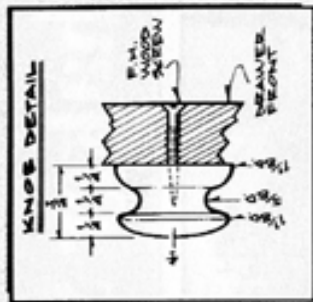
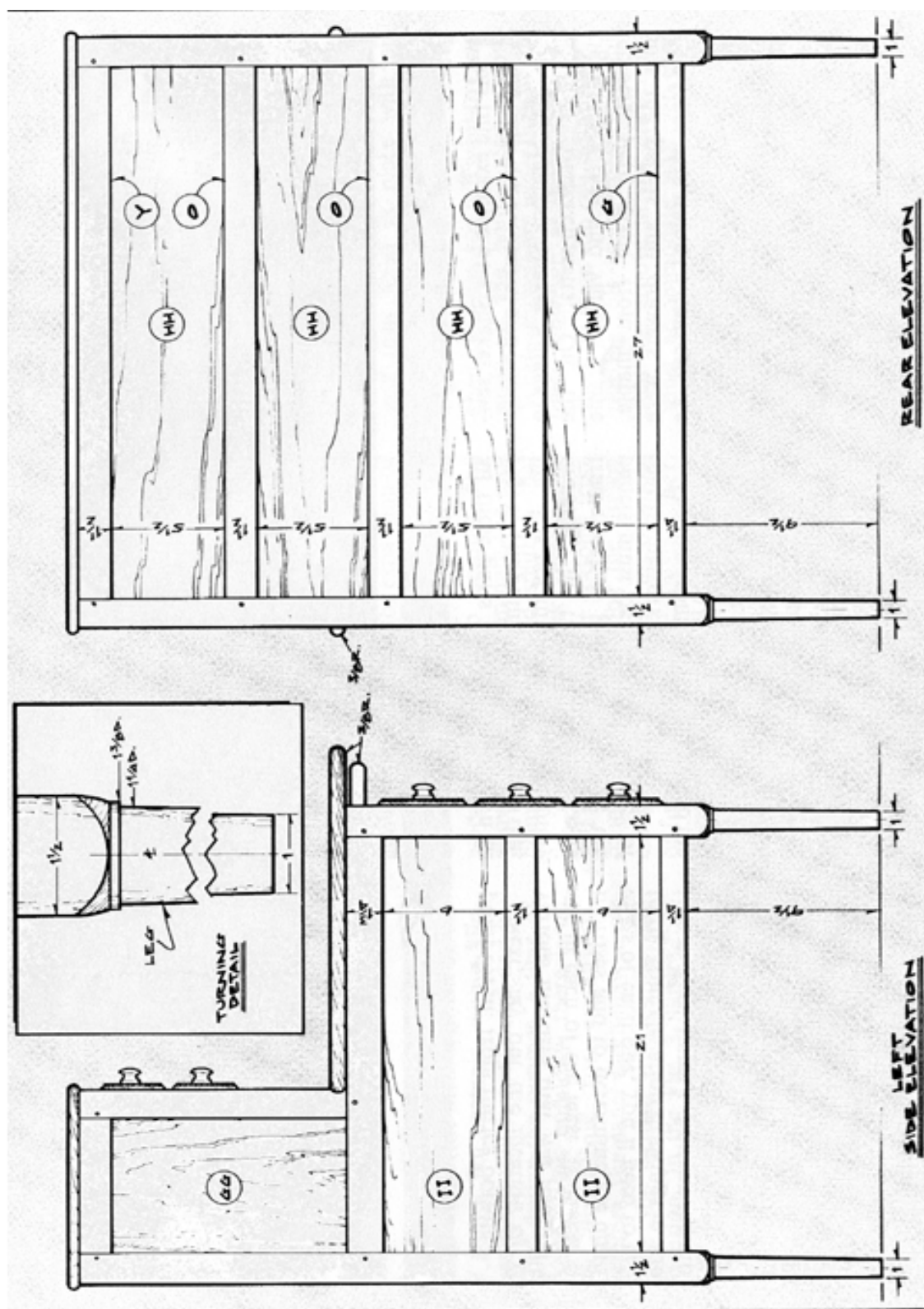


