Baby Dobby
Installation Manual

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USA

Baby Dobby Installation

Getting Started

The purpose of these instructions is to guide an AVL Baby Dobby dealer, or owner, through the procedures necessary to properly fit an AVL Baby Dobby system to the Schacht Eight Harness Baby Wolf Loom. This process is not difficult, but it does require the ability to read simple drawings and drill holes accurately. Once you become accustomed to doing this conversion, the whole operation should take no more than an hour, or two, to complete.

Tools Required

Portable drill (electric or hand operated)
Drill bits: 9/64" and 13/64" diameters
Phillips screwdriver
Slotted screwdriver
7/16" open end wrench or adjustable wrench
Tape measure
Freshly sharpened pencil

Preparing the Loom

To start the conversion, first make sure that the loom you are converting is an eight harness model. If not, it will have to be modified from its current four harness configuration before proceeding with these instructions.

Unfold the loom and securely tighten the two black plastic knobs.

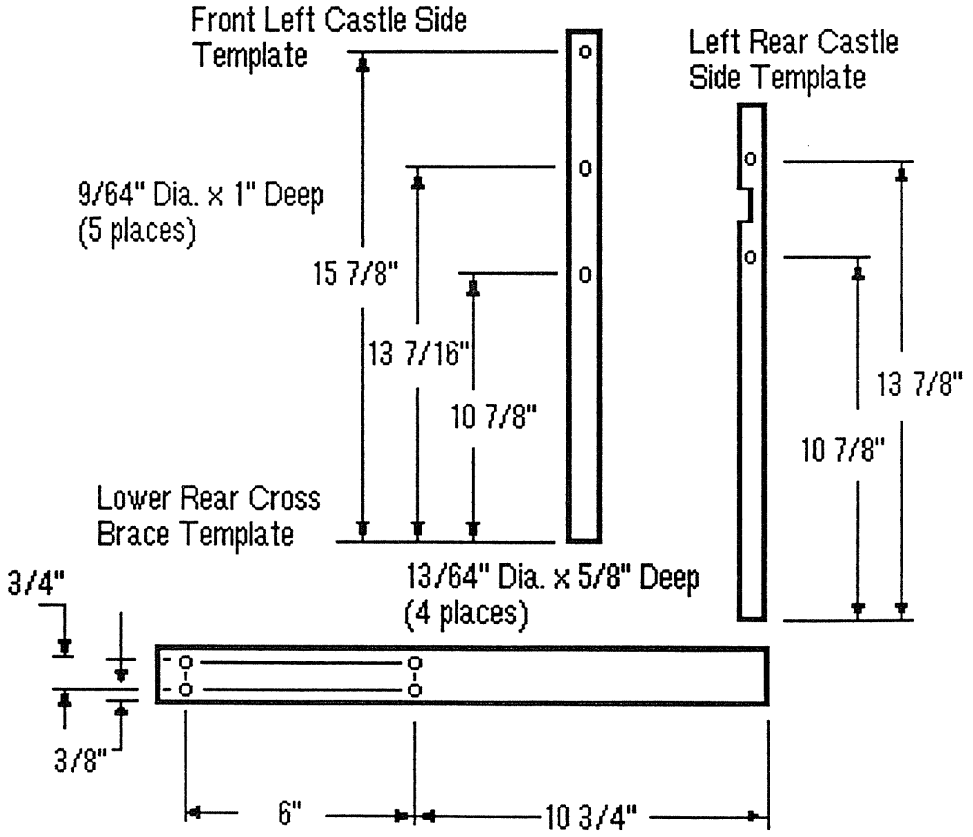
Now remove the Treadle Aid Bar (if there is one on the loom) from the Lower Rear Cross Brace. This is a long piece of wood with a series of holes in it (see Figure 3). Also, remove the rubber bumpers from the front edge of each Castle Side.

In order to mount certain assemblies, some holes will have to be drilled in two of your existing loom parts. Three templates have been provided to help you accurately mark the location of these holes. Drawings have also been included, showing the proper location of these holes. These drawings should be used to double-check the accuracy of the template markings.

Drilling Holes

First locate the template labeled **Lower Rear Castle Cross Brace Template.** This will be used to mark the location of the four holes that will be used to attach the Treadle Pulley Bracket to the loom. Hold the template against the outside face of the Cross Brace, as shown in Figure 2, and put a small pencil mark at each of the four holes on the template.

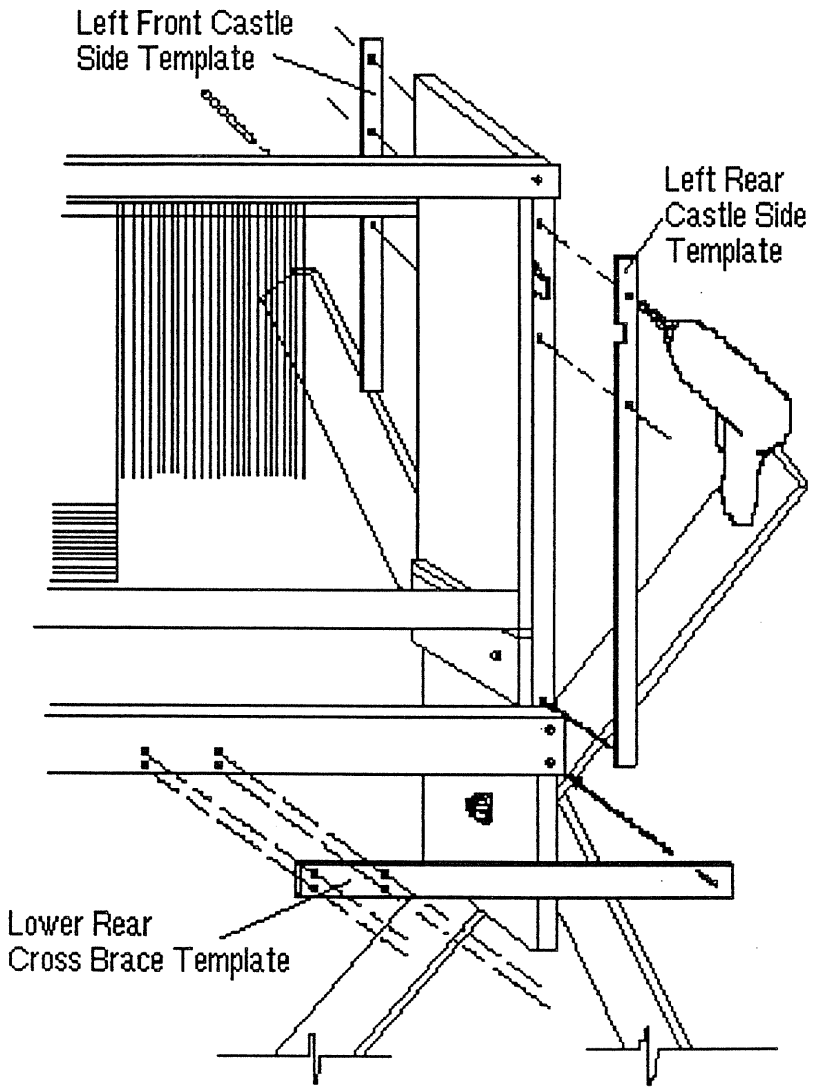
To be certain that you marked the piece correctly, you may wish to compare your results with Figure 1, which shows the actual dimensions of these hole locations. These four holes can now be drilled using the 13/64" drill bit. They do not need to go all the way through the piece, about 1/2" to 5/8" deep is fine. **NOTE:** A small piece of tape wrapped around the drill bit, measured a certain distance from the end, makes an accurate depth gauge for drilling "not through" holes.



