

**Variations on the Drum Leaf and Sewn Boards Bindings**  
**Guild of Book Workers Seminar on Standards of Excellence in Hand Bookbinding**  
**October 26, 2013**

**INTRODUCTION**

The sewn boards binding is Gary Frost's elegant, modern adaptation of an ancient method of board attachment. Stiffened outer signatures sewn along with the text block function as the book's boards.

The drum leaf binding, developed by Tim Ely, has features in common with preexisting Eastern and Western binding structures. This adhesive binding is a perfect structure for printmakers, photographers, or anyone who desires to present visual narratives with no sewing thread to interrupt the flow of imagery. Because a drum leaf book is not laid out in signatures but made of single-sided folios, the complexities of imposition are not encountered when laying out text. Like the sewn boards, the drum leaf can also utilize stiffened outer folios as the book's boards.

Both structures can be dressed up or down with a variety of spine treatments, board-covering materials, and edge decoration techniques. Both books open flat. They can be constructed quickly, lend themselves to edition work, and can be made in a sparsely equipped home studio.

The sewn boards and drum leaf are also excellent structures for beginning binders. Students learn to work with with common bookbinding tools, materials, techniques and principles such as grain direction, folding signatures, tidy application of adhesive, and measuring one component of the book to fit another.

**THE SEWN BOARDS BINDING**

*Note: All materials should be prepared with the grain direction running parallel to the spine of the book. These instructions assume a text block not thicker than about 1/2".*



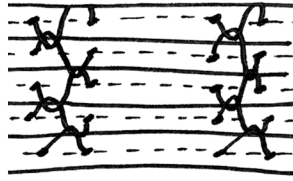
**Preparing the text block**

- Fold paper into signatures.
- Tip endsheet folios to the first and last signatures.
  - Maintain same dimensions as the text folios.
  - Tip just a hair forward from spine edge of text folio.
- Add single folios of card to the front and rear of the text block.
  - Use 10 or 20 point card or heavy printmaking paper that folds without cracking.
  - These will be sewn along with the text block, and with the addition of a stiffener at a later step, will become the book's boards.

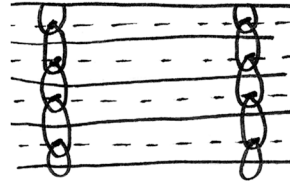
## Sewing

The text block will be sewn unsupported, using either the chain or web methods of linking stitch.

Options for  
Unsupported  
Sewing



web link stitch sewing



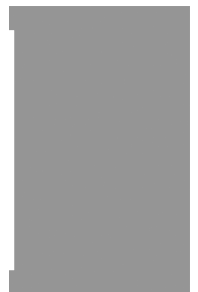
chain link stitch sewing

- End each signature with a kettle stitch.
- Take care to keep the text block square at the head and spine.
- Manage swell while holding the text block at the foreedge to keep the signatures in alignment.

## Stiffening the boards

- Tip card or thin board into the first and last (card) folios.
  - Make the height and width equal to the text block.
- Use only a small amount of PVA stippled in the gutter of the card folio.
  - **Do not adhere the entire card.**
- Take care to insert the card all the way into the gutter.
  - A sliver of the spine edge of the card, kettle stitch to kettle stitch, could be removed to accommodate the sewing thread in the gutter of the outer folios.

*Note: The thickness of the book's boards will be equal to the accumulated thickness of numerous layers: the card folio, the board stiffener, the spine wrapper and adjacent fill card, and the board-covering material. Carefully consider selection of these materials so that the boards remain a pleasing thickness relative to the thickness of the text block.*



