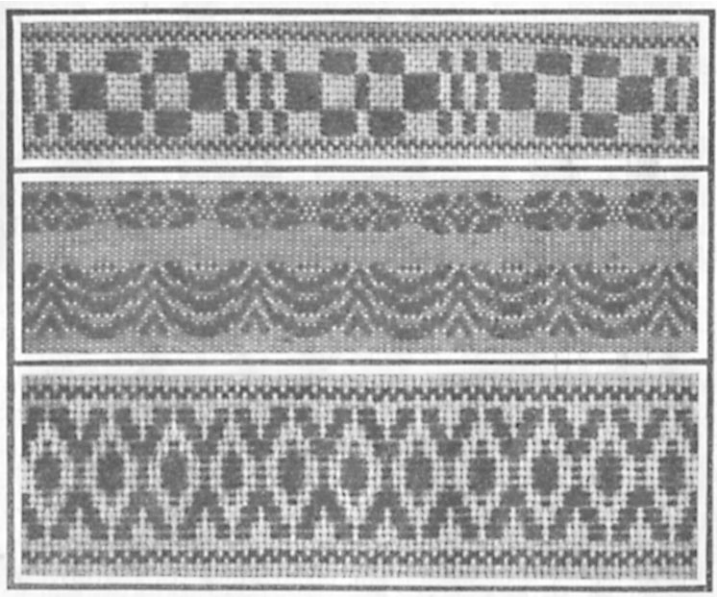
DRYAD LEAFLET No. 89. 6*d.*

HOW TO WEAVE ON FOUR WAY TABLE LOOMS



Three examples of Pattern Weaving; top Monk's Belt; Honeysuckle; Rosepath.

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HOW TO WEAVE ON
FOUR WAY TABLE LOOMS

THIS leaflet contains instructions for assembling the Wendy Loom W170, for setting up this, the Dryad Table Loom W42, the Dryad Cottage Loom W41A, and the Foot-power adaptation for W41A.

All three looms are constructed on the same principle, although they vary somewhat in detail. They can therefore be dealt with collectively, but to save confusion instructions for the setting up and working of the Wendy Loom are given and any small points of difference in the other two looms are described separately at the end. *Although these looms are Dryad Patterns the instructions can be applied in the main to any four-way table loom.*

Here are the chief terms used in Weaving. The principal parts of the looms are described and marked with letters on the illustrations for reference.

WARP AND WEFT. The names given to the two sets of threads interwoven at right angles to form the weaving. *Warp :* The threads running down the length parallel with the selvedge. These are stretched between two rollers, one at the front and one at the back of the loom. *Weft :* The threads running across the width from selvedge to selvedge at right angles to the warp.

FRONT ROLLER A or cloth beam. The finished cloth is wound on this as the work progresses.

BACK ROLLER B or warp beam, on to which the warp is wound (not visible on W170 loom).

HEDDLES C. These are made of wire with a hole in the centre of each, through which the warp threads pass. There are four sets of heddles to each of the looms (*i.e.*, four-way looms), each set being mounted on metal rods or a frame and suspended from the top of the loom. When a set of heddles is lifted an opening is formed in the warp through which the shuttle holding the weft thread passes.

SHED. The name given to the opening in the warp when the heddles are lifted.

REED D and BATTEN, used for regulating the warp threads and for beating the rows of weaving together. A reed is described as having a certain number of "dents," *i.e.,* the number of spaces between the strips of metal to an inch.

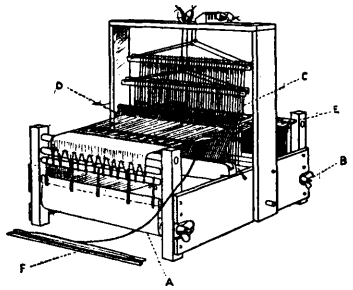
SHED STICKS E. Two smooth sticks with holes at the ends, used for preserving the "cross" in the warp.