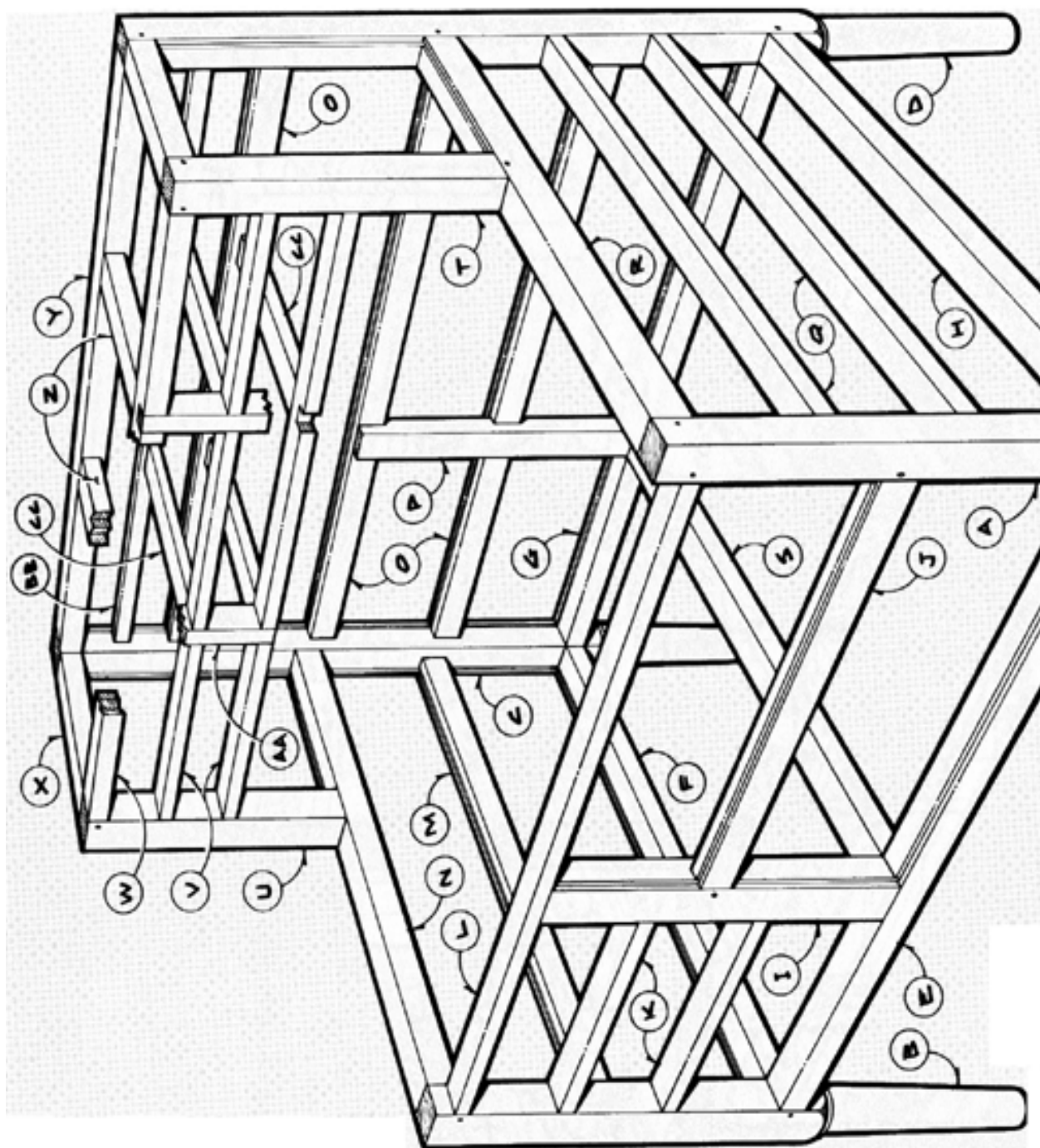


## Project 13519EZ: Shaker Sewing Desk

*This fine example of a Shaker sewing desk was measured and photographed at Hancock Shaker Village in Hancock, Massachusetts. On the original, the legs and various frame members were made from maple, while the panels and drawers were made from pine stained a deep red. As a final finish, the Shakers used a clear varnish on the entire piece. We included Figure 1 in the artwork to show the basic framework of the piece. In order to show it with a minimum of confusion, we did not include the various panels, drawers, runners, guides, etc. The basic framework with all these parts added on is shown in Figure 8. The point to keep in mind is that Figure 1 is not intended as an assembly drawing; in fact, when the basic framework is glued-up later on, the panels must be assembled as part of that framework.*

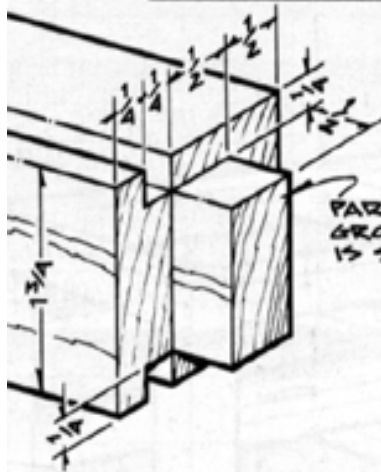
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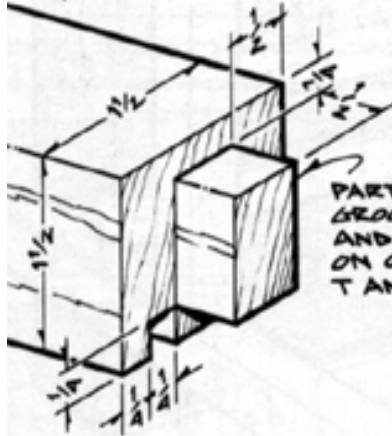




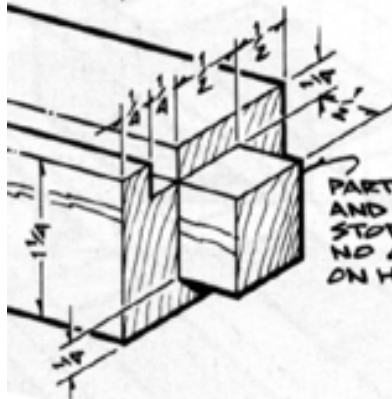
# TENON DETAILS



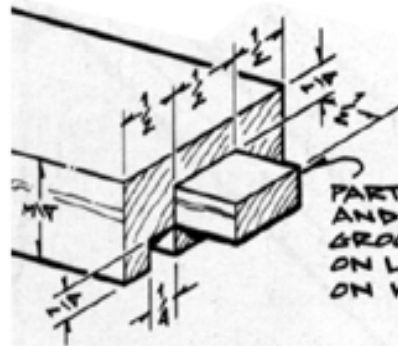
PARTS N AND R.  
GROOVE ON TOP  
IS STOPPED.



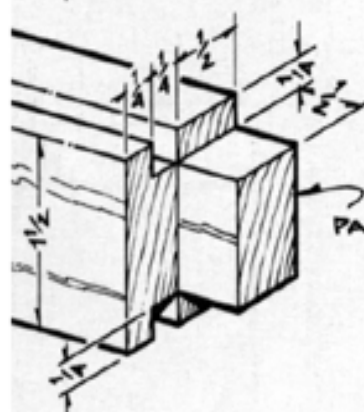
PARTS I, T, U, X AND Y.  
GROOVE STOPPED  
AND NO TENON  
ON ONE END OF  
T AND U.



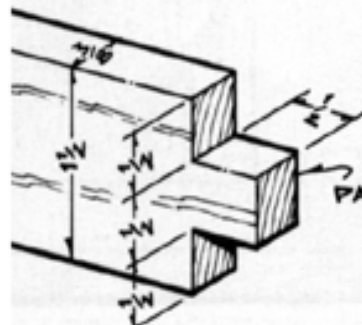
PARTS E, F, G, H, S, W  
AND Z. GROOVE  
STOPPED ON E.  
NO GROOVE  
ON H, S, W AND Z.



PARTS K, L, Q,  
AND V.  
GROOVE STOPPED  
ON L. NO GROOVE  
ON K, Q OR V.

