FLIP
RIGID HEDDLE LOOM

WARPING AND WEAVING INSTRUCTIONS

Find out more at *schachtspindle.com*
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03.11

PARTS

1 — Rigid heddle (5, 8, 10, or 12-dent)
3 — Apron rods
2 — 3/16” dowels
2 — Lock knobs
Apron cords:
6 for 15” loom
8 for 20” loom
10 for 25” loom

ACCESSORY PACK

2 — Loom clamps
1 — Warping peg with clamp
1 — Short heddle hook
2 — Stick shuttles

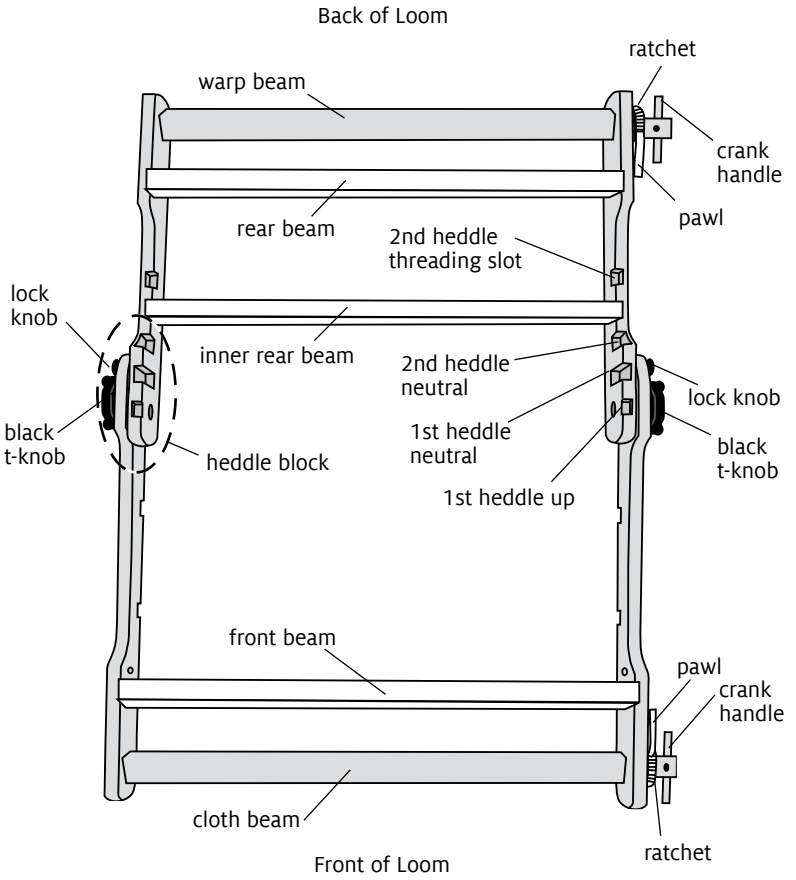

FIGURE 1: LOOM PARTS

FLIP, THE FOLDING LOOM

Your new loom has been crafted from the finest hardwood maple and each piece has been sanded and hand oiled. Flip comes assembled. Install the apron rods and cords and you're ready for warping and weaving.

UNFOLDING FLIP

- Loosen the black t-knobs on each side of the loom.
- Pull on the cloth and warp beams to unfold the loom.
- Insert the lock knobs (figure 2) on each side. Tighten lock knobs and black t-knobs.
- Directions for folding Flip are on page 11.

ATTACH THE APRON RODS TO THE BEAMS

- Attach the apron cords to the beams.

Insert one end of the cord through the beam hole (figure 3A). Slide the 3/16" dowel through the second to last loop of the apron cord. Repeat for the remaining holes on the beams.

- Create a loop for the apron rod.

Fold the cord about 4" from the free end and insert the folded end through the second loop at the free end of the cord (figure 3B).

- Place the apron rod in the cord loop.

Slide the apron rod through the loop (figure 3B) and pull tight (figure 3C).