THE SHUTTLE F. This can either be made of thin plywood (as shown with the W170 loom) round which the wool or cotton is wound evenly lengthwise, or if it is to be used with a larger loom, a roller shuttle as shown with W42 loom is best. The rollers which are on the bottom enable it to be thrown easily through the shed. If this type is used a bobbin winder is necessary for winding the spools.

WARP STICKS. These are the flat wooden sticks, supplied with the loom, used to protect the warp strands from the knots made when "tying on" and to separate the layers of warp on the roller.

WENDY TABLE LOOM, W170

Sizes 9", 12", 15", 18" and 20").



TO SET UP THE WENDY LOOM.

Screw four hooks into the positions marked on each of the solid sides, to be inside the loom when assembled.

Place the Nos. 1, 2, 3 and 4 on the two solid sides of the loom to the corresponding numbers on the front and back parts of the loom in which the rollers are fixed and screw them together with the brass screws provided. Now to determine the front and back of the loom turn it so that the thumbscrews are *on the right.* Next screw

together the three parts of the canopy with the steel screws, making sure that the numbers correspond correctly, and place it in position on the loom as shown in the illustration, with the grooves for supporting the lifted heddles on the right hand side of the loom. Place upright in position with holes corresponding with those in the solid sides and insert a small peg in each of the two lower holes. Screw the uprights to the sides of loom through the upper holes.

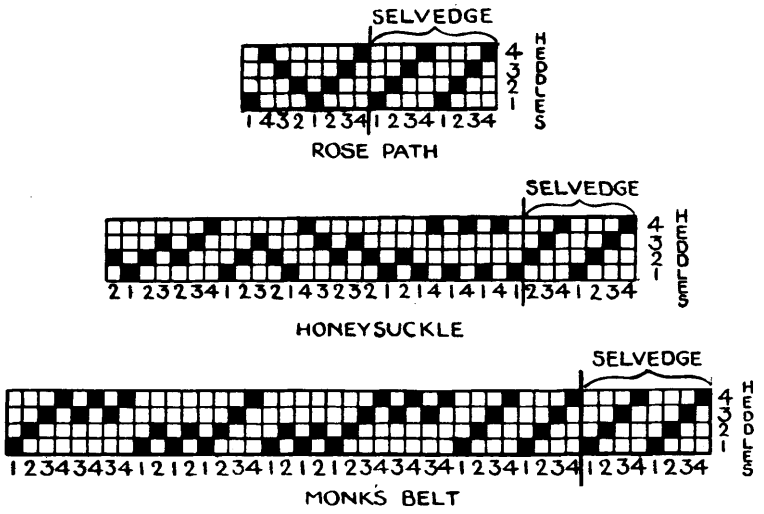
The canopy part of this loom is made collapsible for storing purposes by taking out the small wooden pegs and lowering it down towards the back.

NOTE. The 18″ and 20″ Wendy Looms can be supplied with the reed fixed in a swinging batten if preferred, in which case the arms of the batten are fixed to the sides of the loom with a thumb-screw, through the holes provided.

TO PREPARE THE HEDDLE FRAMES.

One heddle frame consists of two metal rods bored with holes at the ends.

Before proceeding further the pattern to be used must be selected as it depends on this as to how many heddles are needed on each frame. Three pattern drafts are given below, namely, Rose Path, Honeysuckle and Monk's Belt.



The four rows of squares represent the four sets of heddles, being numbered from front to back, 1, 2, 3, 4.

The solid squares indicate the order in which the warp threads pass through the heddles. These are numbered 1 to 4 on the pattern draft, according to the particular set of heddles through which they pass. (The end portion denotes the selvedge as marked).

