

**AHRENS & VIOLETTE  
LOOMS**

# **Assembly Instructions**

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# 16 Harness Dobby Loom Assembly Instructions

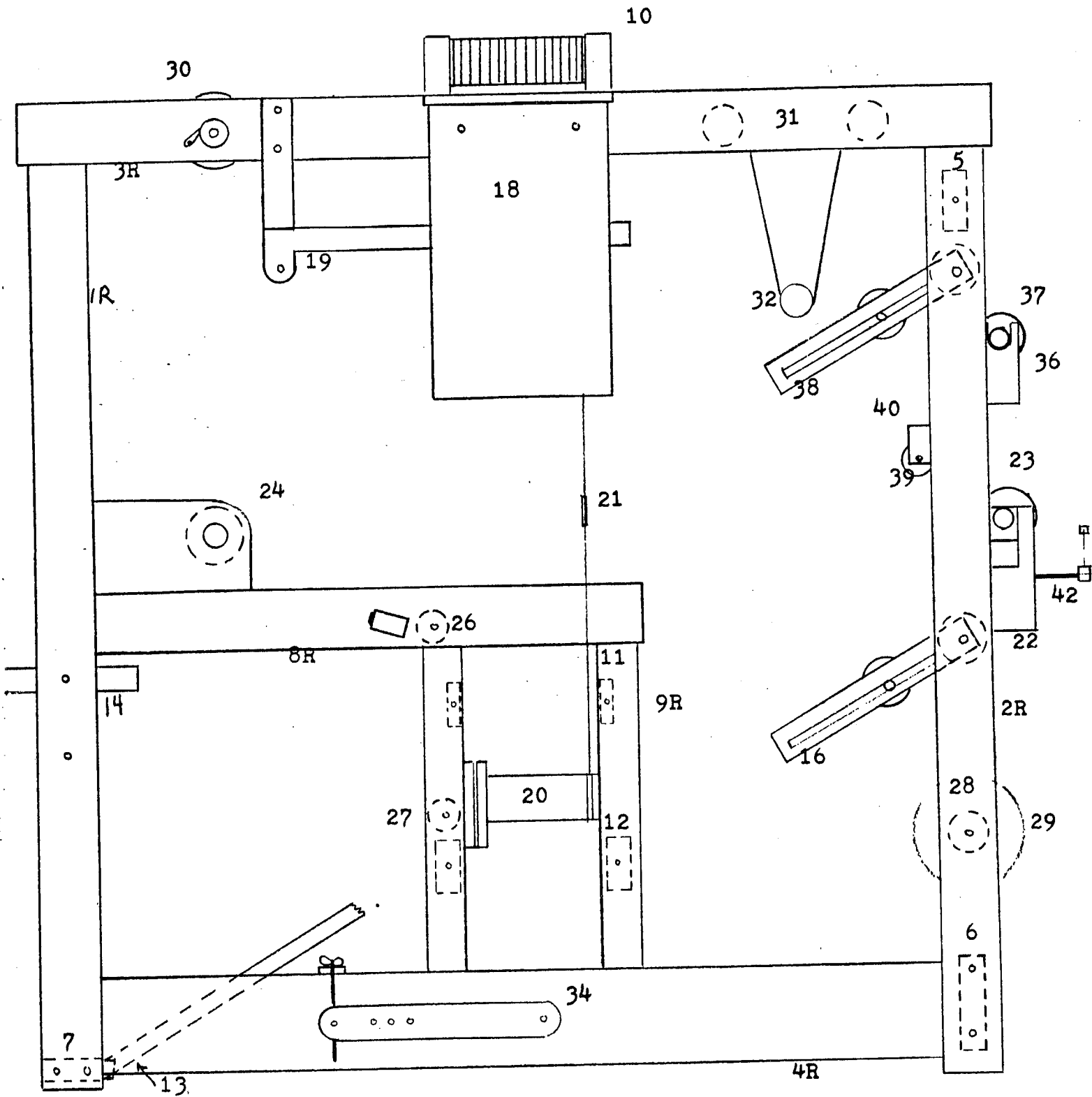
Before starting to assemble your loom, sit down, take some time, and read completely through the assembly instructions. Look at the assembly drawings and identify all the assembly numbers with their names from the parts list. Okay, now when you've really got this down, go through your boxes of loom parts and identify each part by comparing with the assembly drawings and by the numbers stamped on the loom parts. I know this takes time and you're anxious to start putting pieces together, but going through these preliminaries will make things go a lot smoother. Something to keep in mind while going through all this is that when I first started sending these looms out I thought I was going to get some resistance from people about having to assemble these looms themselves; but everyone who's gone through the process of putting one of the looms together has felt that it was a good experience and a great way to get to know their loom. Remember, if you are really serious about your weaving, a thorough knowledge of your equipment is vital. So think of this as an opportunity, not as a liability. Another thing we need to do before we get started is to get oriented with the loom. The front of the loom is the end where the seat is, that makes the back where the warp beam is. The right side of the loom is the side on your right as you are sitting at the loom; and of course a piece marked "bottom" would go down toward the floor. We're al-

most ready now so you'll need to get a few basic tools together. You'll need a screwdriver, a light hammer, a pair of pliers, a four or six inch crescent wrench, and an 1/8" allen wrench. Most of these you'll probably have around the house anyway, and you can buy the allen wrench in almost any hardware store. These tools will become a permanent part of your weaving equipment as you will periodically want to go over your loom and retighten any nuts, bolts, etc. that have loosened up from the continual "beating" the loom takes.