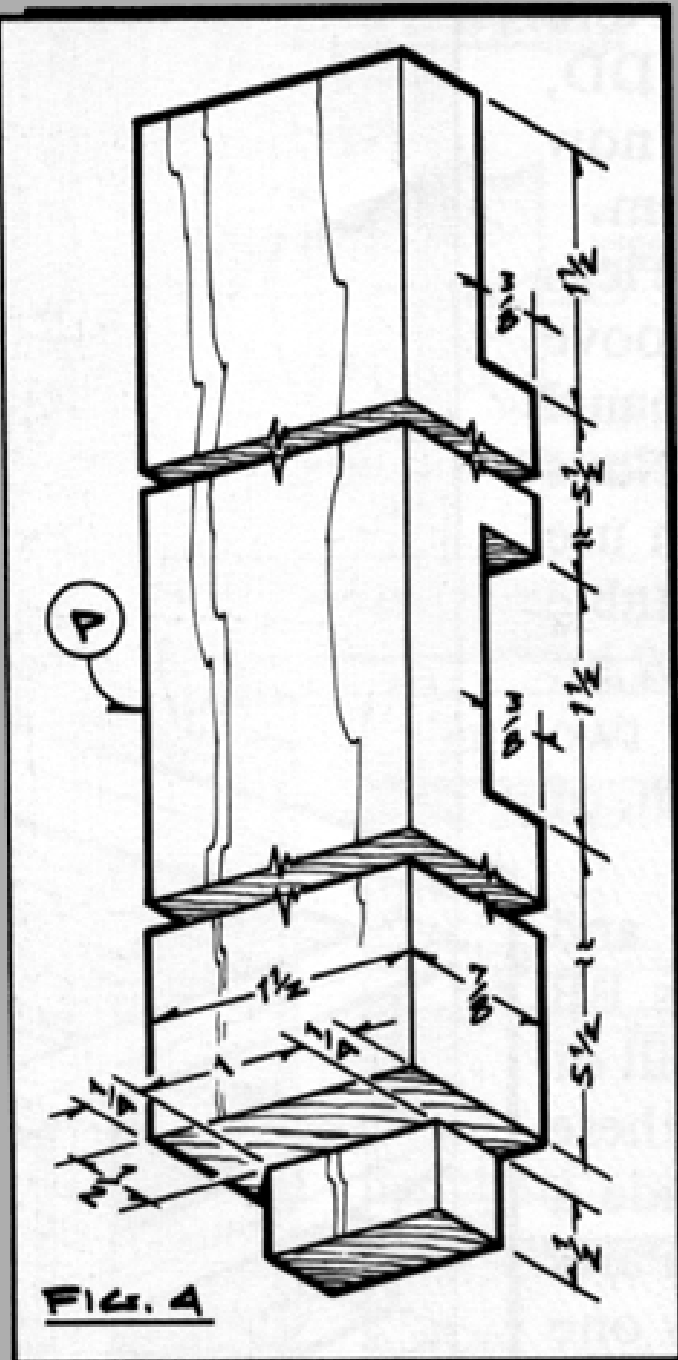
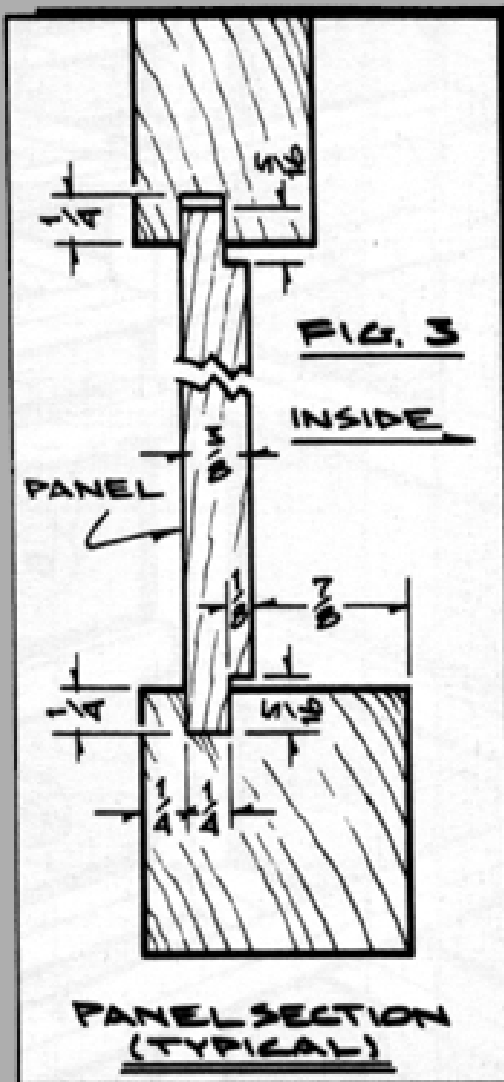