To find out how many heddles will be required on each frame, first count the number of threads in one pattern, *e.g.*, in the Rose Path there are eight, then calculate how many patterns there will be in the full width of weaving. If the material is to be 12″ wide with 14 threads to the inch there will be 168 altogether. Therefore if 168 is divided by eight (the number of threads in one pattern) there will be 21 patterns altogether. Then count from the numbers or squares on the pattern draft how many threads there are in one pattern for No. 1 set of heddles, *i.e.*, two threads, and also for Nos. 2, 3 and 4 in the same way (in this pattern there are also two for each of these), and multiply them by the number of patterns, *i.e.*, $21 \times 2 = 42$ heddles for each frame. Four heddles must be added to each of these for the selvedges. If narrower selvedges are required add two heddles only to each frame and thread half the number of drafted squares, i.e., 4, 3, 2, 1 for each selvedge.

It will be found that the Rose Path and Monk's Belt patterns have an even number of heddles on each frame. The Honeysuckle has an uneven number, but if this is dealt with in the same way the correct number of heddles for each frame will be obtained.

Divide heddles into sets according to pattern draft and slip them on to the rods or frames and tie a piece of string taut across each rod from the holes to prevent the heddles slipping off. Loop rubber bands provided through the outer holes in the lower rods of the heddle frames. The heddle frames will be placed into position when the loom has been mounted with the warp.

TO MAKE A WOOL WARP FOR THE LOOM.

For this purpose a warping frame (which makes a warp up to 7 yards long), or a warping board (which makes a warp up to 10 yards long) is necessary. The method of making the warp is the same for each one.

To obtain the number of threads to be warped, multiply the number of inches required in the width by the number of dents to 1″ in the reed, *e.g.*, for a 24″ reed using 14 threads to 1″, 14×24, which is 336 threads plus eight or sixteen threads for the selvedge will be required. When warping for a pattern threading, allow for

sufficient threads to complete the number of patterns nearest to the required width. If a definite width is required it is possible to thread half a pattern on each side of the warp if adjustment is necessary. Remember that there is also shrinkage in the width to be allowed for, as there is always a certain amount of "drawing in" of the warp with the weft thread and this varies according to the worker and the material used. The material to be warped should be wound into balls. It is advisable and much more expedient to use two balls, and these should be put into a receptacle of some kind so that the threads unwind freely. Begin by tying the two ends together and slipping the loop thus made over peg A, guide the two threads together under peg B, over and round peg C, and then following the black line in diagram 1 down to D, across to E, across to F, back to G, across to H, then back to I, then to J, back to K, round to L, under

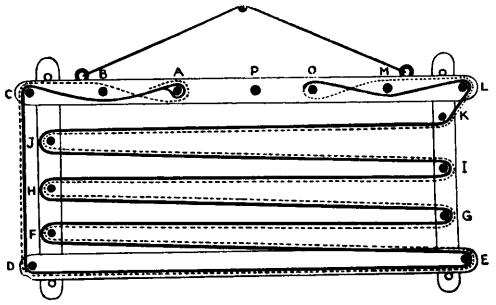


Diagram 1.

M, over and round O, Return, following the dotted line, by taking them over M, round L, down to K, across to J, back to I, across to H, back to G, across to F, back to E, across and round D, up and round C, over B and under and round A. The two threads should be carried backwards and forwards in this way from peg A to O until the total number of threads have been warped. It will be noticed that there are two crosses made in the warp. This is done as sometimes one cross is lost, in which case there is the one between O and M at the other end of the warp to use.

To keep count of the threads during the process of warping, tie them together at the cross between pegs M and O, in equal groups of approximately ten strands. The number of strands in the groups should be a factor of the total. If this is done there will be little difficulty in knowing when the warp is complete.

Before taking off the warp secure the crosses made between A and B, and O and M, by tying them with string thus :—Thread

a piece of string down one side of the cross, under it and up the other side, and tie the ends on top of the cross ; repeat this for the other cross. Also tie a piece of string through the loops at pegs A and O. Now slip the warp from peg O and loop it up in the form of a crochet chain as follows :—

Hold the warp taut with the left hand about a foot away from the end. Slip the loop on to the right hand and grasp the warp with the right hand. Take the loop over the right hand, thus making another loop. Slip this on to the right wrist and repeat the process until the entire warp has been removed. The shed sticks are now inserted one on each side of the cross in the warp, and tied together at the ends through the holes, allowing them to be about $\frac{1}{2}$" apart. The string tying the cross can now be cut as it is held in position with the sticks.