One other thing you'll want to have is a piece of paraffin. Rub this on any parts that start to squeak or bind.

Okay, let's go, and please resist the temptation to rush ahead of the instructions and start putting pieces on the way you think they should go.

16 HARNESS DOBBY LOOM



AHRENS & VIOLETTE  
16 HARNESS DOBBY LOOM

Part Number

Part Name

1R	right front vertical side frame
2R	right rear vertical side frame
1L	left front vertical side frame
2L	left rear vertical side frame
3R	right top horizontal
3L	left top horizontal
4R	right lower side
4L	left lower side
5	upper back
6	lower back
7	lower front
8R	right cloth beam support
8L	left cloth beam support
9R	Right vertical support assembly
9L	left vertical support assembly
10	pulley support
11	spring lever assembly
12	treadle pulley assembly
13	treadle assembly
14	seat
15	seat support
16	tension arm assembly
17	harness assembly
18	dobby head
19	dobby arm
20	dobby bulley
21	cable turnbuckle
22	warp beam supports
23	warp beam
24	cloth beam
25	cloth beam ratchet handle
26	upper cloth roller
27	lower cloth roller
28	rear cloth take-up roller
29	cloth take-up drum
30	cloth take-up handle
31	cloth take-up pulleys
32	weight pulley
33	cloth take-up weight
34	beater supports
35	beater
36	second warp beam supports
37	second warp beam
38	second warp beam tension lever assembly
39	second warp beam roller
40	second warp beam roller supports
41	sectional beam tension box
42	raddle
43	warp beam handle

# Side Frame Assembly

- 1) From the plastic bag marked side frames, sort out the 5/16" x 5½" hex bolts. Don't let the numbers scare you off. The 5/16" is the diameter of the bolt which you can measure with a ruler or tape, and the 5½" is the length of the bolt from head to the bottom of the bolt threads. On hex bolts the heads have six sides, thus the name.
- 2) When installing the nuts and bolts in the assembly of the loom, it often helps to firmly hold the nuts in place with the flat side of a screwdriver to get them started as you turn the head of the bolt with a wrench. If a bolt is a little tight going in, give it a light tap with the hammer. Always have the large holes where the nuts are inserted toward the inside of the loom. There should always be washers placed under the heads of the hex bolts and exposed nuts to prevent damage to the wood.
- 3) Now, using the 5/16" x 5½" hex head bolts and washers, assemble the right side frame by bolting the right front and rear vertical members 1R and 2R to the right lower side 4R. Then assemble the right top horizontal 3R to the tops of the verticals. It is important that the ends of the lower side and top horizontal, with the numbers stamped on them, are assembled to the front vertical. This establishes their proper relationship. If installed backwards the loom will not operate properly.
- 4) Now assemble the left side frame the same as the right.
- 5) Now bolt the right and left vertical support assemblies 9R and 9L to the lower sides on their respective side frames using 5/16" x 7½" hex bolts. Remember, it is important that the large

holes used for installing the nuts on the vertical supports face toward the inside of the frame member.

6) The right and left cloth beam supports 8R and 8L should now be bolted into place using 5/16" x 5½" hex bolts. The right member 8R is one piece but the left member 8L is of two piece construction. This makes it easier to later place the cloth beam into position.

7) The assembled side frames should now look the way they do in the assembly drawing. Check to see that they do.



# Joining The Side Frames

1) Using 5/16" x 3 1/2" hex bolts from the other bag of nuts, bolts, and washers, join the two side frames together by first bolting the lower back cross member number 6 to the right side frame. You can do this by yourself, I always do, but it helps to have a friend give you a hand. Now bolt the left side frame to the other end of the lower back. Now that the two side frames will stand by themselves, bolt in the upper back number 5.

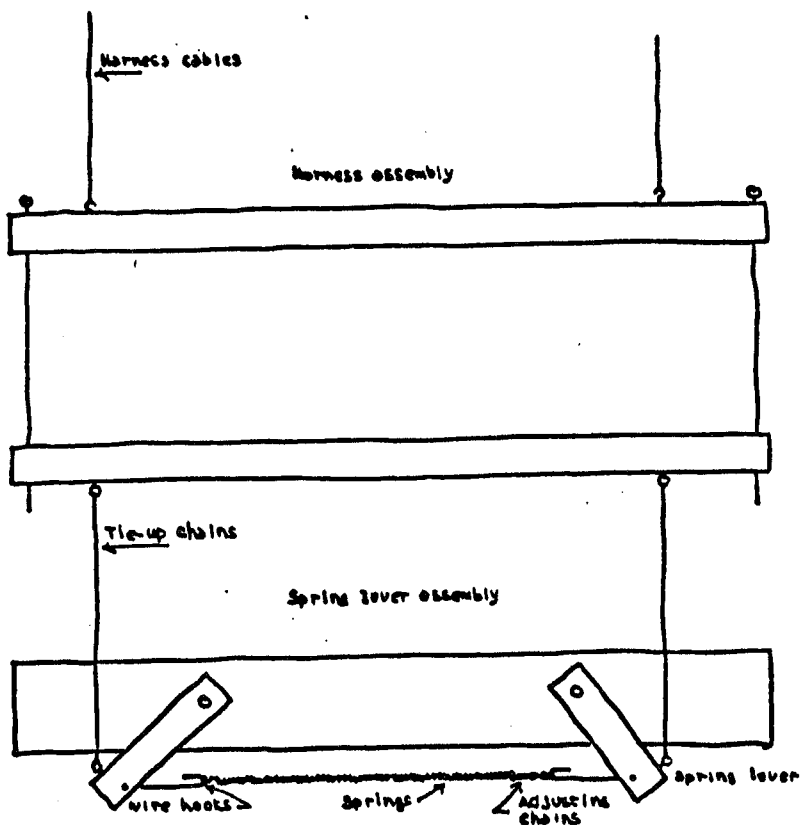
2) At this point assemble the treadles to the lower front member 7. First unscrew one of the blocks holding the metal rod and treadles spacers to the lower front member. Remove the rod and slip a treadle 13 onto each end with the two spacers between them. It is important that the longer treadle goes on the left side of the rod. Now take the lower front cross member and turn it over so that the large holes where the nuts go point down toward the floor and the hole for attaching the seat support 15 is toward the left side. Now slip one end of the rod with the treadles on it back into the block that was left on the lower front member, remember to keep the longer treadle on the left, and then slip the other block, that you removed from the lower front, onto the other end of the rod and screw to back onto the lower front member. I know it sounds confusing at first but read it through again, look at the assembly drawings and get it right.

