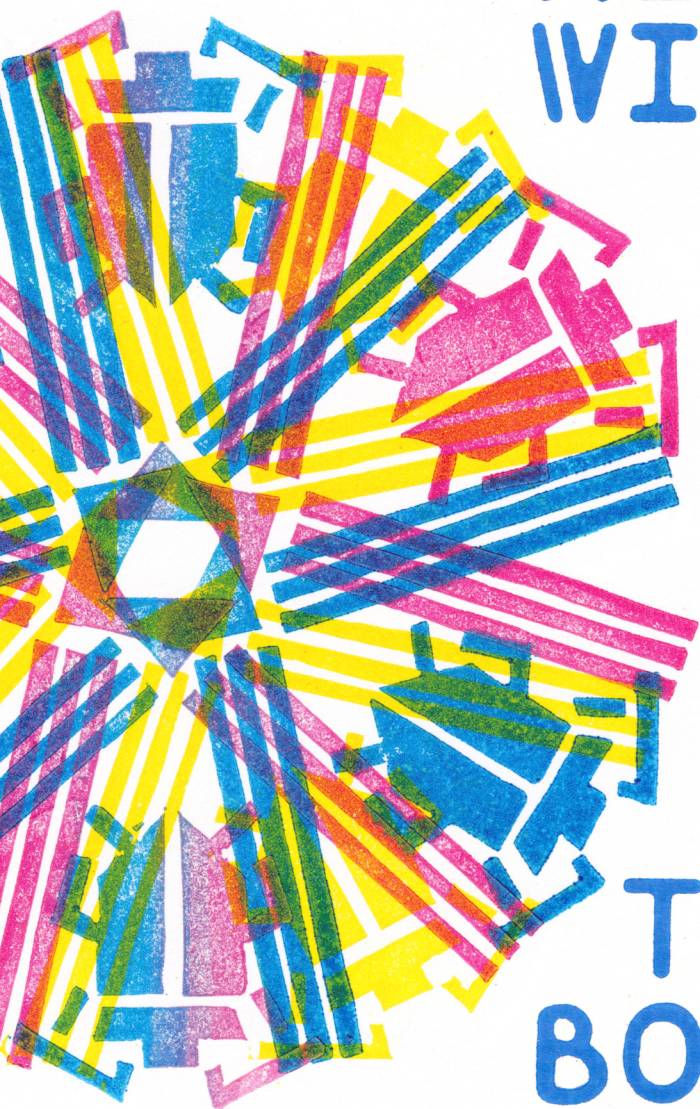


PRINT  
WITH



THE  
BOOK  
BEETLE

**THE**  
**BOOKBEETLE**

**Printing and  
Teaching with  
a Desktop  
Screw Press**

Josef Beery

2023



[www.bookbeetlepress.com](http://www.bookbeetlepress.com)



@bookbeetlepress

Desktop letterpress printing using the BookBeetle press was conceived of and created by Josef Beery. I am happy to provide assistance. You can contact me at:

[josef@josefbeery.com](mailto:josef@josefbeery.com)

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Special thanks to these fine cabinet makers for their design suggestions and excellent craftwork:

Jeff Saine  
Thomas Yoder  
Abraham Dyke

## INTRODUCTION

The BookBeetle was created to demonstrate the operation of the eighteenth-century common press. This press was the penultimate version of the wooden screw press used in the West since the fifteenth century for printing. It's appearance facilitated the most dramatic information revolution mankind had ever known.

I used as a model the Franklin press replica at the University of Virginia. This press is over eight-feet tall and built of heavy wooden timbers. It is not truly portable. I give demonstrations of printing on this press. The BookBeetle represents in miniature all of the working characteristics of this press and many of the parts of the press. The BookBeetle is less than two-feet tall and weighs not much more than thirty pounds. It is easily portable.

The BookBeetle allows interested persons anywhere in the world the opportunity to learn the basic printing processes used on the common press.

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**It became apparent that the BookBeetle could also be used by book artists and printmakers for printing.**

After building a number of BookBeetle presses and giving demonstrations at several academic institutions, it became apparent that the BookBeetle could also be used by book artists and printmakers for printing. With a few modifications, the rather clumsy folding tympan and frisket system could be replaced with an easy to use box base and box chase system permitting quick and easy, accurately registered, multi-color printing. It is for this reason that I have written this new version of the BookBeetle manual.