Card Insert  
Trimmed to  
Clear Sewing

## Gluing and lining the spine

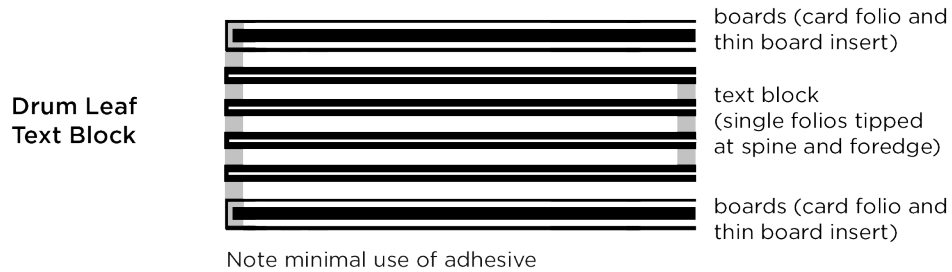
- Square up the sewn text block at both the spine and head.
- Put the text block between scrap boards of the same height as the text block.
  - For easy cleanup and reuse, wrap the spine edge of these scrap boards in packing tape.
- Place the text block at the edge of the bench under gentle pressure.
- Gently flatten the spine edges of each folio with a bonefolder.
- Confirm that the text block remains square.
- Apply PVA to the spine, while maintaining gentle pressure.
- Let dry enough that the spine no longer moves.
- When dry, glue up the spine again.
- Apply a lining of medium-weight Japanese tissue.
  - The lining will be the height of the book by the entire thickness of the spine, including the stiffened outer folios.
- Glue up the spine, not the tissue, which could become difficult to work with when moistened.
- Use a stippling motion with a stencil brush (or other round, dry brush) on top of the tissue lining tissue to aid adhesion.

*The sewn boards text block is complete. Proceed to Trimming and edge decoration, below.*

## THE DRUM LEAF BINDING

*Note: All materials should be prepared with the grain direction running parallel to the spine of the book. These instructions assume a text block not thicker than about 1/2".*

The pages of this adhesive binding will be “drummed” together—adhered only at the spine and foredge, not across the entire material. Potential for warping or cockling is minimized, as is moisture that might disturb digital printing.



### Preparing the text block

- Fold sheets in half, image side in.
  - Make single folios of paper printed on one side only.
  - Use heavy paper (not text weight) that will fold without cracking such as Arches Cover.
  - After assembly, the text block will be trimmed at the head, tail and foredge. Lay out imagery accordingly.
- Endsheets if desired, should be positioned at the front and rear of the text block.
  - Make single folios, of the same weight and dimensions as the rest of the text block.

### Preparing the boards

- Fold two additional, undecorated sheets.
  - These folios can be the same paper as the text block, or 10 or 20 point card.
  - Folio height and width are equal to the text pages.
- Tip card or thin board into the these folios.
  - Card height and width are equal to the dimensions of text block.
  - Choose card thickness in proportion to the size of the book.
- Use only a small amount of PVA stippled in the gutter of the card folio.
  - **Do not adhere the entire card.**
- Take care to insert the card all the way into the gutter.
- With a folder, shape the spine edge of the card folio to accommodate the bulk of the insert.

*Note: The thickness of the book's boards will be equal to the accumulated thickness of numerous layers: the card folio, the board stiffener, the spine wrapper and adjacent fill card, and the board-covering material. Carefully consider selection of these materials so that the boards remain a pleasing thickness relative to the thickness of the text block.*

- Position these stiffened folios at the front and rear of the text block. They will be glued up along with the text block and become the book's boards.

### Gluing and lining the spine

*Note: There is no sewing thread to hold the text block together while the spine is being glued. Exercise extreme care to keep the text block square at the head and spine.*

- Square up the text block at both the spine and head.
- Put the text block between scrap boards of the same height as the text block.
  - For easy cleanup and reuse, wrap the spine edge of these scrap boards in packing tape.
- Place the text block at the edge of the bench under gentle pressure.
- Gently flatten the spine edges of each folio with a bonefolder.
- Confirm that the text block remains square.
- Apply PVA to the spine, while maintaining gentle pressure.
- Let dry enough that the spine no longer moves.
  
- When dry, glue up the spine again.
- Apply a lining of medium weight Japanese tissue.
  - Height of the book by the entire thickness of the spine, including the stiffened outer folios
- Glue up the spine, not the tissue, which could become difficult to work with when moistened.
- Use a stippling motion with a stencil brush (or other round, dry brush) on top of the tissue lining tissue to aid adhesion.
- Allow to dry COMPLETELY.