3) Now assemble the seat support 15 to the lower front member using a 3/8" x 4" hex bolt, and then bolt this entire unit to the two side frames. It will be necessary to prop the loom up to insert the nuts on the under side of the lower front member.

5) Bolt the pulley bar 12 to the base of the uprights with  $\frac{1}{2}$ " x 4" hex bolts. Don't place a washer under its head, but put one between the nut and the wood. The rubber bumper strip goes on the bottom.

6) Now install the spring lever assemble 11 using  $\frac{1}{2}$ " x 4" hex bolts just above the treadle pulley assemble. Be sure the bottom side is down and that the shorter levers are toward the front.

7) Now install the long springs with short chains onto the wire hooks on the spring levers. Make sure that the wire hooks are free to pivot on the metal pins in the spring levers, otherwise they may get bent and won't work properly. Here's a sketch.



# Installing The Dobby Head

- 1) Lift the dobbie head up into place (see diagram) and align the two holes in the back of the unit with the holes in the right top horizontal member. Have two 5/16" x 2 3/4" hex bolts with washers ready and when you get the holes aligned push the bolts through from the dobbie side through the side frame member and secure on the back side with washers and nuts.
- 2) Now lift the dobbie arm 19 up into place and secure with two 5/16" x 3" hex bolts, but before tightening them all the way down, the arm must be aligned with the dobbie head.
- 3) As you face the dobbie head you will see that the dobbie arm passes through the dobbie head and protrudes a few inches past the right box side. Look at the top of this part of the arm that's sticking out and you'll find a line drawn across it. Now lift the arm up as far as it will go, right up against the leather bumper in the top of the slot in the right dobbie box side. Since the bolts in the dobbie arm haven't been tightened yet you'll find that the arm can be moved back and forth slightly. Adjust the arm until the line on top of the arm is just flush with the outside edge of the leather bumper. Hold it aligned in this position and tighten the bolts on the arm; that's it.

Don't worry about the cables and cords hanging out the ends of the dobbie head, we'll take care of those in just a minute.

# Treadle Tie-Up

1) Let's take care of the treadle tie-up first. There are two cables hanging out of the bottom of the dobbie head. Take the longest one and run it down to and under the most right hand groove on the dobbie pulley 20. Now run it across the loom, climb right inside the loom and crouch down in back of the treadle pulley assembly to do this, and run the cable over the top of the pulley closest to you and nearest the left side frame. Then run it down to the longest, left treadle. Look at the left side of the treadle and you'll see a small metal pin sticking out. Get your pliers and pull this pin out, not all the way out of the treadle, but just enough to clear the hole going through the treadle. Okay, now take hold of the cable we were just working with, it should be hanging down from the pulley just above the treadle, and lift the treadle we just pulled the pin out on, up, until the loop in the end of the cable can pass down into the hole in the treadle. What we want to do here is push the pin back in so that it passes through the loop in the end of the cable so that the treadle will be attached to the cable. When you've got the pin through the loop, take your hammer and tap the pin into the treadle as far as it will go to secure it.

2) Now let's handle the other, shorter, treadle. Look at the dobbie pulley and you'll see another cable wound around and taped to the groove on the large, left end of the pulley. Untape and wind the cable around the pulley, starting at the smaller part of the pulley and coming off at the larger part (see sketch). Run the cable over to the top of the pulley directly above the short treadle and then down to the treadle and secure the loop in the end of the

cable to the short treadle just like you did on the other treadle.