HOLE LOCATIONS (shown from rear) FIGURE 1

NOTE: You will find it much easier to drill some of the next holes with the beater removed from the loom. To do this, simple remove the nuts where the beater pivots.

Now locate the template marked **Left Rear Castle Side Template**. This is the long thin template with a small notch in it. It will be used to mark the location of the two holes along the rear edge of the Left Castle Side. Position the template as shown in Figure 2, with the bottom touching the top edge of the Lower Rear Cross Brace. Holding the template against the rear edge of the Castle, place a pencil mark where each of the two holes are to be drilled.



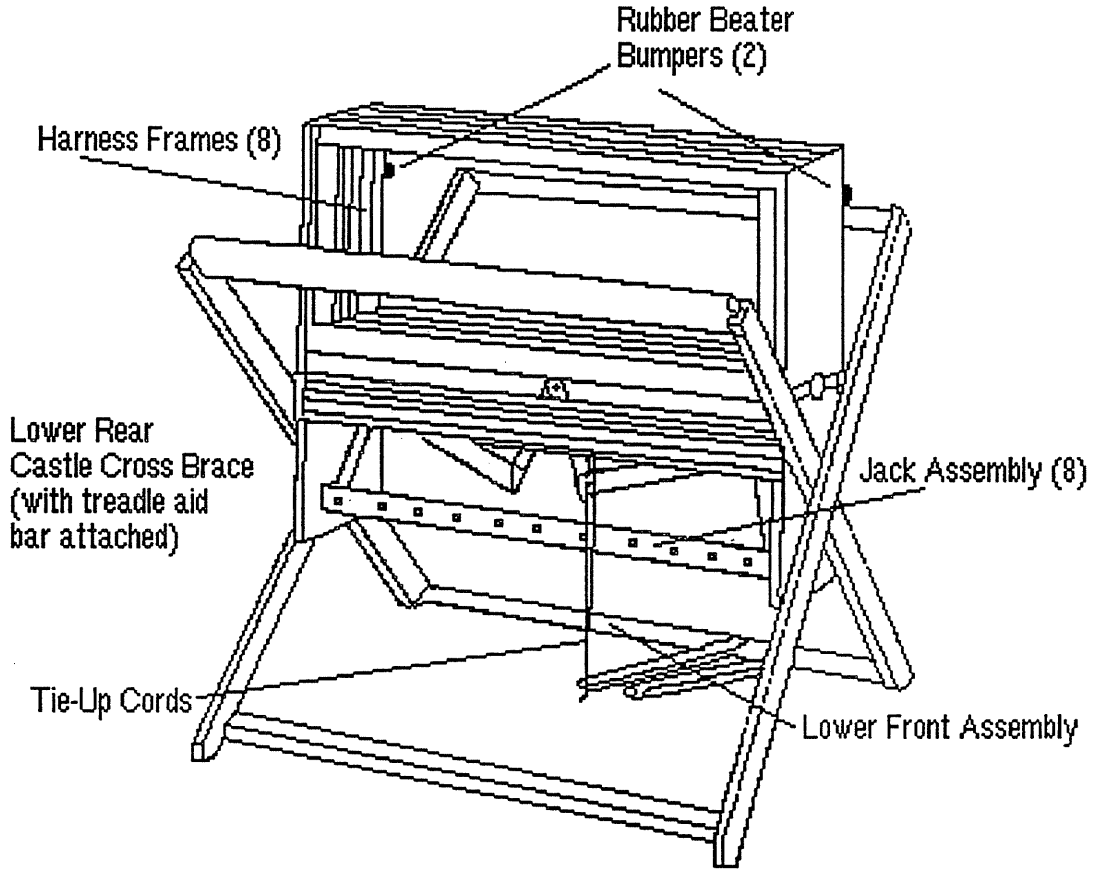
MARKING and DRILLING HOLES (shown from rear) FIGURE 2

Similarly, locate the **Left Front Castle Side Template** and use it to mark the front edge of the Castle where three more holes are to be drilled.

After checking these hole locations with the dimensions in Figure 1, you can drill these five 9/64" diameter holes one inch deep. These are the last holes to be drilled, so you can put your drill and bits away.

Using Figure 3 as a guide, remove the following items from the loom:

- the eight harness frames
- the tie-up cord beteen the Lamms and the Treadles
- Lower Rear Castle Cross Brace from lower rear of the loom
- the eight Jack Assemblies from above the Treadles
- Lower Front Assembly with the Treadles attached



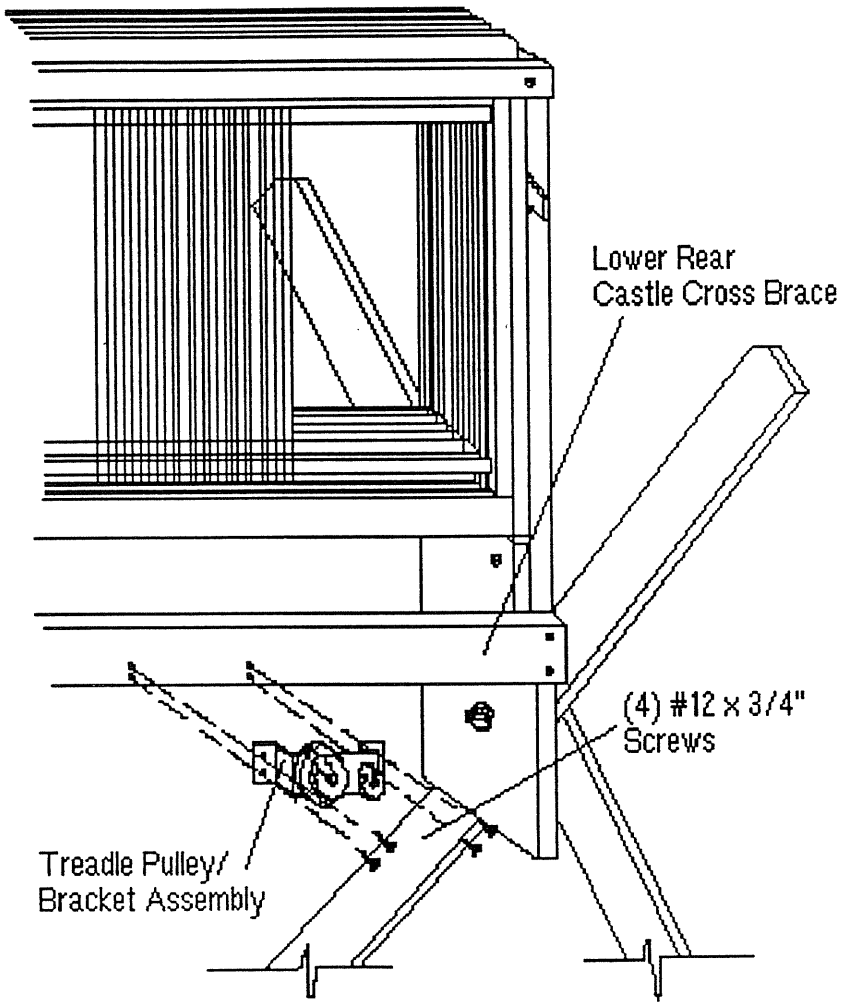
BABY DOBBY LOOM (shown from rear) **FIGURE 3**