### Drumming of signatures at the spine

- Apply a small amount of PVA between each folio at the spine edge with a drywall knife (width of knife preferably equal to the height of the text block).
  - A 1/8"-wide bead of PVA is all that is necessary.
  - If a drywall knife is not available, use a flat glue brush and apply the glue sparingly, only at the spine edge, not in the center of the pages.
- **Do not adhere the endsheet folios to outer folios.**
- Bone down after gluing each folio.
- **Do not pull apart the glued folios to check for good adhesion at the spine.**
  - This action will undo any existing adhesion.
  
- Confirm that the spine is still square, and finesse back into square if necessary.
  - Use the same fanning and pressing motion as used in rounding.
- Nip if a press is available.
- Allow to dry COMPLETELY under light weight.

### Drumming of signatures at the foredge

- PVA adjacent folios at foredge.
  - A small paint trim and touch-up pad, made from the same material as a paint roller, works nicely.
- **Do not adhere the endsheet folios to the outer folios.**
- Bone down after gluing each folio.
- Nip if a press is available.
- Allow to dry COMPLETELY under light weight.

*The drum leaf text block is complete. Proceed to Trimming and edge decoration, below.*

## Trimming and edge decoration

### If no edge decoration is desired

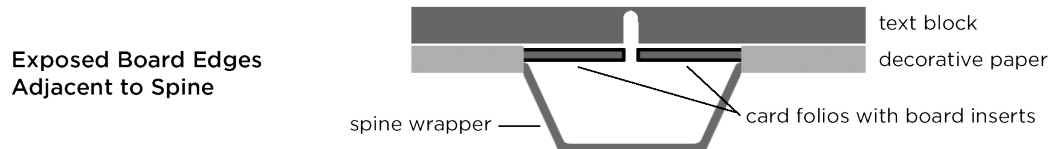
- Trim the text block flush at head, tail, and foreedge.
  - If a guillotine or plough is unavailable, trim any excess board or text folios extending beyond the card folios.

### If edges will be decorated

- Trim the text block flush at head, tail, and foreedge.
- Scrape, sand, and decorate edges as desired.
- Decorate either the head only or all three edges: head, tail, and foreedge. These are the traditional configurations.

## Treatment of raw board edges

An optional refinement: After the spine wrapper and board-covering material are applied, a raw edge of several layers of board and card will remain visible adjacent to the spine at the front and rear, head and tail.

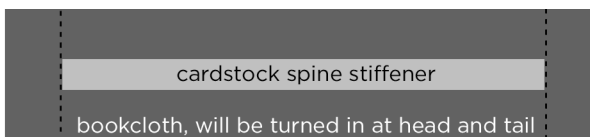


Let your own aesthetic preference dictate if this area looks adequately finished. You may want to embrace it as a design element. There are several options for dealing with this area:

- Select card and board inserts of colors that will either camouflage or enhance the exposed areas relative to the tone of the text block edges.
- Decorate the edges of the text block so these exposed areas match the text block.
- Cover the exposed areas:
  - Cover a 1" area of the raw board edges at the head and tail adjacent to spine with decorative paper or thinly pared leather.
  - Push this material as far towards the spine as possible, but avoid any bunching that would interfere with the closing of the book.

## Preparing the spine wrapper

Spine  
Wrapper

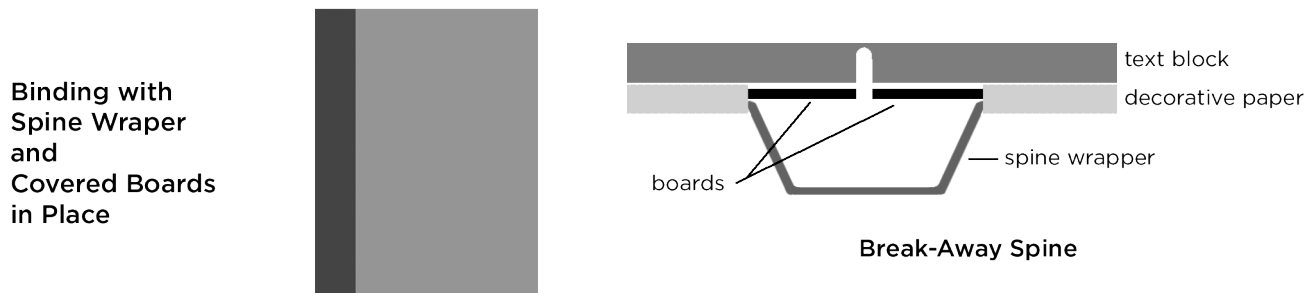


- Cut a spine stiffener from 20 point card or heavy printmaking paper.
  - (very slightly less than the thickness of text block) by (the height of text block plus 1/16" [this extra height will give the illusion of head caps])
  - Grain parallel to the spine
- Cut a second strip of card, of identical dimensions.
  - Set this aside for later use in adhering the spine wrapper to the text block.

- Cut book cloth for the spine wrapper.
  - 1" taller and 2" wider than the spine stiffener
- Glue up the spine stiffener and place it squarely in the center of spine wrapper.
- Glue up the turn-ins of the spine wrapper **at the head and tail only**.
- Fold the turn-ins over the spine stiffener at head and tail *with a very slight downward angle at the edges*.
- Define the edges of the spine stiffener inside the spine wrapper:
  - Place the wrapper on the bench, spine stiffener side up.
  - Hold down firmly.
  - Crease the book cloth against the spine stiffener with a folder.
- *Confirm that the wrapper is a good fit for the text block.*
- Dry under light weight.
- When dry, trim the edges of the spine wrapper square with the spine stiffener as needed.

*Note: Any stamping on the spine should be done after drying, before attachment to the text block.*

### Applying the spine wrapper to the text block



- The finished book will have the appearance of a quarter binding, with a cloth spine and paper-covered boards. The spine wrapper will move away from the spine and from the boards adjacent to the spine when the book is opened and must be adhered firmly to the text block at this point so the paper wrapping over the boards is not torn when the book is opened.
  - This is less essential if the boards are covered with more robust book cloth or leather.
- The thickness of the text block is a good starting point for the width of the spine wrapper visible on the boards and for the point at which the spine wrapper breaks away from the boards.
  - The extra spine stiffener cut earlier will aid in measuring this dimension when gluing out and applying the spine wrapper to the text block.
  - Experiment with other dimensions for engineering and aesthetics.

*Note: For the book to open fully, the point at which the spine wrapper breaks away from the boards must be a minimum of a little more than half the thickness of the book.*

- Mask one long edge of the spine wrapper adjacent to the spine stiffener with the extra strip of card cut earlier.
- Apply PVA between the mask and the long edge of the spine wrapper.
- Repeat at the other long edge of the spine wrapper.
- Glove the wrapper over the spine, adhering the glued edges firmly to the text block.
  - Place the spine wrapper on the book with an even overhang at head and tail.

### Applying the fill card adjacent to the spine wrapper

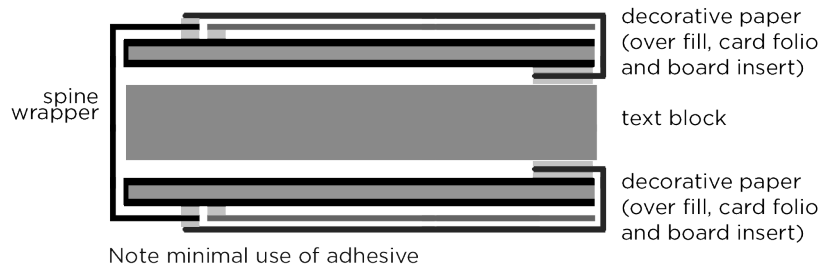
A fill card, tipped adjacent to the spine wrapper, ensures a smooth surface across the boards once they are covered.

- Tip a card of the same thickness as the spine wrapper book cloth to fill the distance from the spine wrapper to the foreedge.
- Apply PVA to the spine edge of the fill card only; **do not glue up the entire card.**

### Finishing boards

*Note: Decorative paper or book cloth, will not be glued completely, but will be “drummed”—attached only by the edges—adjacent to the spine and at the turn-ins, greatly reducing the likelihood of warping. This will also give the boards a pleasing, pillow-like feel.*

*Note: Beware of a covering material that is not opaque. If the spine wrapper is made of dark material it might show through. Use a darker fill card, back the translucent paper it to make it opaque, or select a different covering material.*



Spine Wrapper, Fill Card and Board-Covering Material

- Score a line with a thin bonefolder on the spine wrapper front and rear.
  - Score a distance from the spine equal to the thickness of the book.
  - If the extra spine stiffener is still available and dry, score against it.
- This line will be a guide for attaching board covering material.
- Prepare two pieces of decorative paper or book cloth.
  - 1" taller than the text block, and 1/2" wider than the distance from the scored line adjacent to spine (created in the previous step) to the foreedge
- Glue up the edge of the covering material that will lie adjacent to the spine (**the edge only, not the entire material**) and affix it to the book, just covering the line scored adjacent to spine.

- Flip the book over and trim the corners of the covering material at a diagonal.
  - The cut will be a board and a half thickness from the corner of the boards.
- If the turn-ins are wildly uneven, trim to a more consistent measurement.

*Note: Pre-creasing the covering material around the board edges with a folder or your fingers will speed application after the material is glued up.*

- Glue out the turn-ins and drum to the inside of the boards.
  - The paint and touch-up pad used in preparing the drum leaf text block will speed application of the PVA.

*Note: The covering material should be wrapped around four layers of card, the inner and outer leaves of the card folio, the board stiffener, and the fill.*

- Repeat on the other side.
- Drum down the endsheets at head, tail, fore edges (**edges only, not the entire endsheet**).
- Dry under light weight.

*The book is complete!*

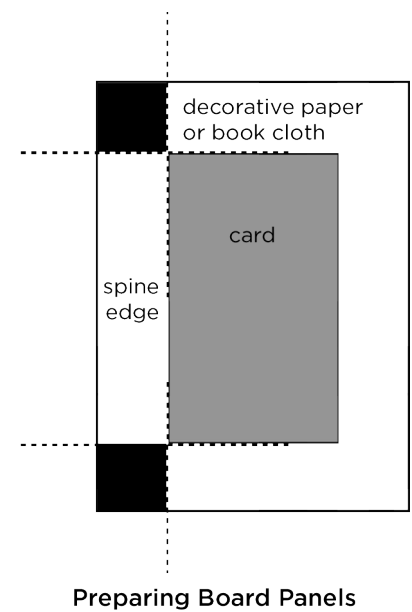
Additional options for covering the spine and the boards follow.

### Dimensional panels over boards

Instead of wrapping the covering material directly over the boards, it can first be wrapped over a card. With some materials, this could look more finished than a raw edge adjacent to the spine wrapper. It is also a solution when covering the boards with cloth that might unravel.

*Notes: Because the panel will add an additional layer of card, consider using a thinner card insert inside the outer folios to stiffen the boards or omitting the insert all together.*

- Assemble and apply the spine wrapper as directed above.
- Prepare the panels: two pieces of card.
  - (The height of the book) x (the width of the book minus the thickness of the spine)
- Prepare 2 pieces of decorative paper or book cloth.
  - 1" taller and 1" wider than the panels, for 1/2" turn-ins all around
- Place the panels centered on the covering material.
- Place a small weight on the panels.
- Butting a straightedge against the head, then the tail edge, then what will be the spine edge of the panels, cut and remove squares of the covering material.
  - **Remove squares at the spine edge only, not at the foredge.**
- Glue the resulting spine edge flaps to the card.
  - This will be the rear of the panel.





- Carefully tip the panels adjacent to the spine, matching the foredge corners of the panel cards to the foredge corners of the text block.
  - **PVA only at the spine edge of the panels.**
- Glue out the turn-ins, trim the corners, and drum to the inside of the boards.
- Drum down the endsheets as directed above.

### One-piece spine wrapper

A spine wrapper constructed of a sufficiently stiff, robust material will not require turn-ins or a spine stiffener. Try parchment or heavyweight handmade case paper. To flex smoothly, these stiffer materials will require an additional crease at the point of break-away on the boards.

After trimming the text block:

- Trim wrapper material to the height of the text block by the thickness of the text block + 2".
- Make creases in the wrapper, a spine width apart, running head to tail.
- Make additional creases a spine width away from the first set, towards the long edges of the spine wrapper; these should be folded in the opposite direction.
- Apply PVA to the spine wrapper from the outermost creases to the edges.
- Glove the wrapper onto the text block.
- Complete the book as directed above, *Applying fill to the exterior of the boards.*



Creases for One-piece Spine Wrapper

### Tight back and exposed spine options

Instead of the cloth or one-piece spine wrapper, and in place of the Japanese tissue spine lining, a variety of materials can be used as decorative, exposed spine linings.

*Note: With no break-away spine wrapper to accommodate, the board-covering material can be attached as close to or as far from the spine as desired.*

- Line the spine and adjacent exposed area on the boards with decorative tissue, leather, or a thin layer of acrylic paint.
  - The lining material measures the exact height of spine by whatever width of this material you would like to be visible on the boards, plus a small amount that will be overlapped by the board-covering material.
  - Or cut the lining material a touch taller than the spine and carefully trim off excess at the head and tail after this material is applied to the spine and has dried.
- Finish the boards as directed above, with the covering material drummed directly to the boards, or first attached to panels.

*Note: Tissue, paint, or thinly-pared leather will reveal the sewing and folded spine edges of each signature. Thicker leather will produce a flatter spine but could inhibit opening.*

- Complete the book as directed above, *Applying fill to the exterior of the boards.* A fill may not be necessary with tissue or very thinly-pared leather.

## RESOURCES

Eldridge, Betsy Palmer. "Hand Trimming Book Edges." presentation at the Guild of Book Workers Seminar on Standards of Excellence in Hand Bookbinding, Providence, Rhode Island, 2004. Available online at [http://www.guildofbookworkers.org/events/documents/2004-Eldridge\\_Besty-1.pdf](http://www.guildofbookworkers.org/events/documents/2004-Eldridge_Besty-1.pdf)

Ely, Tim, "The Transcendental Drum Leaf." *The Bonefolder* Vol. 1, No. 1, (Fall 2004): 10-18. Available online at <http://www.philobiblon.com/bonefolder/vol1no1contents.htm>

Frost, Gary, "Sewn Board Bookbinding More Than a Thousand Years Later." *Guild of Book Workers Journal* (2010-11): 18-36.

Frost, Gary, "Application of Sewn Board Technique to Book Conservation Practice." *The Book and Paper Group Annual*, 23 (2004): 33-39. Available online at <http://cool.conservation-us.org/coolaic/sg/bpg/annual/v23/bp23-06.pdf>

Horton, Richard. *A Small Book of Practical Sewings*. Westfield (MA): Richard Horton, 1997. For the chain-style linking stitch, see the section on "Looping Link Stitch Sewing." For the web-style linking stitch, use the instructions for "Sewing Over Slips, Thongs or Tapes with Link Stitch." Remove tapes after sewing, or sew without using tapes.

McAfee, Chris, "Standards Presentations: Timothy Ely Drum Leaf Binding" *Guild of Book Workers Newsletter*, 163, (2005): 10-12. Available online at <http://www.guildofbookworkers.org/resources/newsletters/index.php>

*University of Iowa Library Historical Bookbinding Model Collection*, online at <http://digital.lib.uiowa.edu/binding/index.php>

## ACKNOWLEDGEMENTS

Thanks to Julie Naggs and Laura Wait, who introduced me to the sewn boards and drum leaf bindings. I am also grateful to Eric Alstrom, Pam Barrios, Sarah Bryant, Rebecca Chamlee, Gary Frost, Jill Krase, and Priscilla Spitler for generously sharing their expertise with me.