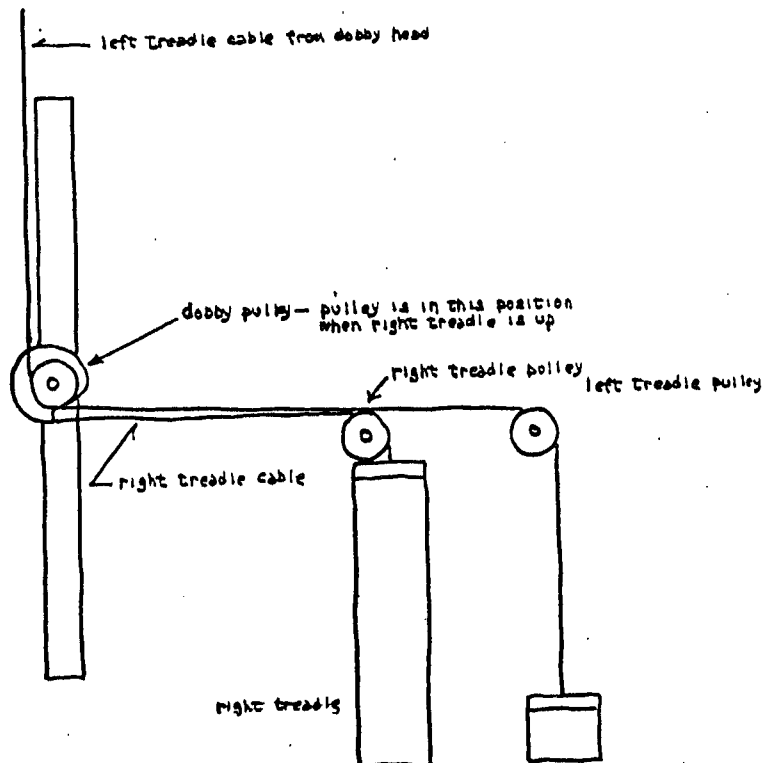
3) Now there's just one more cable we have to take care of here.

Hanging from the dobbie head is a threaded eye bolt, and wound around and taped to the dobbie pulley is a cable with a metal turnbuckle on it. Untape this cable and now rotate the dobbie pulley by hand in a clockwise direction as you are looking at it from the back of the loom. This will cause the short treadle cable to wind-up on its pulley and raise the treadle. Keep rotating the pulley until the treadle comes all the way up and stops against its treadle pulley. This has also probably caused the cable with the turnbuckle on it to get wound up on the dobbie pulley. If it has, unwind it while you hold onto the dobbie pulley with your other hand so that the short treadle stays up against its' treadle pulley. Good, now take hold of the turnbuckle, which should be laying beside the lower side member on the outside of the loom, and lift it up toward the threaded screweye from the dobbie head. Now if you've done this right you should be able to let go of the dobbie pulley and by pulling up and down on the turnbuckle cable you should be able to raise and lower the short treadle, great. Okay, now the last step and we're home. Just screw the turnbuckle onto the threaded eyebolt, not very far just enough to get it started, about  $\frac{1}{4}$ ", and it is a reverse thread so it will screw on backward from most screws. That should be it except for the adjustment.

4) The purpose of the turnbuckle is that it provides a way to adjust treadle travel so that we get a full shed, and so that the dobbie works properly. Now what needs to be done to get this proper adjustment is to screw on the turnbuckle until when the long treadle on the left is pushed all the way down, the dobbie arm raises and

just touches the leather bumper in the top of the slot in the right doobby box side. It's easiest to get this right if you first screw the turnbuckle in far enough so the doobby arm won't touch the leather bumper and then screw it back off a little at a time until it will just touch.

5) Before we go on to the next section there is one other thing we should check here, and that's to make sure that the doobby arm is not binding or rubbing on the sides of the slot in the doobby box side. Usually after the doobby arm bolts are tightened it will align itself; however, sometimes the right top horizontal can become slightly warped and tends to throw the doobby arm out of alignment. If this occurs on your loom it is easy to fix by putting pieces of paper between the doobby arm and the top horizontal. It acts as a shim and realigns the arm so it doesn't rub or bind.



# Harness Tie-Up

- 1) The first thing we need to do is get the cords that are coming out the top of the dobbie head straightened out. As you are facing the dobbie head the cord coming out of the first hole on the left, that's the one nearest the front of the loom, is the number one harness cord; the one next to it on the right is number 2 harness cord and so on. Take hold of the number one cord and pull it up and then lay it over the groove in the pulley directly above the cord hole, let it hang completely over the pulley so that the loop end is on the other side. Do this for each cord until all sixteen pulleys have their respective cords hanging over them.
- 2) Now unwrap and separate the harness, cables, then hold up and stretch one of them out. You'll see that it has three loop ends in it, one at each end and one along its' length which is closer to one end than the other. Now hold up the cable by this inner loop so that the loops at the two ends of the cable are hanging down. The shorter cable loop end will support the right side of a harness and the longer cables loop end will support the left side of the same harness, see sketch.
- 3) Now we're going to attach this cable to the number one harness cord of the dobbie head. It's easiest to do this if you stand on a chair or stool inside the loom in back of the pulley support assembly. Simply hook the inner cable loop onto the hook in the end of the harness cord that's laying over the number one pulley, and then lay the shorter cable end over the first pulley of the next set of pulleys, and then lay the longer cable end over the first pulley of the set of pulleys furthest to the left. Let these ends hang down and we'll hang a harness from it in a little while. Now repeat this operation for the remaining fifteen cables.
- 4) Now we're ready to put the heddles on the harnesses and then

hang the harnesses from the harness cables.