Once you have removed these items, keep them close by, as many of them will be re-installed onto the loom.

With the previously mentioned parts removed and the holes properly drilled, the loom is now ready to be reassembled. Locate the hardware package and remove its contents. Reassemble the loom in the following order:

1. Locate the Lower Front Assembly (with treadles attached). Replace the four center treadles with the two AVL treadles placing the spacers to the outside of each AVL treadle. Make certain that the side of each treadle, with a black button taped to it, faces the floor. You can put the remaining treadles back in place, as they can be used in conjunction with the dobby system.

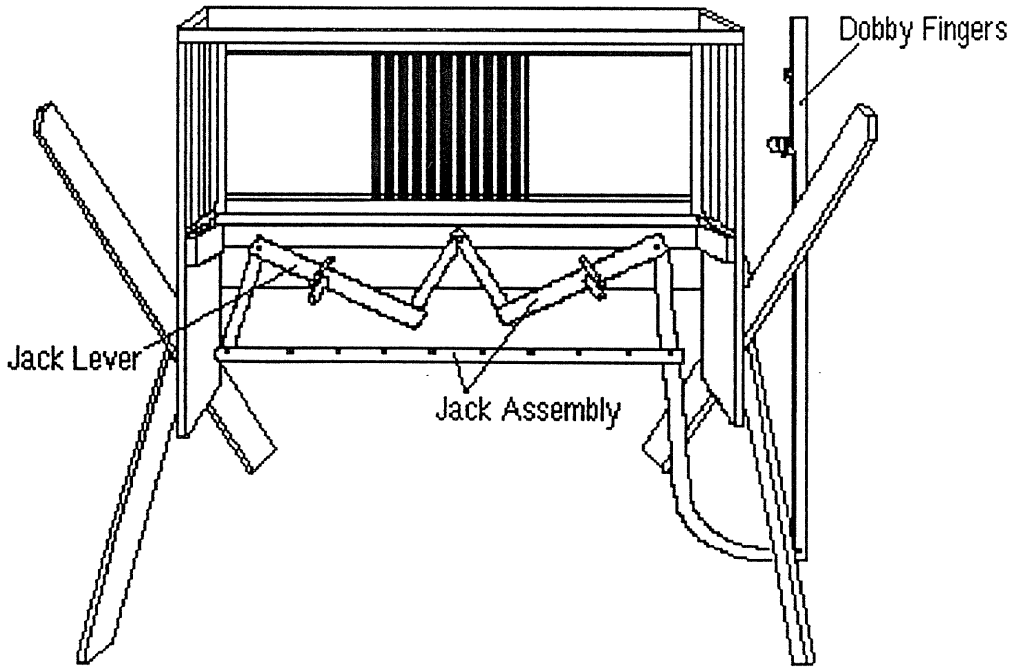
2. This Lower Front Assembly can now be reattached to the loom, making certain to align the steel locating pins at each end of the Lower Front with the holes in each front leg.



ATTACHING TREADLE PULLEYS FIGURE 4

3. Attach the Treadle Pulley Bracket (see Figure 4) to the Rear Castle Cross Brace. (This is the first piece that you drilled and has not yet been reattached to the loom.) Use the four larger, but short, screws from your hardware package (#12 x 3/4") to attach this bracket, making sure that it will be oriented, as shown in Figure 4, when attached to the loom. Set this assembly aside for now.