- Repeat Steps 2 and 3 for each cord.

Three apron rods are included with your loom. The third rod is used for lashing onto the back apron rod in certain warping methods.

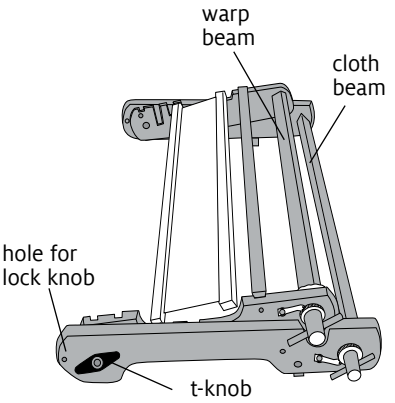

FIGURE 2: UNFOLDING FLIP

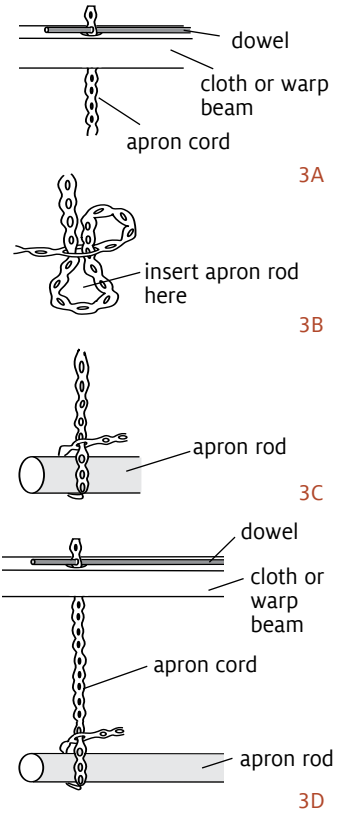

FIGURE 3: ATTACHING APRON CORDS

GLOSSARY OF WEAVING TERMS

Balanced weave: Fabric in which the number of warp ends per inch (see e.p.i.) equals the number of weft ends, or picks, per inch (see p.p.i.).

Beat: To push the weft threads into place with the rigid heddle.

Cross: The figure eight made at one end of the warp when measuring. It keeps the warp ***ends in order and helps prevent tangles.***

Draw-in: The tendency of the weft to pull the warp in during weaving.

End: One warp yarn or thread.

E.p.i.: Ends per inch. The number of warp threads, or ends, per inch, determined by the number of slots and holes per inch on the rigid heddle.

Heddle block: The notched area on the inner face of the loom sides. Holds the heddle in the upper position (on top of the block) or the lower position (under the block). When the heddle is in the notch it is in the neutral position.

Loom waste: The ends of the warp threads which are not usable because they are knotted onto the loom, or remain unwoven.

Pick-up stick: A narrow stick used to pick up warp threads to make patterns and that is turned on edge to create a shed.

P.p.i.: Picks per inch.- The number of shots, or picks, of weft per inch.

Plain weave: The most basic weave in which the weft is woven over and under, over and under warp threads. Also called tabby.

Rigid heddle: The device that creates the sheds in weaving and is made up of alternate slots and holes. It is also used to beat the weft.

Selvedge: The very outside warp edge of the woven fabric.

Sett: The number of warp ends per inch.

Shed: The space between raised and lowered warp threads through which the weft passes.

Shuttle: A tool for holding and carrying weft.

Sley: To thread the warp threads through the rigid heddle.

Tabby: See plain weave.

Take-up: The amount of warp length "lost" during weaving. The warp, instead of going in a straight line, actually curves over and under the weft, and therefore extra warp yarn is required.

Warp: Noun: the set of threads held taut by the loom. Verb: the process of threading the warp onto the loom.

Warping board: A rectangular frame fitted with dowels that is used to measure the warp.

Weaving: Interlacing one set of threads with another.

Web: The woven cloth.

Weft: The threads or yarn which is passed across the warp threads.

Weft-faced weave: A weave in which the weft covers most of the warp. Usually this is achieved by using a thin, widely spaced warp and a thick or soft, closely packed weft.