TO MOUNT THE WARP ON LOOM.

Place groove for reed in position about 2" in front of canopy and insert reed for the first threading. Take out the string which is tied through the end of the warp nearest the cross and slip the loops on to the left hand. These loops must now be put through the reed from front to back, four threads, *i.e.*, two loops, into every fourth space in the reed. This is only a temporary threading so that the warp is distributed evenly across the loom, in readiness for winding it on to the back roller. It is much easier for two people to do this, one to hold the loops and pass them to the other person, who takes them by means of a threading hook through the reed to the back, where a stick is inserted to prevent them slipping back through the reed. This stick is securely attached at intervals to the strip of calico on the back roller with string. Cut a piece of string approximately 10" long and double it. Bring the loop up through one of the slits or eyelet holes in the calico ; thread the ends through this loop and pull it tight. Repeat for each slit in the calico. Spread the warp evenly across the stick and then take the ends of the centre string, pass them over the stick, bringing them up behind it with one end on each side of the string, and tie them on the top with a reef knot, allowing about $\frac{1}{2}$" between the calico and the stick. This process is repeated for each string in the calico with the wool arranged equally between them. Now loosen the thumbscrew and proceed to wind on the warp. This must be done evenly, one person turning the roller and the other person holding the warp taut. Insert three or four of the warp sticks across the roller at the commencement to protect the threads from the knots of the string used for tying on. Continue winding, inserting the remaining sticks at intervals with the exception of two. Wind until only sufficient warp is left to

reach the calico on the front roller, then tighten thumb screw of the back roller. The cross which is at present at the front of the reed must now be transferred to the back as follows :—

Hold the warp taut while this is being done. Take out the strings securing the ends of the shed sticks and turn the back stick nearest the reed on its edge. Place a temporary stick of the same length through this space, but at the back of the reed. The back shed stick can now be taken out and placed through the threads by the side of the temporary stick, which is then removed. The process must be repeated with the front shed stick, again using the temporary stick, after which the sticks are secured at each end as before and tied to the back of loom. The cross will now be in position at the back of the loom. Next untie the string securing the free end of the warp, cut the loops and slip the threads from the reed, tying them in groups of approximately 30 strands to prevent them from getting ravelled.

Take the cord supplied with loom and tie a length firmly through one of the holes in the top rod of a heddle frame and again into the corresponding hole at the opposite end of rod, allowing the cord to lie taut along the top edge. Tie cord to each heddle frame in this manner. A better balance is obtained on the wider looms if the inner holes are used for this purpose. Cut the remaining cord into four, tie a knot in one end of each length and thread with a wooden bead. Thread one of these cords down through each of the four holes in the top crossbar of the canopy, and tie it to the centre of the cord on each heddle frame as shown in illustration, letting the frames hang so that the eyes in the heddles are approximately level with the top bars on the front and back of the loom.

Attach rubber bands in order to the hooks in solid sides of loom and loop a piece of string from hook to hook to prevent bands slipping off while weaving.

THREADING OF HEDDLES AND REED.

Take warp threads in order from the cross and starting from the right with the selvedge put the first thread through the first heddle on No. 4 frame, the second thread through the first heddle on No. 3 frame, the third thread through the first heddle on No. 2 frame and the fourth thread through the first heddle on No. 1 frame. If a wider selvedge is required this threading is repeated and then the pattern threaded according to draft and repeated across warp, leaving the last four (or eight) threads to correspond with the first selvedge and thread as before, 4, 3, 2, 1. Check each completed pattern and tie threads loosely in groups. When the threading of the heddles

is completed the reed is threaded with the threading hook. Starting from the right, untie one group of threads at a time and take in order, threading the first two or four threads (according to width of selvedge) through the reed with double selvedge threads. After this, draw the threads through singly with the exception of the last four (or eight) which must be threaded double for the selvedge. Tie warp strands in small groups as they are passed through the reed to prevent any slipping back.