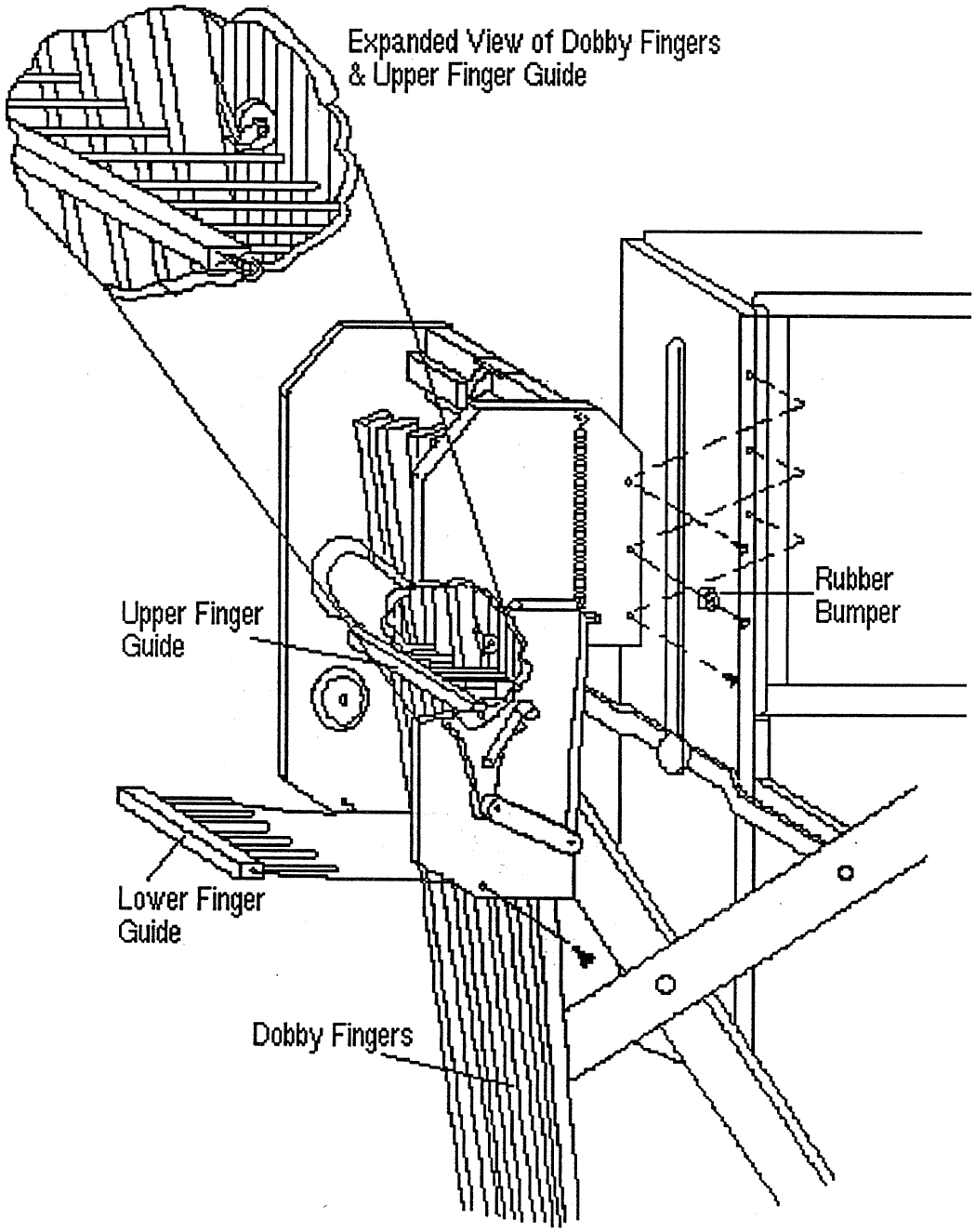
4. Now locate the new set of eight Jack Assemblies. They each have a long strip of wood attached to them. These Jack Assemblies have been modified by AVL to work with the Baby Dobby system. They have been packaged separately from the Baby Dobby. These Jack Assemblies can now be placed in the loom in the same place that the old Jack Assemblies were located, making sure that the assemblies with the longer outer jack levers (1's) are to the front of the loom, descending in size until the shortest ones (4's) are at the back, just like the original Jack Assemblies. Make sure that you include a washer between each of these Jack Assemblies, and two washers at the outside of the first and last Jack Assembly. Also, make sure that the extended aluminum Jack Lever and attached wooden Dobby Finger extend out the left side of the loom and are located between the lower portion of the "X" that makes up the frame of the loom, as shown in Figure 5. Let the long wooden levers (Dobby Fingers) lie on the ground for now. They will be held in the position shown when the dobby unit is installed.



INSTALLING JACKS ONTO LOOM (rear view) **FIGURE 5**

5. Using the original screws (#8 x 1 1/2"), replace the Rear Castle Cross Brace onto the loom, once again making sure that the pulleys are situated as shown in Figure 4. Also, make sure that the ends of the Jack Assembly Axles all end up in the holes on the inside face of the Rear Castle Cross Brace.

6. You can now place the eight harness frames back in the loom, fastening them to the Jack Pin in the usual manner.

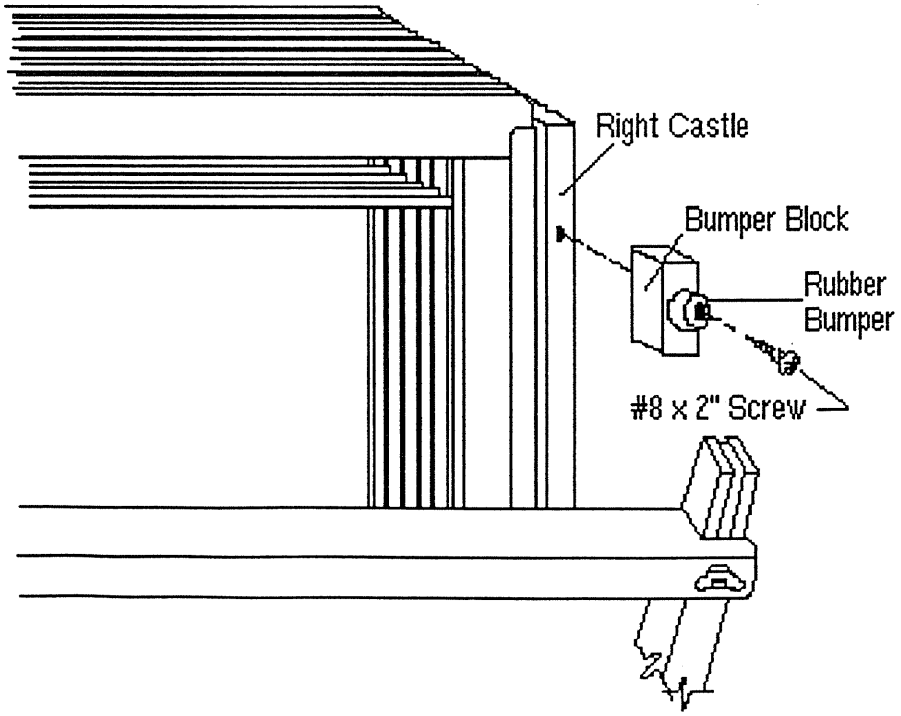


ATTACHING DOBBY TO LOOM FIGURE 6

7. It is now time to mount the dobby to the loom. Before doing this, one small item must be temporarily removed from the dobby unit. This part, the Lower Finger Guide (shown in Figure 6), should now be removed. The dobby can now be brought to the loom. Before attaching it to its final position, you will need to thread the eight wooden fingers that are attached to the Jack Assemblies through the Upper Finger Guides in the dobby. When doing this, be certain that the rollers on the back of the fingers are placed in the appropriate grooves on the inside face of the Dobby Back (see Figure 6).

While placing the Dobby Fingers into the dobby unit and locating the dobby on the loom, be very careful that these rollers don't catch on either the top or bottom edge of the grooved Dobby Back. If this happens and the fingers are forced into place, the roller assemblies can be damaged.

At this point, you can attach the dobby to the Left Castle Side by lining up the holes on the Dobby Sides with the holes that you drilled in the Castle Side. Use the six #8 x 1 1/2" screws from your hardware package to secure the dobby unit in place. Make certain that the center screw that goes into the Right Dobby Side (the one you see best from the front of the loom) is the screw that contains the rubber bumper (see Figures 6 and 10). The Lower Finger Guide Cover can now be put back onto the dobby with the two #8 x 1" screws (see Figure 6). While doing this, make certain that the ends of the steel rods go into the small holes near the bottom of the Dobby Back.