Find your harness sticks and copper harness wires, those things with the little round loop ends on them, and your heddles. You'll notice that there are five bundles of harness sticks, the larger bundle has open eye hooks and these are the upper harness sticks. Untape them and set them to the side. Now look at the four smaller bundles of harness sticks. These have closed eyehooks and are the lower harness sticks. Each of these lower bundles are numbered. Bundle number one contains the first or front four lower harness sticks; bundle two, the second four, and so on. Don't get these lower sets of sticks out of order or you'll have problems. Okay, now untape the bundle of number one lower harness sticks, and set them near the set of upper harness sticks. Now get your heddles and decide how you are going to distribute them over the 16 harnesses. Remember that you can't switch heddles from one harness to another once you've had them on the loom; each harness stretches its heddles to a slightly different length, and this is why you can't switch them around. Now take an upper harness stick and a number one lower stick and lay them parallel to, and about 10 inches apart from each other with their screweyes pointing away from each other. Now slip the loops of the heddles over the harness sticks and spread them out along their lengths. Now slip a harness wire through the holes in each end of the harness sticks. That's two wires for each harness, one through the holes in each end. The round loop ends of the harness wires must be on the same side as the open eyehooks. Great, now pick up this entire harness assembly and carry it over to the loom, don't bend the harness wires, and hook the harness onto



the loop ends of the first, front, harness cable. Okay, now just keep repeating this process until you've hung all sixteen harnesses.

5) That's it, you're over the hump, just a few more pieces to hang on the loom and we're through, so let's get on with it.

# Installing Beams And Rollers

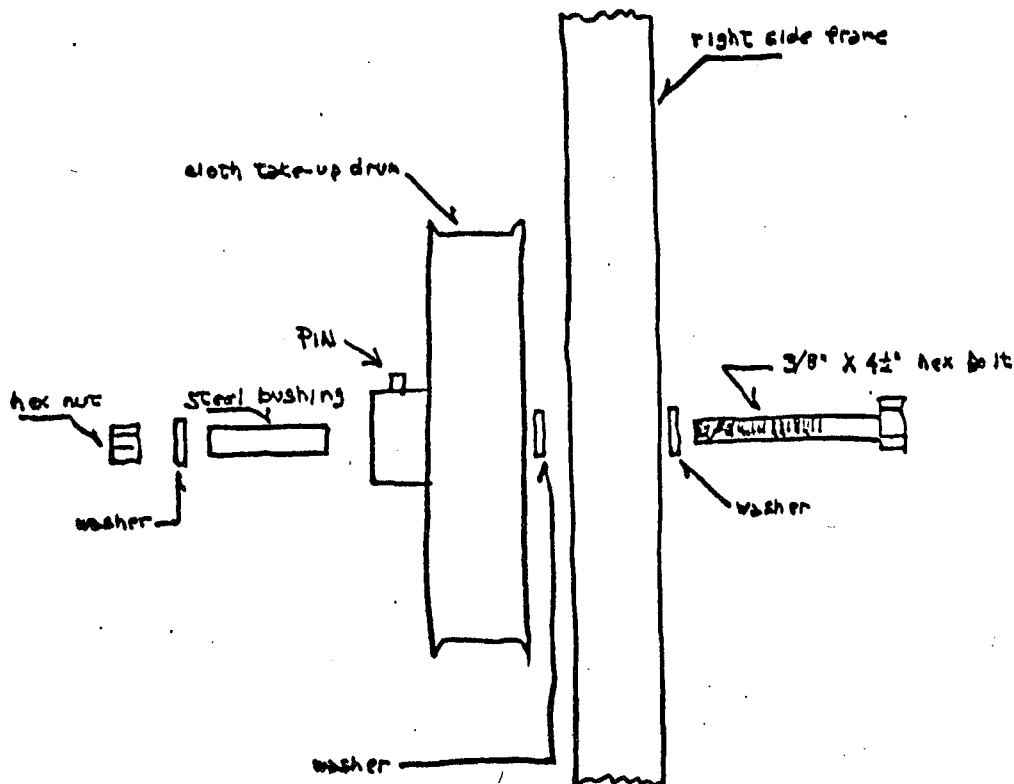
- 1) Now the roller tubes for the rear cloth take-up system can be installed. Simply drop the upper cloth roller 26 into its' slotted brackets on the sides of the cloth beam supports. Then take the lower cloth roller 27 and slip one end into the slot of its' bracket, then pull the pin out of the other bracket, lift the roller up into place, and push the pin back into place; that's it.
- 2) Now take the cloth beam 24 and slip the cloth beam ratchet handle 25 over the end of the cloth beam with the ratchet on it. Be sure that the wood handle points inward toward the cloth beam. Then slip the thin wooden spacer ring over the beam end.
- 3) Now slip the end of the cloth beam with the ratchet and ratchet handle on it into the hole in the right cloth beam support. Then slip the upper half of the left cloth beam support onto the other end of the cloth beam, and then bolt it to the left front vertical member.
- 4) Now install the cloth take-up drum 29 to the right rear vertical member. First remove the nut, two washers, and the metal bushing from the bolt going through the drum. Now from the outside of the frame push the bolt with a washer through the hole in the lower side of the right rear vertical member. Put another washer on the bolt. Then slide the metal bushing, and then the wooden drum, onto the bolt. The large diameter of the drum goes toward the side frame, then put another washer on, then the nut, and tighten down. The drum should turn freely, see sketch.
- 5) Install the rear cloth take-up roller 26 by slipping the open, notched end of the roller over the small wooden bushing and pin

that is attached to the side of the cloth take-up drum. The notch in the roller goes over the small steel pin. Then slip the other end of the roller into its' bracket on the left rear vertical.

6) Now bolt the warp beam supports 22 to the rear vertical members using  $5/16"$  x  $6\frac{1}{2}"$  hex bolts. Be sure to install in the lower set of holes in the rear vertical members, and check the assembly drawings on this one, a couple of people have put these on backwards and their looms didn't work well that way at all.

