multiply the circumference of the rope in inches by itself and divide the product by five, and the result will be the number of tons the rope will carry. For example, if the rope be five inches in circumference, $5 \times 5 = 25 \div 5 = 5$, the number of tons the rope will carry.

When the strain that a rope will bear is alluded to, it must be understood that a steady haulage is meant, for if the strain comes suddenly on a rope, as when a weight attached to it is allowed to fall suddenly, its resisting power is greatly diminished. This is easily demonstrated by giving a sudden jerk to a piece of twine, when it will part at once, though all one's strength, steadily applied, fails to break it. Knots always more or less diminish the strength of a rope, particularly when they are badly made; so that where as much strain as the rope will bear is likely to come upon it, care should be taken to use none but the strongest knots. The Alpine Club, in the report issued by them of some experiments made on ropes, recommend for joining two ropes the fisherman's knot, and for loops the fisherman's eye. Probably these knots will bear as much strain as any. Illustrations of these knots will be given with subsequent papers, and will be found, the former in Fig. 11, and the latter in Fig. 16

If we require to know the weight of any description of cordage, we can ascertain it, if hawser or shroud-laid, by multiplying the circumference of the rope in inches by itself and by the length of the rope in fathoms, and dividing by 420; the result will be the

weight in cwts. For example, to obtain the weight of a six-inch rope 120 fathoms long, $6 \times 6 = 36 \times 120 = 4,320 \div 420$, makes the weight of the rope 10cwt. 32lb. = 10cwt. 1qr. 4lb.

The rule for cable-laid rope is somewhat different. In this case, multiply the circumference in inches by itself and divide by four; the product will be the weight of the rope in cwts.

In practising knotting it is as well to use a tolerably firm material, such as whipcord, for small common knots, or, still better, small fishing line - of course, I mean line used for sea fishing. Either of these can be tied up and undone over and over again without injury to the stuff, which is not the case with twine; it is also more easy to see which way the parts of a knot lie in the harder material, and then to find out whether the turns are properly made or not. In the case of more complicated knots, particularly those where the strands of the rope have to be unlaid to form the knot, such as a wall knot or a Mathew Walker, I should advise that three strands of fishing line be used, about a foot long each. If a seizing be put round them in the centre, so as to hold them firmly together, we have a good representation of a rope with the strands unlaid ready for working. A knot can be made and unmade as often as required in this way, without the strands suffering any detriment, which is not the case with the strands of a rope, which, from their loose nature, will seldom bear knotting more than once or twice. I have adopted this plan myself with great success in making the illustrations for these articles. If desired, the knots can be made as above described and kept for future reference. In string also it is better to use hard laid stuff at first, but when these matters are thoroughly understood, knots can be made on any sort of cordage without difficulty.

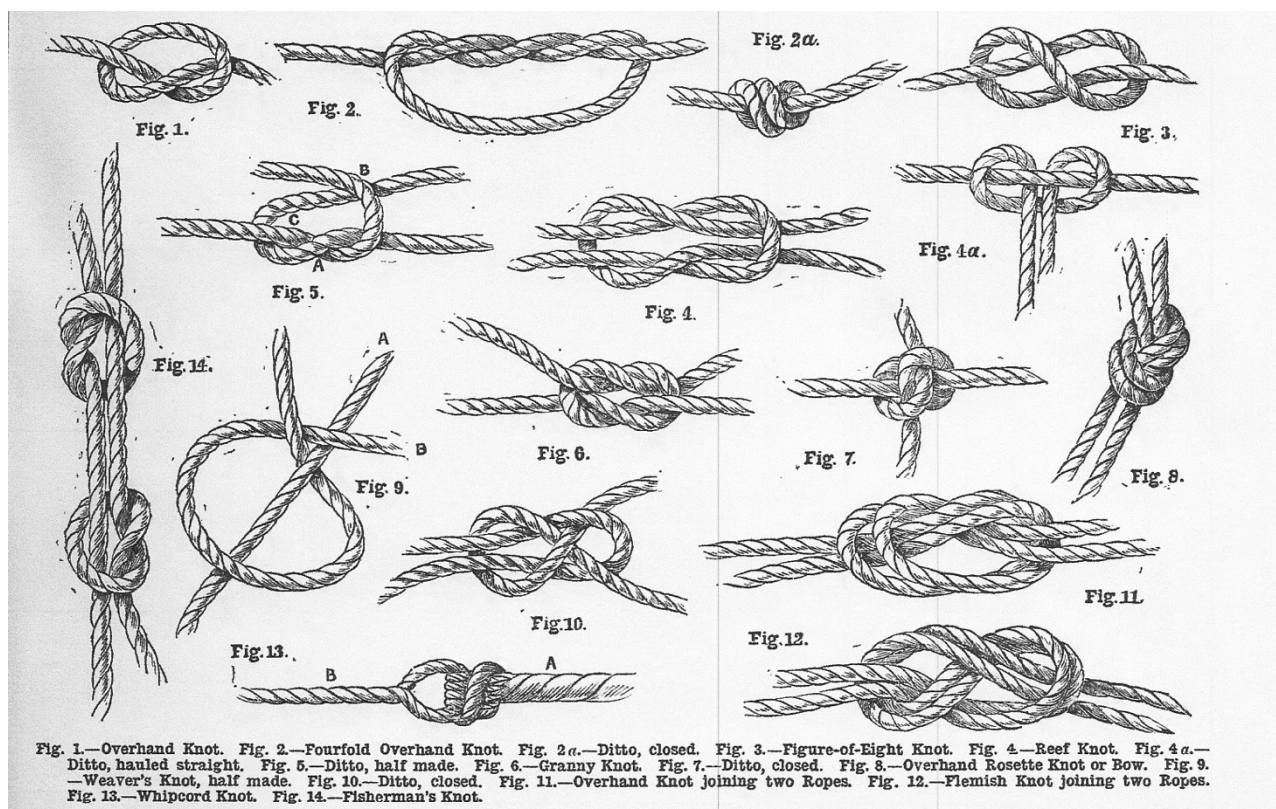
Pages 65-66

Knotting, Splicing, and Working Cordage.

WORK - April 18, 1891.

SIMPLE KNOTS AND KNOTS FOR UNITING ROPES.

Overhand Knot - Fourfold Knot - Figure-of-Eight Knot - Reef Knot - Granny Knot - Rosette Knot or Bow - Openhand Knot - Weaver's Knot - Overhand Knot Joining Two Ropes - Flemish Knot Joining Two Ropes - Whipcord Knot - Fisherman's Knot.



Simple Knots. - Overhand knot (Fig. 1). This is the simplest knot that is made; at the same time it is a very useful one. It also forms a part of many other knots. To make it, the standing part of the rope - that is, the main part in opposition to the end - is held in the left hand, and the end of the rope is passed back over it (whence its name) and put through the loop thus formed. It is often used at the end of a rope to prevent the strands unlaying. It is also sometimes used in the middle of a rope as a stopper knot. If we pass the end of the rope through the bight two, three, or more times before hauling it taut, we then have the double, treble, or fourfold knot (Fig. 2). This forms a larger knot than Fig. 1. It is often used on the thongs of whips, and is then termed a blood knot. Fig. 2a shows the knot hauled taut. Fig. 1 also goes by the name of the Staffordshire knot, as it forms the insignia of the county. A Flemish or figure-of-eight knot is shown in Fig. 3 To make it, pass the end of the rope back, over, and round the standing part, and up (*ed. down*) through the first bight.

For the benefit of my non-nautical readers, I may say here that the bight of a rope is the loop formed when a rope is bent back on itself, in contradistinction to the ends. The term is also used for the bend in the shore forming a bay - as the Bight of Benin. The Flemish knot is used for much the same purposes as the preceding knots, but is rather more ornamental.

Knots for Uniting Ropes. - The circumstances under which we have to join the ends of two pieces of cordage together are very various, and several methods of doing so are brought into requisition at different times, but it is always of considerable importance that the most suitable knot be employed in each case. The value of some knots consists in the rapidity with which they can be made, and in the case of others in the readiness with which they can be undone, but it is a *sine qua non* that the knot should hold firmly and not slip when once hauled taut. The commonest knot for joining the ends of two ropes, and probably the knot that is most often made, is the sailor's, true, or reef knot (Figs. 4 and 5). When correctly made it is as perfect as a knot can be. It can be made very rapidly and undone with equal ease, and is very secure when taut. It has, however, one disadvantage - it will not answer when made with ropes of different sizes, as it then slips and comes adrift, but where the two pieces of cordage are of the same size it is a most secure and reliable knot, the strain on every part being so equally distributed.

Though very readily made when once you get in the way of it, it requires a little practice to make it properly. To do this, take an end in each hand and lay one over the other, the right end being undermost; bring the left-hand end under the standing part of the right end, as shown at A, Fig. 5, and over the end at B, round it, and up through the bight at C. The key to the knot I take to be putting the right end under the left when the two ends are crossed at the commencement of the knot, as the left-hand end then comes naturally first over and then round the other rope, and the ends lie parallel with the standing parts, as in Fig. 4. If the ends are not passed correctly, a granny, lubber's, or calf knot results. This is shown in Fig. 6. Though at first sight this seems to be a good knot, yet it is not so in reality, and when any strain comes upon it, it slips and becomes useless.

Fig. 7 is a granny knot, as it appears when hauled upon. It is considered a very lubberly thing to make a granny knot, and my readers should practise until they can make a true knot rapidly and with certainty in any position. The sailor's knot is invariably used for reefing sails, the ease with which it can be undone making it very valuable for this purpose. You have only to take hold of the two parts on each side just outside the knot and bring the hands together, and the loops slip over one another, as in Fig. 4, and the knot can be opened at once. This knot has a curious peculiarity which I do not think is generally known. If we take hold of the end of one of the ropes in one hand and the standing part of the same rope in the other, and haul upon them until the rope is straight, the knot becomes dislocated, so to speak, and the rope not hauled upon forms a hitch (Fig. 4a) round the other part.

This property was the secret of Hermann's celebrated trick, "the knotted handkerchiefs." After the handkerchiefs were returned to him by the audience knotted together at the corners, under pretence of tightening the knots still more, he treated each knot as I have described. To the superficial observer the knots seemed as firm as ever, but in reality they were loosened so that a touch with his wand separated them easily. The common bow or rosette knot is a modification of the sailor's knot. The first part of the process of making it is the same, but instead of passing one end singly over and under the other, as in the sailor's knot, both ends are bent back on themselves, and the double parts worked as before. Care must be taken to pass these doubled ends exactly as those described in the sailor's knot, or a granny bow will result.

One often hears people say that they cannot understand *why* their shoes are always coming untied, the reason being that they were tied with granny instead of true bows. Another way of joining the ends of two pieces of cordage is shown in Fig. 8. This is merely an overhand knot, made with two ropes instead of one. It is also sometimes called an open-hand knot. It can be made very quickly, and there is no fear of its slipping, but if there is much strain put upon it the rope is very apt to part at the knot, in consequence of the short "nip," or turn, that it makes just as it enters the knot.

Fig. 9 shows the weaver's knot partly made, and Fig. 10 the same knot completed, but not hauled taut. This knot is called by weavers the "thumb knot," as it is made over the thumb of the left hand, and is used by them in joining their "ends" as they break. No one would believe, without seeing them, the rapidity with which they make the knot, snip the ends off, and set the loom going again. It is used by netters to join their twine. It also forms the mesh of the netting itself, though, of course, it is then made in a very different way. In making the weaver's knot, we cross the two ends to be joined in the same way as in the sailor's knot, placing the right end under, and holding them with the thumb and finger of the left hand at the place where they cross. The standing part of the right-hand rope is then brought back over the thumb and between the two ends, as shown in Fig. 9. The end A is then bent down over it, and held with the left thumb, while the knot is completed by hauling on B. We shall meet with this knot again further on.

Fig. 11 shows an excellent way of joining two ropes. It can be made by laying the ends alongside one another, overlapping each other sufficiently to give room for the knot to be made. The double parts are then grasped in each hand and an overhand knot is formed, which is made taut by hauling on both parts at once, as if the knot was single. Though this is the easiest way to make the knot, it is not available where the ropes are fast. In this case we make a simple knot on the end of one rope, but do not draw it taut. The end of the other rope is then passed through the bight of the first, and a second loop formed with it alongside the first. The knot is closed by drawing the two ropes as before. This is in every way an excellent knot, and very secure. Fig. 12 shows the ends of two ropes joined by means of a Flemish knot. This does not require much description. It is made after the manner of the last knot.

Fig. 13 is the whipcord knot, and is used to fasten the lash to a whip; A shows the thong, and B the lash. The lash is first laid across the ends of the thong, which are turned up over it. The lash is then brought completely round the thong and through the loop it makes, which secures the ends of the thong firmly. If a silk lash is used, the short end is cut off, but if whipcord, the two ends are generally twisted together for a few inches, as at B, and an overhand knot made with one end round the other, which secures them. The remaining part is left somewhat longer, and another overhand knot at the end prevents it from unravelling.

The fisherman's knot (Fig. 14) is one of the most useful knots we have. It derives its name from the fact that it is always used for joining silkworm gut for fishing purposes. In making it, the strands are first laid overlapping one another, and an overhand knot made with one end round the other strand. The strands are then turned round, and another overhand knot made with the other end round the first strand. When the knot is tightened by hauling on the standing parts, one knot jams against the other and holds securely. The knot is improved by putting the ends twice through their respective loops, as in Fig. 2. The size of the knot is increased by this means, but it will stand a much heavier strain, so that it is advisable to do this whenever the size of the knot is not of paramount importance.

The attention of the reader is called to the illustrations of the various knots mentioned above, which show in the clearest manner possible the nature and character of each knot, and how it is made.

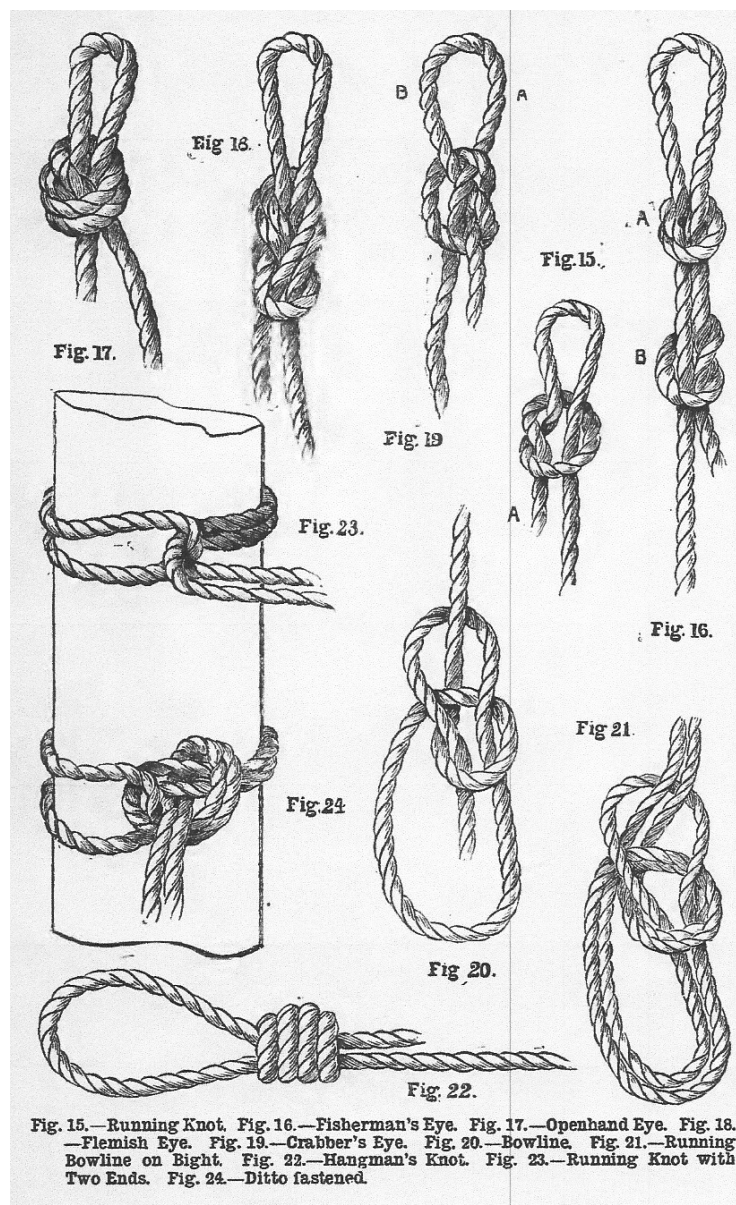
Pages 137-138

Knotting, Splicing, and Working Cordage.