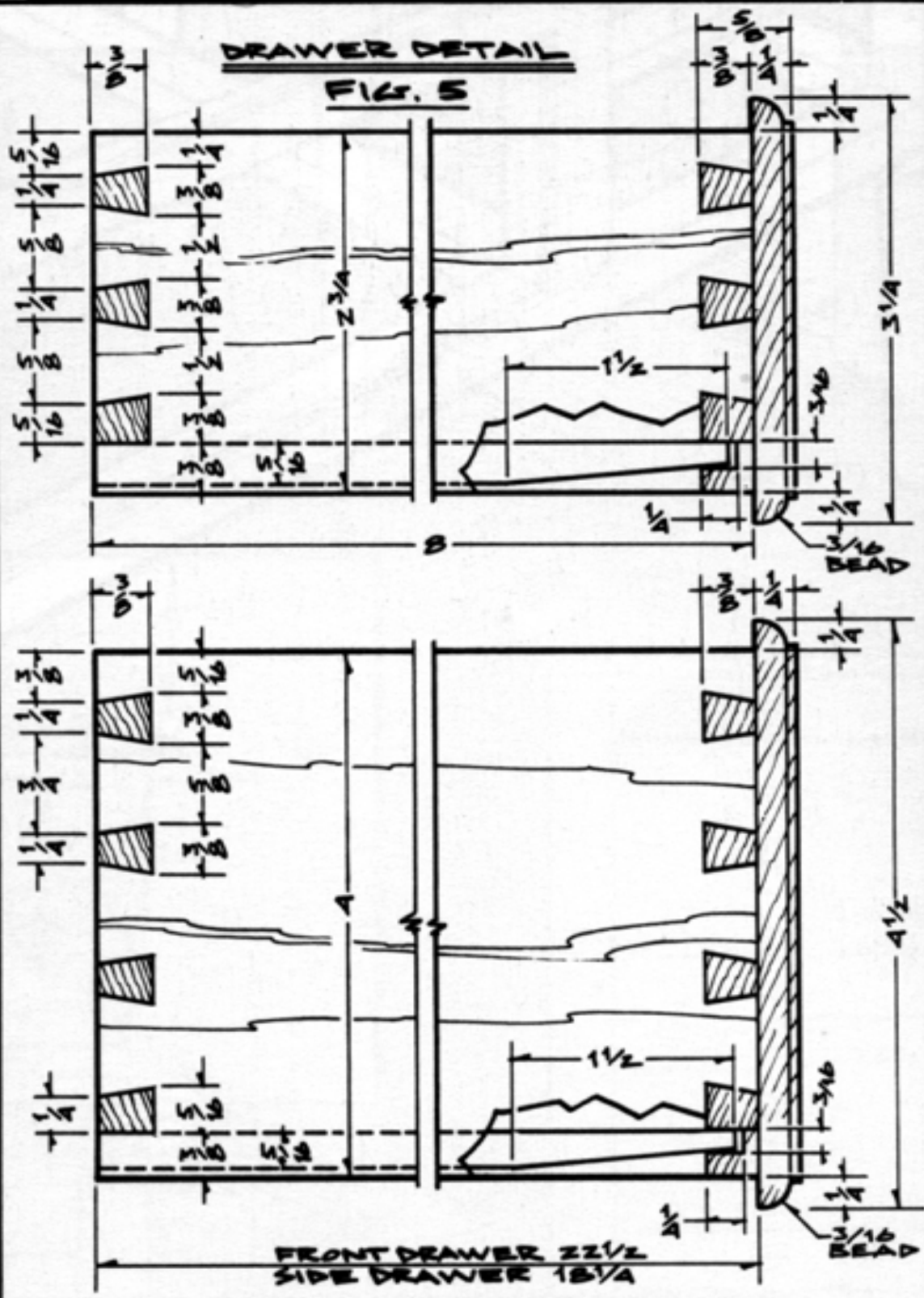
PARTS J, M AND O



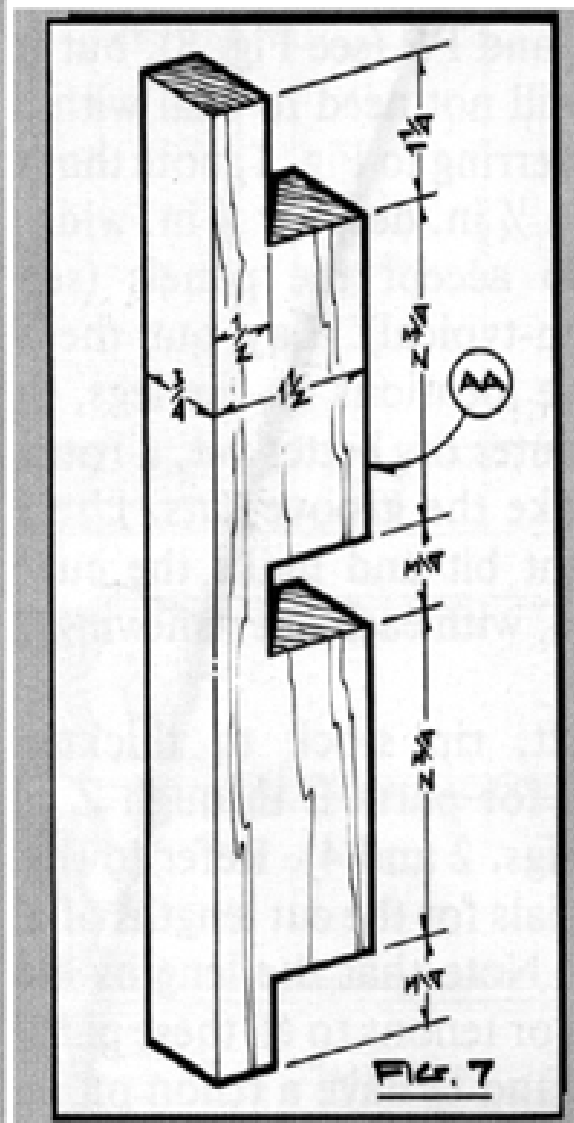
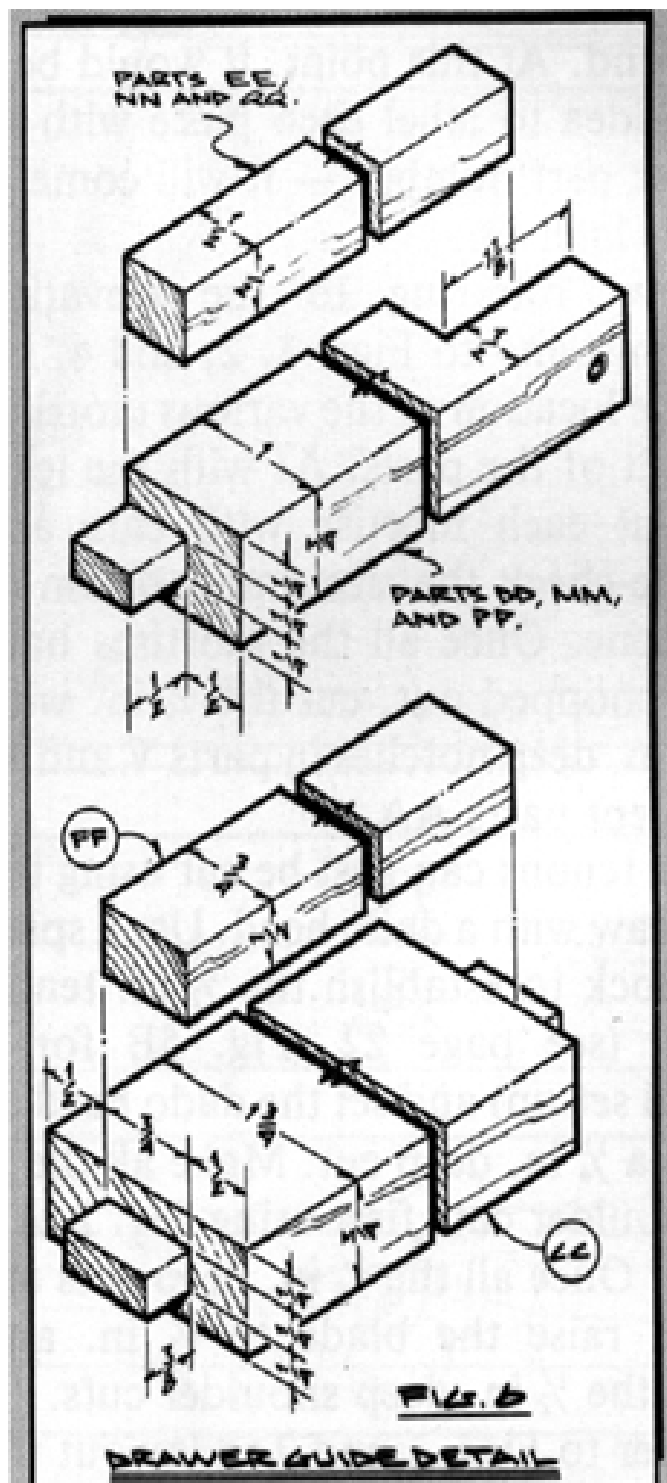
PART B