Attach a warp stick to the calico on the front roller as previously described for the back roller. Then tie the warp strands to the stick with approximately 12 threads in each knot. Pass each group of threads over the stick, divide and cross underneath and bring up half on one side and half on the other and tie in a single knot. Test the tension of the warp with the hand and regulate any loose threads, then tie each group of threads with a second knot.

TO WEAVE.

In weaving, the heddles are lifted in pairs in a definite order, by means of the beads on the cords attached to the heddles. These cords may need adjusting to improve the shed when the loom is set up. The beads are pulled up and the cords slipped into the grooves provided on the top crossbar as shown in the illustration.

Plain weaving is obtained by lifting heddle frames Nos. 1 and 3 alternately with Nos. 2 and 4, and the patterns by lifting Nos. 1 and 2, 1 and 4, 3 and 4, 2 and 3 in various orders and by repetition. Weave a plain row after each pattern row as this makes the weaving firm and gives a background to the pattern. Experiment will quickly show how these patterns may be developed. An arrangement for each of the three patterns given is shown on the front cover.

Wind the weft thread evenly on to the shuttles with the colours chosen for the groundwork and for the pattern. A separate shuttle is required for each colour used in the weft and a careful study of the introduction of colour harmonies and contrasts into the warp and weft must be made in order to obtain satisfactory results.

It is advisable to begin with a piece of plain weaving. Begin by lifting heddles Nos. 1 and 3 and place a warp stick in the first shed. This will help to draw the warp threads together and to give a firm selvedge to the material. Lower heddles Nos. 1 and 3 and lift Nos. 2 and 4 and begin to weave. Pass a shuttle carrying the weft thread through the shed in the warp, leaving $1\frac{1}{2}''$ outside the warp. Twist this short end round the first warp thread and place it inside the shed and beat into position with the reed. The amount of

beating required can be judged from the fact that plain weaving should have a square mesh, *i.e.*, an even amount of warp and weft showing, where the same sized thread is used for both. It is important that the edges of the woven material should be kept even and the width regular. Leave the weft thread sufficiently slack so that when beaten into position with the reed it will not draw in the edges of the warp.

As the weaving progresses the finished material must be wound on to the front roller, at the same time releasing more warp from the back roller. When it is necessary to introduce a new weft thread the shed is changed ready to proceed with the next row and the old end is threaded through the shed for about $1\frac{1}{2}''$. The new weft thread is then introduced, beginning at the edge in the usual way. The old and new weft threads will then overlap for $1\frac{1}{2}''$. The shed is changed again, surplus ends cut away and weaving continued. When the required length of material has been woven, remove from the loom and finish off the ends of the weaving by neatly oversewing to prevent ravelling. Press material carefully with an iron under a wet cloth. Should the same pattern be required for a further piece of weaving, but with a different coloured warp, considerable time can be saved by cutting across the warp a few inches in front of the reed so that the new warp threads can be tied to these. The ends of warp should be tied together in groups, while the new warp is being made, to prevent them slipping back through the reed.

TO MAKE A COTTON WARP.

The making of a fine cotton warp differs slightly from a wool warp. To save time more threads are warped together, eight being a convenient number, and a spool rack shown in diagram 2 is used to hold the spools. It is essential for a fine cotton warp to keep the threads single in making the cross between pegs A and B, this being done as follows. Arrange the spools on the rack in pairs with all the ends of cotton unwinding from the same direction either above or below the spools. Tie all the ends together into a small loop and place this on peg P of the frame.

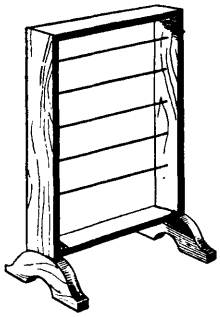


Diagram 2.