WORK - May 16, 1891

EYE KNOTS.

Running Knot or Slip Knot - Fisherman's Eye - Openhand Eye - Flemish Eye - Crabber's Eye - Bowline Knot - Running Bowline on a Bight - Hangman's Knot - Running Knot with Two Ends - Running Knot with Two Ends Fastened.



One of the simplest of these is shown in Fig. 15. It is the "Running" or "Slip Knot." A bight is first formed, and an overhand knot made with the ends round the standing part. The standing part may be drawn through the knot, and the eye made to any size required. There is less chance of the knot coming undone if an overhand knot is made on the end A. This is the knot with which a sailor ties his neck-handkerchief, and it is therefore sometimes called a sailor's knot.

Fig. 16 is the "Fisherman's Eye Knot." A bight is first made of sufficient length, and an overhand knot formed with the standing part round the other strand; the end is now passed round the standing part, and knotted as before. We now have a running knot A, with a check knot B, which, when hauled upon, jam tight against one another, and hold securely. This is one of the best knots I know of for making an eye in fishing, as the strain is equally divided between the two knots. Fig. 17 shows a very common way of making an eye on the end of a piece of cord - indeed, you will often find those who know no other mode of doing so. It is practically the same knot as Fig. 8, only, instead of being made with two ropes, one only is used. The end is brought back along the rope to form the eye, and an overhand knot made with the two parts. This knot, from being so easily made, is often used, but as it lacks strength, like the openhand knot (Fig. 8), it is not advisable to use it where it is required to bear much strain. My readers will by this time doubtless have noticed how very often open-hand knots come into requisition as component parts of other knots.

Fig. 18 is an eye made with a "Flemish" knot. It is worked just the same as a single Flemish knot, the only difference being that two parts are used instead of one. It is stronger, but clumsier, than the one just described. It is not very often used.

The "Crabber's Knot" (Fig. 19) is a curious and not very well-known knot. I learnt it one day coming home from fishing in a friend's yacht. His captain was an old crabber, and we had been discussing the best form of eye knot for fishing gear, when he recommended me this one as being very secure, and less likely to part at the knot when a strain was put on it, than any knot he knew. To make it, bring the end back to form a loop, taking it first under and then over the standing part, up through the main loop, over the standing part again, and up through its own bight. Before the turns are hauled into their places, the knot will slip on the part A, as in an ordinary slip knot; but if the part B is hauled upon, the strand A, which passes through the centre of the knot, rises, and the coil which goes round it jams, making the knot secure : so that it may be used as a running knot or otherwise, as desired. This is also called a running knot with crossed ends.

Fig. 20 - the "Bowline Knot" - is one of the most useful knots we have. It is impossible for it to slip, and it is therefore always used for a man to sit in when he is slung, for the purpose of doing some particular piece of work. The end is first laid back over the standing part, so as to form a loop; the end is then passed up through the loop, round the back of the standing part, and down through the loop again. Hauling on the end and the standing part makes the knot taut.

Fig. 21 is a modification of this knot, called a "Bowline on a Bight." The loop is made as in the previous knot, only with the two parts of a doubled rope; the bight is then passed up through the loop, opened, and turned backwards over the rest of the knot, when it appears as in the figure. To untie it, draw the bight of the rope up until it is slack enough, and bring the whole of the other parts of the knot up through it, when it will readily come adrift. If the standing parts of the rope are held fast, it puzzles the uninitiated to undo it. I remember hearing of a mischievous person who used to amuse himself by going round to the country inns, and making this knot on the bridles of any farmers' horses he could find tied up outside; the result being that the old farmer, whose wits probably were not sharpened by his recent potations, had generally to cut the reins before he could get them over his horse's head. A "Running Bowline" has the knot made on the end after it has been passed round the standing part, thus forming a loop through which the main rope will run. Two ropes may be joined together by making a bowline in the end of one of them, and putting the end of the other through the bight, and forming with it another bowline on its own part. This is often used to join hawsers together.

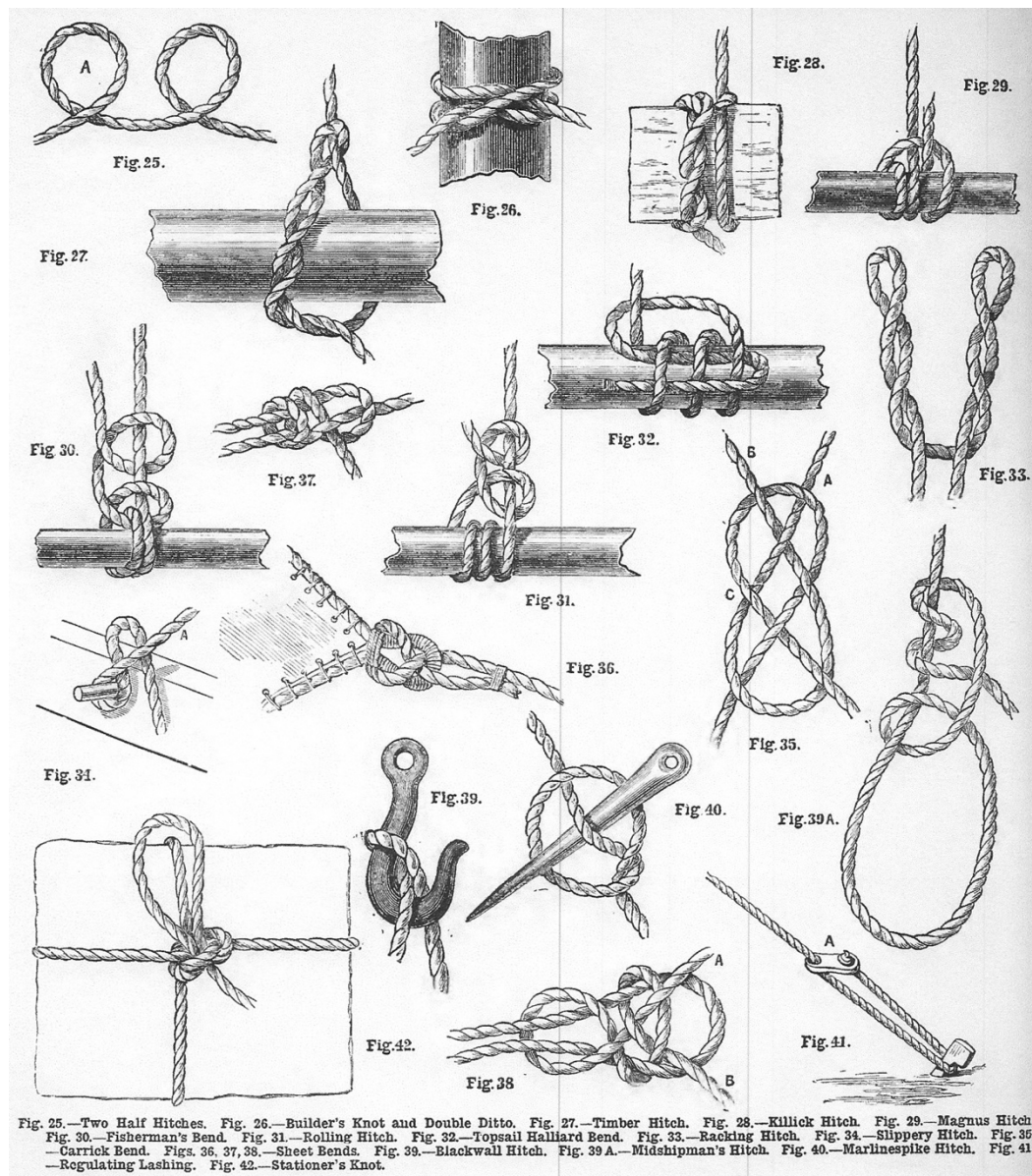
Fig. 22 is the "Hangman's Knot." A bight is first formed in a rope, which is held in the left hand; the end is then coiled several times backwards - that is, from right to left round the standing part - and then passed forwards through the coils. It is made more easily if, in the case of small stuff, the first finger of the left hand be laid along the standing part, and the coils made round them both. This keeps the coils open, so that the end passes through them readily. In the case of larger cordage, a piece of stick may be used. The advantages of this knot for its particular purpose are that when well-greased it runs very readily, and that, from its large size, it presses on the veins of the neck, and thus extinguishes life more rapidly than a smaller knot would do. I believe our modern executioners instead of this knot use a thimble - that is, a grooved ring of metal spliced into the end of a rope, and the main part passed through it to form the fatal noose.

Fig. 23 shows a method of making a rope fast to a post or pillar. The rope is doubled and passed round the post, and the ends put through the loop. If it is required to make this fastening secure, the ends maybe passed round the standing part and through the bight thus formed, as in Fig. 24; or, instead of passing the cords through the bight, a loop may be formed by doubling the ends, and this loop put through the bight, thus forming a slippery hitch. This knot has the advantage of being more readily undone than the other one, as we have only to pull at the ends, and the rope is released at once. We may also secure the ends by making a Flemish knot on them, instead of an overhand knot.

This brings us to an end of the consideration of the various knots that are in use, classified as simple knots, knots for joining ropes, and eye knots. In my next paper I shall endeavour, by means of description and illustration, to make the reader acquainted with the modes of making hitches and bends.

HITCHES AND BENDS.

Two Half Hitches - Builder's Knot - Double Builder's Knot - Timber Hitch - Killick Hitch - Magnus Hitch - Fisherman's Bend - Rolling Hitch - Topsail Halliard Bend - Backing Hitch - Slippery Hitch - Carrick Bend - Sheet Bends - Blackwall Hitch - Midshipman's Hitch - Marlinespike Hitch - Regulating Lashing - Stationers' Knot.



We now come to a somewhat different class of fastenings, though it is very difficult to discover where knots end and bends and hitches begin; indeed, a tie that, under certain circumstances and made a particular way, is called a "knot," differently constructed, and under dissimilar conditions, is called a "bend" or "hitch," though the result is the same in both cases. As an illustration of what I have been saying, we may take two half hitches (Fig. 25), which, if made in another way round a pole, is called a "Builder's Knot." If my readers will analyse the knots I shall set before them, they will find several other similar instances occurring amongst them, A, Fig. 25, is a single hitch : it is merely a loop formed in a rope. This is readily done by holding the rope in the left hand, and giving it a twist with the right; the loop then forms itself, as it were. When a tightly laid piece of cordage is twisted, these loops are apt to arise of their own accord; they are then called "kinks." They are very objectionable, as the cord is sure to part at the kink when a strain is put on it. It is still worse in the case of wire, which breaks readily when once kinked. Tight, hard cordage should always be well stretched before it is used, to avoid kinking. Two half hitches (Fig. 25) form a very useful knot for a great variety of purposes, as they are very quickly made, and will not slip, no matter what strain is put upon them - indeed, the more they are hauled upon the faster they hold. There is no better or easier way of making a rope fast to a hook. First one hitch is

slipped on, and then the other on the top of it, and the rope is fast in less than a couple of seconds. This knot is used by surgeons in reducing a dislocation of the thumb joint.

Fig. 26 is the builder's knot, which, as said before, is merely two half hitches, but as it is used in places where it is impossible to pass the hitches over the ends of the timber, it is made by holding one end in the left hand, passing the rope round the pole, under the end, round the pole again, above the first part, and under its own part; from its non-liability to slip laterally this knot is always used to fasten one pole to another in fitting up scaffolding, from which circumstance it has acquired its name. If, instead of making the commencement of the knot as shown in Fig. 26, we pass the end, after it has gone round the pole, two or three times round the other part, as in Fig. 2 (page 65), the remainder of the knot is rather more readily made, as it holds itself taut, and will not slip while the end is put round to complete the fastening.

A "Double Builder's Knot" is made the same way exactly as the builder's knot, but the end goes round again, as beforehand underneath its own part. This makes it much stronger. When a builder's knot is made on a rope for the purpose of securing a small line to a stout rope, it is called a "clove hitch"

The "Timber Hitch," Fig. 27, is a rough and ready way of securing a piece of timber or any similar thing, and comes in handy on a great many occasions. It is made by bringing the end of a rope round the timber, then round the standing part, and then, taking two or more turns, round its own part. The pressure of the coils one over the other holds the timber very securely, and the more it is hauled on, the tighter it holds. It can also be cast off very readily.

Fig. 28 is a modification of the timber hitch, called the "Killick Hitch." It is much used to fasten a stone to the end of a rope. After making a timber hitch and hauling it taut, a single hitch is made, and slipped over the end of the stone alongside of it. Some of the best fishing grounds are on rocky coasts where an anchor would not hold; and if it did, there might be considerable risk of losing it altogether, from its jamming in the crevices of a rock. In these places a killick, or large stone, slung as shown in Fig. 28, is used, which holds the boat by its own weight, without any risk of getting fast to the ground.

Fig. 29 is a "Magnus Hitch," a good strong method of securing a rope to a spar, as there is little tendency to slip endways along the spar. In making it, take the end of the rope twice round the spar, in front of the standing part, round the spar again, and then through the last bight.

The "Fisherman's Bend," Fig. 30, consists of two round turns round a spar, and a half hitch round the standing part, and through the turns on the spar, and another half hitch above it, round the standing part. It is used for bending studdingsail halyards to the yard, and, in yachts, for bending on the gaff topsail halliards.

A "Rolling Hitch," Fig. 31, is made by taking three round turns round a spar, and then making two half hitches round the standing part of the rope, and hauling taut.

The "Topsail Halliard Bend," Fig. 32, is another bend, used chiefly on board yachts. It is made by bringing the rope twice round the spar, then bringing it back round the standing part, under all the turns, over two turns, and under the last. This hitch is shown open for the sake of clearness, but in practice we jam the coils close together, and haul them all taut.

Fig. 33 is a "Racking Hitch," for hitching a rope on to the hook of a block. Make two bights in a rope, and turn the bights over from you two or three times, and put the two loops on to the hook. This is sometimes called a "cat's paw."

Fig. 34 is a "Slippery Hitch," the value of which consists in the readiness with which it can be cast off in case of emergency; at the same time, it holds securely while there is a strain on the rope. If the mainsheet of small boats is made fast at all, which is always a more or less risky thing to do, a slippery hitch should always be used as a start. A sharp pull at the end of the rope lets the sheet go at once.