7) The warp beam may now be installed. Pull the pins out of the back of the supports, pull out the inner sliding brackets, and put these inner brackets over the ends of the warp beam. Make sure the rounded edges are on top. Then slip this assembly, small end to the right, back down into the grooves in the support until the inner brackets are flush with the top of the support. Then push pins all the way back in until they seat in the side frame; you might even give them a light tap with the hammer to make sure they're seated.

8) Now you can bolt on the warp beam handle.



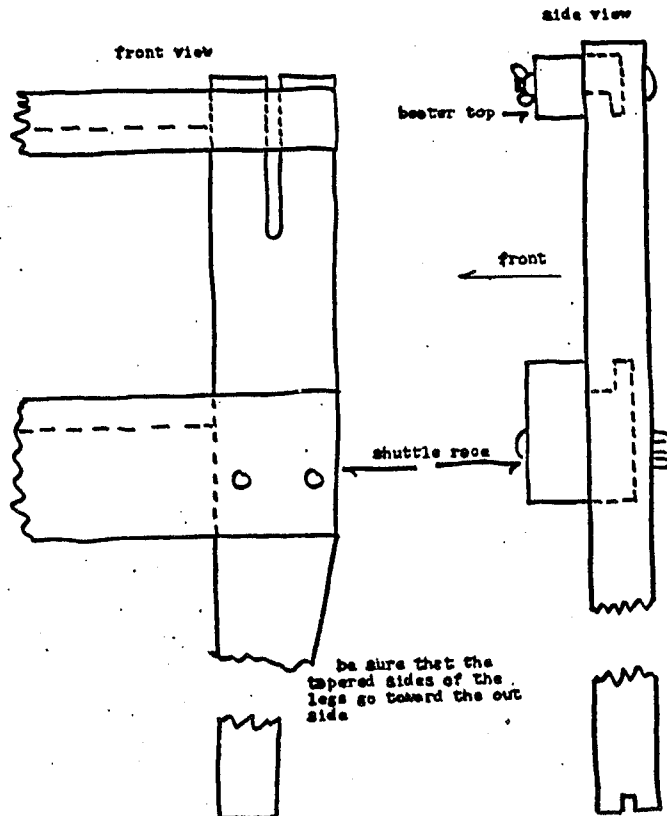
9) The seat 14 is now put into place. The metal bracket attached to it goes against the right vertical side member with 3/8" x 4" hex bolts and nuts going through the seat itself, and 3/8" x 2 1/2" carriage bolt (the kind with a round head) going from the side frame through the bottom of the bracket and used to adjust the seat for comfortable sitting. Another 3/8" x 4" hex bolt goes through the seat vertical 15 and the seat.

# Beater Assembly

1) Now bolt the beater supports 34 to the lower sides. Unscrew the threaded rod from the front of the beater support, pass it down through the hole in the metal adjustment bracket, back down through the round spacer of the beater support, and replace the nut on the bottom of the round spacer. The nut must fit up into the slot in the spacer, and the slot in the spacer must be down toward the floor. This will hold the nut from turning as you adjust the beater.

2) Refer to the sketch and assemble the beater by first attaching the shuttle race to the beater legs using 5/16" x 3" carriage bolts. Be sure that the tapered sides of the legs go to the outside, that is, away from the side frames. The round heads of the bolts go against the shuttle race, and tapped into place with a hammer; and the washers and nuts go against the back of the beater leg.

BEATER ASSEMBLY



On the flyshuttle beater the notched out area on the beater leg fits over the back shuttle box side.

3) The beater top is now attached to the beater legs using  $\frac{1}{2}$ " x  $2\frac{1}{2}$ " carriage bolts, the wing-nut and washer go to the front of the beater top. On the flyshuttle beater top the wing-nuts and washers go to the back of the beater legs.

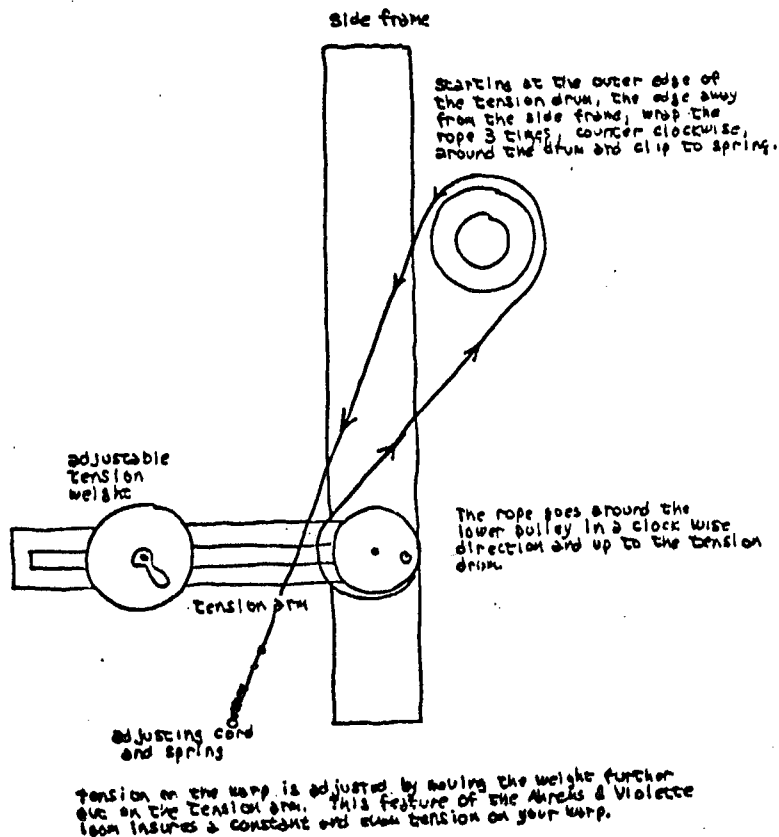
4) The reed goes into the slots in the shuttle race and beater top. Push the beater top down on top of the reed and then tighten the wing-nuts. On the flyshuttle beater the reed is already installed.