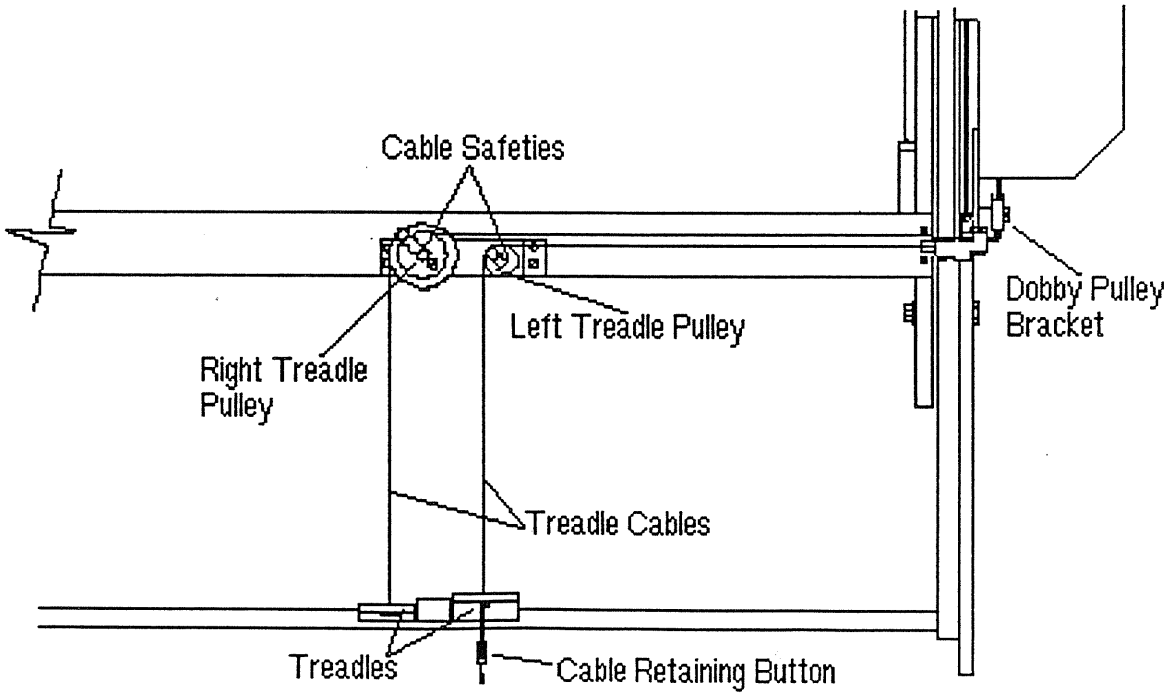


ATTACHING BEATER BUMPER FIGURE 7

1. The Right Beater Bumper can now be put on the loom, as shown in Figure 7. Locate the one remaining screw from the hardware package (#8 x 2") and also the Beater Bumper Block. When mounting the Right Bumper, use the original mounting hole and sandwich the block between the bumper and the Right Castle Side. This makes up for the added thickness of the dobby on the Left Side.

2. The next step is to hook up the cables to the treadles. Before routing the cables over the Treadle Pulleys, you need to loosen the bolts that hold the pulleys in place. This can be done with a 7/16" end wrench or an adjustable wrench. The reason you are loosening these bolts is to give room between the pulleys and the bent metal pieces we call Cable Safeties. Each Cable Safety partially covers each pulley. Their purpose is to keep the cables from coming off the pulleys. At this point, there should be two cables coming from the metal Pulley Bracket at the bottom rear portion of the dobby. The ends of these cables are labeled "To Left Treadle" and "To Multiplier Pulley".

3. As shown in Figure 8, route the Left Treadle Cable over the Left Treadle Pulley and down to the Left Treadle. Notice that there is a small Cable Button taped into the hole near the end



ROUTING TREADLE CABLES (rear view) FIGURE 8

of the Treadle. Remove this Button, run the cable through the hole, and place the Button over the crimped end of the cable. The cable can now be pulled up until the Cable Button is drawn into the hole in the Treadle. You can now re-tighten the bolt that the Cable Safety is situated as shown in Figure 8. It should cover the upper left portion of the outside edge of the pulley (when viewed from the rear of the loom), and be mounted at approximately a 45° angle.

Now look at the Right Treadle Pulley. It is a wooden pulley that looks like two different size pulleys that have been attached together. It's called a **Multiplier Pulley** and its purpose is to make the loom easier to treadle. Notice that there is a metal ring inside of the large hole on the face of the pulley. These rings are the **Cable Retaining Barrels**. Temporarily remove the barrel that is partially extending from the Multiplier Pulley. Now take the Treadle Cable marked **To Multiplier Pulley** and route it into the small hole in the groove on the edge of the small part of this pulley and on through to the hole that the barrel came out of. This barrel can now be re-inserted into the large hole, being careful to align the large slot with the cable and making certain that the crimped end of the cable is placed inside the barrel.

Now notice that there is a cable coming from the larger part of the Multiplier Pulley. This cable will soon be attached to the Right Treadle. To make sure that it is routed properly, rotate the Multiplier Pulley counter-clockwise (as viewed from the rear of the loom) until the slack is removed from the cable that you just attached to the Multiplier Pulley. As shown in Figure 8, route the remaining cable out of the larger part of the Multiplier Pulley and down to the Right Treadle. When viewed from the rear of the loom, this cable should come off of the left side of the Multiplier Pulley. At this point, you can attach the crimped end of this remaining cable to the Right Treadle the same way that the Left Treadle was attached. Once you are certain that the cables are all routed correctly, you can re-tighten the bolt that the Multiplier Pulley spins on, making sure that the Cable Safety is oriented correctly, as shown in Figure 8.

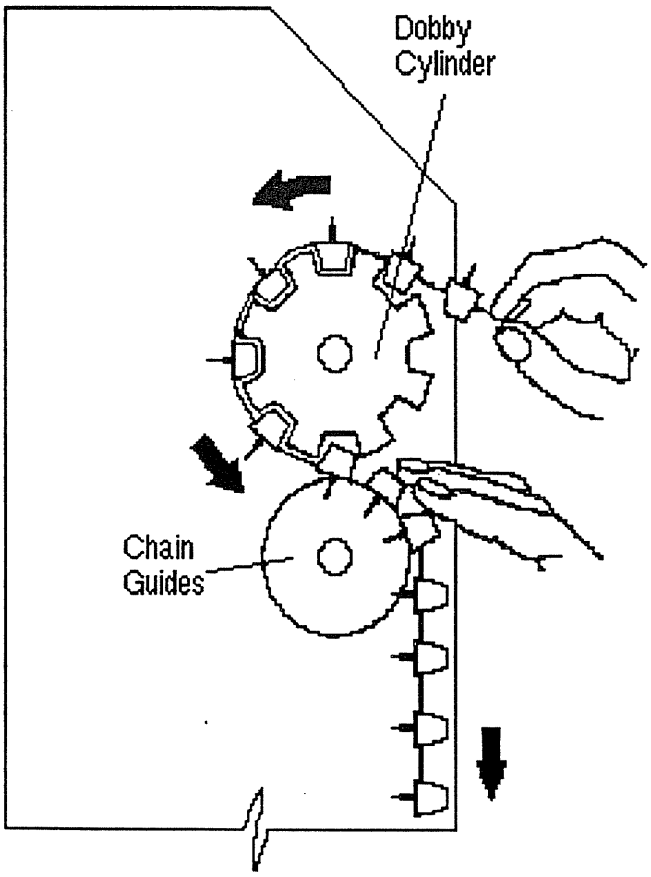
Finishing Up

At this point, your eight harness loom should now be a dobby loom. You should now be able to operate the treadles and see if the Selector Plate goes up and down inside the dobby (see Figures 6 and 13). No harnesses should raise, as a pegged dobby chain has not yet been installed. Please refer to the following section to learn the basics of dobby weaving.