Fig. 35 is the "Carrick Bend." Lay the end of a rope over the standing part, thus forming a loop; then take the end of another rope, and put it under the bight over the standing part at A, under the end at B, over the rope again at C, under its own part, and over the rope B, and haul taut. The parts A and B form the first loop made. This is generally used for binding hawsers together, to increase their length to warp or tow with. This method of binding ropes together has the great advantage of being readily undone without the aid of a pricker or marline-spike, which would have to be used for many knots, after they had been in the water. As in the sailor's knot, we have but to grasp the ropes just outside the knot, and push the loops inwards, and the knot comes adrift at once.

Fig. 36 shows the clew of a sail, and the method of bending the sheet on to it. This is termed a "Sheet Bend." The sheet is not, as some of my readers might fancy, a part of the sail, but is a rope used in setting a sail, to keep the clew or lower corner of the sail down to its place. In making a sheet bend, the end is passed Up through the clew, round the back of it, under its own part, and over the clew again. The end is generally stopped to the standing part with rope yarn or other small stuff. The knot thus formed is exactly the same as the weaver's knot, Fig. 10 (page 65). Fig. 37 shows a method of giving additional security to this knot. This is done by passing the end twice round the back of the loop before putting it under its own part. This knot is very much used by fishermen in bending a line on to a loop of gut.

Fig. 38 gives another and somewhat more complicated method of bending a rope on to a loop; B is the standing part, and A the end of the rope to be bent on a loop already formed. Pass the end down through the loop, round over its own part, and through the loop, round the back of it, and through its own bight. When hauled taut, this holds more securely than either of the other methods, but, on the other hand, takes longer to make.

The "Blackwall Hitch," Fig. 39, is a ready way of temporarily securing a rope to a hook. The way of making it is evident from the illustration. As the standing part when hauled upon jams the end against the back of the hook, it holds much more firmly than would be supposed at first sight.

The "Midshipman's Hitch" is an old-fashioned hitch, used for attaching a tail-block to a rope. A round turn is first made over the standing part, and the end is brought up, passed twice round above the first hitch, and then passed out underneath its own part.

The "Marlinespike Hitch," Fig. 40, is used for getting a purchase on the seizing stuff when serving a rope, so as to leave the turns taut. Make a bight in the seizing stuff, and bring it back over the standing part; pass the marlinespike under the standing part, and over the sides of the bight. This is practically identical with the running knot, Fig. 15 (page 137).

Fig. 41 is a "Regulating Lashing," used when the tension of a rope requires altering from time to time. Tent ropes are secured this way, as they require easing in wet weather, and tightening in dry. This is readily effected by slipping the piece of wood a upwards or downwards along the cord, the friction of the cord against the sides of the hole fixing it sufficiently.

The "Stationers' Knot," Fig. 42, is very handy for tying up a parcel, as it can be made very rapidly, and undone with great ease. Make a running noose at the end of a piece of twine, and bring it to the centre of the parcel; take the twine round the parcel again at right angles, round the noose, and making a bight, slip it under, as shown in the figure. A pull at the end releases the knot instantly, as will be found on making the experiment.

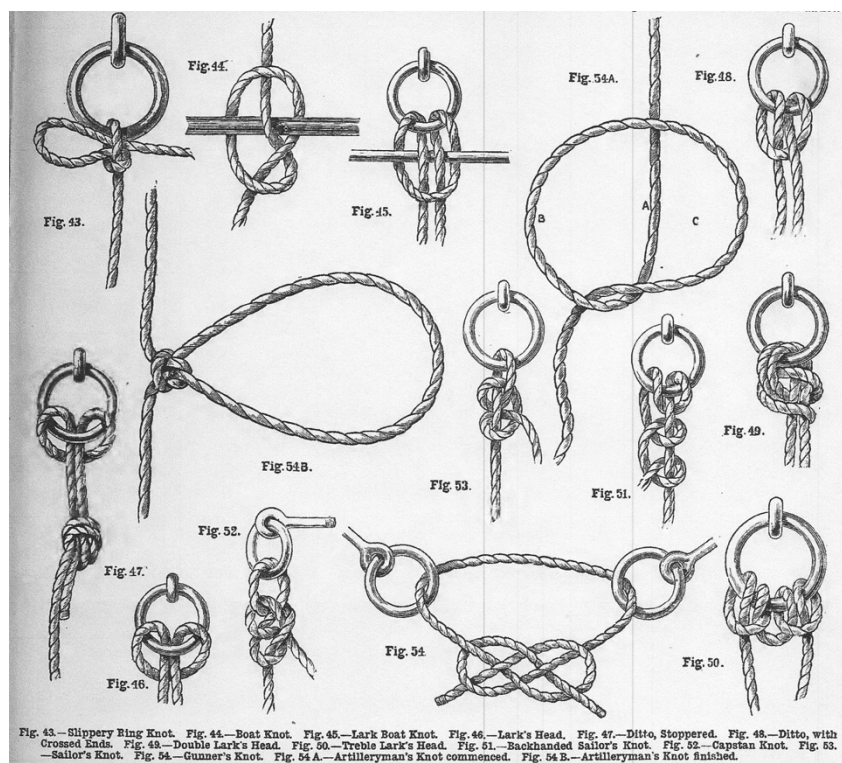
Pages 244-245

Knotting, Splicing, and Working Cordage.

WORK - July 4, 1891

RING KNOTS.

Slippery Ring Knot - Boat Knot - Lark or Double Boat Knot - Lark's Head - Lark's Head Stoppered - Lark's Head with Crossed Ends - Double Lark's Head - Treble Lark's Head - Backhanded Sailor's Knot - Capstan Knot - Sailor's Knot - Gunner's Knot - Artilleryman's Knot.



We have very commonly to make a rope fast to a ring, and there are a variety of methods of doing so, some of them identical with knots used for other purposes; but as they have their own names, I have thought it best to give them here. Fig. 43, where the end is passed through the ring, and a bight put under the standing part, is a ready way of temporarily fastening the painter of a boat to the ring of a pier; as in the Stationary Knot, a sharp pull at the end of the rope frees the painter at once. This is an excellent fastening for many purposes. Fig. 44, called the "Boat Knot," is another good way of mooring a small boat. It is made in the same

way as a Marlinespike Hitch, the only difference being that a thowl pin or other small piece of wood is put through the centre of the knot instead of a marlinespike. By withdrawing the pin the knot comes adrift of its own accord.

Fig. 45 is another form of boat knot, called the "Lark Boat Knot," or "Double Boat Knot" This differs from the last knot, inasmuch as a bight, instead of a single end of rope, is put through the ring; a piece of wood is used to fasten it, as in the Boat Knot It is rather the better knot of the two. If, instead of the ends being brought down outside the bight after it has been passed through the ring, they are put through it we have a "Single Lark's Head" (Fig. 46), and in Fig. 47 we have the same knot "stoppered." It may be made by passing a bight through the ring, and drawing the two parts of the rope through the bight; or where this is not practicable by reason of one end of the rope being fast, the end may be passed up through the ring behind the standing part, and down through the ring and bight again. Sometimes, instead of stoppering this knot with an overhand knot, as in Fig. 47, we seize the end to the standing part with twine or other small stuff.

Fig. 48 is a "Lark Knot" with crossed ends, and is made in the manner I have described, where one end of the rope is fast, except that the end at last comes over instead of through the bight. The ends are often stoppered as in the last knot If we take the standing part in one hand and the end in the other, and draw them apart, we shall find, though with a name of its own, this is really nothing more than a "Clove Hitch" or "Builder's Knot" under a different name and different circumstances.

In the "Double Lark's Head" (Fig. 49) a bight is first made, and the ends passed through it; the ends are then put through the ring and through the loop just made and hauled taut. In Fig. 50 we have the "Treble Lark's Head," which, though it looks complicated, is more easily made than its appearance would lead us to expect. First bring the bight of a rope up through the ring, take one of the ends, and pass it through the bight, and up through the ring, and then down through its own bight; do the same with the other part and the knot is formed.

In Fig. 51 we have a "Backhanded Sailor's Knot." It is made by passing an end through the ring round at the back of the standing part and through the ring again, and finishing with two half-hitches round the standing part. It may also be made with the end in the last turn put under the standing part and under its own part. Fig. 52 is the "Capstan Knot." Cross the end of the rope after it is through the ring, bring it round the standing part, through the first bight and through its own bight, thus forming a sort of figure-of-eight knot.

Fig. 53 is a "Sailor's Knot," composed of two half-hitches round the standing part of the rope. This is one of the most useful and easily-made knots we have, and is very much used as a mooring knot.

A "Gunner's Knot" (Fig. 54) is simply a "Carrick Bend," made with the two ends of a rope after it has been passed through two rings. Gunners themselves call this a "Delay Knot."

The knot shown in Figs. 54A and 54B is called "Manharness," or the "Artilleryman's Knot." It is used when hauling guns over a difficult country, when horses cannot be employed to get them into position. It is a most valuable knot where heavy weights have to be drawn with ropes, as by its use a man can exert his strength to much greater advantage than he could by merely grasping the rope with his hands. To make it, form a half-hitch, turn it round, and lay it against the standing part. This is, in fact, a Marlinespike Hitch, and is represented in Fig. 40 (page 200). Now pass the right hand into the bight C, and going under A, as shown in Fig. 54 a, grasp the part B, and draw it through C until a loop of sufficient size is made. When using it, the head and one arm are passed through the loop, as shown in Fig. 54 n, which gives the knot finished. A little care is required in closing the knot, so that the turns may jam properly one against the other, or the knot will slip.

When several men are employed, a bowline is generally made at the end of the rope, and as many loops as there are men to haul at equal distances along it.

Pages 309-310

Knotting, Splicing, and Working Cordage.

WORK - August 22 1891

SHORTENINGS.

Bend Fastening - Chain Knot - Twist Knot - Sheepshanks - Sheepshanks Fastened, Knotted, and Toggled - Knot Shortening - Double Chain Knot.

It frequently occurs that a rope is too long for the purpose for which it is required, and as it would be inadvisable and wasteful to cut it, some method of reducing its length had to be devised; hence arose what are termed "Shortenings."

The "Loop" or "Bend" Shortening (Fig. 55) is the simplest of these. The rope is merely bent as much as is required, so as to form two bights, and the two parts seized together with small stuff. This is a simple and good method of shortening ropes.

The "Chain Knot" (Fig. 56) is another method of shortening ropes. In commencing it, we make a running knot (Fig. 57), and then draw a portion of the part A through the loop B; this is done with the forefinger and thumb of the left hand. It will now form another loop, through which a fresh piece of A is to be passed. This process is to be repeated until all the slack of the rope is

taken up. There are two ways of finishing it off : either by putting a piece of stick or belaying-pin through last loop, or by drawing the end itself up through the bight.

The "Twist Knot" (Fig. 58) forms another handsome shortening. In commencing, we place the cord to be shortened as in Fig. 59. One of the outside parts is then brought over the middle strand, and the outer strand on the opposite is brought over this, which is now the middle part. This is continued as long as required, the outside strand alternately being placed over the centre strand, as in an ordinary three-plait. Fig. 58 shows the plait completed, and the way of finishing off the end. These shortenings are ornamental as well as useful. Among other purposes, they may be used for thickening a piece of small cord, so as to give more substance where it has to be hauled upon, and thus prevent the hand being cut with the cord.

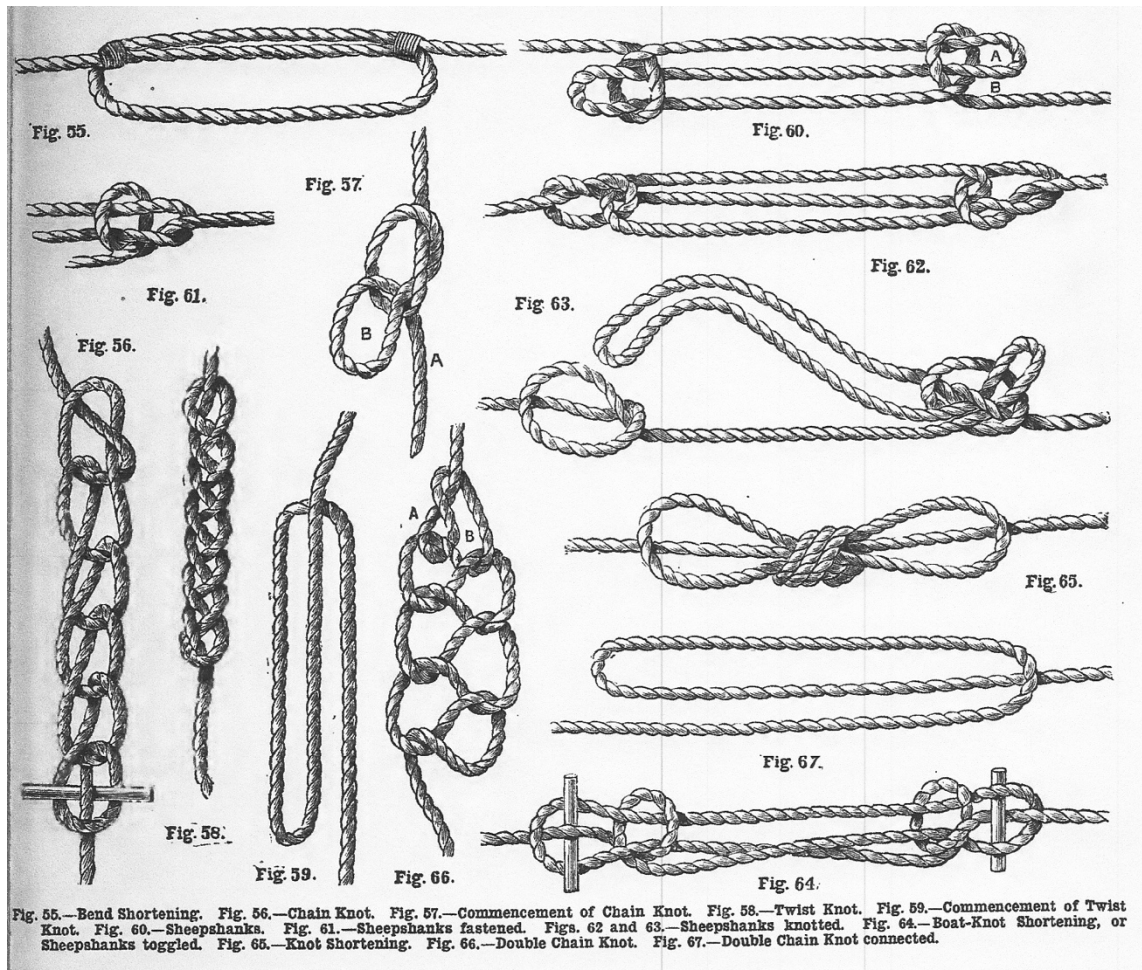


Fig. 60 is the "Sheepshanks" or "Dog-shanks" - a very old-fashioned method of shortening, and one that is a good deal used, as it is applicable to any size of cordage. The twist and chain knots are not suitable for very stout rope. Two bights are formed in the rope, as in Fig. 59; a half hitch is then made at each end, and slipped over the bights. This is made more secure if a seizing is put round the two parts, at A and B. It can also be secured when ends of rope are free by passing each end through adjoining bight, as shown in Fig. 61.

Fig. 62 is a "Knotted Sheepshanks." This is very similar to the last, the only difference being that the ends are fastened in a rather different way. The two bights are made as before, and each end, after passing through the bight nearest to it, is put through the bight it has just made, thus forming an overhand knot at each end.