5) The beater may now be mounted onto the loom. The grooves in the bottom of the beater legs fit onto one of the pins in the beater support.

# Finishing Up

1) Now install the tension arm assembly 16. First remove the nut and washers from the bolt that runs through the metal bushing in the end of the tension arm and pulley. Put one of the washers back on the bolt, and from the outside of the frame push the bolt through the lower hole in the side of the left rear vertical member. Now put another washer on and slip the tension arm, with metal bushing, onto the bolt; the pulley side goes on first. Put another washer on and then the nut and tighten down. The tension arm should pivot freely, refer to sketch on cloth take-up pulley. Remove bolt from groove in tension arm and install the round metal weight on the arm. The weight goes on the same side as the pulley and the flanges on one of its' sides fit into the groove in the tension arm. Now the rope tie-up can be made: See sketch.

WARP TENSION TIE-UP

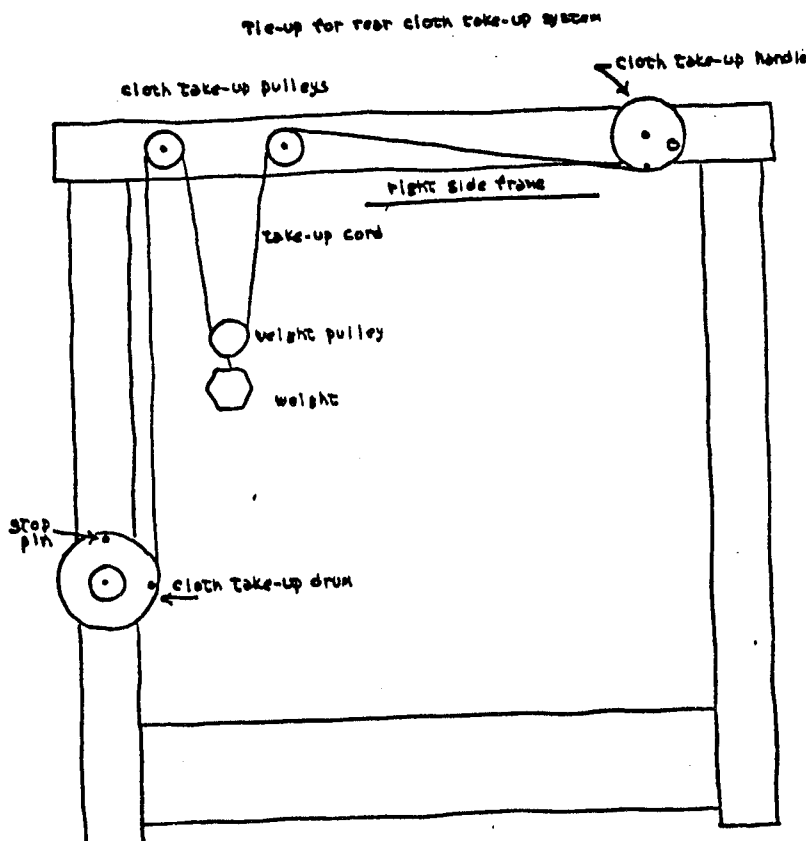


2) The cloth take-up handle 30 can now be installed. First remove the ratchet. Then push the shaft with a washer on it through the hole from the inside of the right top horizontal member 3R. Slip a washer over the shaft and then put the ratchet back on and tighten the set screw with your allen wrench.

3) To make up the cord tie-up from the take-up handle to the take-up drum see sketch.

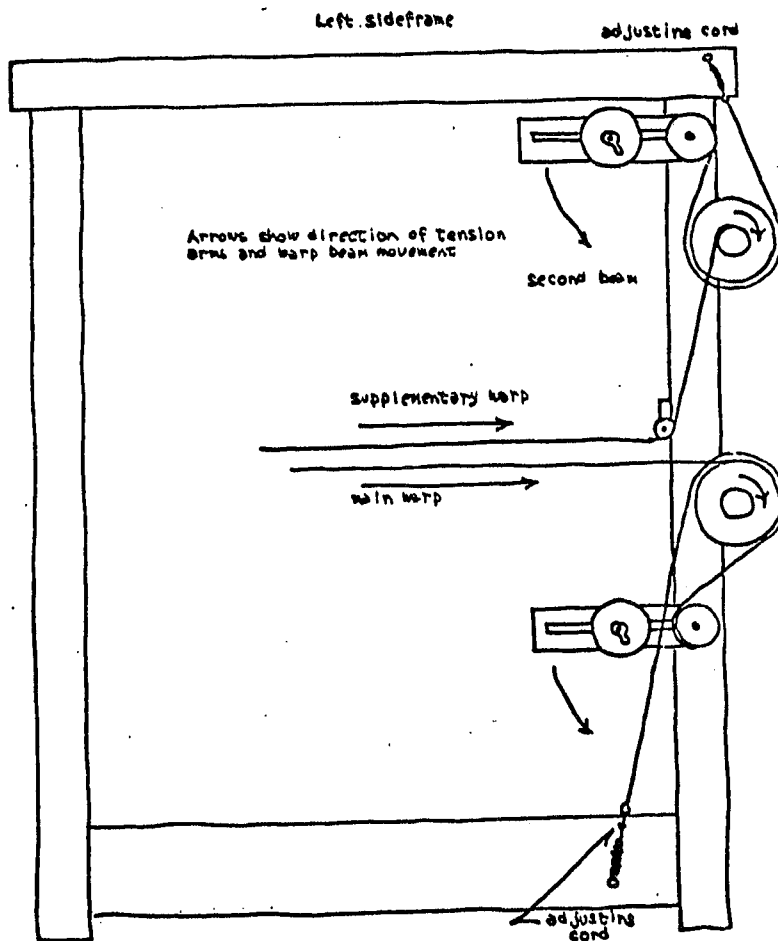
All right, that's it, and remember your loom will need some periodic tightening and checking.