PEGGING THE DOBBY UNIT

A dobby loom provides the means for quickly and easily raising any number of harnesses in any combination by the alternate use of only two treadles. This is accomplished by the use of a chain of wooden bars which are placed in the dobby mechanism, or "head", in which short metal pegs can be easily inserted. Each wooden bar has a row of eight holes in it. The first hole on the right corresponds to the first harness; the second hole to the second harness; and so on. The way the dobby works is that each wooden dobby bar controls one shed; when a peg is inserted into a hole in a bar, it causes the corresponding harness to raise when that bar comes around into position by pressing on the treadles.

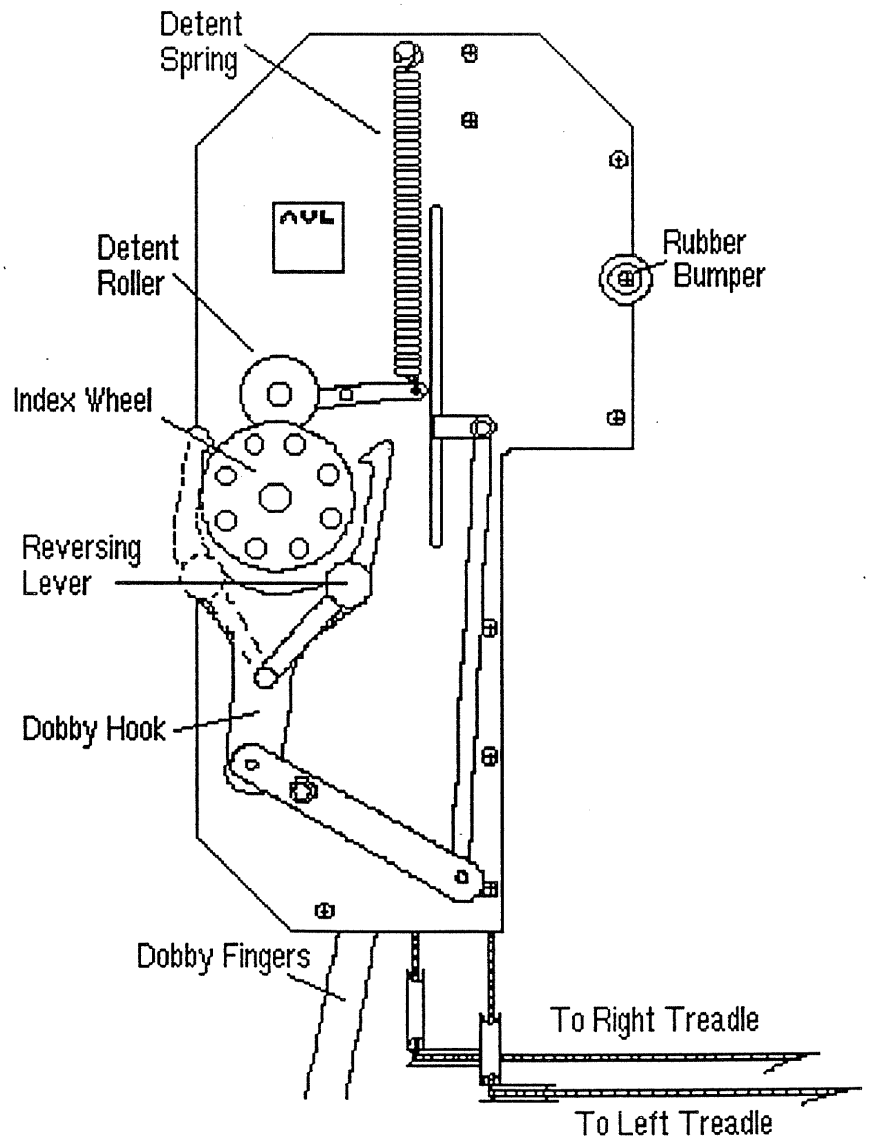
1. The first pattern you should "peg up" on the dobby bars is a plain weave. Tabby weave should usually be used for the first inch of each new warp as a heading. Take a chain of 16 dobby bars and lay it flat on a table with the holes facing up. In the first bar (start at the bottom of the chain and work upward) using the special wrench provided, place pegs in holes 1, 3, 5, and 7 (starting at the right). Place the smooth end of the peg in the wrench, then holding the wrench handle, screw the peg into its hole firmly, but not too tightly.



FEEDING THE DOBBY CHAIN INTO DOBBY HEAD FIGURE 9

In the second bar, place pegs in holes 2, 4, 6, and 8. Continue repeating these two sequences until all the bars are pegged.

2. Now place the pegged up chain in the dobby unit. Note that in the dobby unit is a large grooved upper roller (called the Dobby Cylinder) and just below it is a small set of rollers (called Chain Guides). Hold the chain so that the larger pegged surfaces are facing away from you and carefullly feed the chain over the top of the Dobby Cylinder and down behind it and over the top of the Chain Guides using your fingers to gently roll the Dobby Cylinder inward as you do so (see Figure 9). If the Dobby Cylinder will not rotate in this direction, flip the Dobby Reverse Lever so that the black knob is



DOBBY - SIDE VIEW **FIGURE 10**

facing away from the loom, so that the inner hook of the Dobby Hook is not in contact with the Index Wheel (see Figure 10). The small side of the chain will fit into the grooves in the Dobby Cylinder. When a few bars have come out over the top of the Chain Guides, give them a pull to make more chain available. Fasten the chain together to form a continuous circle using the plastic ties provided, jewelry hooks, twist-ties, or string (note that if you use the dobby chain ties or string, be sure to cut off the excess plastic or string at the tie so your dobby bars won't jam in the Dobby Box). Make two ties similar in size to the metal connecting loops between the bars. If using string, make sure it is strong and wind it around two times making a tight square knot after each turn.