Using the right hand, place the thumb under the thread coming from the top left hand spool on the rack and the fingers under the thread coming from the top right hand spool, which will make a cross between the base of the thumb and the first finger. Repeat this process

with the next two spools and so on until all the eight threads are held on the right hand. Now carefully transfer the cross to the frame ; the threads passing over and under the fingers are placed on peg A and those passing over and under the thumb on peg B, so that the cross is between these two pegs. The eight threads are now carried round the frame to peg O (following the line on diagram 1) where a cross is made with the strands in one group between pegs M and O, and back again, the crossing being repeated with single threads each time the threads reach pegs A and B, and in a group at M and O, as described, until the warp is completed.

During the warping threads should be tied up between pegs M and O in groups representing 1", *i.e.*, 24 threads where a 24 dents to the inch reed is used or 28 for a 28 dent reed, and so on.

REMOVING THE WARP FROM THE FRAME.

First secure the crosses between A and B and O and M ; the crossing between P and A is ignored. Tie the loops at P and crochet the warp up as previously described for wool, but this time starting at peg P and not at O as before.

TO PUT THE WARP ON THE LOOM.

The heddles must be removed as already described for wool, also the reed frame must be unscrewed and removed from the loom, thus making a free opening from the front to the back roller.

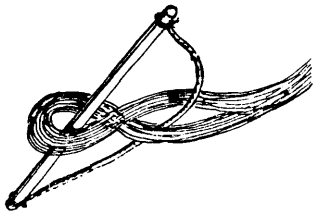


Diagram 3

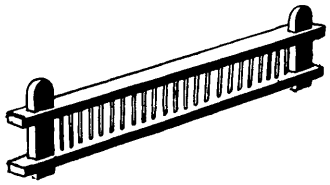


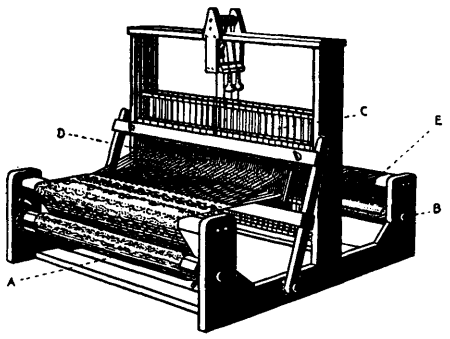
Diagram 4.

Place a stick through the loop at the end of the warp, and tie a piece of cord to the ends of this stick, taking it through the other side of the cross as shown in diagram 3. The string securing the cross can now be cut and the stick attached to the back roller. In order that the fine threads may be evenly distributed, a raddle or spreader is necessary for a cotton warp, see diagram 4. The raddle is placed or tied on to the loom in front of the heddle frame supports and the top is removed ready for receiving the threads. As the raddle is usually made with two dents to the inch, when each 1" group of warp strands is untied it is divided and a half placed in every dent.

When this process is completed the top of the raddle is replaced and the warp is ready to be wound on to the back roller. This is done in the way described for wool, one person holding the warp carefully, and the other winding it on to the roller and inserting warp sticks at intervals. It is advisable to brush the warp with a small soft clothes brush during this process as cotton is liable to become tangled and it is essential that the threads should be even and of the same tension on the warp beam.

When the final cross is reached the shed sticks must be inserted in the space in the warp on either side and securely tied together as already described for a wool warp. The string securing the cross is then cut. The raddle is removed and the ends of the warp cut and tied into groups. The heddles and reed are put back and the loom is ready for threading as before.

DRYAD COTTAGE LOOM, W41A
(24")



Instructions for assembling this and the Dryad Table Loom are not required as both looms are sent out already put together.

The processes of making the warp, setting up and weaving on this loom are exactly the same as for the W170 Wendy Loom. The only exception is that to move the heddles out of the way whilst rolling the warp on to the back roller, the top crossbar must be unscrewed and the bar and all four heddle frames lifted out of the top. They are afterwards put back again and the top bar screwed into position.