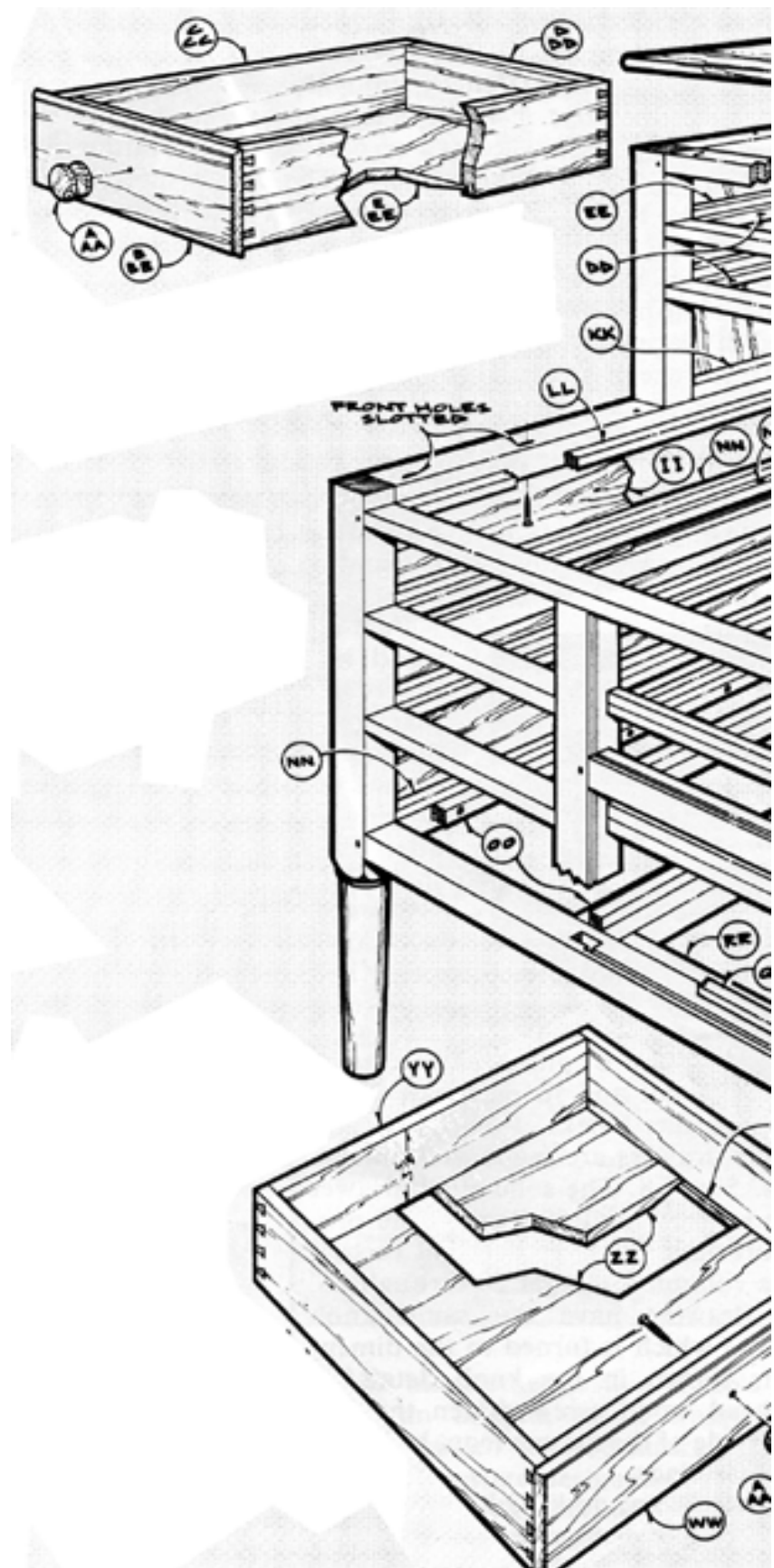


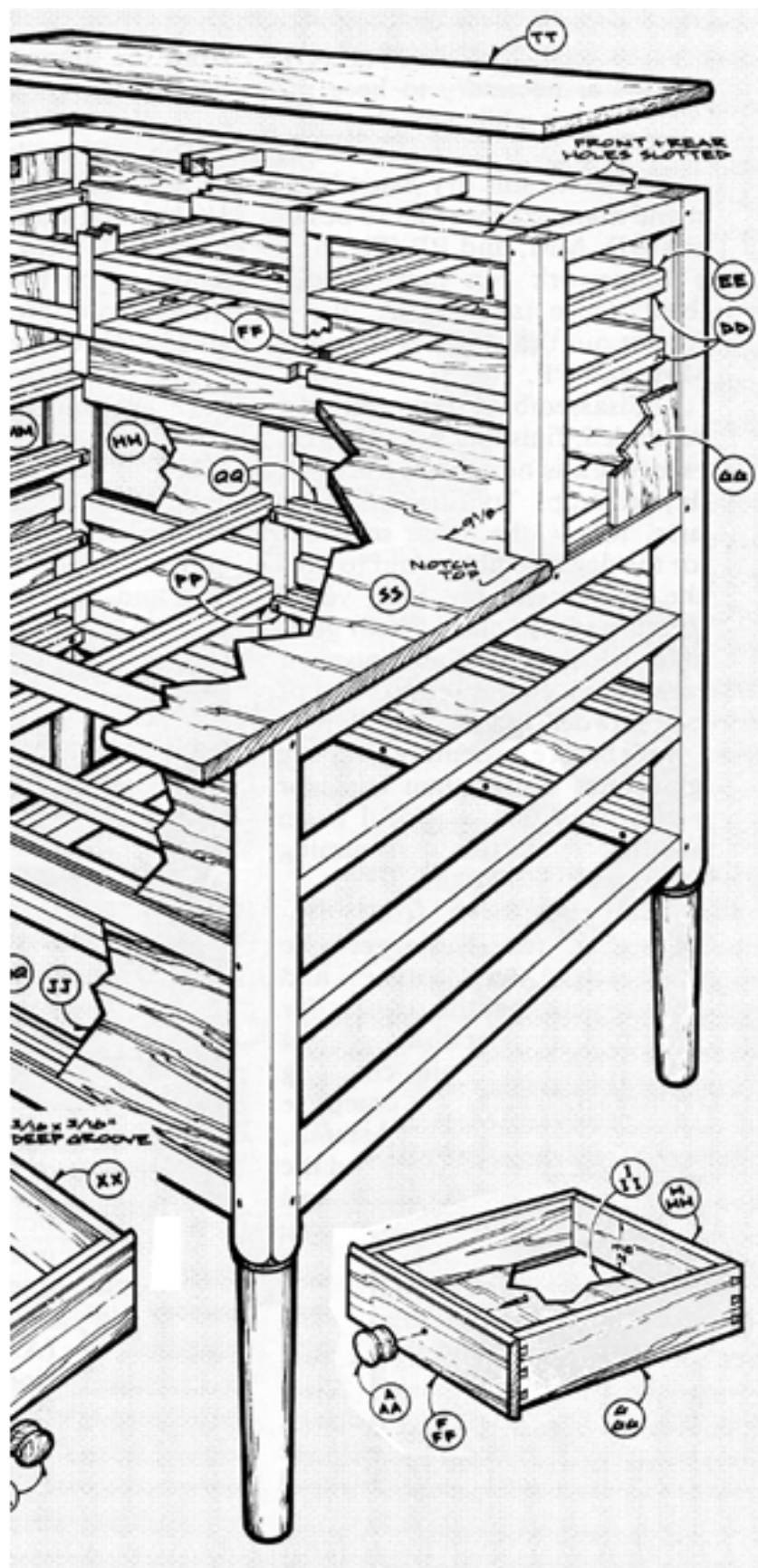


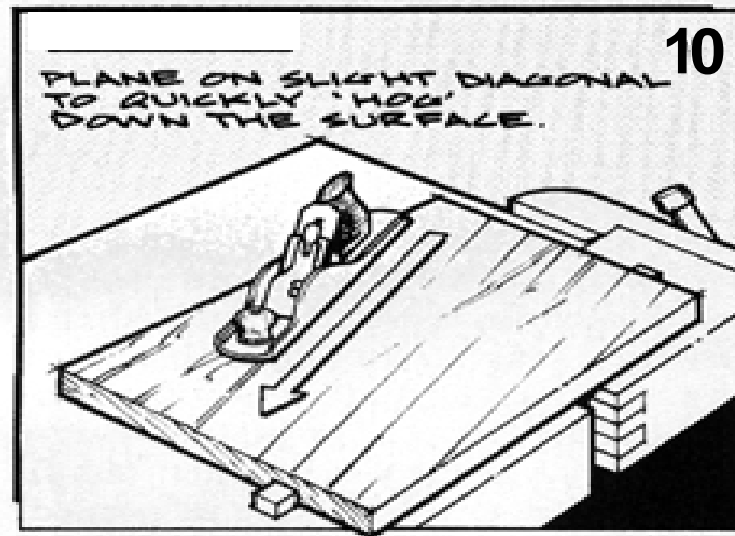
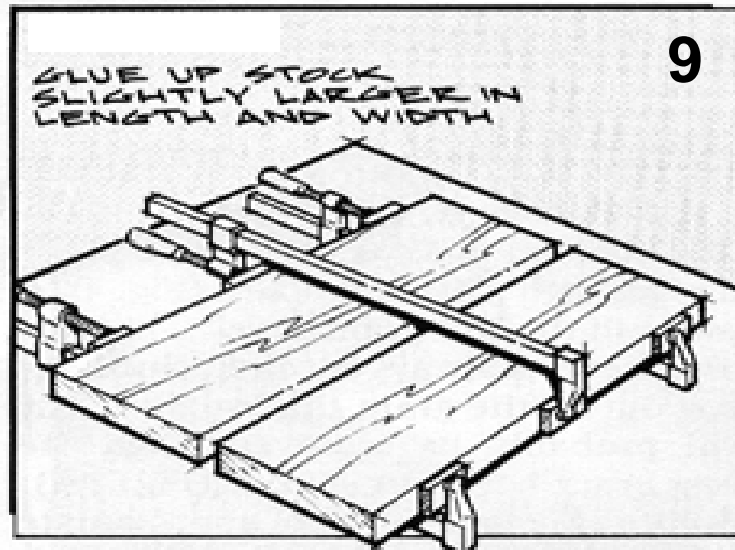