Now the BookBeetle press serves two functions. It demonstrates and allows hands-on practice with the fundamental processes of the common press. AND the BookBeetle gives printers access to an easily portable, compact, desk-top letterpress. This is a boon to book artists and printmakers seeking to work in letterpress without owning the large and expensive antique relief presses found in print studios.

I call printing without the folding tympan and frisket **DIRECT PRINTING** and provide a detailed description after the discussion of using the BookBeetle as a historical demonstration press.

Letterpress printing, as it was used for three-and-a-half centuries after Gutenberg's innovations was different than the letterpress printing used

today to print wedding invitations and social paper. Movable type, each letter individually cast and filed to the correct height, ink mixed to the proper viscosity from cooked linseed oil, lamp black, and a variety of other ingredients, paper made from linen rags and dampened to just the right softness for the proper impression... all of these were critical elements in printing the perfect page. Preparation of the printing surface (the type and the woodcuts), the application of the ink, the choice and use of the paper, and the careful introduction of even pressure all were important variables in the production of the page.

The invention of printing was the key to unlocking the mysteries of the book and offering them, along with reading, to every person. There is no disputing the importance this has played in the history of our world. Imagination, ideas, and their communication are the basis for everything we humans treasure. I first discovered printing as a child with simple rubber stamps which were offered on the back of a Rice Krispies box! Since then I have made a career of working in the world of book design and printing. I love to share my excitement with folks for whom printing has become reduced to just clicking the "PRINT" button on their computer screen.

**I call printing without the folding tympan and frisket **DIRECT PRINTING.****

## WHY A SCREW PRESS?

A screw is an ancient device (appearing BEFORE the time of Christ) which allowed the transformation of a small rotational force into a much larger linear force. It was used very early in agriculture to crush and press grapes, apples, olives and more. With the arrival of paper making skills from China in the eighth century, Europeans started using the screw press to remove water from large stacks of paper as it was being manufactured.

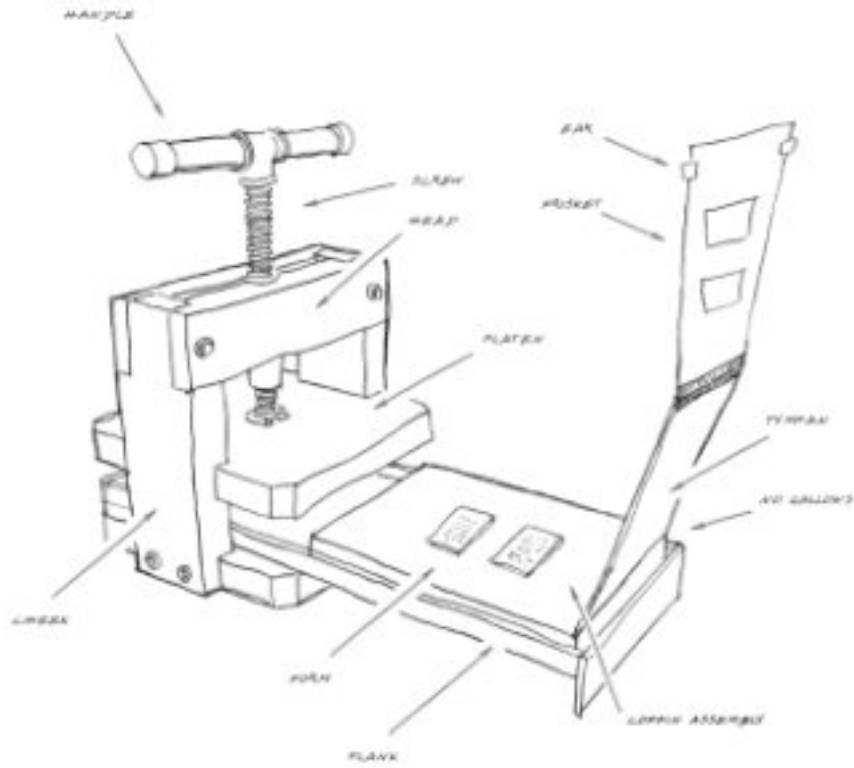
When Gutenberg and others began experimenting with the manufacture of type and investigated printing images with oil-based inks in fifteenth-century Germany, the large wooden screw press in the paper maker's shop was at the ready to be repurposed to this use. It quickly caught on and in 45 years many millions of books were printed. For three-hundred-and-fifty years, until the industrial revolution of the early nineteenth century, the standing screw press was the ONLY technology used in the West for printing. It was easy to operate, could be built readily by the village joiner and blacksmith, and produced fine quality work once the basic skills had been mastered. The technological revolution of the nineteenth century would sweep away the simple and efficient screw press and replace it with new sophisticated techniques for creating the pressure required to print a sheet of paper using relief

processes. ("Relief" printing involves the use of a raised surface which holds the ink. This is in contrast to intaglio printing in which the ink rests in an incised line in a plate.) As innovation roared ahead, the screw press was almost entirely forgotten. Only a very few of them would survive into modern times.