When extra heddles are required it is necessary to unscrew the short ends of the frames and to unhook one end of the metal weights while they are removed from the loom for rolling on. This loom is fitted with a swinging batten for the reed and may be easily adapted to foot-power by the addition of a stand which can be supplied separately.

FOOT POWER ADAPTATION FOR W41A COTTAGE LOOM

W205

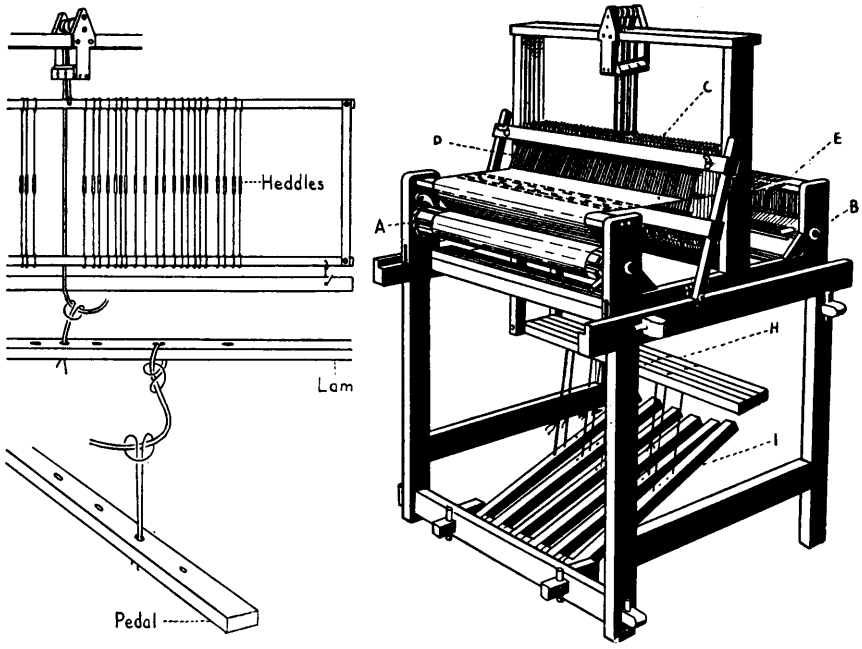


Diagram 5.

The stand for the adaptation of W41A to foot-power is a well built frame fitted with 4 lams (H) and 6 pedals (I). The sections are placed together as marked and secured with wedges. The table loom is placed in position on the stand as shown in the illustrations and harnessed as follows :—A length of cord is looped double through

the hole in the centre of the top rod of each heddle frame and threaded through the hole in the centre of the cross bar of the canopy, passed over the pulley and down again through the same hole, slipped between the bottom bar of the heddle frame and the metal weight and tied to the centre hole in the corresponding lam as shown in diagram 5. The lams must be tied so that they slant slightly upwards. The pedals are then tied to the lams in the correct position for weaving through the holes directly above the corresponding holes in the pedals, all slung at the same level, about 8″ from the floor at the raised end of pedals.

The "tie up" of the pedals for each of the three patterns already referred to is given below, each pedal being tied to two lams. Therefore, when a pedal is depressed it will lift two heddle frames at the same time. Number the pedals from right to left 1 to 6, Nos. 1, 2, 5 and 6 being used for the pattern and 3 and 4 for the plain or "tabby" rows. In Monk's Belt pattern only four pedals are used, 2 and 5 for pattern and 3 and 4 for "tabby."

1. Rose Path. Lams Nos. 1 and 2 to pedal 1.
   2 „ 3 „ „ 2.
   1 „ 3 „ „ 3.
   2 „ 4 „ „ 4.
   3 „ 4 „ „ 5.
   1 „ 4 „ „ 6.

2. Honeysuckle. Lams Nos. 2 and 3 to pedal 1.
   1 „ 4 „ „ 2.
   1 „ 3 „ „ 3.
   2 „ 4 „ „ 4.
   1 „ 2 „ „ 5.
   3 „ 4 „ „ 6.