In making Fig. 63, the parts of the rope are arranged as before. A marlinespike hitch is made at each end, and the bight put through it. The left side of the figure shows the knot made, and the bight in the act of being passed through it. It goes over the outside strand, under the centre one, and over the next. On the right side of the drawing the loop is shown in its place, ready to be hauled taut.

The "Boat-Knot" Shortening (Fig. 64) is another form of Sheepshanks. In this the ends are secured by bringing a portion of the loose part of the rope through the bight at each end, and toggling it with a belaying-pin or piece of wood, as in the Boat Knot. This has the advantage of being loosened very readily. This can be made when both ends of the rope are fast.

The "Knot" Shortening (Fig. 65) is a ready mode of taking up the slack of a rope, though it is not suitable for very stout ropes. It can only be made, however, where one end of the rope is at liberty. The rope is laid as at Fig. 67. The three parts are then grasped with both hands near the bights, and an overhand knot is formed with the whole of the strands. It forms a good shortening for moderate-sized cordage, where the strain is not too heavy.

The "Double Chain Knot" (Fig. 66) is perhaps the most ornamental knot of this group. A turn is first taken round the standing part, and the loose end is then passed through the loop thus formed at a. In doing this another loop (b) is made, through which the end is brought. The end is thus continually passed from one side to the other through the preceding loop until the knot is of the proper length. It may be finished, if required, by making an overhand knot with the end over its own part, or merely passing it through the last loop, and hauling on it.

Pages 361-362

Knotting, Splicing, and Working Cordage.

WORK - August 22, 1891.

TIES AND LASHINGS.

Wedding Knot, or Tie - Chain Knots - Cross Lashing - Necklace Tie - Packing Knot - Finishing-off and Whipping - Nippering, or Racking - West Country Whipping - Securing Block to Rope - Catspaw.

Fig. 68 is a "Wedding Knot" or tie, used for fastening together the eyes at the end of two ropes. It is made by passing rope-yarn or marline through the eyes backwards and forwards until it is strong enough; it is then fastened by taking several turns round the middle and fastening the ends with a reef knot. This forms a sort of hinge between the ropes.

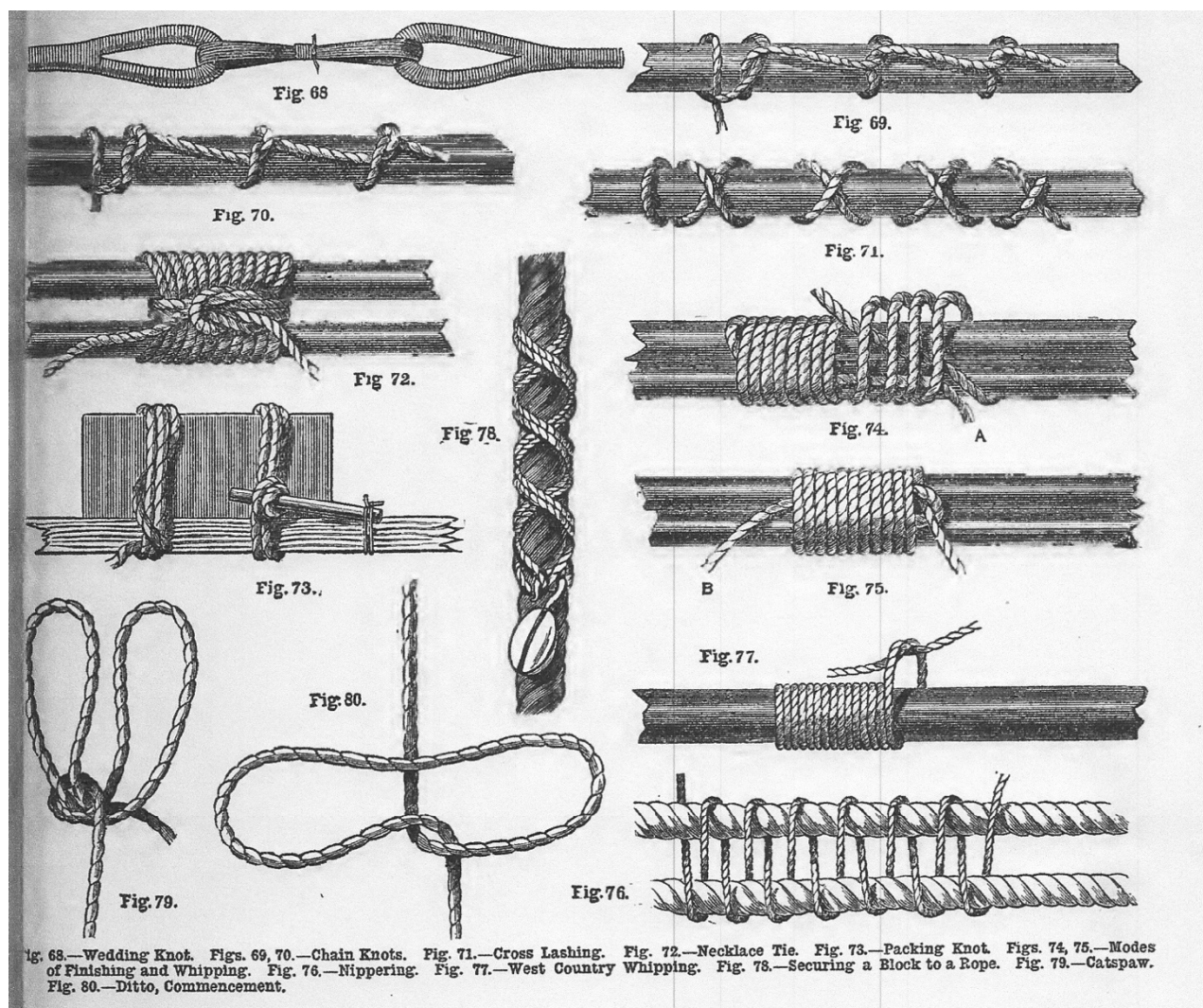


Fig. 69. - "Chain Knot," for lashing to a spar. A clove-hitch is first formed round the spar, and as many single hitches as required are then made. It may be finished off with any secure knot. Fig. 70 shows another and better way of making the "Chain Knot." In this case an overhand knot is formed at each turn, and consequently it is much more secure than Fig. 69. This is used for bending yachts' sails to the gaff. As each turn forms a knot if the cord parts, the remainder holds firm, and does not necessarily come adrift, as it would be almost sure to do if fastened as in Fig. 69.

Fig. 71 is a "Cross Lashing," used when a lever is used to a rope. After several turns round the rope, the lashing is crossed round the lever and fastened with a reef knot. All these lashings are used when several men are required to haul on large ropes at the same time.

Fig. 72 is the "Necklace Tie." Several turns are taken round the spar to be joined, then two turns round the lashings, and it is secured with a reef knot. When this is used as a lashing for shearlegs, the crossing of the two legs puts a strain on the knot, and effectually secures it. For this purpose it is called a Portuguese Knot

Fig. 73 is a "Packing Knot," used for securing large pieces of timber together. It is much employed in the neighbourhood of stone quarries in holding the blocks of stone on to the carriages on which they are taken to their destination. Fig. 73 represents a block of granite secured to a trolley with packing knots. Two or three turns are made somewhat loosely with cordage round the block and its carriage; a stout piece of wood is then inserted under the coils, and twisted round until all the slack is taken out and the cordage is taut. The end of the lever is then secured with twine to the side of the carriage, as shown in the right side of the figure. The other lashing is supposed to be already for tautening up. We have often to lash two things together where an external knot to finish off with would be objectionable, as it would spoil the smoothness and neatness of the work - as, for instance, in whipping the two parts of a broken fishing-rod together.

Fig. 74 shows one very common method of finishing off whipping without showing any knot. In commencing, we lay one end forward, as shown at A, then pass the other end round and round a sufficient number of times - hauling taut as we go; three or four loose turns are now made, and the end passed under them backwards; these are worked down into their places, and when the ends are hauled taut and cut off the job is completed. The end need not come so far as shown in the figure, but may be hidden under the coils.

Fig. 75 is another method of accomplishing the same end. Instead of a single end, as in the last case, a bight of the seizing stuff is laid along the part to be whipped, and the turns passed over it; when these are completed the end is passed through the bight, as at A. The end B is now hauled upon, which has the effect of bringing the bight and the end of the rope snug under the coils. We have now two loops interlacing at the centre of the work, and which cannot come undone. When the ends A and B are cut off close to the turns, the whole is as fair and smooth as one can wish. This is the method I generally adopt myself in making fishing gear.

"Kippering," or "Racking," is shown in Fig. 76. This is a method of securing two ropes together with cross turns; these are hauled taut, jamming the ropes together, and they are further secured by round turns over all, with a reef knot at the ends.

Fig. 77. - "West Country Whipping." Whether it was invented in the West or not I do not know, but I certainly never heard of it until I came to reside in the "west country." It is an excellent method, and deserves to be oftener practised than it is. Bring the middle of the material used under the part to be whipped, raise the ends up and tie an overhand knot, lower the ends and tie another underneath; continue tying a single knot above and below alternately, finishing with a reef knot - or a round turn or two may be taken and the ends secured, as in Fig. 65; but a reef knot is the most usual way of fastening off this whipping. This is not quite so neat-looking a method as Figs. 74 and 75, but it is very strong and trustworthy, and is an excellent way of fastening large hooks, such as those used for cod or conger, on to a line.

Fig. 78 shows the way a block is often secured to a rope with a selvage strop. The middle of the selvage is placed against the rope, and cross turns taken until the bights come together, when the loop of the block is put through them.

A "Catspaw" (Fig. 76) is used for attaching a rope to the hook of a tackle. Fig. 80 gives the manner of commencing it. A loop is first made, and laid over the standing part so as to form two bights; these are rolled over two or three times from you, and the hook inserted in them. When the standing part is hauled upon, the hooks take the form shown in Fig. 69, and will not slip.

Pages 468-470

Knotting, Splicing, and Working Cordage.

WORK - October 10, 1891

FANCY KNOTS.

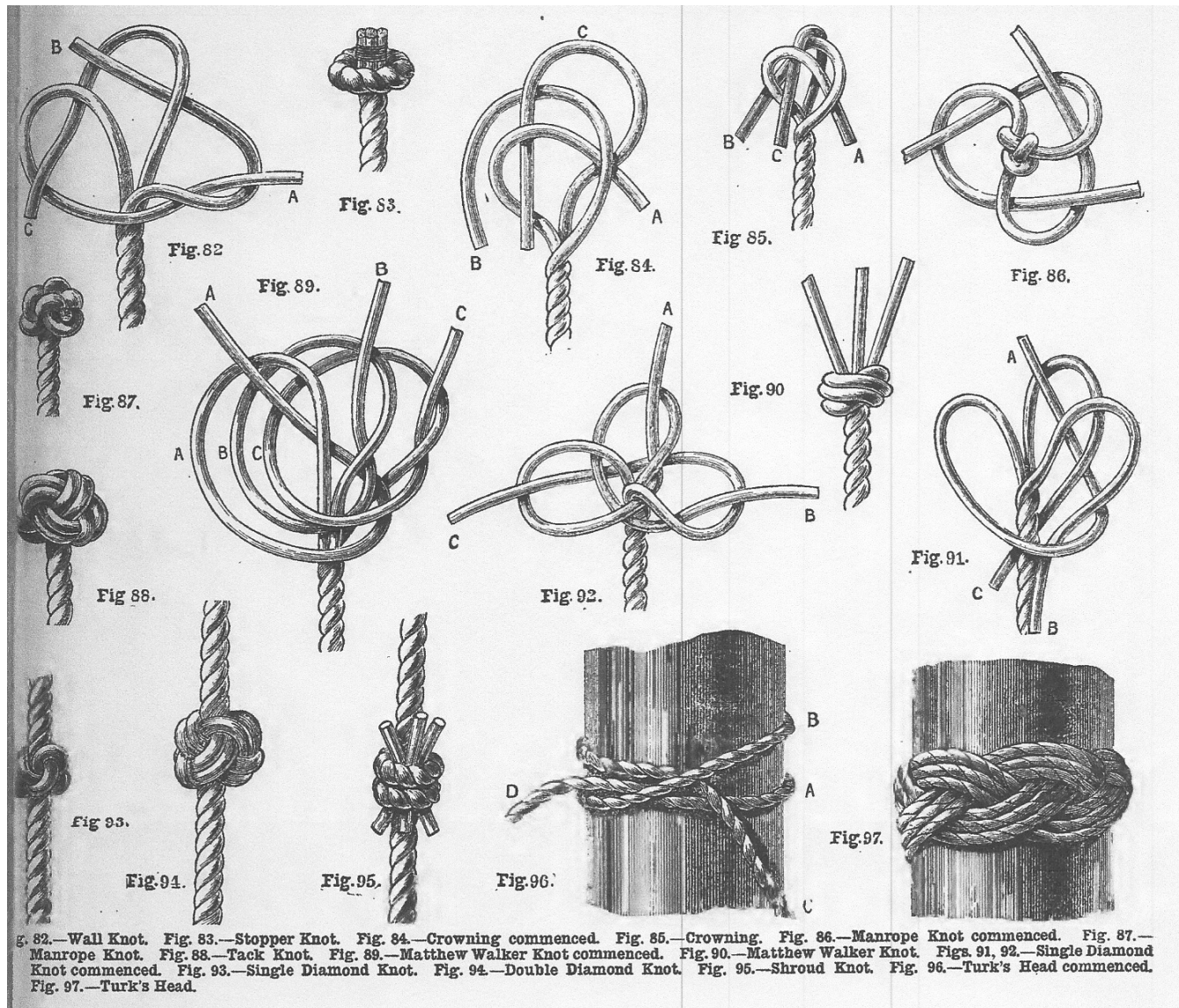
Wall Knots - Stopper Knots - Masons' Whipping - Crowning - Manrope Knots - Double Wall Knot, Single Crowned - Tack Knot - Matthew Walker - Single Diamond - Double Diamond - Shroud Knot - French Shroud Knot - Spritsail Sheet Knot - Buoy Rope Knot - Turk's Head.

We come now to a perfectly different style of knot which, though they are termed fancy knots, are not necessarily used for ornamental purposes, but are often of considerable benefit: indeed, we could hardly do without some of them aboard ship. One of the most commonly used knot of this group is the "Wall Knot." Fig. 82 shows the knot ready for hauling taut. First unlay the strands at the end of a rope and make a bight with one strand, A; hold this to the standing part with the thumb of the left hand, then make a loop with the next strand, B, round the end of the first strand, and bring the remaining strand, C, round the end of the strand B and through the bight of A.

If the ends are taken round once more and brought up in the centre of the knot, it is called a "Stopper Knot." In this case the ends are whipped together and cut off level. How the "Wall Knot" acquired its name was always a puzzle to me until I once happened to meet with directions in a very old book on rigging, for making a basket which was to have "a small walnut knot crowned the

end." A fancied resemblance to a walnut no doubt gave it its name originally, which, for euphony's sake, was contracted to wall knot. Fig. 83 is the "Stopper Knot" finished.

Fig. 84 shows the crowning commenced, open the strands of a rope as before, but do not put a seizing round the rope. Lay the strand A down over the centre of the rope, and bring strand B down over A and strand C over B and through the bight of A. Fig. 85 shows how the strands tie when they are nearly taut. The strands in Fig. 84 are hardly in the position which they occupy when the knot is actually being made, as they are then much snugger; but to show clearly their relative positions I was compelled to draw them as they appear in the figure. In criticising the illustrations, and of these knots in particular, I hope my readers will take into consideration the extreme difficulty of making them so as to show with any clearness the method by which the result was arrived at. Making a knot is one thing; showing on paper the method of making it is quite another. Crowning may be used by itself as a method of preventing the strands of a rope unlaying while in use.