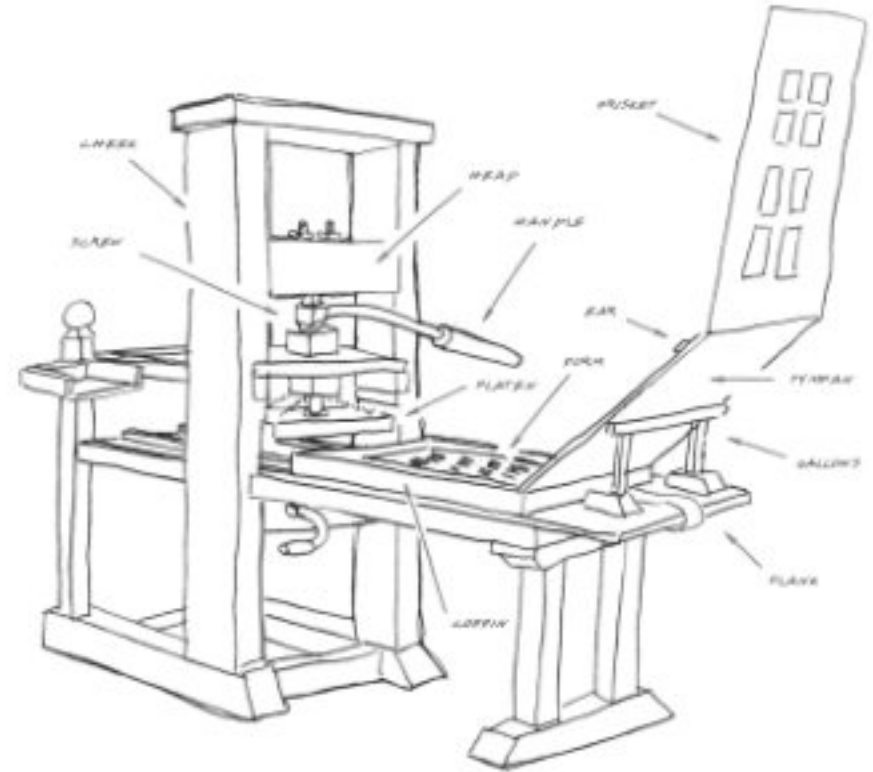
Yet the screw press was a remarkable machine. It was simple to use and easy to understand. It was slow (just over 200 impressions an hour printing at top speed with a pair of highly experienced press operators). But what a revolution the production of 200 printed sheets per hour would be in a world which had relied on the tedious scratchings of master scribes for the "publication" of texts!

Relief printing with the screw press had almost completely disappeared by the end of the nineteenth century, replaced by the agency of great iron beast-like machines using levers, clamshells, cylinders and other ingenious systems to print larger and larger numbers of impressions per hour.

Some of these printing behemoths survive and live in the print shops of artists and hobbyists where they have provided the tools for the current rediscovery of early printing technology. Carefully-crafted wedding paper, artists' books, and wood and linoleum prints can all be produced on these early relief presses.



**BookBeetle  
Desktop Screw Press**  
Circa 2023



**Franklin  
Wooden Common Press**  
Circa 1750

I have been demonstrating the use of the old wooden screw press on replicas built in the twentieth century. I teach students studying the history of the book who have professional aspirations as librarians and curators of special collections. While giving these demonstrations it occurred to me that it was unfortunate that we had forgotten the fine capabilities of these slow

**If you compare the working parts of a BookBeetle with an eighteenth-century wooden screw press, you will find the systems have been replicated accurately.**

but gentle presses. After a good deal of thought, I decided to redesign the screw press using some of the insights gained since its heyday. I knew it did not need to be so large and clunky

and that its essential system of linear pressure produced by the low power rotation of a simple screw was still viable. Studying some other small presses used for pressing botanicals and for book binding, I distilled all of these ideas into a simple desktop version of a letterpress. And the BookBeetle was born!