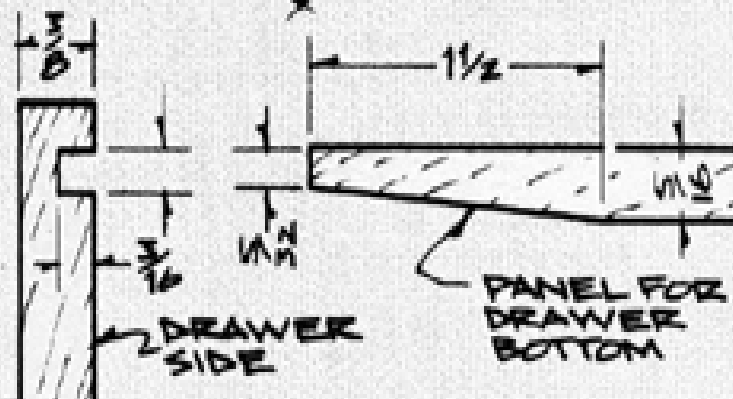
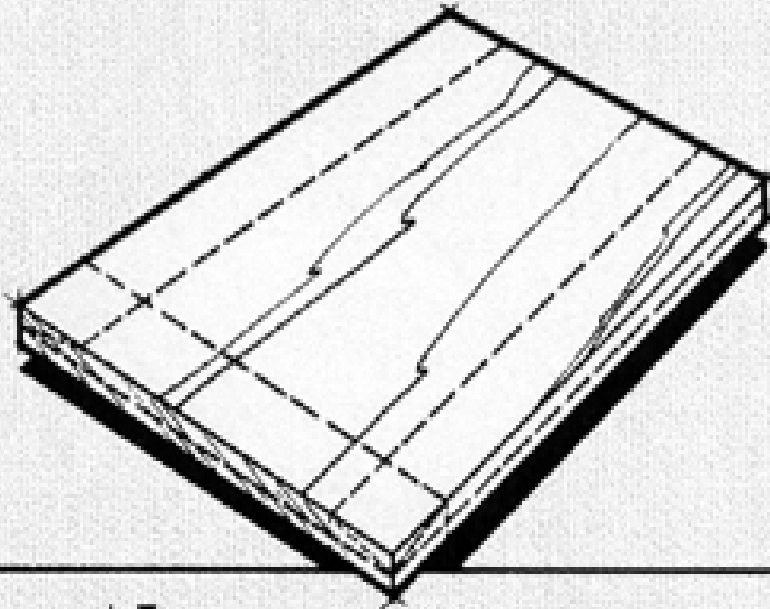




# Shaker Sewing Desk Materials List

A	1-1/2" x 1-1/2" x 26"	1	FF	1/2" x 3/4" x 7-1/4"	4
B	1-1/2" x 1-1/2" x 26"	1	GG	3/8" x 7-1/4" x 11-3/4"	2
C	1-1/2" x 1-1/2" x 39"	1	HH	3/8" x 6" x 27-1/2"	4
D	1-1/2" x 1-1/2" x 39"	1	II	3/8" x 6-1/2" x 21-1/2"	2
E	1-1/4" x 1-1/2" x 28"*	1	JJ	3/8" x 6-1/2" x 17"	2
F	1-1/4" x 1-1/2" x 22"*	1	KK	3/4" x 7/8" x 6-3/4"	2
G	1-1/4" x 1-1/2" x 28"*	1	LL	3/4" x 1/2" x 21"	2
H	1-1/4" x 1-1/2" x 22"*	1	MM	3/4" x 1" x 22"	4
I	1-1/2" x 1-1/2" x 14-1/2"*	1	NN	1/2" x 1/2" x 21"	6
J	1" x 1-1/2" x 17-1/2"	1	OO	3/4" x 1/2" x 21"	2
K	3/4" x 1-1/2" x 10"*	2	PP	3/4" x 1" x 17-1/2"	4
L	3/4" x 1-1/2" x 28"*	1	QQ	1/2" x 1/2" x 16-1/2"	6
M	1" x 1-1/2" x 22"*	1	RR	3/4" x 1/2" x 16-1/2"	2
N	1-1/2" x 1-3/4" x 22"*	1	SS	3/4" x 26-3/8" x 31"	1
O	1" x 1-1/2" x 28"*	3	TT	1/2" x 10-1/4" x 30-1/2"	1
P	7/8" x 1-1/2" x 14-1/2"*	1	UU	3/4" x 26-3/8" x 31"	1
Q	3/4" x 1-1/2" x 22"*	2	VV	3/4" x 1" x 24-5/8"	2
R	1-1/2" x 1-3/4" x 22"*	1	WW	5/8" x 4-1/2" x 21-1/2"	3
S	1-1/4" x 1-1/2" x 22"*	1	XX	3/8" x 4" x 18-1/4"	6
T	1-1/2" x 1-1/2" x 13-1/4"*	1	YY	3/8" x 3-5/8" x 21"	3
U	1-1/2" x 1-1/2" x 13-1/4"*	1	ZZ	5/16" x 18-1/8" x 20-5/8"	3
V	3/4" x 1-1/2" x 28"*	2	AAA	See detail.	12
W	1-1/4" x 1-1/2" x 28"*	1	BBB	5/8" x 4-1/2" x 9-1/2"	3
X	1-1/2" x 1-1/2" x 7-3/4"*	2	CCC	3/8" x 4" x 22-1/2"	6
Y	1-1/2" x 1-1/2" x 28"*	1	DDD	3/8" x 3-5/8" x 9"	3
Z	1-1/4" x 1-1/2" x 7-3/4"*	2	EEE	5/16" x 8-5/8" x 22-3/8"	3
AA	3/4" x 1-1/2" x 8-1/4"	2	FFF	5/8" x 3-1/4" x 9"	6
BB	3/8" x 1-1/2" x 28"*	1	GGG	3/8" x 2-3/4" x 8"	12
CC	3/4" x 1-3/4" x 8"*	4	HHH	3/8" x 2-3/8" x 8-1/2"	6
DD	3/4" x 1" x 7-3/4"	4	III	5/16" x 7-7/8" x 8-1/8"	6
EE	1/2" x 1/2" x 6-3/4"	4	* Includes Tenons		

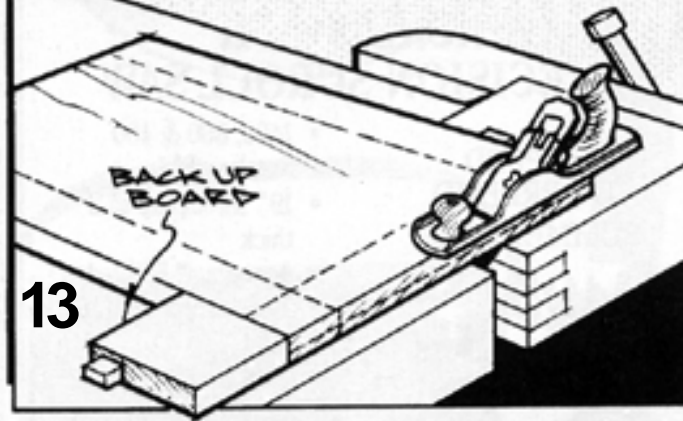
CUT PANEL TO WIDTH + LENGTH,  
AND LAYOUT BEVEL LINES.