3. Monk's Belt. Lams Nos. 1 and 2 to pedal 2.
   1 „ 3 „ „ 3.
   2 „ 4 „ „ 4.
   3 „ 4 „ „ 5.

To obtain the patterns on the upper side of the weaving as illustrated on the cover, tramp the pedals in the following order, with a tabby row after each pattern row.

Rose Path Border : 2 rows pedal 2 ; 2 rows pedal 5 ; 2 rows pedal 6 ; 2 rows pedal 1 ; 2 rows pedal 6 ; 2 rows pedal 5 ; 2 rows pedal 2.

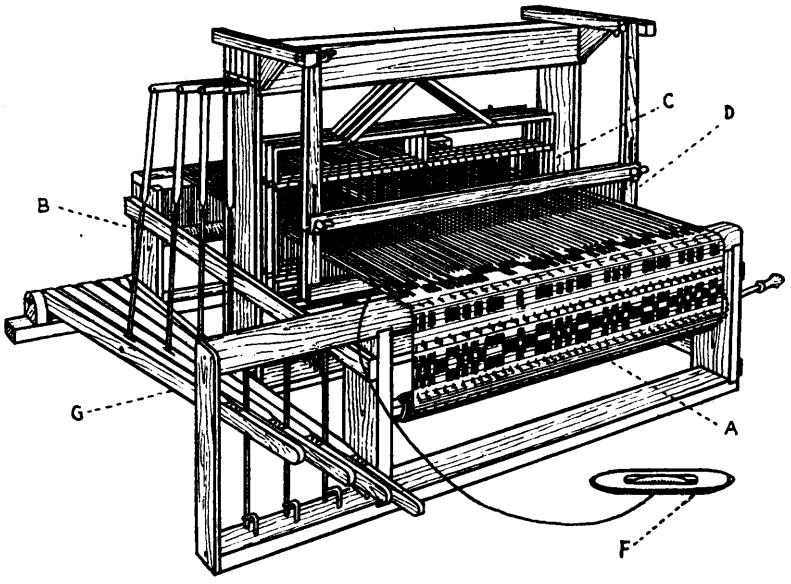
Honeysuckle Border : 2 rows pedal 2 ; 2 rows pedal 5 ; 2 rows pedal 1 ; 2 rows pedal 6.

Monk's Belt Border : 4 rows pedal 6 ; 6 rows pedal 1 ; 4 rows pedal 6.

Other variations of these patterns may be obtained by changing the order of tramping and by varying the number of weft throws to a block.

DRYAD TABLE LOOM W42

(24" and 30")



The processes of making the warp and threading up the loom are exactly the same as for the W170 Wendy Loom.

To move the heddles whilst rolling the warp on to the back roller, they are unhooked from the blackhooks connecting them to metal levers, at the top of the loom, and laid down in the bottom of the loom. The heddles are hooked up again when the warp is completely rolled on to the back roller.

The rods are unscrewed at one end of each frame when it is necessary to add extra heddles. The heddles are lifted by means of levers (G) which are pulled down and slotted under hooks to control the shed while using the shuttle. The method of swinging the batten differs from that used for W41A as on this loom it is slung from the canopy.

Suitable materials for weaving on the looms mentioned, including wools, cottons, linen and silk, can be obtained from Dryad Ltd. Particulars of these and all necessary weaving equipment for schools and home weavers will be gladly forwarded. A complete catalogue, including the above with materials, apparatus and publications for over 40 crafts, can be had on receipt of 4d. to cover postage.

All teachers of weaving should obtain a copy of "The Weaver's Craft," by L. E. Simpson and M. Weir. 148 pages. Size $10\frac{1}{2}'' \times 7\frac{1}{2}''$ 10/6, by post 11/-. (Dryad Press).

The book aims at giving a comprehensive account of weaving in all its forms and in a variety of materials from the simplest work for six-year-old children to the more advanced work on the hand loom with four heddles and six pedals. The historical sequence of the development of the craft has been followed in the grading of the work, and explicit working instructions are given at every stage.

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