In this case, after crowning as above, pass one end over the next strand in the standing part, and under the following one. Do the same to each of the other strands in succession. This may be repeated and the ends cut off. Masons, whose ropes have to stand a good deal of knocking about, generally use this plan; for this reason it is called "Masons' Whipping." Though very strong and standing hard usage well, this is not the neatest way of finishing the ends of a rope. Crowning may also be used in connection with other knots. For instance, we may crown first and wall afterwards, as shown in Figs. 86 and 87. Fig. 86 shows the crowning in the centre of the knot hauled taut; this is made on the end of a rope as just described. We now make a single "Wall Knot" under the crowning. When the knot is tightened it will appear as in Fig. 87, and is called a "Manrope Knot." A single "Wall Knot" may be crowned after it is made; we then have a single wall and a single crown. If now we wall again by passing one end under the part of the first walling next to it and bring it up through the same bight, and do the same with the other two strands, the result is a knot with a double wall and a single crown. A double-walled double-crowned, called a "Tack Knot," is made as the last knot - that is, double-walled and single-crowned. Now lay the ends by the sides of those in the single crown, and with the aid of a pricker bring them down through the double walling and they will be alongside the standing part of the rope. The knot is shown completed, with the ends cut off, in Fig. 88.

A Matthew Walker (Fig. 89) gives the knot open ready for being hauled taut. How this knot came by its curious name I believe is not known. I learnt it some forty years ago, and the captain, an elderly man, who taught me, had known it all his nautical life, so I think we may take it that its origin is lost in the mists of antiquity. After putting a seizing round the rope and unlaying the end as before, bring one strand, A, round the rope and put it through its own bight, the next strand, B, underneath, through the bight of A and through its own bight, and the last strand, C, underneath, through both the other bights, and lastly through its own bight. Fig. 90 is the knot completed. The "Diamond Knot" is an ornamental knot made some distance from the end of a rope; it is therefore necessary to unlay the rope considerably more than is required for the preceding knots. To form a diamond, bring each of the three strands down alongside the standing part of the rope, thus forming three bights, and hold them thus with the left hand. Take the first strand, A (Fig. 91), and putting it over the next, B, bring it up through the bight of the third strand, C. Take the end of the second strand over the third and up through the bight of the first. The last strand is brought over the first and up through the bight of the second. Haul taut and lay the rope up again. Fig. 91 is the way the knot is begun, showing the manner of taking the first strand. Fig. 92 shows the loops in their places with the ends through them before they are hauled taut. Fig. 93 gives the knot finished. This is a difficult knot to illustrate and describe; but the key to the knot is to remember that, after the bights are formed down the standing part, each end successively goes over the strand next to it and up through the loop beyond. This knot is the "Single Diamond." For a "Double Diamond" (Fig. 94) we make a "Single Diamond," as above, without laying up the strands; the ends are then made to follow the lead of the single knot through two single bights, the ends coming out on the top of the knot. The last strand passes through two double bights. When the ends are hauled taut they are laid up as before. The last four knots are used for the ends of lanyards, man and ridge ropes, yoke lines, etc.

The "Shroud Knot" (Fig. 95) is a very valuable knot for joining two ropes together; it is used for joining a stay or shroud that has been carried away. The ends of each rope are unlaid, and they are then placed within one another as in splicing, the parts not unlaid being brought closely together. Make a "Wall Knot" with the strands of one rope round the standing part of the other rope; turn the ropes over, and do the same with the other set of ends, and they will appear as in the figure. Open the strands, and taper and serve them over if you wish to make a particularly neat job of the work. Two ropes of different sizes may be twisted in this way, and will be quite secure.

"French Shroud Knot." In making this knot, unlay the ends and place the two ropes with the strands intermixed as before; bring one set of ends back on their own rope, and make a single "Wall Knot" with the other set of strands round the bights of the first set and the standing part. They can then be tapered and served as in an ordinary "Shroud Knot."

"Spritsail Sheet Knot." Unlay the two ends of a rope and bring the two sets of strands together side by side; these have to be walled together in precisely the same manner as a common "Wall Knot." A bight is made with the first strand, the second is put over the first, the third over the second, the fourth over the third, the fifth over the fourth, the sixth over the fifth and through the bight of the first; they are then hauled taut. It may be crowned by laying two of the strands along the top of the knot and passing the other strands alternately over and under these two, and afterwards hauling them taut. It may be double-walled after crowning by putting the strands successively under the bights on the left of them and through the same bights, and the ends will then come up in the right position to be crowned again. This is done by following the lead of the first crowning and putting the ends through the walling as before.

"Buoy Rope Knot." This can only be made on a cable-laid rope. Unlay the main strands, and take out one of the smaller strands, of which they are composed, from each of the large strands, and then lay them up again. The small strands that have been taken out are now single and double-walled round the rope, and then laid along the divisions after the manner of weaving, and their thin ends stopped with spun-yarn. A stop should be put round the rope with the spun-yarn where the knot is to be made before it is commenced, and the walling should be made right-handed.

"Turk's Head" is a highly ornamental knot of quite a different character to the preceding ones, inasmuch as, instead of being made out of the rope itself, it is formed on the rope with a piece of small stuff worked round it. A "Clove Hitch" is first made on the rope (Fig. 96); this must be slack enough to allow of the extra strands which will form part of it. Put part A over strand B, thus twisting the two strands; pass the end C under and up through the bight that B now forms, then twist again by putting B over A and run the end under and up through the bight of A. Continue twisting the strands by alternately putting one over the other, and at each twist bring the end under and up through the bight which is underneath, A at the commencement going over B; the bight which B makes will be the under one, and therefore the one through which the end C must be passed. The end C must be very much longer than shown as the whole knot is made with this part, and as the knot when finished contains three groups of three strands each, it is obvious that the length of cord used must be more than nine times the circumference of the rope round which the knot is made. Having made a sufficient number of twists (the number depends on the size of the knot), lay the end C, with which you have been working, alongside D, where it comes out of the knot, and continue following its lead through all its turns as it goes through the knot until you come round to the commencement again. There will now be a "Turk's Head" of two parts. If the end is again passed through by the side of the same strand as before, a complete "Turk's Head" of three parts will be formed. Care must be taken to keep the strand with which we are working close to and on the same side of the strand we are following, or a perfect knot cannot be formed. The first time round is the most difficult, the second is easy enough. Of course, the knot may consist of more parts if required, but three are the usual number. Fig. 97 gives the finished knot. The ends do not require fastening in any way, as in the last round they finish in the middle of the knot under the coils, and are quite secure.

HINTS ON NETTING.

BY LANCELOT L. HASLOPE.

This short paper was suggested by and is in reply to a query by J. H. (*West Bromwich*), as to the *modus operandi* of netting, and the tools required. For illustrations of the netting needle, mesh, mode of making stitch, etc., the reader is referred to Vol. II, page 425, otherwise No. 79.

The tools required for making nets are very simple. They consist of a needle to hold the twine or other material used, and a spool or mesh to form the loops of the net upon. They are usually made of some kind of hard wood, generally box, and can be purchased from most ironmongers and wool-shops for a few pence. If J. H. could get a sight of them, he would doubtless be able to make them for himself of the exact size he requires.

The knot used in netting is the weaver's knot, or sheet bend, shown in page 65 of Work, No. 109. There are two methods of making it used by netters. The most common way is called "under edge" netting. This is easy enough when you know how to do it, but it is complicated and quite impossible to describe without the aid of elaborate illustrations. The other mode is called "over edge netting," or "braiding." As this is much simpler, I will do my best to describe it. The first thing to do is to make the "foundation." A piece of small cord or stout twine, about a yard long, is joined together at the ends with a sailor's knot and then fastened to the handle of a door or other suitable place. If the net to be made is small, the left foot may be put in the loop. The needle having been filled with twine, one end of the twine is made fast to the foundation. The spool is held in the hollow between the forefinger and thumb of the left hand, the fingers being extended along it, as a pen is held in the right hand. To form the first stitch the twine is brought over the spool, then under it, over the foundation, and up over its own part - thus forming a clove-hitch. The hitch thus formed is now held between the tip of the forefinger and the thumb of the left hand, while the needle is passed over the foundation again and up through the loop formed; the two loops are pushed close up together and hauled taut. This is repeated again and again until as many half meshes or loops are formed as are required. When this is accomplished, turn the foundation over and slip the loops off the spool: pass the needle over the spool, round under it, and bring it up through the first loop on the foundation; draw this down until the end of it just touches the upper edge of the spool; hold it there with the forefinger and thumb of the left hand. Throw the loose twine well over to the left side of the loop that has just been taken up, and pass the needle behind the loop and bring it up in front of the spool and haul taut. The knot is now made. Pass the needle over the spool round it and up through the next loop, round the back of it, and between it and the last loop, and when hauled taut another mesh will be formed. Care must be taken to have sufficient slack twine, so that the needle has plenty of room to work easily. In every case the stitch must be made on the loop taken up, and not below it, or a "slip stitch" will be formed which is fatal to good netting. Braiding has some advantages over "under edge" netting. In the first place, it can be done with greater rapidity; it also makes rather a better stitch - at all events, one that can be tautened more easily. If any difficulty is experienced in making the first row of half meshes, the spool may be dispensed with, and the loops made with the fingers of the left hand alone; In mending nets, the fingers alone are generally used in the place of a spool.

Pages 551-554

Knotting, Splicing, and Working Cordage.

WORK November 14, 1891

SOME MORE FANCY KNOTS.

Single Pitcher Knot - Pitcher Handled - Double Pitcher Knot - Slinging a Can - Shamrock Knot - Dalliance Knot - Davenport Brothers' Knot - Bell-Ringer's Knot.

Fig. 98 is the "Single Pitcher" knot, known also as "Tom Fool's" knot. The easiest way to make it is to form two half hitches, as shown in Fig. 99, one lying half-way over the other. With the finger and thumb of the left hand draw the part A down through the bight, and with the same fingers of the right hand bring the strand B, upwards through the bight, under which it lies. Pull the loops thus formed out to a sufficient length and knot the ends together. When used to supply the place of a broken pitcher handle, the centre knot should be hauled taut, and the pitcher being placed on it, the loops are brought up to form handles. To keep them in their places a lashing is put round the neck of the pitcher, as shown in Fig. 100. This knot is also very useful in slinging a shot when required as a weight, or for any other purpose. In this case the centre knot is not hauled taut but left open, forming a large loop on which the shot lies. If the ends are spliced instead of knotted a three-loop knot is made. It is also used as a trick knot to puzzle landsmen, and from this arose its name of "Tom Fool's" knot. To make it in this way, turn the left hand with the palm upwards and lay one end of the cord across it, holding it against the side of the hand with the thumb. Turn the right hand over so that the backs of the fingers are downwards and the ends of the fingers pointing towards you; take up the other end of the cord on these fingers, but do not close the hand; bring the right hand, without altering its position, over the left, until the part hanging down over the first finger of the right hand hangs outside the left hand. With the third and little fingers of the left hand seize the cord which hangs down over the little finger of the right hand, and at the same time with the right thumb and the other fingers of the same hand take hold of the cord which is on the left hand. If the hands are now separated the knot will form.

This is a good puzzle, as from one hand lying over the other as the knot is made, it is impossible to see that one end is grasped between the third and little finger of the left hand, even when the knot is made slowly and with every apparent intention of showing how it is done.

Fig. 101 is the "Double Pitcher" knot. - This also goes by the names of "Jury" knot and "True Lovers'" knot. It is used as the single pitcher knot to sling a broken pitcher, but in this case we have four loops to carry it by instead of two. In rigging a jury-mast the end of it is put through the centre of the knot before it is hauled taut; the stays to support and steady the mast are then made fast to the bights of the knot. It is called, I believe, a true lovers' knot because there is no end to it. Form two half hitches in a piece of cord, as in Fig. 102, then make another hitch, which draw behind the other hitches with the inner edge overlapping the inner edge of the first hitch, as shown in Fig. 102. Pass the forefinger and thumb of the left hand over strand A under B and take hold of C. Put the same fingers of the right hand under D over E and take hold of F. Take G between the teeth and draw the three loops out. It is better to make G the length required at first, as the other loops being immediately connected with the ends can be more readily adjusted as to size than the upper loop. When the loops are made the right size the loose ends are spliced together with a short splice, thus forming the fourth loop. The knot is now completed.

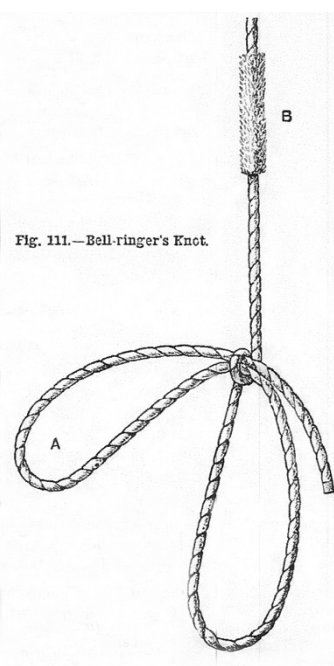
Fig. 103 is a ready way of slinging a can which comes in useful for a variety of purposes, such as turning a meat can into a paint pot, dipping for water, etc. etc. Pass the end of the cord under the bottom of the can and bring the two parts over it, and make with them an overhand knot; open the knot, as shown in Fig. 104, and draw the two parts down until they come round the upper edge of the can; haul taut, and knot them together again over the can, as shown in Fig. 103. This is a very useful dodge.

Fig. 105 shows fin ornamental knot that was discovered by a correspondent of the *Queen* newspaper hanging below a Japanese lamp. It has been named the "Shamrock" knot. Of course the ends could be spliced, thus forming a four-looped knot if required. Whether it is ever used in Japan otherwise than for ornamental purposes I cannot say, though it is evident that it is available for the same uses as Fig. 101. It is not, however, as good a knot as the other, being more troublesome to make and not so strong, in consequence of the short nip of the strands in the centre of the knot. Fig. 106 shows the way of making it. An overhand knot is first formed with the ends at A; the end B is then laid across the upper loop, brought round and under the right loop and up through the bight C. The strand D, after passing at the back of the upper loop, is carried over the left loop and down through the bight E. The loops are now-adjusted for size and the knot hauled taut. Fig. 107 gives another way of making this knot. Two overhand knots intersecting one another are made on the ends, as shown in the figure; the part A is then drawn up through the bight C, and the part B down through the bight D. These form the side loops, and the top loop being pulled out, the knot is completed. By an extension of these methods knots may be made with any number of loops, but the difficulty increases greatly as the loops increase, so much so, that many loops cannot be made without wire is used instead of cord. As this would lead us beyond the scope of these articles, I shall leave the matter to my readers to follow out by themselves, if they deem it worth their while.

Dalliance Knot. - This is a trick knot, and rather a difficult one to learn when you merely see it rapidly made. The object is to make two double knots, quite independent of one another, at once on a double cord. Double the cord so that the ends lie together; bring the bight over the standing parts, as shown in Fig. 108, and cross the strand A over the strand B; they will now appear as in Fig. 109. Press the part C down between the two strands on which it lies, and bring it up through the opening D, draw it out, and two overhand knots will be formed on the double cord. While the part C is being drawn out through D, the whole of the loop E must be brought up through the bight F; this forms the upper knot. The lower knot is made by loop F, C forming bight at top of double cord. The finished knot is practically the same as Fig. 16 (page 137).