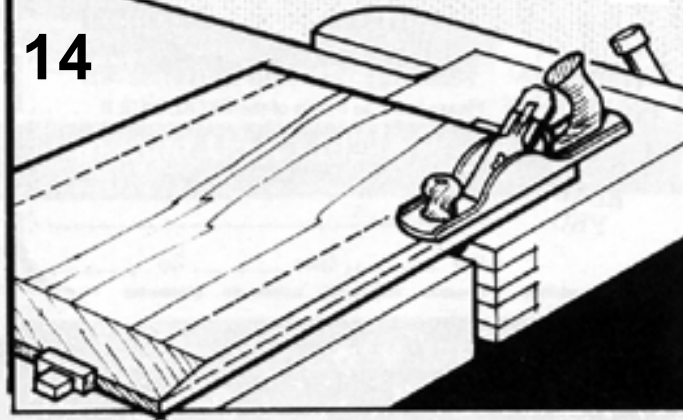
PLANE END GRAIN OF PANEL.  
HOLD PLANE AT AN ANGLE TO  
CREATE BEVEL, USE BACK UP  
BOARD TO PREVENT BREAKOUT  
OF THE GRAIN.

13



PLANE LONG GRAIN SIDES AGAIN  
HOLDING PLANE AT AN ANGLE.

14



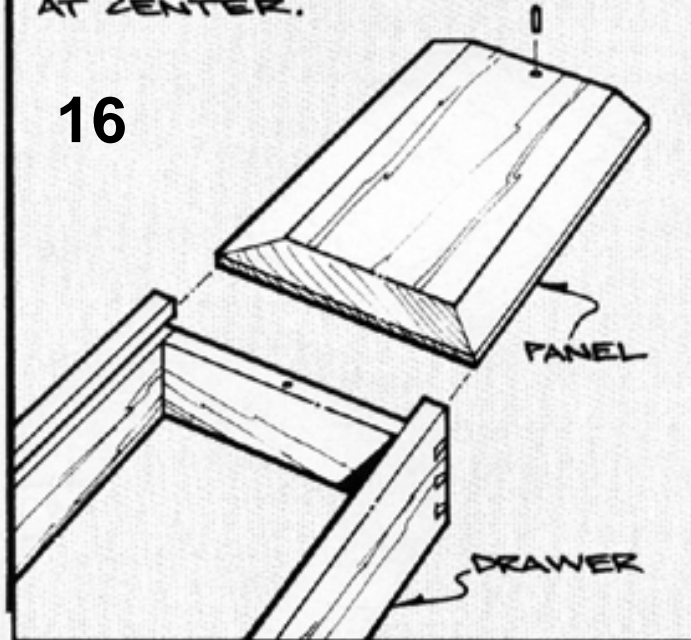
A GUIDE BOARD CAN BE CLAMPED  
TO STOCK TO HELP ESTABLISH  
EDGE OF BEVEL.

15



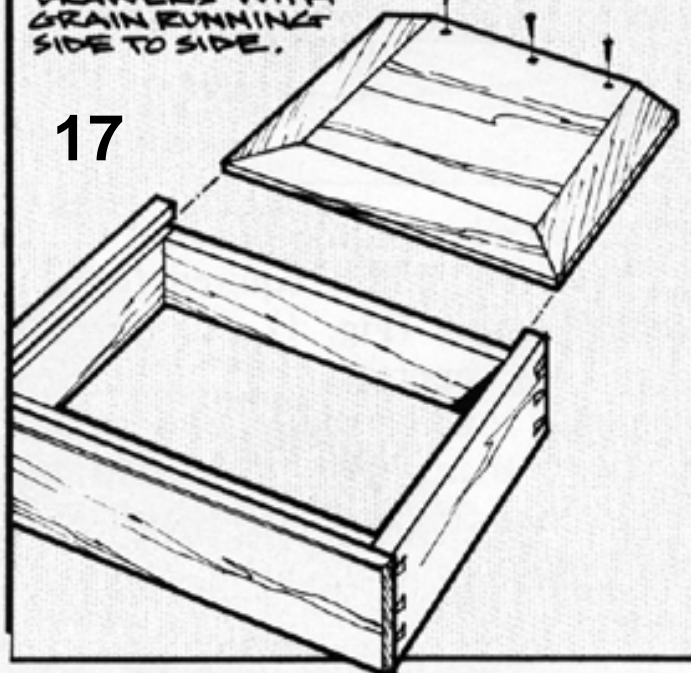
DRAWER BOTTOM SLIDES INTO  
GROOVES CUT INTO DRAWER SIDES  
AND FRONT. BOTTOM IS  
SECURED WITH A DOWEL PIN,  
FINISHING NAIL OR SCREW  
AT CENTER.

16



SECURE DRAWER BOTTOM WITH  
SCREWS UP INTO BACK IN WIDE  
DRAWERS WITH  
GRAIN RUNNING  
SIDE TO SIDE.

17



# Shaker Sewing Desk Step-by-Step Instructions

1. Rip stock to 1-1/2" square before to begin making the two front legs (A and B) and the two back legs (C and D).
2. Cut each leg to the length shown in the materials list.
3. Use the lathe to turn the bottom end of each leg to the dimensions specified in the turning detail. **NOTE: As indicated in the front elevation, the turning starts at a point 8-1/4" from the leg bottom.**
4. Refer to the four elevation drawings as well as Figures 1 and 2 to carefully lay out the location of the various mortises that will need to be cut in each of the legs.
5. Check the size and location of each mortise again as one miscalculation can ruin all the previous work that went into the leg.
6. Use a sharp chisel to chop out each mortise.
7. Refer to Figure 1 and note that the legs have a 1/4" deep by 1/4" wide groove cut to accept the panels (see panel section-typical).
8. Lay out the various groove locations on the legs.
9. Use a router table equipped with a 1/4" straight bit to make the groove cuts in two passes, with each cut removing 1/8" of stock.
10. Rip stock to thickness and width for parts E through Z plus BB (see Figures 2 and 4).
11. Cut all these parts to the lengths provided in the materials list. **NOTE: The lengths include a tenon or tenons to all these parts. Parts P, T, and U have a tenon on only one end, while all others have a tenon on each end.**
12. Label each piece with its proper part number.
13. Refer to the elevation drawings and to Figures 1, 2, and 4 to carefully lay out the location of the various mortises in each of the parts.
14. Recheck the size and location of each mortise.
15. Chop out all the mortises.
16. Cut the 3/4" wide x 1/2" deep notches in parts V and W to accept parts AA.
17. Equip the table saw with a dado head to begin cutting the tenons.
18. Establish the 1/2" tenon length with a spacing block (See Figure 5B for a typical set-up).
19. Set the dado head to make a 1/4" deep cut.
20. Make all the 1/4" shoulder cuts first using Figure 2 as a guide.
21. Raise the blade to 1/2" and make the 1/2" deep shoulder cuts.
22. Refer to Figures 1 and 2 to lay out the location of the various 1/4" deep by 1/4" wide grooves.