CHOOSE YOUR WARPING METHOD

There are two warping methods: The direct method using a single warping peg and the indirect method using a warping board.

The direct method, developed by Rowena Hart, is a quick way to warp your loom. It is best for short warps, single-color warps, or striped warps of even numbers. The indirect method is more versatile. It can accommodate longer warps and any color order. The warp is measured on a warping board, then brought to the loom for threading.

If you have never woven on a rigid heddle loom before, the direct method is a quick and easy way to begin.

DIRECT WARPING USING THE SINGLE WARPING PEG

1. Calculate the length of your warp, warp width, and number of warp ends. See "Quick Guide to Warp and Weft Calculations" on the next page.
2. Clamp the back of the loom to the table using the loom clamps (the loom will hang over the edge of the table). The back of the loom is the end with the heddle block (figure 1).
3. Clamp the warping peg as far away from the back apron rod as you want your warp to be long (figure 6).
4. Place your ball or cone of yarn on the floor below the back beam of your loom (figure 5). Place the heddle in the slot labelled "1st heddle neutral" in Figure 1.
5. Bring the apron rod up over the warp beam and rear beam toward the heddle. Tie the end of the yarn to the apron rod at the place that will be the edge of your weaving (figure 4). Find the center of the heddle and then measure to the right half the width of your warp. (For example, if your warp is 10"

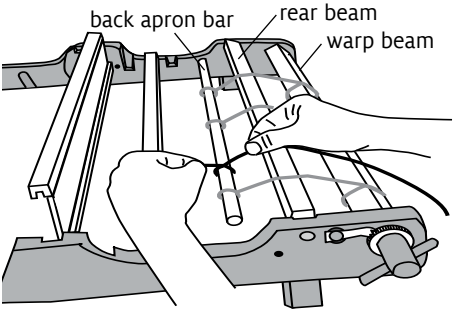

FIGURE 4: TIE ONTO THE APRON BAR

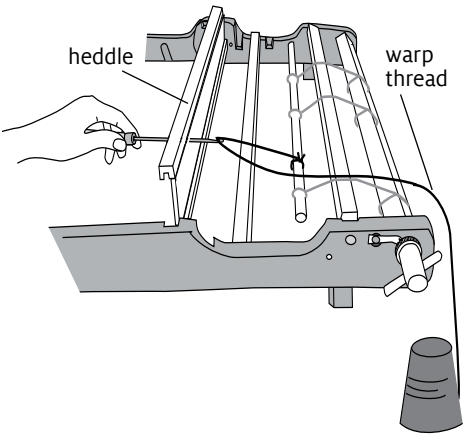

FIGURE 5: PULL THE WARP THROUGH THE HEDDLE

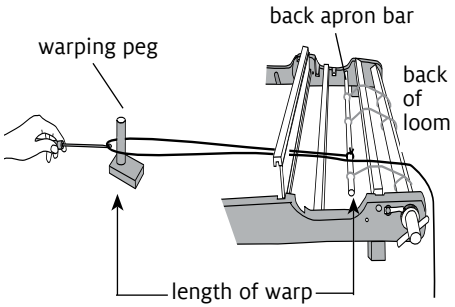

FIGURE 6: PLACE THE WARP LOOP ON THE PEG

wide, measure 5" to the right and begin threading at this point.)

6. Using the heddle hook, pull a loop of yarn through a slot in the heddle (figure 5). Place the loop of yarn over the warping peg (figure 6). You now have two warp ends going through a single slot.

7. Measure the next two warp ends. Continuing along the apron rod to the left, pull another loop of yarn under the apron rod (it will encircle the rod) and through the next slot in the rigid heddle. Place the loop over the warping peg (figure 7).

Continue in this manner until all warp ends are measured. You will alternately pull the loop above and below the apron rod.

8. After all warp ends have been measured, cut off the yarn from the yarn source and tie the end to the back apron rod.

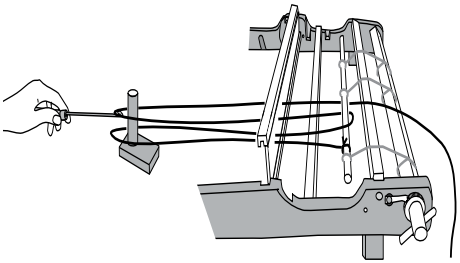

FIGURE 7: PLACE THE SECOND LOOP OVER THE WARPING PEG

Wind the warp onto the warp beam

9. Remove the yarn from the warping peg. Hold it tightly in your hand and with a pair of scissors cut the end of the loops. Tie the bundle of warp threads into an overhand knot (figure 8) and set aside.

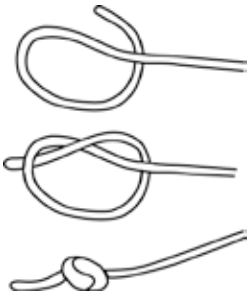

FIGURE 8: OVERHAND KNOT

10. Wind the warp onto the warp beam by turning the warp beam crank handle clockwise. When the warp has been rolled around the beam once, insert heavy paper between the layers of warp threads to separate them.

11. Continue rolling the warp and paper onto the warp beam. Stop every so often and pull hard on the warp to tighten the paper and warp on the beam.

12. Stop winding when the front end of the warp is about 10" from the heddle.

Thread the holes

13. You have two warp ends in each

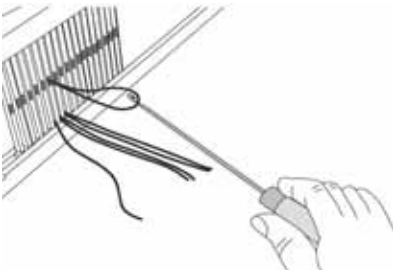

FIGURE 9: THREAD THE HOLES IN THE HEDDLE

slot. You need to take one end out of each slot and thread it through the adjacent hole using your threading hook (figure 9). Work from one edge of the weaving to the other until all holes have been threaded.

Tie onto the front apron rod

14. Bring the apron rod around and over the top of the front beam so that it is about 6" from the heddle.

15. Select a 1" group of threads at the center of the warp and bring them over the top of the apron rod, dividing them in half and tying together around the apron rod using a surgeon's knot (figure 10). It's like starting to tie your shoes, except you go around twice.

16. Alternate tying 1" groups to the right and left of center until all groups have been tied.

17. Work back and forth across the warp, tightening all the groups. Pat across the warp to check if all groups have equal tension. Adjust as needed.

18. Tie the ends of each group in a bow tie to secure them. You are now ready to weave.

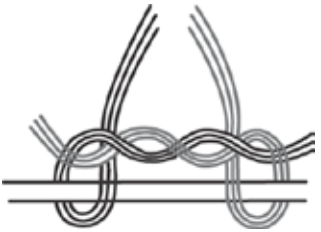

FIGURE 10: TIE THE WARP ENDS TO THE FRONT APRON ROD

INDIRECT WARPING USING A WARPING BOARD

Set up a guide string

1. Determine which pegs of the warping board to use by cutting a piece of string a few inches longer than the length of one warp thread. Use a string that is a different color than your warp.

Tie one end of the string to a peg and work back and forth around the pegs until the string runs out. Adjust the starting point until the end of the guide string comes out even at the set of 2 pegs marked x in figure 11.

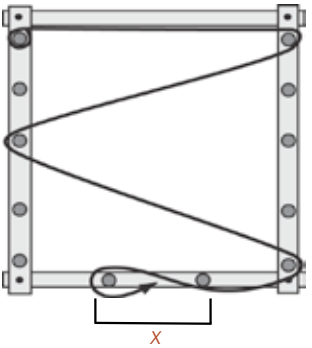

FIGURE 11: WIND THE WARP

Measure the warp

2. Tie the end of the warp yarn to the starting peg. Wind back and forth

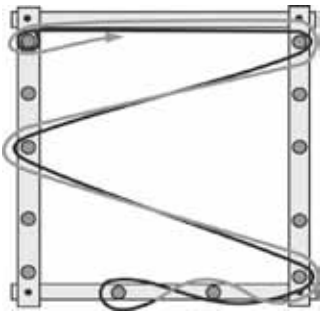

FIGURE 12: CONTINUE AND WIND THE WARP BACK IN THE REVERSE DIRECTION

QUICK GUIDE TO WARP AND WEFT CALCULATIONS

Let's say you're going to weave a table runner that is 16" wide and 40" long.

A. Calculate the length of your warp. The length of the finished piece is 40", but you will also need additional warp length for tying onto the loom and other loom waste. The average loom waste is approximately 24". You should also add to this figure another 10% (4") for take-up, which is the amount of warp length "lost" during weaving. It is a good idea to add another 10% (4") for possible shrinkage when washing the fabric after weaving. Add these four numbers to get the total length required for the warp:

40" (length of piece)
24" (loom waste)
4" (take-up)
4" (shrinkage)
72" (total length) or 2 yards

B. Determine the ends per inch (E.P.I.). There is a rule of thumb which is quite useful: simply wind the yarn you want to use as warp around a ruler for 1" so that there are no spaces between wraps. Then count the number of wraps in this 1" and divide by two for the number of ends per inch. Choose the heddle which comes closest to this number. In our example, the warp yarn is set at 10 e.p.i.

C. Calculate the total number of warp ends. Multiply the width of your planned weaving times the e.p.i. to get the total number of warp ends. In our example: 10 e.p.i. x 16" weaving width = 160 total ends of warp yarn.

D. Calculate the total amount of warp (in yards) needed. Finally, to figure how many yards of warp you will need, multiply the 160 total ends by 2 (the length of each warp end in yards). In our example, you will need a total of 320 yards for warp.

Here's the simple formula (from steps C and D above):

Total warp ends x length of warp (in yards) = total yards of warp

E. Calculate the weft yarn. The amount of weft yarn you will need is determined by how firmly you pack your weft. For a balanced weave (the same number of wefts per inch as warps per inch), buy the same amount of weft as warp. For a weft-faced weave (where weft packs tightly and covers the warp), buy up to five times more weft than warp.

A more detailed warp and weft calculation sheet is available in the instructions section at www.schachtspindle.com.

across the warping board following the guide string until you reach the ending two pegs. Wind a figure-eight around these (figure 12). This is the cross and its purpose is to keep the warp ends in order. Wind back to the beginning peg. You have now measured 2 warp ends. Continue following this path until the total number of warp ends are measured.

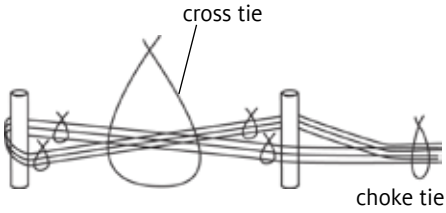

FIGURE 13: TIE THE CROSS

Remove the warp from the warping board

3. Secure the cross by tying it loosely with contrasting yarn in five places (figure 13) using overhand knots. Now tie choke ties along the warp at about 18" inch intervals. Tie these tightly with a bow tie. Choke ties keep the warp from tangling. After the warp has been tied, remove it from the warping board. Cut all the loops on the non-cross end and tie the end of the warp bundle in an overhand knot.

FIGURE 14: HOLD THE CROSS

THREAD THE HEDDLE

4. Wrap the warp around the front beam so that it extends about 10" past the heddle.

5. Place the heddle in neutral. Find the center of the heddle and then measure out to one side half the width of your warp. (For example, if your warp is 10" wide, measure out 5" and begin threading at this point.)

6. Hold the cross in one hand so that each section is separated (figure 14), and then cut the loops at the end and the five ties holding the cross. Notice that the threads stack up Lincoln-log style. Take the top end and use the heddle hook to thread it through the slot at the outermost edge of your weaving. Take the next thread and thread it through the adjacent hole. Alternately thread slot, hole, slot, hole until all warp ends are threaded.

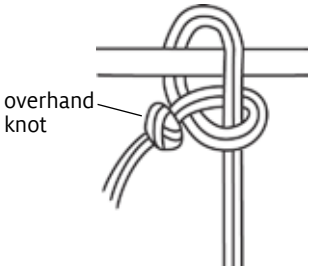

FIGURE 15: TIE THE WARP TO THE BACK APRON ROD

7. Tie groups of about 1" of warp ends in overhand knots across the entire warp. Then tie each group around the back apron rod and secure this knot by tightening it up to the first knot (figure 15).

WIND THE WARP ONTO THE WARP BEAM

8. Begin cranking the warp onto the warp beam in a clockwise direction. Remove choke ties as they approach the heddle.

9. When the warp has been rolled around the warp beam once, insert heavy paper between the layers of warp to separate them.

10. Continue winding on, stopping every so often to pull hard on the warp bundle to tighten the warp on the warp beam.

11. Stop winding when there is about 10" of warp left in front of the heddle.

Tie onto the front apron rod

12. Tie onto the front apron rod in the same way as for the direct method.

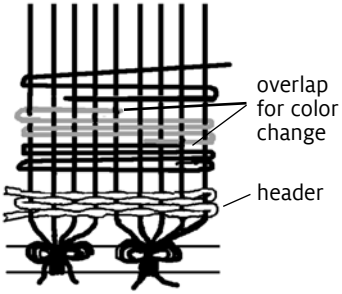

FIGURE 16: WEAVE A HEADER

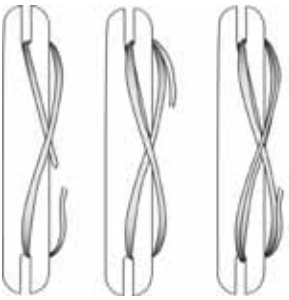

FIGURE 17: WIND A STICK SHUTTLE

WEAVING

The first shed is made by resting the heddle on top of the heddle block (there is a shallow notch for it, figure 1). This is called the upper shed. The other shed is made by placing the heddle under the heddle block (the lower shed).

Weave a header

Before beginning your project, it is a good idea to weave a "header" with scrap yarn (figure 16). The purpose of the header is to spread the warp out evenly so that your weaving project can begin on an even, uniform warp. Use scrap yarn about the same size as your project yarn. Weave about three rows without beating and then press these in place with the rigid heddle. If needed, repeat until the warp is evenly spread.

Wind a shuttle

You will need a shuttle for weaving. A stick shuttle about the same width as your warp works well on the rigid heddle loom. Wind the weft yarn around the shuttle in a figure-eight. You can wind along one edge or both edges of the shuttle (figure 17).

Weave your project

To weave on your rigid heddle loom, you alternately raise and lower the rigid heddle. Place your shuttle through the opening between the raised and lowered threads (the shed). Inserting the weft thread at about a 30 degree angle will allow the extra weft neces-

sary. Your weft should be snug at the selvedge but should not pull in. Press the weft into place with the rigid heddle andthen weave the opposite shed, returning the shuttle to the other side of the weaving. That's all there is to it! Pretty soon you'll be doing all of the steps automatically.

Remove your project from the loom

When you can't weave any farther or have finished your project, weave a few rows with waste yarn, and cut the warp off from the back of the loom. Unwind the fabric from around the cloth beam and untie or cut off the warp from the front apron rod.

You will need to secure the warp ends from raveling with either knots or stitching. Finally, wash, dry and press your finished fabric!

FOLDING FLIP

1. If there is a warp on the loom, loosen the tension on the warp. Turn the crank handle on the front beam clockwise while pulling up on the pawl (figure 1 and figure 18). Loosen the warp one full turn, replace the pawl, and turn the crank handle counterclockwise just enough to re-engage the pawl.
2. Remove the rigid heddle from the heddle block and lay it flat toward the back of the loom, on top of the rear beams (figure 19), with the bottom edge of the rigid heddle in the 2nd neutral slot (figure 1).
3. Loosen or remove the lock knobs and loosen the black t-knobs (figure 20).
4. Pull up on the black t-knobs to fold the loom (figure 21). Tighten the t-knobs to keep the loom in the folded position.
5. Re-adjust the tension on the warp if needed to keep it in place.

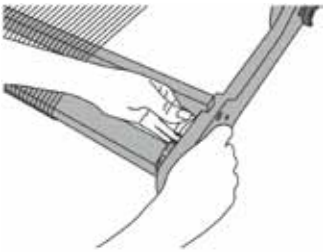

FIGURE 18: LOOSEN THE TENSION ON THE WARP

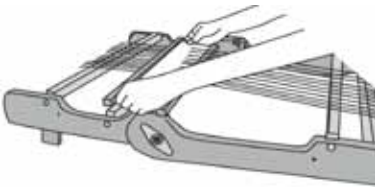

FIGURE 19: LAY THE RIGID HEDDLE FLAT

FIGURE 20: LOOSEN THE T-KNOBS AND LOOSEN OR REMOVE THE LOCK KNOBS

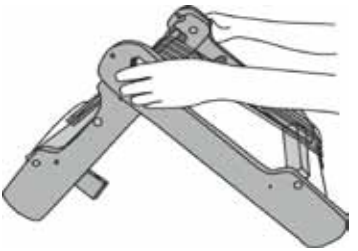

FIGURE 21: PULL UP ON THE T-KNOBS

THREADING TWO HEDDLES

1. Measure the warp on a warping board.
2. Secure the warp chain to the front beam for threading front to back.
3. With the front of the loom toward you, place a heddle in the front neutral slot.
4. Thread the heddle in this way: 1 thread in a hole, 3 threads in a slot, repeat (figure A).
5. After you've completely threaded this heddle, wind your warp onto the back beam.
6. Move the threaded heddle to the rear slot (heddle 2) and then place the remaining heddle (heddle 1) in the front neutral slot.
7. As you thread heddle 1, think in terms of 4-end groups. Take the ends from the first hole and slot (4 total) of heddle 2. Find the corresponding hole in heddle 1 and place the hole end and one of the slot ends in the slot to the right of the corresponding hole. Thread one of the remaining ends in the hole and the other end in the slot to the left (figures B and C). Thread the next four ends in the same way (there will always be 1 end in a hole and 3 in a slot). Check your work as you go.
8. After the front heddle has been threaded, tie on to the front beam.

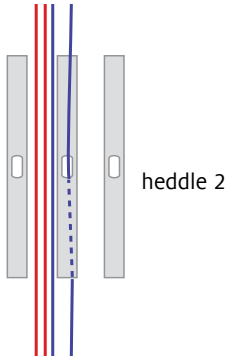

FIGURE A

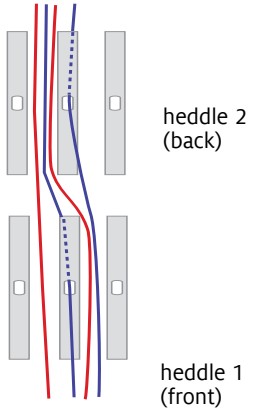

FIGURE B

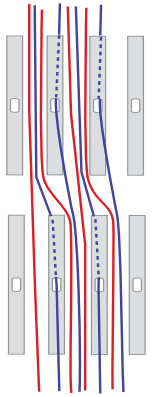

FIGURE C

RESOURCES

Davenport, Betty. *Hands On Rigid Heddle Weaving*, Interweave Press, 1987.

Gipson, Liz. *Weaving Made Easy,* Interweave Press, 2008.

Hart, Rowena. *The Ashford Book of Rigid Heddle Weaving*, Ashford Handicrafts, 2002.

For projects and additional information, visit our website at www.schacht-spindle.com.