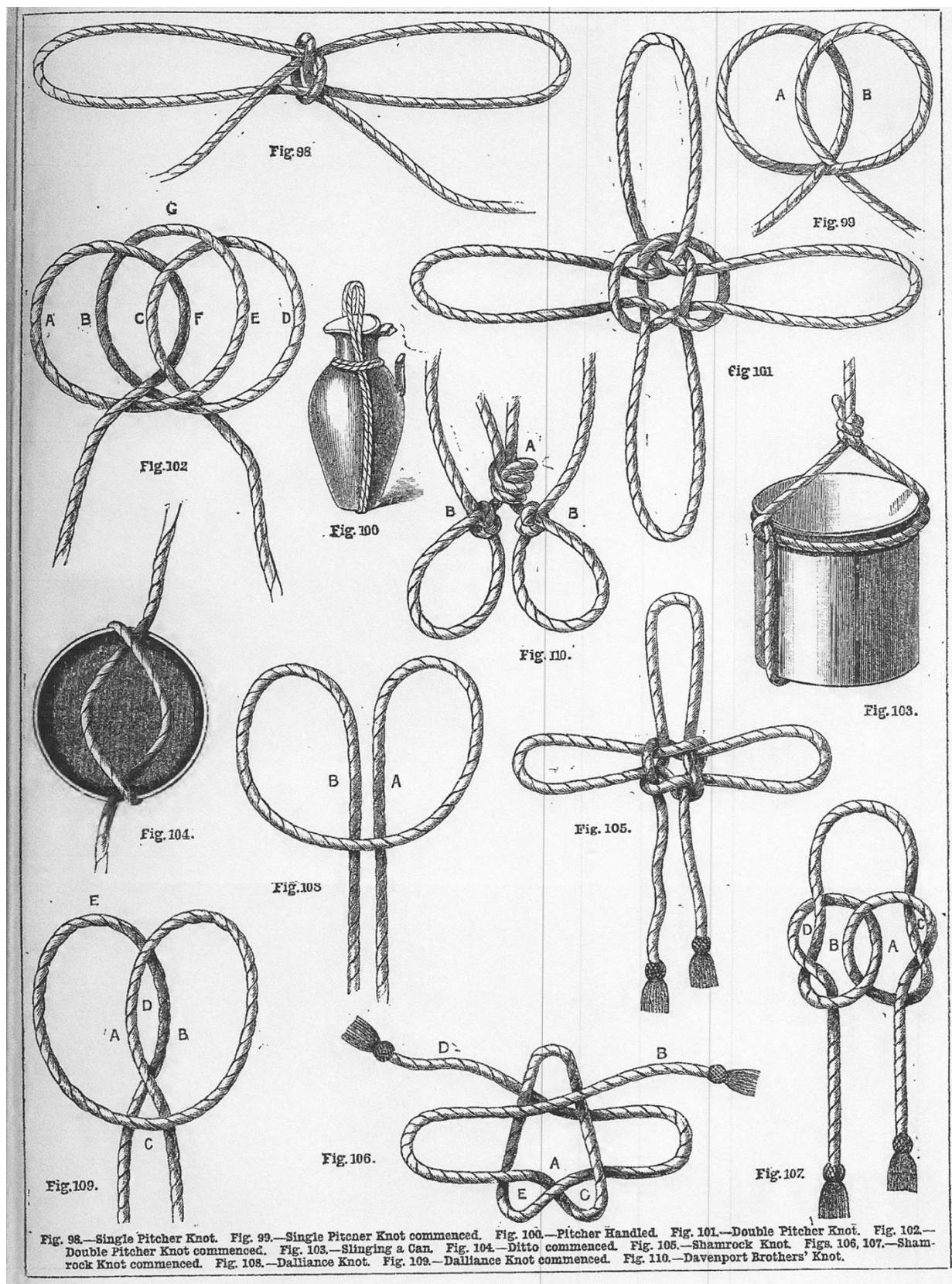
Some of my readers will doubtless remember the performances of the so-called Davenport Brothers some years ago. These consisted of various tricks performed with ropes. In the principal one the performers were shut up in a cabinet, and when the doors were thrown open they were found seated on two chairs tightly bound hand and foot. Any amount of examination of the ropes and knots was allowed. The moment after the doors were closed they rang bells, played on the tambourine, and threw things out of a small window in the top of the cabinet. On the doors being opened again directly they were found firmly tied to their chairs as before. They claimed to effect this by spiritual agency, whereas their only assistant was an ingeniously contrived knot, which is shown in Fig. 110.

To perform the trick, two ropes about 12 ft. long each are required; they should not be too stout - the kind used for cording boxes is as good as any. First the knot joining the two ropes must be made. This is an openhand knot, shown in Fig. 8 (page 65), the ends being passed twice through the bight to increase the size of the knot. Two running knots are now made close up to this knot as shown at B, B. The knotted end of the ropes is laid on the seat of a chair with the ropes passing down the back of the seat and under the chair. The performer seats himself on the chair, and, drawing the loose ends of the ropes up in front from under it, he passes them round and round his legs and the legs of the chair in as complicated a manner as he can devise. He now draws the knotted end from under him, and; putting his arms over the back of the chair, passes his left hand down through one loop and his right hand up through the other. He now turns his right hand down until the palms of



both hands are together and the fingers pointing downwards. This produces a twist in the ropes which takes up the slack and tightens the cord round the wrists. The large knot being between the hands effectually hides this, and the wrists merely appear to be as tightly bound together as they can be.

The performer has merely to reverse this last proceeding - that is, to bring the right hand up again, and so undo the twist - and his hand can be withdrawn as readily as it was put into the loop. The trick requires some practice, and the size of the loops must be regulated by the size of the performer's wrists. The knots should also be so placed on the chair at the commencement that the ropes are tight when the hands are in the loops. Of course, they can be tightened by the performer leaning forward, but it looks better and puzzles the audience more if the actor is so bound that he cannot move in any direction. The Davenport Brothers used also to perform the ordinary rope trick, which consists of the performer being bound by any of the audience; he is then covered up, and when, in a few moments, he is uncovered again, he is found to have freed himself from the cords with which he was tied. This



is done by expanding the chest and making the muscles as rigid as possible whilst the tying is going on. When the muscles are relaxed there is not much trouble in slipping off the rope, particularly if it is a new one. The Davenport Brothers were checkmated in this trick by some Liverpool gentlemen securing their hands with a Tom Fool's knot, and also on another occasion by tying their thumbs together behind their backs with whipcord. There is no better way of securing a man than putting his hands into the loops of a Tom Fool's knot and knotting the ends securely behind his back. It is much safer than using the ordinary handcuffs.

Fig. 111 is the "Bell-ringer's" knot. - I give the name by which it is commonly known, although it is a hitch and not a knot. Church bells have a large wheel on the axle on which they are hung, round which the bell-rope passes; this is done to obtain sufficient leverage to raise the bell mouth upwards when it is rung. This requires along rope, a good portion of which lies on the belfry floor when the bell is down. When the ringing is over this slack is always hitched up out of the way in the manner I have shown. A loop, A, is made near the end of the rope; this is laid against the standing part, and a hitch taken over it at about the height of a man's head. The hitch should be kept quite close to the standing part, and it will hold the loop quite securely; at the same time a slight pull at the end releases the whole thing at once. When I was an amateur bell-ringer anyone leaving their bell-rope trailing about was subject to a fine. The part B where the rope is grasped when the bell is checked as it comes over is called the sally or tufting. It is made by opening the strands and inserting short pieces of worsted, which are afterwards trimmed until they are all of one length.

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WORK - December 12, 1891

SPLICING.

Short Splice - Marlinespike - Pricker - Long Splice - Cut Splice - Eve Splice - Cable Splice.

SPLICING is a method of joining ropes by-interweaving together the strands of which they are composed. When ropes that are required to run through blocks have to be joined it is evident that knotting them together will not serve our purpose, as the knot would prevent their passing through the block. In this case splicing is always used to unite them.

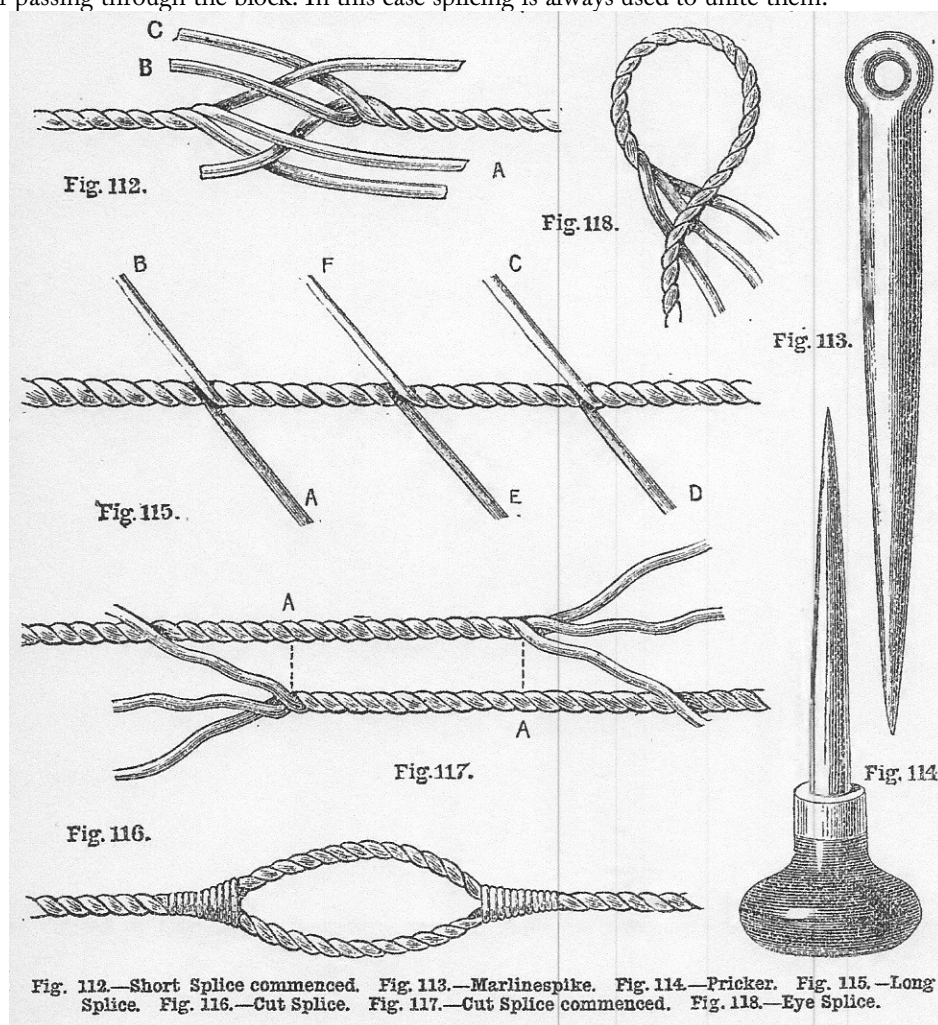


Fig. 112.—Short Splice commenced. Fig. 113.—Marlinespike. Fig. 114.—Pricker. Fig. 115.—Long Splice. Fig. 116.—Cut Splice. Fig. 117.—Cut Splice commenced. Fig. 118.—Eye Splice.

The splice most generally used is the short splice. The ends of the two ropes are unlaied for a sufficient distance : they are then placed together, as shown in Fig. 112, the strands of one rope going alternately between the strands of the other. The two ropes are then jammed closely together. The end of one rope with the strands of the other rope is now held firmly in the left hand. Sometimes a lashing is put round the strands to keep them down to the rope on which they lie. Pass the middle strand, A, over the strand of the other rope, which goes down to the left of it, which is B, then bring it under C, and haul taut. Do the same to

each of the other strands in succession, putting them over the next strand to them and under the next beyond. Turn the rope round and do the same to the other set of strands; this may be repeated on both ropes.

Care must be taken not to bring two strands up through one interval in the rope. Each strand should come up separately between two strands of the rope they are passed into. If it is desired to taper the splice for the purpose of making it neater after the ends have been interwoven, divide the yarns of which the strands are composed, pass one-half as before, and cut off the other half. For the purpose of bringing the rope into shape again after the splice is finished, it is usual to roll it, if the rope be large, with the foot on the deck; if small cord has been used, a piece of fiat wood is substituted. As the strands of a rope are tightly twisted together it requires some force to open a passage for the parts of one rope through the other. For this purpose, in the case of large ropes, a marlinespike (Fig. 113) is used. They are made of iron, copper, and hard wood. I like copper best myself, as it does not rust like iron, or break like wood. With small stuff we use a pricker (Fig. 114), which should be made of steel. Messrs. Thomas Turner & Sons, of Sheffield, make an excellent knife, with one large blade, and a good-sized pricker; the whole is nickel-plated to avoid rust. At the end of the handle is a shackle for a lanyard. It is as useful a tool as any sea-going person could desire. For very large ropes a fid is used, which is merely a wooden pin, tapered, generally made of *lignum vitæ*.

Long Splice (Fig. 115). - This is in some respects a better splice than the short splice. Unlay the ends of two ropes for a much greater distance than for a short splice and put the ends together as before. Unlay one strand (A) for some length, and fill up the space left by its removal with the opposite strand from the other rope, as B. Do the same with two more strands (C, D), C being the one unlaid, and D the one laid up in its place. Now make an overhand knot with the two remaining strands (E and F), taking care that the ends follow the lay of the rope and not across them. Divide both strands in halves and pass one-half over the next strand, and under the following one; do this two or three times and cut all the ends off close. Work the remaining two pairs of strands the same way and the splice is finished. The rope should be well stretched before the ends or the strands are cut off.

Fig. 116 is a cut splice forming an oblong loop in the middle of a rope. It is made by splicing the end of one rope into the standing part of another, as at A, A, Fig. 117, so as to form an eye of any size you wish. The end of the other rope is then spliced into the standing part of the first rope, and the spliced parts, served over. A neat way of forming an eye at the end of a rope is by unlaying the strands and placing them on the standing part so as to form an eye, then put one strand under the strand next to it, and pass the next over this strand and under the second; the last strand must go through the third strand on the other side of the rope. Taper them as before by halving the strands and sticking them again. This is called an eye splice (Fig. 118).

Cable Splice. - Unlay the ends of the ropes to be joined for some distance, then place them together and make a short splice, leave some length, and from thence reduce each strand to a long taper by gradually cutting away as many yarns as necessary; neatly point over the taper and lay the ends in the intervals of the rope. Clap on a seizing at each end of the splice, an end seizing at the beginning of the pointing and a stop at the end of the tails. This is the best splice for cables, as it may readily be taken asunder.

Another method of making a cable splice is to splice the ends in twice each way, then to pick out the strands, worm part of them round the cable, and taper away the rest, which should be marled close down; then clap on a throat and two end seizings of ratline.

I am now approaching the termination of the subject on which I have been writing, and in two papers more I shall bring my remarks on it to a conclusion. Readers will have noticed that it divides itself into three parts, of which the first, namely knotting, was by far the longest. Splicing, which has been dealt with here, is short, but its importance must not be underrated on that account. Working Cordage now remains for our consideration, and this, as I have said, will be comprised in two papers.

Pages 676-678

Knotting, Splicing, and Working Cordage.

Work - January 9, 1892

WORKING CORDAGE.

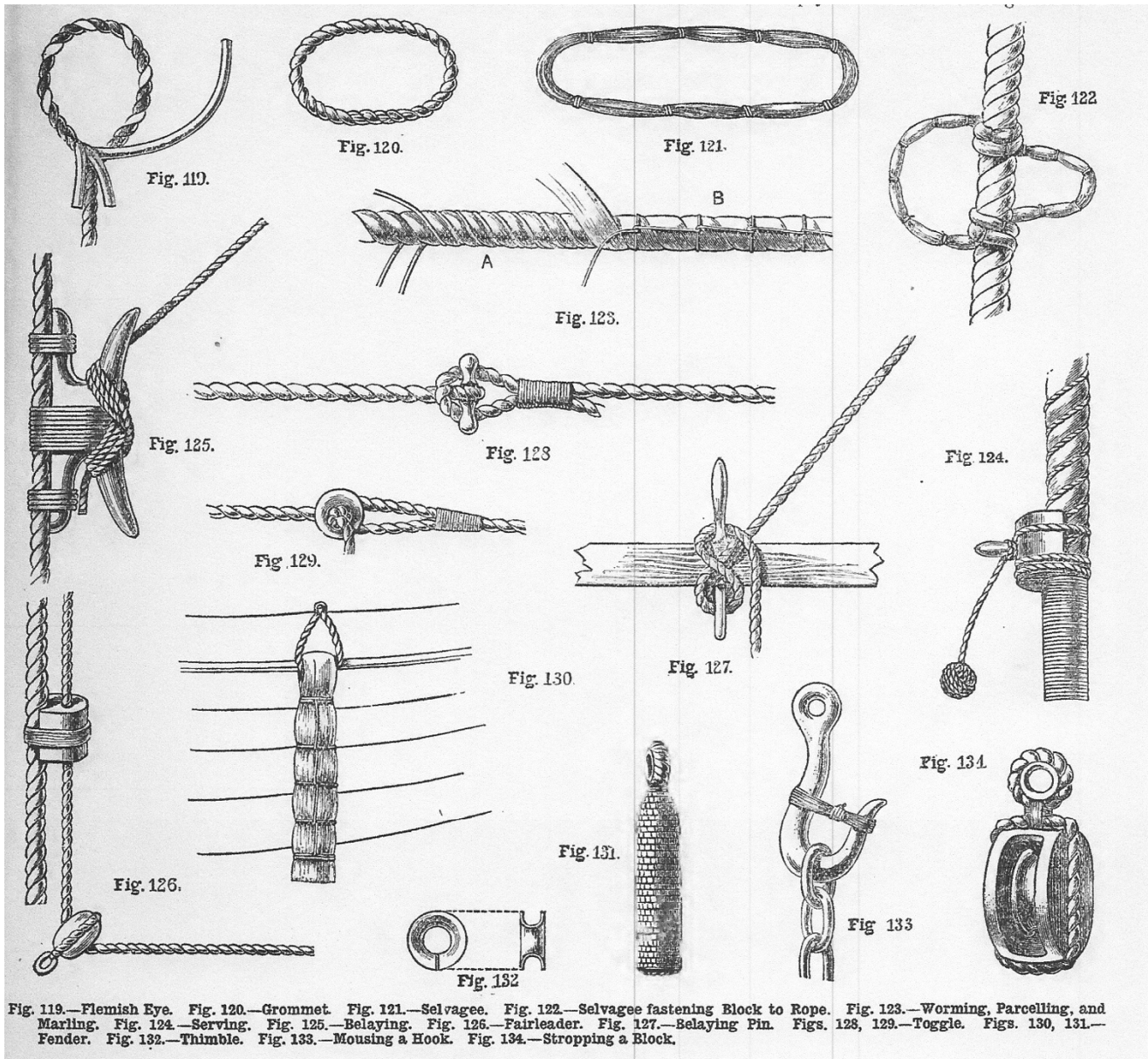
Seizing - Sennit - French Sennit - Gaskets - Flemish Eye - Grommet - Selvagee - Worming, Parcelling, and Marling - Serving - Belaying - Fairleader - Belaying Pin - Toggle - Fender - Thimble - Mousing a Hook - Stropping a Block.

To give a complete account of all that can be done with cordage would, in fact, be to write a treatise on rigging, which is altogether outside our present purpose. But there are many ways of using rope for the construction of various articles in constant use aboard ship that every seaman has to acquire, several of which are of great service to landsmen and all those who have anything to do with cordage. Some of the principal of these we shall now consider. Seizing is fastening together two ropes, or different parts of the same rope, with several coils of small rope, spun-yarn, etc., laid on close together. There are several kinds of seizings which take their names from the positions they occupy in the rigging. End seizing is a round seizing at the end of a rope. Throat seizing is the first seizing clapped on where a rope or ropes cross each other. Middle seizing is between a throat and end seizing. Eye seizing is a round seizing next to an eye in the rope. To make a round seizing, make a small eye in the end of the seizing stuff, and, after taking a turn round both parts of the rope, reeve the ends through the eye, take two or three turns, and haul them taut with a marlinespike hitch; pass eight or ten turns close together, and heave taut. Bring the end back under these turns and out between the last two coils, and pass another series of turns on the top of the others, which are called riders, and are not hove so taut as the first turns.

There is always one less of the riding turns than of the lower ones. Two cross turns are sometimes taken, passing between the ropes to be joined and across the whole of the seizing; the end is brought under the last turn, hove tight, and secured, if large, with a wall knot, crossed; if small, with an overhand knot, and cut off. Other seizings are done in the same way.

Sennit is a sort of flat rope, made by plaiting ropeyarn or spunyarn together, the outside yarns being brought over to the middle from each side alternately. It must always consist of an odd number of yarns, generally from five to thirteen. French sennit is braided with an even number of yarns passed over and under every other time.

Gaskets are made of braided cordage in the same manner as sennit. They are used for confining the sails when furled to the yards. They are called arm gaskets when used at the ends of the yards. Bunt gaskets are used in the middle of the yard to hold the bunt of the sail, and quarter gaskets between the middle and extremities of the yards.



A Flemish eye (Fig. 119) is a method of making an eye without splicing. Unlay one strand at the end of a rope; bring the other two strands, just as they are, against the standing part, so as to form an eye of the size required. Lay up the strand which has been unlaied in the intervals in the rope from which it has been taken, only the reverse way - that is, you commence at the end and keep on laying it round until it comes down the standing part and lies along with the other strands. The ends are then tapered, marled down, and served over with small stuff.

An artificial eye is the end of a rope unlaied, and the yarns of which the strands are composed are separated. The yarns are now hitched round a piece of wood the size of the proposed eye. They are then marled, parcelled, and served over.

A grommet (Fig. 120) is a ring of rope made by carefully unlaying one strand from a rope and cutting it off. All the turns must be left in it. Form a ring by laying one part over the other, taking care that the turns coincide with one another. Pass one end round and round, in the lay, until all the intervals are filled up and the ring is complete. The two ends are secured as in a long splice, first

with an overhand knot, and then by dividing the strands and passing half of them under the standing part, and cutting off the remainder. Grommets are used for stropping blocks, handles for chests, snorters for the heel of sprits, etc. They are very often parcelled and served to make them look neater. It is easier to make them if the rope from which the strands are taken is laid up hard.

Selvagee (Fig. 121) is a number of rope-yarns fastened together. To make it, drive two nails into a piece of board at a sufficient distance from one another to form the size of selvagee required. Wind ropeyarn round these to form the thickness you wish, and marl them down with spunyarn. They are used to form a neat stropping for blocks, or to go round a spar for fixing a hook to. Fig. 122 shows how a selvagee is employed for fastening a block to a rope. The middle of it is placed against the rope, and the bights passed one over the other, until they come close to the rope, when the hook of the block is inserted.

Worming is filling the intervals between the strands of a rope by laying spunyarn or other small stuff into them. This renders the rope more even and smooth for parcelling and serving. The first end of the worming is securely stopped and passed along one of the divisions of the rope. When it has been carried as far as it is required, it is stopped and laid back down another interval, and then forward along the remaining one, and stopped at the end. To estimate the quantity of serving stuff required for a given length of rope, multiply the length of rope to be served by the number of strands in the rope, and add one-third of the product. The result is the length of serving necessary to do the work. Thus, if six fathoms of three-strand rope have to be served -

$$\begin{array}{rcl} \text{Length 6 fathoms.} \times 3 \text{ strands.} & = & 18 \\ & + & 6 \text{ (one-third.)} \\ & = & 24 \text{ the length of serving.} \end{array}$$

Fig. 123 shows at A how worming looks when finished.

Parcelling is done by winding strips of old canvas smoothly round a rope in spiral turns after it has been wormed and before it is served. This is shown at B (Fig. 123). The canvas is generally well tarred before it is used. To secure the canvas in its place it is marled down - that is, some marline or other small stuff is wound round it, which is secured at every turn with a hitch, so that each of the turns is secure and independent of each other. This is shown at B (Fig. 123b). The proper hitch for securing the turns is given on a larger scale in Fig. 70 (page 361). In marling down, the coils are never laid close to one another, as in serving, but always at some distance apart. Fig. 124 shows the way a rope is served or covered with coils of spun-yarn or other small stuff laid on quite close to one another. This is done with a serving mallet, as shown in the figure. The end of the yarn is first secured by placing it under the first two or three coils. The mallet, after being placed against the rope, has two or three turns passed round the body of it, and another turn or two on the handle. This produces sufficient friction to leave the coils taut as the mallet is worked round the rope by its handle. Another person is required for passing the ball of serving stuff. The service must be put on against the lay of the rope. A rope may be served single-handed by using a large reel for carrying the serving stuff, with a hole in its centre large enough for the rope to run through. This is kept just ahead of the mallet, and the serving stuff comes off the reel of its own accord as required. When the mallet is within a few-turns of the end, the turns are taken off it by hand, the end is put through them, and heaved well taut.

Fig. 125 is the way a rope is belayed or made fast by cross turns round a cleat. The cleat is in this case supposed to be lashed to a stay or other rope, but it is often made fast to some part of the vessel.

Occasionally a single hitch is put over the upper horn of the cleat, which makes the rope still more secure. It is often required to take a rope at right angles from one part of a vessel to another. This is done by means of a "fairleader" (Fig. 126). It is merely a block of wood with a hole in it of sufficient size to allow the line to run freely through it. The back of it is grooved to fit the rope it is lashed to. Where more than one line has to be led, a piece of board or plank with holes through it is used. A fairleader is not necessarily fastened to a rope, but is fixed in that position where it comes in handiest.

Fig. 127 shows a belaying pin with a rope made fast to it. This is the usual way of securing running rigging, as it is made fast and cast off so rapidly. Fig. 128 shows a method of securing ropes together by means of a toggle. This is a piece of wood turned to the shape shown in the figure. It has a groove in the centre, round which the end of a rope is spliced. An eye is made in another rope by any of the methods described and the toggle slipped into it. It can readily be undone by slackening the ropes and putting the toggle through the eye, end foremost. Fig. 129 is another form of toggle, a round piece of wood shaped like a button being used in this case. It has a hole in the centre, through which a rope is passed and the end knotted.

In running alongside a pier-head, or when boarding a vessel in a small boat, it is necessary to have something to protect the boat's sides from being chafed and the paint or varnish rubbed off. These are called fenders. They are occasionally made of wood, which is slung over the boat's side by a lanyard reeved through a hole in the end of it. More often they are made of canvas, stuffed with oakum and painted. Fig. 130 is an excellent form of fender, easily made, very effective, and needs no painting. Take a piece of Manilla rope double the length of the fender required; unlay it, and open the strands; comb them down until all the yarns lie straight; double it and clap an eye-seizing on it, marling it down as shown in the engraving. A lanyard of small cords, such as log-line, is then spliced into the eye, and it is ready for hanging over the boat's side. These fenders are very soft - "plum," as we call it in Cornwall - and last a long time. Fig. 131 is another and a handsomer form of boat's fender. This is made of a centre or "heart" of ropeyarn worked over or grafted with short pieces of ropeyarn called "knittles" or "nettles," which is in fact a species of weaving. The nettles are first cut to the right length, and the middle part slightly twisted. They are then brought snugly round a thimble,

and a seizing put under it. The heart is put into its place and the nettles laid evenly over it. One-half of the nettles, taken alternately, are now turned back over the eye, the rest lying down the heart. Pass a turn or two of twine or marline, called the warp, or filling round the fender where the nettles separate, and hitch it. The nettles that are turned back must now be brought down, and the ones that are down turned up over the eye. The warp is now passed again, and hitched as before. This must be repeated until the whole of the fender is covered with a sort of woven coat as in the engraving. The ends of the nettles are brought round the last turn of the warp, and interlaced in the grafting. This fender requires a lanyard the same as the last one.

A thimble (Fig. 132), side view and in section, is a ring of iron, usually galvanised, with a hollow formed round it, so that a rope or strop may fit snugly into it. They vary in shape, some being heart-shaped and some round, as in the engraving. They are very much used when a small eye is wanted at the end of a rope for another rope to pass through. Fig. 133 is a method of preventing a chain slipping off a hook, which it would have a great tendency to do when, as often happens, it is dragged along the ground or deck. A few turns of ropeyarn are passed round the end of the hook and the standing part, and the ends brought round the middle a few times, and fastened with a reef-knot. This is called "mousing a hook." For "stropping a block" (Fig. 134), a grommet or selvagee is often used. Sometimes the stropping is made by splicing the ends of a suitable length of rope together. A grommet, however, is neater, and a selvagee the neatest of all, particularly when it is covered with leather. The block is first fixed in one bight, so that the lower part of the block sits on the splice, if there is one. A thimble is put into the other bight, and a seizing put on between the block and the thimble, each turn of which is hove taut with a heaver. The turns are, lastly, crossed, and the ends knotted. Fig. 131 shows the work finished.

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WORK JANUARY 23 1892

SHOP: A Corner For Those Who Want To Talk It.

Knotting, Splicing, and Working Cordage.

- E. P. B. (*Penge, S.E.*) writes: - "I may say that Mr. Haslope's alternative way of forming 'Tom Fool's' knot by two half hitches is not quite correct, the 'Tom Fool' proper being correctly described by him in the after part of paragraph, and the two knots being slightly dissimilar when finished, as anyone may easily prove. He also passes over the pitcher or jar sling, most generally used afloat. It is made as pattern enclosed, forms a sennit round jar, and is, I think, the most secure of its forms."

- (I am obliged to E. P. B. for his criticism. My object being to make these articles a complete manual of knotting and working cordage, I am always glad of any hints or suggestions. I am quite aware that there is a very slight difference in the appearance of the knot he refers to when it is made different ways, though for all practical purposes it is identical. I did not therefore consider it necessary to give another illustration merely to show that the strands do not cross one another quite in the same way when the knot is made by the two methods. I do not recollect the pitcher or jar sling he refers to. Perhaps he would kindly give me particulars of it. He speaks of an enclosure in his letter. There was nothing in it when it reached me. - L. L. H.)

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Knotting, Splicing, and Working Cordage.

WORK January 30, 1892

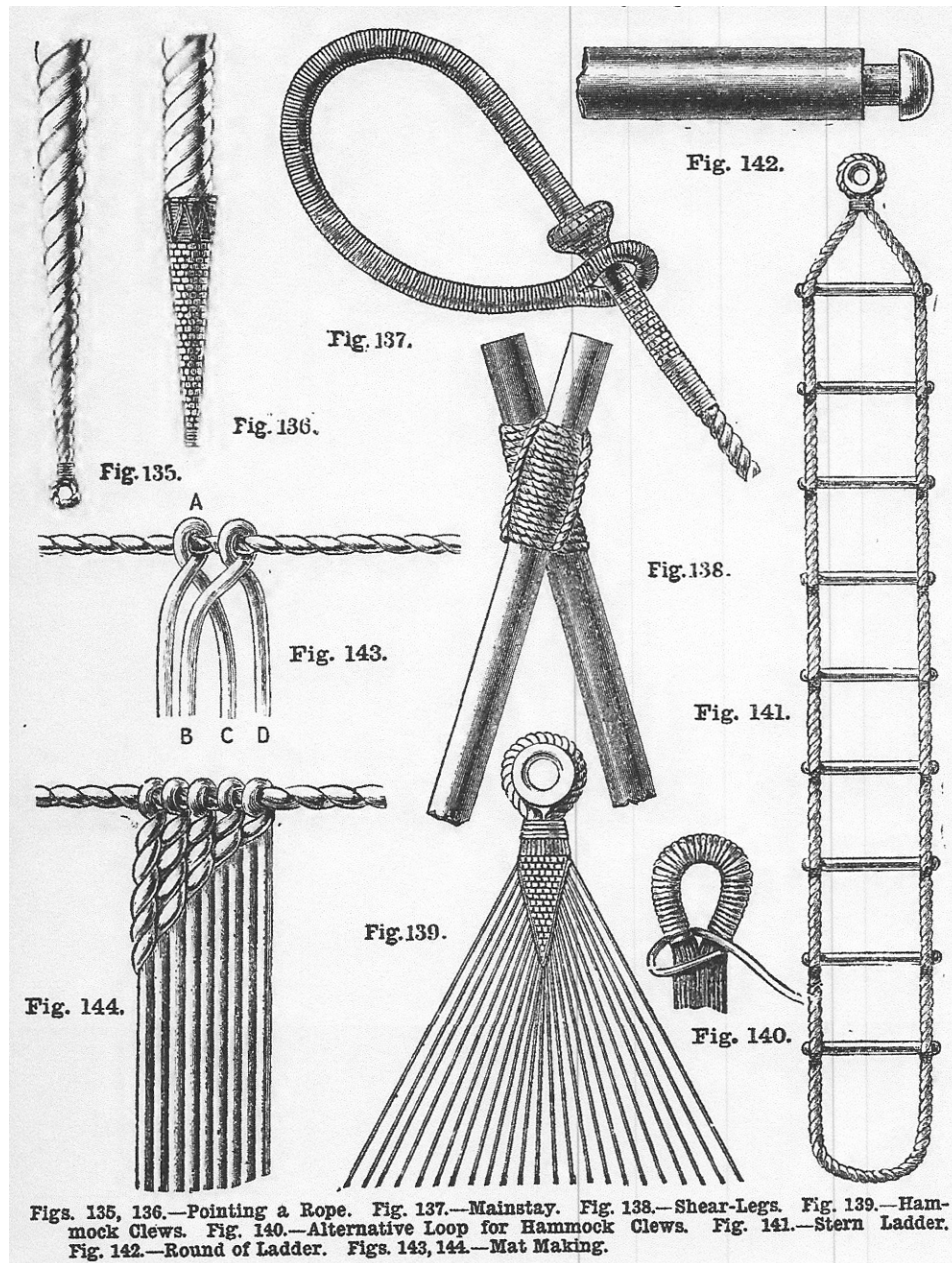
Pointing a Rope - Mainstay - Shear-Legs - Hammock Clews - Stern Ladder - Mat Making - Conclusion.

Pointing a Rope is done partly to prevent it from untwisting, and partly to make it go more readily through a block or hole. Fig. 135 gives one manner of doing this. The rope is first unlaid for the necessary length, and the strands reduced gradually. They are then laid up again. The ends are finally whipped with small twine. If the end is not strong enough without it, a piece of stick is inserted to stiffen it. Sometimes a "becket" - that is, a piece of small line with an eye at the end - is put into the end and whipped over to secure it, as in the engraving. Fig. 136 gives another more elaborate way of doing the same thing. The rope is first unlaid, and a stop put on it where the unlaid part commences. As many yarns as are required are taken out and made into nettles by twisting together the two halves of different yarns. The remainder of the yarns are scraped down taper with a knife. Half of the nettles are turned back on the standing part of the rope, and the other half allowed to lie on the scraped part. Two or three turns of twine are hitched round the division of the two sets of strands, and the nettles laid backwards and forwards, the weft being passed each time, as described in making the tender (Fig. 131). The end is usually whipped and a seizing put on the upper part, which is snaked, as shown in the figure, by passing twine diagonally under and over the outer turns of the seizing alternately - that is, if it comes out over the upper turn, it will go under the bottom one, under the top, and so on until it is finished.

Fig. 137 is part of a *Mainstay*. An eye is first made in the end, and a mouse the shape of a pear raised on the rope with spunyarn. Each turn of the yarn is hove well taut with a large serving mallet, and beaten close. The eye and the rope as far as the mouse are wormed, parcelled, and served over; the mouse and the part below it, which is called the tail, is parcelled with worn canvas, well tarred, and pointed over or grafted with small stuff. The mouse must be covered with nettles, and their number diminished as they are worked into the smaller parts. Below the pointing it is again served over.

Fig. 138 shows the way Shear-legs are fastened together. They are first laid side by side, and a lashing of rope put round them. The ends of the lashing are carried one up and the other down to form a cross-lashing, and are knotted in the middle. This is called a Portuguese Knot. When the legs are separated, the knot becomes very secure.

The *Clews*, or small cords of a hammock by which it is slung, are usually about the size of fishing-line, but the dimensions of the cords vary according to the number of clews the hammock contains. As in other cases that I have mentioned, the pieces of cony, when cut to their proper length (about 3 ft.), are called nettles. Lay them all together with the ends even. Take hold of them and give them a twist or two in the middle, and put a thimble in the bight and a stop under the thimble. Now divide the nettles into two equal parts, holding the eye in the left hand upside down. Take one of the nettles from the outside on the right, and lay it across the space between the nettles; do the same with a nettle from the outside on the left; haul upon these till they lie snug down in the divisions between the nettles. Now change the position of the nettles by taking one from the right and laying it over on the left, at the same time tailing one from the left and placing it over to the right; repeat this alternately until all the nettles have changed places. Pull them well down, so as to make a clear division between them. Then take two nettles, one from either end of



the work, and, crossing them, lay them down in the parting as before. Change the other nettles from side to side, as before, and continue working this way until all the nettles are used up. The last pair of nettles in the middle are knotted. Another pair of nettles being used up every time the nettles are crossed over, the worked part becomes taper, as shown in Fig. 130. The ends of the nettles should be whipped to prevent their unlaying.

A *Hammock*, as I daresay my readers know, is usually made of canvas, and is about 6ft. long by 3ft. wide. The ends are turned over and hemmed down, and a row of eyelets, in number equal to the number of the clews, are punched along it at equal distances. The nettles are rove through these, and secured with an overhand knot or two half hitches. When neither thimbles nor eyelets are at hand, an eye may be formed at the end of the clews by serving over the middle of the bundle of nettles with some of the nettle stuff, and then bending it into an eye. The easiest way to do this is to put two half hitches over a hook or anything that is convenient, and, standing at the full length of the serving stuff, gradually wind it on to the bundle of nettles by turning them round and round. The first end is secured by being stowed away among the nettles and served over. The last end of the serving stuff is brought round and through the eye, then round the front of the right part of the eye, round through the eye, and round the left stile as at first. This must be repeated thrice, hauling well taut as you go. The end is then brought down, passed through the centre of the nettles, up through the eye, an 1 round the lashing just made, where it is hitched; this must be repeated, and the eye

will be secure. In the place of eyelets a hole may be made in the canvas with a pricker, and a small grommet inserted : this must be worked over in button-hole stitch with sail makers' sewing twine. Of course, the first is the neater method, though the second is quite as strong. Two clews are required for a hammock, one at each end, and it is slung by two ropes spliced into the eyes of the clews.

Fig. 141 shows a *Stern Ladder*. This is made of four-strand rope; the rounds are turned out of oak in the form shown in Fig. 142. The groove at the ends is for the reception of the strands of the rope. The rounds are rather more than 1 in. in diameter, and are placed 11 in. apart. The strands are opened with a marline spike and the rounds inserted between them, two on each side : a seizing is put on below each round; a round thimble is put into the upper bight, and an eye seizing is clapped on below it. The lower ends are generally spliced together, or a thimble may be spliced in, as at the upper end if it is intended to make the lower end fast.

Mats are used on board ship to prevent chafing. In making wrought mats a piece of small cord is stretched tight horizontally at about the height of a man, and fastened at each end. Across this, hanging by their middles, nettles are placed. These are often made of "foxes" - that is, three or more rope-yarns twisted together by hand, and each rubbed down with tarred canvas or a handful of rope-yarn. Beginning with the nettle nearest the left hand, it is crossed as A (Fig. 143). Another nettle is then brought up close to the first, and crossed in the same way. The end B is then passed over the strand C, and pushed to the back; another nettle is then brought forward, crossed as before, and one part of it put over the part D, and pressed back. The work is continued this way, working diagonally until a sufficient width is obtained (Fig. 144); then, as no more nettles are added, and the outside nettle on the right is brought over from time to time, a selvege is formed as on the left side. Care must be taken to twist each of the nettles together at the bottom, so that they may retain their twist until the next in succession is brought down to interweave with them. There is a little difficulty at starting, but afterwards everything goes on easily. Each nettle from the right passes over the next one to it on the left, and is pushed back, the one that has been passed over being taken up first over the next and pushed back as before. Each twist should be pressed tight as it is made. When the mat is deep enough, a selvege is made by straining another piece of cord along the bottom, securing both ends. As each nettle comes down it is half hitched to this, and the next nettle is laid up at the back of it, and so on alternately. Mats are frequently thrummed, which is done by raising the nettles that lie on the top of the mat with a marlinespike or pricker after it is finished, and putting short pieces of the nettle stuff underneath. The thrums are then cut off to the same length, and opened out. Of course, wrought mats may be made of any material and used for a variety of purposes. They make most excellent door-mats, and are of everlasting wear. For this purpose they should not be made of tarred stuff. Very pretty mats may be constructed of twine for the foundation and various coloured pieces of worsted for the thrums.

There is another kind of mat used aboard ship called a sword mat. It is made in the same manner that weaving is done, only no loom is used. Two small cords, or, better still, two small rods, are secured horizontally and the nettle stuff wound round them, the coils being laid close together. A piece of wood called a "fiddle," as long as the width of the mat and about 2 in. wide and $\frac{3}{8}$ in. thick, has half as many holes bored near the lower edge as these nettles in the mat. Every alternate nettle is secured to this by some twine laced through the holes. Another fiddle is fastened in like manner to the remaining nettles. The work is now ready to be commenced. The first fiddle is raised, and the first set of nettles consequently raised with it. What weavers call a "shed" is thus formed - that is, an opening between the two sets of nettles, along which the weft or filling is passed with the help of a netting-needle. The filling is driven well home with a fiat piece of wood, tapered towards the edge, called a "sword." The first set of nettles are now allowed to drop, and the second set drawn up with the other fiddle. The filling is passed again and driven home as before. The work is thus continued until there is no longer room to use the sword, when the filling must be worked home with a pricker. When the mat is long enough, the filling is fastened off, and the mat is complete. These mats may be thrummed in the same manner as the wrought mats.

A softer kind of mat is made on a foundation of canvas or duck, which is very suitable for the stern-sheets of a boat or any other similar purpose. The material is cut to the right size and folded a short distance from the edge. A hole is made near the selvege with a pricker and a thrum inserted; another hole is then made a short distance from the first and another thrum put in, and so on until the row is completed. Row after row is thus worked until the mat is finished. Of course the holes, and consequently the thrums, go through both parts of the material. When the canvas is pulled straight after each row is finished, the thrums are held securely without any other fastening. When a pattern is to be worked on the mat, the design must first be drawn on the material in pencil and the canvas folded accordingly. It must be remembered that every fold produces two rows of thrums. White duck thrummed with pieces of cotton rope makes very nice, clean-looking mats for boat use, and as they wash beautifully, they can always be kept in good order. These mats, with a stout canvas or sacking foundation, thrummed with pieces of untarred hemp rope, serve very well for door-mats, though, of course, they will not last as long as wrought mats. Very ornamental mats are made somewhat after the same manner as those just described. Any suitable material, of any colour, can be used for the foundation, on which the pattern must be drawn. The mat is folded along the line intended to be worked, and a common pencil laid along the ridge of the fold. The worsted or other material used is threaded in a large needle, and worked over and over the pencil, thus forming, when the pencil is withdrawn, a series of loops on the foundation. Any pattern can thus be worked, provided always that it consists of straight lines. It might be possible, I think, to form curved lines by working the loops over the first finger of the left hand, moving the finger after each loop, but I have no experience of this. My lady readers will find mat making on this plan a very agreeable and useful employment, as really beautiful mats can be made by this method. I saw one a short time ago, made by a rigger's wife, which would not have been out of place in any drawing-room.

I have endeavoured with pen and pencil to give as clear an account as possible of the various knots and methods of working cordage in general use among seamen, and I hope my readers will soon master the subject. They will find it well worth their while to do so, as there are such a great variety of circumstances where a knowledge of knotting, splicing, and working cordage comes in usefully.

I have not touched on the subject of heraldic knots, partly because I considered it lay somewhat out of the line of my present purpose.

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WORK - February 20 1982

ABOUT LANDING NETS. by LANCELOT L. HASLOPE.

The easiest way to make a landing net is to net a sufficient number of loops on to a foundation as already described in WORK (*ed. HINTS ON NETTING p 535 above*), and then to join them together into a circle by taking up the first loop that was made. If each succeeding loop is now taken up, a tubular-shaped net will be formed. When it is considered to be long enough, one end should be closed by reeving a piece of twine through the end meshes and fastening it with a reef knot. It is well to make the net deep enough, as otherwise the fish are apt to jump out of it as it is raised out of the water.

A better mode of making the net is as follows. Net in the usual way a square piece of netting, sufficient to cover the ring to which it has to be attached: then fasten a piece of twine to the centre mesh, and attach this to the handle of a door or other suitable place. Now net round the square piece you have made, and a circular net will be formed, having a flat or nearly flat bottom, which will hold the fish more securely than one tapering to a point. In rounding the corners, the needle should be passed twice through the corner meshes, as this improves the shape of the net when finished. It is a good plan to net the last row of meshes - that is, those by which the net is secured to the ring - with double twine or twine of a coarser kind, as these meshes are apt to wear out long before the rest of the net. When the net is finished, it is laced to a ring of some kind with ordinary twine or fine copper wire. Rings are made in a great variety of shapes. Stout iron or brass wire bent into form, with the ends turned outwards for two or three inches, so as to form a tang to go into the handle, answers very well, though it will be rather cumbersome to carry about. A great variety of collapsing rings may be purchased at the tackle shops. These usually screw into a handle, and thus take up but little room. The handle, when made of bamboo, forms a convenient receptacle for an extra top or two. On the whole, the best form of landing net with which I am acquainted is the one I have given an illustration of. The wood must be sawn down the centre for about twenty inches, and a ring or lasting passed round the end of the cut to prevent splitting. A short cross-bar is then inserted, as shown at A, and the ends secured by twine, as at B. The net is then laced on in the usual way.