23. Cut these grooves in the same manner used to cut the grooves on the legs.
24. Make parts AA (Figure 7) and the four parts CC (Figure 6).
25. Use the dado head to cut the notches in parts AA and the tenons on each end of parts CC.
26. Reduce thicker stock to 3/8" to make the panels (parts GG, HH, II, and JJ).
27. Cut the panels to the overall length and width shown materials list.
28. Use the table saw and dado head to cut the 1/8" deep x 5/16" wide rabbet (see Figure 3) all around. **NOTE: The panel length and width dimensions given in the materials list do not allow any clearance inside the grooves. When the framework is dry assembled, you may find it necessary to lightly hand plane the panel edges to provide room for them to expand and contract with seasonal changes in humidity.**
29. Begin the dry assembly by putting together the front sub-assembly (parts A, B, E, K, L, I, J, and JJ).
30. Place clamps between the legs to hold everything together.
31. Join the back as a separate sub-assembly (parts C, D, G, O, P, BB, Y, and HH), again using clamps between the legs.
32. Join the upper drawer front face (part N, R, T, U, V, W, and AA) as a third separate subassembly.
33. Join the front to the back by adding the upper drawer front face plus all the remaining front to back stretchers (parts F, H, M, Q, S, X, Z, CC, GG, and II).
34. Add clamps as necessary to keep the assembly together.
35. Check for general fit-up and squareness.
36. Lay out and mark the mortises to be cut for parts DD, MM, and PP (see Figure 6).
37. Disassemble the framework.
38. Use a chisel to cut out the mortises for parts DD, MM, and PP (see Figure 8).
39. Final sand all parts, finishing with 220-grit sandpaper.
40. Obtain plastic resin glue, which dries slower than regular glue.
41. Glue and clamp the front sub-assembly with side panels to begin final assembly.
42. Check for squareness and set aside to dry.
43. Repeat this process for the back and the upper drawer front face sub-assemblies, again checking for squareness and setting aside to dry.
44. Complete the assembly by joining the front, back, upper drawer front face, and the remaining front to back stretchers and panels.
45. Square everything up and allow to dry thoroughly.

46. Lay out and bore holes for the 3/16" diameter x 1-1/4" long tenon dowel pins (See Figure 1 and elevation views).
47. Cut the pins slightly long.
48. Glue them in place and sand flush.
49. Refer to Figure 8 to lay out and bore the various holes in parts N, R, W, X and Y that will be used later on to attach parts SS and TT. **NOTE: Some of these holes are slotted to allow parts SS and TT to expand and contract with changes in humidity.**
50. Make slotted holes by boring a 1/4" diameter hole and elongating it with a rattail file.
51. Take actual measurements for parts DD, EE, FF, MM, NN, PP, and QQ from the assembled framework, as minor construction variances may change the actual dimensions slightly.
52. Refer to Figure 6 and the bill of materials to cut the drawer guides DD, EE, FF, MM, NN, PP, and QQ to thickness, width, and length.
53. NOTE that on parts DD, MM, and PP there is a tenon cut on one end while a notch is cut on the other.
54. Use the materials list as a guide to cut parts KK, LL, OO, and RR to size.
55. Study the assembly for the various drawer guides in Figure 8.
56. **NOTE** that the 1-1/8" long notch on the back end of parts DD, MM, and PP allows the tenon to be inserted in the mortise without interference.
57. Glue and screw the notch into place.
58. Cut part UU to overall length and width from 3/4" thick stock.
59. Use the table saw and dado head to cut the tenons on each end.
60. Cut parts VV to size.
61. Use a router table with a 1/4" diameter straight bit to cut the 1/2" deep mortise, making four passes with each pass removing 1/8" of stock. **NOTE: To accommodate seasonal movement, the mortise is cut longer than the tenon is wide.**
62. Dry assemble parts UU to parts VV.
63. Use pipe clamps to hold the pieces together.
64. Bore the three 3/16" diameter dowel pin holes.
65. Remove the pipe clamps and separate the parts.
66. Use a rattail file to elongate the two end holes in each tenon as shown.
67. Reassemble the parts.
68. Apply glue to the 3/16" dowel pins and drive them in place. NOTE: Only the pins are glued, not the mortise and tenon joints.
69. Final sand parts UU and VV.
70. Cut a 3/4" x 3/4" x 12" long cleat.

71. Screw the cleat to the underside of part UU, flush with the back edge. When part UU is installed, the cleat will act as a stop to keep the desk surface from sliding out.
72. Glue up stock for parts SS and TT.
73. Cut both parts to final length and width.
74. Lay out the location of the cutout and notch on each back corner of part SS (see elevation views and Figure 8).
75. Make the cutout so that the back of part SS fits between parts T and U and extends all the way back to panel HH.
76. Final sand parts SS and TT.
77. Apply two coats of a penetrating oil as a final finish.
78. Finish parts UU and VV in the same manner.
79. Use wood screws driven up through the slotted holes in parts W, X, and Y to install part TT.
80. Place parts UU and VV in position on the frame.
81. Add part SS by driving screws up through parts N and R.
82. Cut and fit parts KK, which server as filler blocks.
83. Make the drawers as shown in Figures 5 and 8.
84. Edge-join sufficient stock to obtain the width required for the drawer bottoms (see Figure 9), paying attention to the direction the grain runs for maximum strength given the length and width of the drawer, as shown in Figure 10.
85. Rip and cross-cut the drawer panels to their final sizes as given in the materials list.
86. Start hand-planing the stock to its final 5/16" thickness by clamping it with bench dogs and a vise as shown in Figure 11).
87. Set the plane iron for a maximum cut.
88. Quickly remove the material to reach approximate final thickness.
89. Reset the plane iron for a shallow cut.
90. Plane the rest of the material with the grain (Figure 12) to final smooth the surface.
91. Cut the panel to final length and width (See Figure 13).
92. Lay out bevel lines according to the dimensions shown in Figure 14, and taking seasonal moisture changes into account.
93. **NOTE** that the drawer bottom bevel tapers to about 1/32" less than the groove width. This is necessary to allow the beveled edge to fit into the groove.
94. Clamp the drawer bottom panel in place with a backup board (Figure 14) to establish the end-grain bevel.



95. Cut the end-grain bevel.
96. Clamp a guide board to the stock to help establish an even long-grain bevel.
97. Hold the plane at the approximate bevel angle.
98. Start planing at the edge and work down to the desired final point (see Figure 15).
99. Apply glue to the groove cut for the bottom.
100. Slide the bottom in from the back to begin assembly.
101. Use several screws or brads to reinforce the back edge, as illustrated.
102. Lathe-turn the knobs (AAA) to the dimensions shown in the knob detail.
103. Drive a flathead wood screw through the inside of the drawer front to hold the knob in place.
104. Add a brass lock on the upper right side drawer if you desire.
105. Cut the diamond shaped escutcheon from .32" thick brass stock to 3/4" across the points and 1" top to bottom.
106. Bore the keyhole and file the slot.
107. Use two small brads to secure the keyhole to the front.
108. Apply two coats of penetrating oil.
109. All the oil to dry.
110. Buff with a soft cloth for a warm satin finish.
111. Complete the project by applying a thin coat of beeswax on the drawer guides to make the slide easily.

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