3. After weaving at least one inch, you may want to peg up another chain with a more complex weave structure (an eight harness point twill is an easy one to try first). The first step is to draw up a "peg plan", which is a graph that shows the order in which the pegs are inserted into the dobby bars. The peg plan takes the place of the tie-up and treadling plans used with conventional treadle type looms. Use the following procedure for determining your peg plan:

   A. First determine the tie-up and treadling plan for the weave structure you will be using as you would for a conventional treadle loom. Figure 11 is an example showing a typical pattern tie-up, its treadling plan. In the tie-up, each vertical column represents one treadle (numbered 1 through 8, from left to right), and each horizontal row represents a harness (numbered 1 through 8, from bottom to top). Squares are filled in showing which harnesses are to be tied to each treadle. Please note that the filled-in squares represent **raised** harnesses.

   B. In the treadling plan, each horizontal row represents one shed and they are numbered from bottom to top in the order they will be used when weaving. At each shed, an "X" is placed in a vertical column representing the treadle which is to be used. Make sure your treadling plan represents one complete repeat

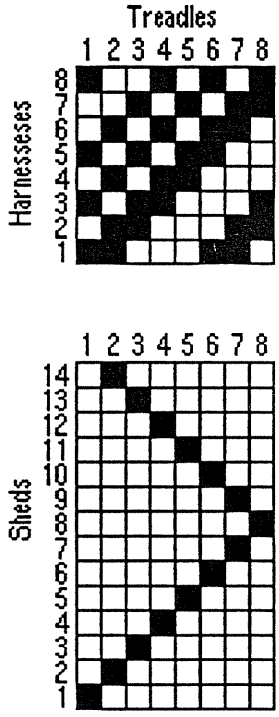


FIGURE 11

of all the sheds needed to weave your pattern.

C. Now, on graph paper, you will construct a peg plan. In your peg plan, each horizontal row will represent one dobby bar and they will be ordered from bottom to top to correspond to the way the dobby chain feeds into the dobby head; and each vertical column represents the holes in the dobby bars and their corresponding harnesses. If you are using all eight of the harnesses on the loom, there will be eight vertical columns numbered from left to right. The number of horizontal rows (or dobby bars) needed will be the same as the number of sheds in the treadling plan. Refer to the sample peg plan (Figure 12) and notice that there are fourteen sheds in the treadling plan (Figure 11).

D. Now look at the first shed (Figure 11) of your treadling plan and note which harnesses will be raised. That will be harnesses 1, 3, 5, and 8. Proceed to the first horizontal row of your peg plan and fill in the squares corresponding to these harnesses as we have done in Figure 14.

E. Look at the second shed (Figure 11) of your treadling plan and note which harnesses will be raised. That would be harnesses 1, 2, 4, and 6. Proceed to the second horizontal row of your peg plan and fill in the squares corresponding to these harnesses as we have done in Figure 14.

F. Continue in this same manner until all the sheds of your treadling plan have been recorded on the peg plan as we have done in Figure 15. Figure 16 shows the same tie-ups as in Figure 11 with a different treadling plan and its corresponding peg plan.

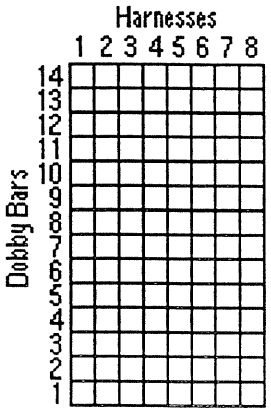


FIGURE 12

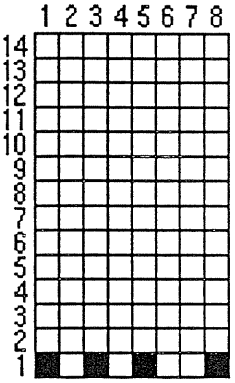


FIGURE 13

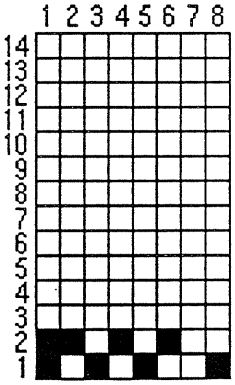


FIGURE 14

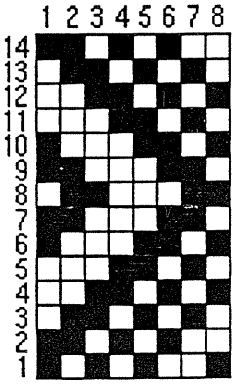


FIGURE 15

4. Here are some additional points to keep in mind when making up your peg plan:

   A. At least sixteen dobby bars should be used at once in order for the dobby chain to feed properly through the dobby. As an example for a tabby weave, which has only two sheds, repeat the pegging eight times so that you will using sixteen bars.

   B. When the dobby chain is placed in the dobby unit, it will form a continuous loop; visualize your peg plan as a circular loop. Check your peg plan to see that if the first shed follows the last shed, the weaving pattern will turn out correctly. If you make the mistake of making the first shed and the last shed the same, then when the chain is palced in the dobby unit, two sheds exactly the same will follow each other.

   C. There are times when you will find it helpful to use a blank or unpegged dobby bar to mark your place in your pattern. If none of the holes in a bar are "pegged" in, then at this shed no harnesses will rise. This bar will act as a "bookmark" to let you quickly do tabby weave whenever necessary without having to repeg it each time.

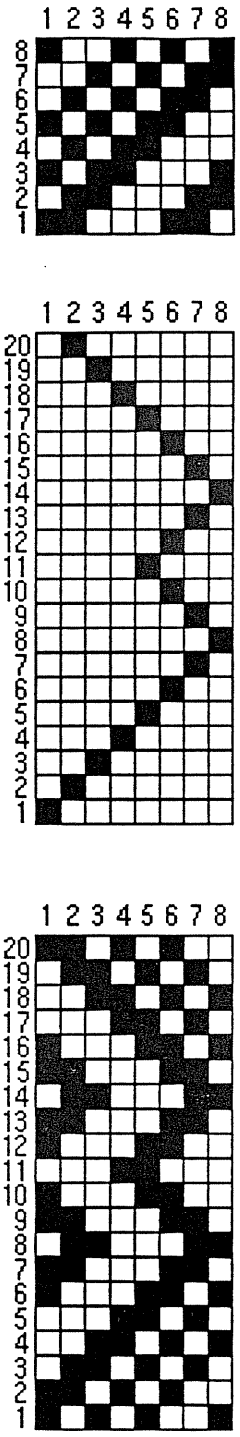


FIGURE 16

5. Peg your pattern up on the dobby bars. The number of bars needed is determined by the number of rows in your peg plan. If you need to take off bars from the chain, unfasten the metal Z-shaped wires with a long nosed plier. If you need to add bars to the chain, use a long nosed plier to reconnect the chain. It is easiest, however, to fasten them together with dobby chain ties, jewelry hooks, or string. Again, if using string, make sure it is strong and wrapped around twice with two knots.

6. Always start pegging the bottom bar first corresponding to the bottom row of your peg plan and work upwards. It is a good idea to mark the left end of the bottom bar with an "X" since it will be placed toward the front of the loom when placed in the dobby unit, otherwise it is easy to get the chain turned

around backwards, which would make your weaving pattern turn out all wrong. Keep this pegged-up chain aside until it is time to place it in the dobby unit.

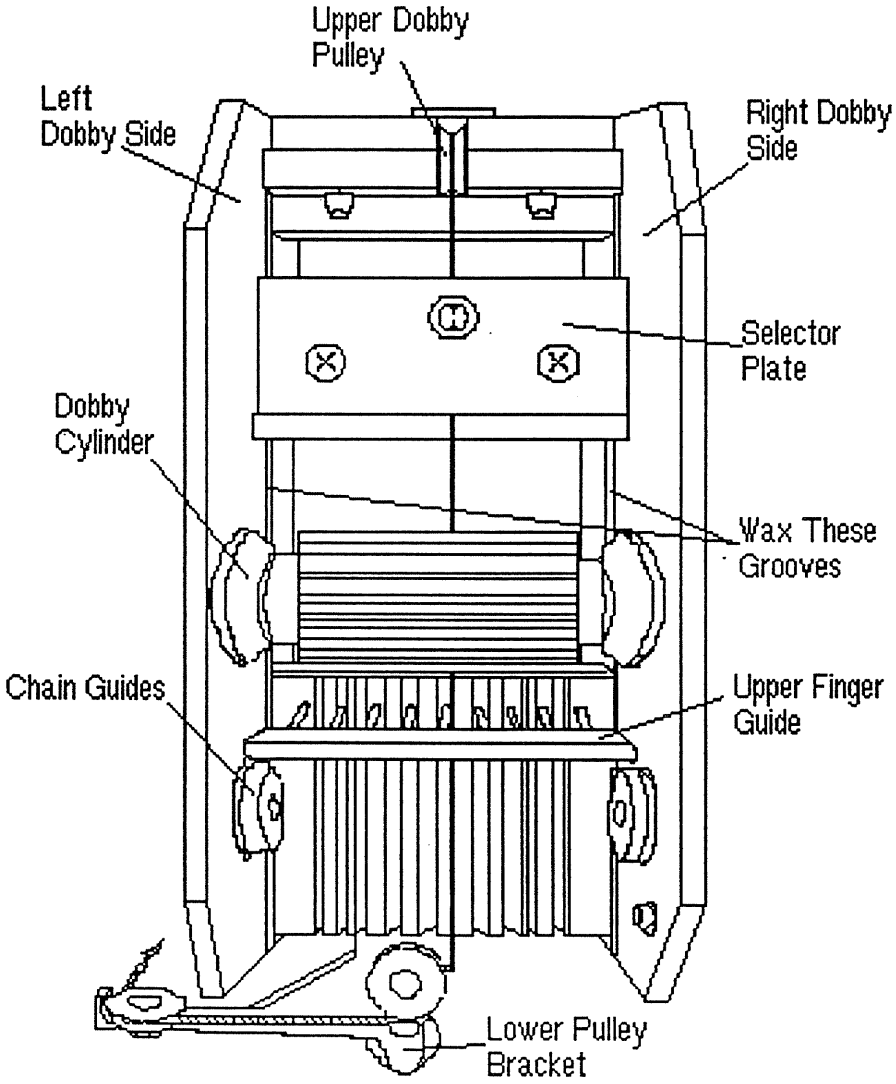
7. Here are some tips for handling your dobby chains. First of all, keep one length of chain pegged with tabby weave in a handy location. This way you can quickly do tabby weave whenever necessary without having to repeg it each time. As you develop a repertoire of weaving patterns, which you will be using over again, keep a notebook of their peg plans as well as other weaving information and give each weaving pattern a number. If you have lots of dobby chain, you can just leave the chain pegged-up ready to be used at any time. Each will be easy to identify if you write its number on a tag which is tied to the first dobby bar. Keep your pegged-up chain in a box, or hang them on the wall.

8. If you do not have a lot of extra chain, here is a little trick that saves time if you are going to be repegging a pattern over again. Cut cardboard strips about the same length and width of the dobby bars. Make a guide by punching eight holes in one strip, so that when that strip is held over a dobby bar, the holes in the strip are aligned with the holes in the dobby bar. Use the guide to punch holes in the other strips corresponding to the way the dobby bars are pegged. Use them to quickly and easily repeg the dobby bars.

LUBRICATION

The AVL Dobby System requires very little lubrication. The only place that it should require occasional attention is at the Selector Plate, which is the plywood plate that goes up and down inside the dobby when the treadles are activated (see Figure 13). We have found that the best lubricant here is common wax (such as candle wax), which can be applied to the grooves that this plate slides in.

The steel pulleys that the cables ride on are pre-lubricated and won't require any attention for quite some time. If you feel that they require some lubrication in the future, a drop or two of a light grade oil (such as sewing machine oil), will work just fine. This oil is also adequate for oiling the wooden Multiplier Pulley in the same system.



DOBBY - FRONT VIEW FIGURE 17

REPLACING A BROKEN CABLE

The cables used on this unit are of aircraft quality and should last a long time. However, replacement cables are available through your dealer. The three types of cable are:

- Selector Plate to Left Treadle
- Selector Plate to Multiplier Pulley
- Multiplier Pulley to Right Treadle

These cables come with instructions and require no special tools or skill for their replacement.

REPLACING WEAR STRIPS

Wear Strips are the steel strips that are screwed onto the outer edge near the top of the Dobby Fingers. Since the dobby pegs slide along these strips, it is conceivable that they could eventually wear and may need replacing. The replacement of these parts can be prolonged by simply reversing them, so as to place the worn surface against the finger, giving a new smooth surface for the dobby pegs to slide along.

PROBLEM	REASON	SOLUTION
No harnesses raise.	Dobby chain not in place.	Install dobby chain.
	Broken cable.	Replace cable.
	Cable improperly routed or off of pulley.	Re-route cable.
Too many harnesses raise.	Incorrect pegging of chain.	Check chain pegging.
	Left Treadle not completely depressed.	Check treadling.
Not enough harnesses raise.	Incorrect pegging of chain.	Check chain pegging.
	Left Treadle not completely depressed.	Check treadling.
Shed not large enough.	Incomplete treadling.	Depress right treadle fully.
Treadles difficult to operate.	Lifting large number of treadles.	Lubricate loom.
	Cables routed incorrectly.	Check and correct cable routing.
Dobby jams.	Incorrect feeding of dobby chain.	Straighten kinked chain and use longer chain or chain weight to prevent kinking.
Excessive wear of Dobby Finger Strips.	Rough end on one or more steel dobby pegs.	Wear Strips are reversible and replaceable. File ends of rough pegs to reduce wear.