For those who have ordered the optional double weaving system, raddle, or flyshuttle beater, there is some additional assembly and tie-up.





- 1) If you ordered a second warp beam for your loom you should now attach the second beam supports 36 to the upper set of holes on the rear vertical member.
- 2) Place the second beam into the supports, ratchet end to the right, and push lock pins into place.
- 3) Now screw the second warp beam roller supports 40 onto the pre-drilled holes on the front of the rear vertical members using the 2½" woodscrews.
- 4) Lift the second warp beam roller 39 up into place on the supports and push its lock pins into place.
- 5) Now attach the second warp beam tension arm assembly 38. See diagram and sketch of tension arm tie-up. For those who ordered a sectional beam, the tension arm is installed with the pulley toward the inside of the loom and the weight on the outside of the arm.



6) If you ordered a flyshuttle beater for your loom you can now make the tie-up for it. First slip the sliding wooden shuttle pickers into the grooves in the shuttle boxes, the ends where the cords attach go in first, toward the reed. Now clip the cord attached to the screweye in the handle to the screweye in the bottom of the pulley assembly. Now you'll need to attach the two upper, wooden, cord supports to the sides of the left and right top horizontal members using the woodscrews that are taped up with the cord supports. The holes for mounting the supports are pre-drilled 20" in from the ends of the top horizontals. The screweyes of the supports should be pointing downward. Now you can clip the two cords from the pickers into the screweyes of their respective cord supports.

7) The Ahrens & Viotette raddle is designed to fit directly into holes in the warp beam bracket. This holds the raddle firmly in place and centers it perfectly in the loom.

Initially install the raddle in the holes just above the upper mounting bolt of the warp beam bracket. The other holes are for adjustment which is described in the weaving instruction.

# Trouble Shooting

THE PROBLEM

THE CAUSE

THE REMEDY

Dobby skips

Pressing too hard and quickly on treadles

Press treadles with a smooth, rhythmical motion

Too many dobbie bars in dobbie head

Reduce number of bars or support bars with an auxiliary roller to take some of the weight off the dobbie head

Dobbie head doesn't advance

Round ratchet wheel on dobbie head loose

Tighten allen screws on ratchet wheel

Cable turnbuckle out of adjustment

Adjust according to assembly instructions

One or more harness that are supposed to raise, don't

Left treadle isn't being pressed all the way down.

Concentrate on getting both treadles all the way through their travel

Harnesses don't raise properly

Harness cables have been hooked to wrong harness

Rearrange cables

Chains from spring levers have been hooked to wrong harnesses

Rearrange chains

Copper hooks on spring levers have been bent

Straighten hooks with pliers

A harness cable has slipped off its pulley

Put cable back on pulley

A treadle cable has slipped off its pulley

Put cable back on pulley

Dobbie arm rubbing on slot in dobbie head

Realign dobbie arm according to assembly instructions

Dobbie head jams

Dobbie chain not brought out over the top of the lower roller

Reverse dobbie and turn by hand to get dobbie chain out

Small or uneven shed

Cable turnbuckle out of adjustment

Adjust turnbuckle according to assembly instructions

Beater not adjusted properly

Adjust according to weaving instructions

## THE PROBLEM

## THE CAUSE

## THE REMEDY

Harnesses jam up  
on each other

Heddles not distrib-  
uted evenly over  
harness sticks

Redistribute heddles evenly  
on both sides from the  
center of the harness sticks

Squeaking noise  
when harnesses  
are raised

Probably either in  
the dobbie arm or  
treadle or harness  
pulleys

Isolate where the squeak is  
coming from, then either  
rub with paraffin or lubricate  
with a light machine oil

Excessive tension  
on warp

Too much weight on  
tension arm

Use a smaller weight on  
tension arm

The tension rope has  
gotten crossed over  
itself on the warp  
beam brake drum

Straighten out rope

Flyshuttle hits  
the box sides

Reed not absolutely  
flush with shuttle race

Place small shims in back of  
reed so that it is perfectly  
even with the rear beater  
box side

Picker too loose

Shim box sides so that picker  
just moves freely without  
too much play.

# AHRENS & VIOLETTE LOOMS

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## CORRECTION TO ASSEMBLY INSTRUCTIONS

The directions and diagrams in the booklet show the second warp beam brackets 36 mounted on the back of the rear vertical sideframe members 2R, 2L. However, we have found that by mounting the brackets 36 to the front of the rear vertical sideframe members the sectional beam will take up less space and make a more compact unit. So mount them on the front and then attach the second warp beam tension arm 38 as per the instructions but when making the rope tie-up start the rope on the outside of the brake drum and work to the inside.

Here's a rough sketch:

