

# Cradles for Bound Japanese Books

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*Freer | Sackler Galleries*

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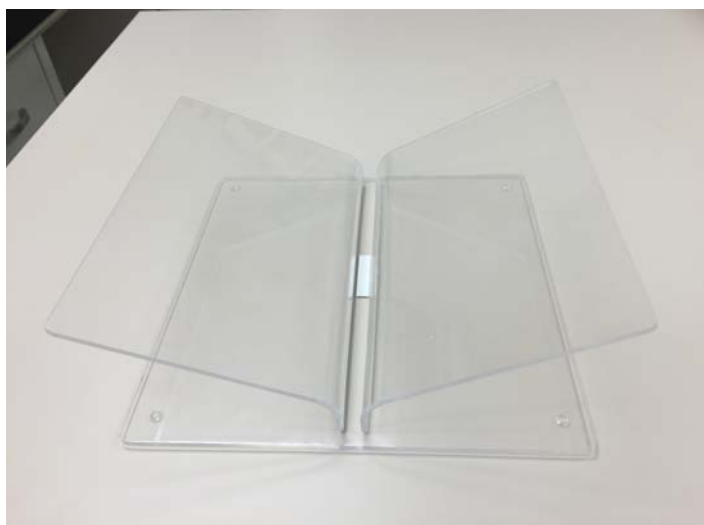


Figure 1. Butterfly cradle.

## INTRODUCTION

This paper focuses on cradles made for over 100 Japanese printed books from the Pulverer Collection in the Freer Gallery of Art for an exhibition titled “Hand-Held: Gerhard Pulverer’s Japanese Illustrated Books,” which ran from April 6–August 11, 2013 in the Arthur M. Sackler Gallery. Included is information on common Japanese book structures, their display limitations and a description of cradle fabrication. For more than thirty years Dr. Gerhard Pulverer, a renowned medical researcher in Germany, and his wife Rosemarie, traveled the world and assembled the collection. The Pulverer collection was purchased in its entirety by the Freer Gallery of Art in 2007 and includes numerous rare and pristine examples of Japanese illustrated books produced in the Edo period (1615–1868) and beyond. The collection encompasses more than 900 titles and almost 2,200 individual volumes. Nearly all of the books that went on display in the Pulverer exhibition needed cradles. This large number of books meant that we had to be strategic in how to construct the cradles. While the Freer | Sackler has in-house mount makers, they didn’t have the time to fabricate custom fit cradles for each

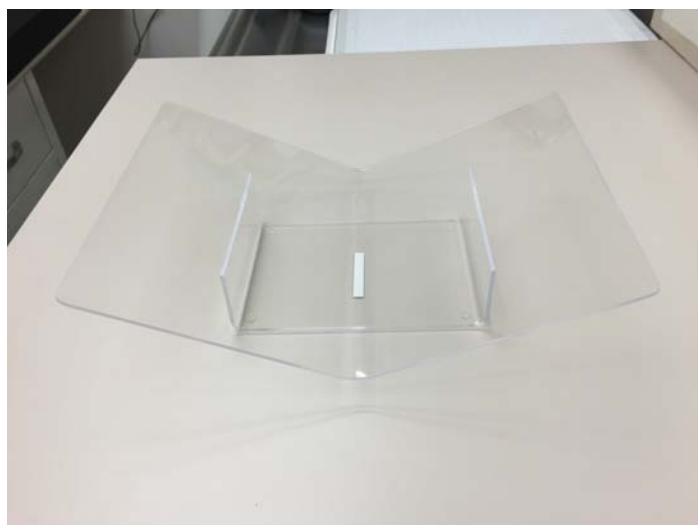


Figure 2. V-cradle.

individual book. For that reason we decided to separate the books into three groups, each group requiring a different style of mounting.

While one group did not require cradles, two different cradles were designed for the other two groups. The two cradles we came up with accommodated the binding styles that were most prevalent in the books going in the Pulverer exhibit. We called these cradles a butterfly cradle (figure 1) and a v-cradle (figure 2) based on their profiles.

## JAPANESE BOOK FORMATS

The different binding styles that have been used in Japan are pictured in figure 3. The oldest book format is the handscroll which was in use from the 5th century onward. In the late 8th century the accordion book developed from the handscroll by simply folding the long paper sheet of the roll concertina style to make it more easily read and handled. Album and flutter book formats are variations on this accordion style.

In the 9th century the butterfly book was developed; in this book a page was printed and folded with the text inside. Each of these folded sections were attached to each

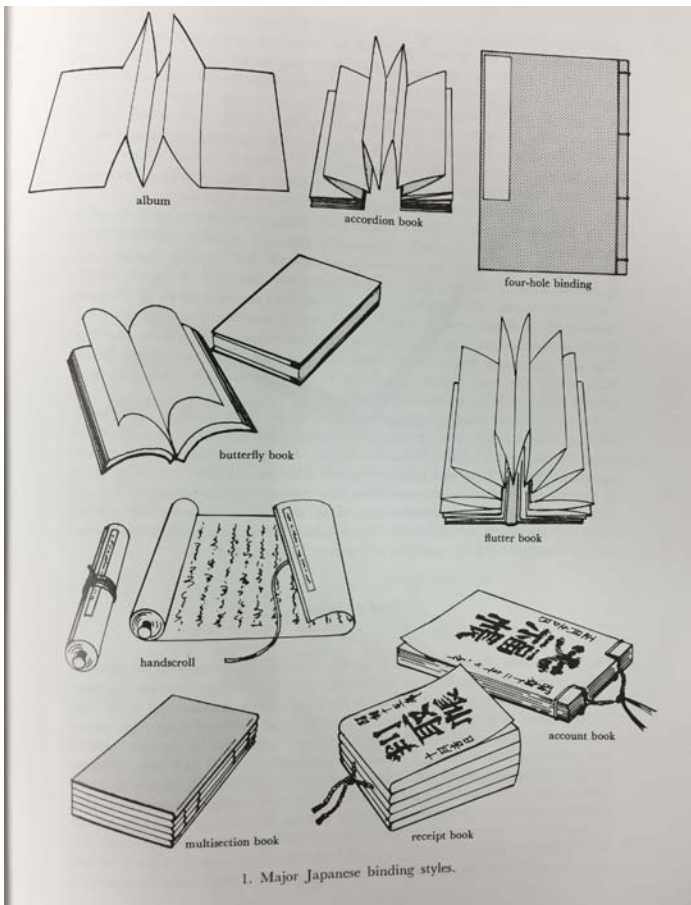


Figure 3. Major Japanese binding styles.

other by pasting along the spine edge. When open the attached pages look like butterfly wings.

By the 14th century though, the pouch or stab binding (four or five-hole) came into use and quickly became the most commonly used binding format. Variations on the stab binding include different binding threads, number of binding holes and stitching patterns.

### EXHIBITION CRADLES

The cradle designs for this exhibition focused on the accordion and the stab bindings as these were both the predominant styles of binding in the Pulverer collection.

The accordion book is made from sheets of paper pasted into a long strip that is then folded concertina fashion into the desired size. Variations on this binding include creating the long sheet of paper by pasting sections together at the fore edges or by overlapping whole pages. This tends to be a simple binding that opens easily and lies flat when in good condition. It is also a delicate book with the main point of stress along each fold; it can torque and tear quite easily if handled or displayed improperly.

When putting the accordion book on display it is im-

portant to keep the open pages level with one another by using supports under the thinner section as in figure 4—in this way you remove any stress at the folds. We use matboard pieces cut to size. The books can lay directly on the case deck or can have a piece of matboard, acrylic or polyester film beneath them.

Figure 5 shows an accordion book that does not naturally lie flat when opened evenly. The problem was due to the fact that each page is composed of two sheets of paper resulting in extra thickness at the folds. For this book we used the v-cradle which allowed the pages to lie flat with the least amount of stress.

The majority of the Pulverer books are stab bindings and this is the most common style of binding for Japanese books in general. In a stab binding holes are pierced along the spine (either 4 or 5 holes) for the binding threads to run through (figure 6). First it is important to understand how the textblock is prepared.



Figure 4. Accordion books with matboard supports to relieve stress along the folds.



Figure 5. V-cradles used for problematic accordion books.



To create the textblock, the paper is printed on one side and folded with the printed text on the outside. The fold becomes the fore-edge while the cut edges are at the binding edge. This means that every page is double-leaved forming a sort of open-ended pouch (figure 7).

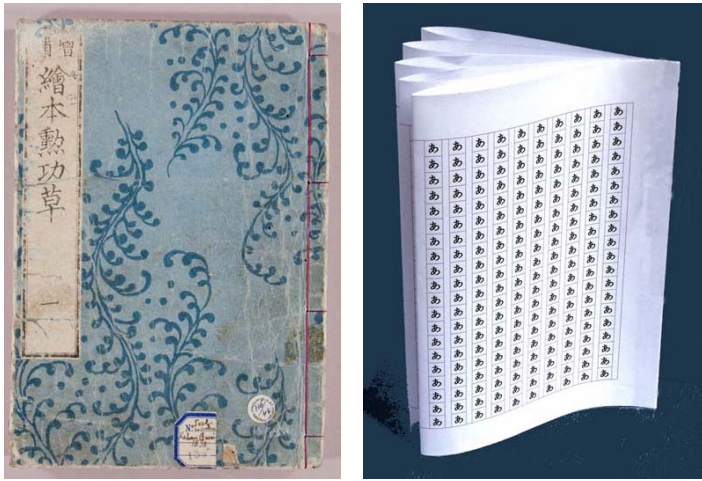


Figure 6. Stab binding. Figure 7. Textblock.



Figure 8. Inner binding with twisted paper.

There is also an inner binding (figure 8) that gives the text block much of its strength. It's made by threading and then pounding twisted paper through double-holes at two places along the spine; the holes are placed so that they won't interfere with the binding holes needed in the subsequent steps.

About half of the Pulverer books still have their original inner bindings; and if you find these they should not be removed. Sometimes corner pieces made of cloth were adhered at the top and bottom of the spine edge. The inner binding helped to keep the text block intact even if the binding became broken or damaged.

Both four- and five-hole bindings were made during the Edo period—the four-hole binding style has its roots in Chinese bookbinding while the five-hole bindings are influenced by Korean bookbinding. The books in the Pulverer collection are predominately the four-hole style binding where four evenly placed holes would be made approximately 3/8 of an inch from the binding edge. The

thread, either silk or hemp, is threaded and woven back and forth through the holes. While the inner binding holds the textblock together, the outer binding holds the textblock and covers together.



Figure 9. Butterfly cradle with soft-covered stab-bound book.

The covers are either made with paper, layers of paper or pasteboard, fabric backed with paper, or fabric wrapped board. These differences are what dictated the need for the two different cradle designs we used. No matter which cover material has been used the strongest part of the stab book is along the binding edge or spine.

We used the butterfly cradle for the four-hole bindings with soft paper covers (figure 9). This design isn't new and is based on earlier book wedges used at our museum. But the design has been simplified and only uses one material, acrylic, for construction. The bottom flange of the wings lightly pinches the book all along the spine. The wings should only start to curve beyond the binding holes. The wings offer support to the pages but also allow them to fall open naturally. One of the nice aspects about this design is that the same cradle works for any page opening.

In many cases, when the paper is soft and flexible, strapping isn't necessary. Strapping does become necessary when the bonnet of the vitrine is close to the object because static electricity can be generated by the acrylic and can actually lift and turn a page in a book. In cases where the vitrines are very low we will always strap the pages.



Figure 10. V-cradle used for stab books with rigid covers.

Rigid covers are made from layers of paper joined to create a pasteboard or are fabric- wrapped boards or fabric backed with paper. In any of these cases the butterfly cradle doesn't work as the cover can't flex in the same way as the plain paper covers.

For these books we used a more traditional style cradle with a v- shape to support the book (figure 10). Strapping is generally needed because the pages do not fall open as easily. When necessary we add rolled polyester between the cover and text block for support.

## CRADLE FABRICATION

Fabricating the cradles from acrylic made production faster and easier. These are not do-it-yourself cradles, however, but need to be constructed by someone familiar with the tools equipment and materials needed. The following describes how the butterfly cradle is made by the mountmakers in our Design department.

To create the wings two sheets of acrylic are cut the height of the book but left longer than the width. The two pieces are bent using heat. It takes a couple of minutes for the acrylic to get hot but it can't be left for too long or bubbles will form. The acrylic has a memory and will want to unbend so it needs to be cooled on a template that will hold it in place (figure 11).

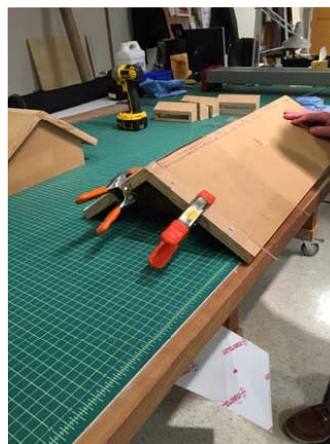
An adjustable template was used for measuring each book (figure 12). Once cool, the two wings are placed in the adjustable cradle along with the book. The sides are slid together until the spine edge of the book is gently pinched. Then the end of the book and the fore edges are marked on the acrylic wings for cutting.

The excess acrylic is cut away on a band saw and the edges are smoothed using a belt sander and 400 grit wet sandpaper (aluminum oxide). Using the sandpaper leaves the edge of the acrylic frosted.

Finally the wings are joined to a base that has already been cut and marked along the center. The wings are supported by wedges to hold them upright during adhesive application. An acrylic adhesive is applied with a syringe along the edge of the join; very little adhesive is needed (figure 13). The adhesive sets in about 2–3 minutes with a total cure time of about 2 days.

## CONCLUSIONS

Understanding the structure of the book you are mounting is paramount in choosing an appropriate display method. With matboard supports, a butterfly cradle and v-cradle we safely displayed over 100 Japanese books for the Pulverer exhibition.



*Clockwise from bottom left: Figure 11. Acrylic cooling on template; Figure 12. Adjustable cradle for measuring; Figure 13. Applying acrylic adhesive to join wings to base.*

## ACKNOWLEDGMENTS

This project was supported by Freer|Sackler staff: Andrew Hare, East Asian Paintings Conservator; Teak Lynner, Mountmaker; John Piper, Mountmaker.



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