If you compare the working parts of a BookBeetle with an eighteenth-century wooden screw press, you will find the systems have been replicated accurately. I use many of the same names given by early craftsman to the parts of a

press to describe the construction of the BookBeetle, making the BookBeetle a perfect teaching tool.

## **TEACHING THE HISTORY OF PRINTING AND THE BOOK**

The BookBeetle was designed to facilitate teaching the story of Johannes Gutenberg and the birth of printing in the West. The fifteenth-century development of movable type and its use with a wooden screw press was one of the most important accomplishments in our history. The BookBeetle's parts mirror those of this press. Printing technology based on a screw-operated platen, a hand-composed form, and a tympan and frisket for printing adjustments would remain virtually unchanged for over three-and-a-half centuries. The BookBeetle's screw-driven platen, hand-composed movable form, hand inking, and use of a tympan and frisket give students the opportunity to play with and learn the essential aspects of this basic technology.

## THE PIECES

### Head and Screw

The BookBeetle uses a 1-1/8 inch steel vise screw to replicate the 2-1/4 inch diameter steel screw found on the eighteenth-century Franklin press. It's corresponding NUT is attached to a two-piece head instead of being embedded in the wood as in the historical press.

### Handle

A sliding vise handle replaces the steel BAR and wooden HANDLE on the Franklin press. Press operators often referred to the handle as the "Devil's Tail."

### Cheeks

The wooden uprights on the common press were known as CHEEKS, specifically the "near cheek" and the "off cheek." When the press operator pulled the bar with such strength that it actually touched the wooden side piece at the end of the pull, it was known as "kissing the cheek."

### Platen

This solid piece of wood hangs from the end of the screw. The PLATEN provides the pressure which pushes the sheet of paper against the inked surface of the type. The actual platen size on a Franklin-era common press was only about 12x18 inches. This is notable because this is just a bit

larger than the size of the BookBeetle's platen (12x12 inches), yet the press was eight times larger and as much as fifty times heavier! The platen was traditionally made of a thick piece of 3-inch mahogany to give it the rigidity necessary to create an even impression from the printing surface. The BookBeetle's platen obtains additional rigidity by being built from cabinet-grade Baltic birch plywood. The fifteen cross-laid plys of thin birch laminated into a 3/4-inch sheet gives it a surprising amount of stiffness. In the BookBeetle, these 3/4-inch sheets are then doubled in dimension by gluing two together to create a thickness of approximately one-and-a-half inches. Unfortunately perfect rigidity in a platen is a fiction, the screw's force will always decrease mathematically as the distance from the screw's central contact point is increased. When this pressure decrease is notable as a change in the type "color" (blackness), the problem is remedied in those particular areas on the sheet by carefully inserting small slips of paper PACKING between the two hinged-pieces of the tympan, thus increasing the pressure in that area by increasing the thickness of the tympan.

The platen's low power required a second modification. Paper to be printed was first softened to encourage the creation of a good uniform impression. Softening was accomplished by dampening the sheets with water. Sheets were dipped into a tub of water and the excess was



allowed to drain off. Alternated with dry sheets, the sheets were stacked under weight to prevent cockling. When all of the paper had achieved the proper humidity, (usually the next morning,) it was ready to print. The 12x18 platen on the common press restricted the printing to a page of a similar size. If a book was to be bound from folded sheets, the maximum size of the text block would be restricted by the 9x12 inch module. To print larger sheet sizes the sheet would be run under the platen a half sheet at a time. The FORM was rolled into the press, an impression was pulled and then the form was rolled the rest of the way under the platen to print the second half of the sheet. This two-pull printing technique was used to create larger books, such as the Gutenberg Bible (each page was just under 12x18 inches on an approximately 18x24 inch printing sheet).

### **Form**

The FORM is the material to be printed. Whether lead type, a photopolymer plate, a linoleum or wood cut. It presents the relief surface to which ink is applied and from which the impression will be made. In the case of movable type or a cut, the material to be printed is held in a CHASE or frame positioned with pieces of wood called FURNITURE and wedges known as QUOINS. (The BookBeetle is small enough to use a chase made of wood instead of the usual steel.) Very good printing can also be created from a digitally-produced photopolymer

(plastic) relief plate with an adhesive back. On the BookBeetle, it is adhered to a highly polished flat wooden base made of MDF. The plastic plate mounted on the wooden base is referred to as the form in this case. [MDF stands for "medium density fiberboard." This modern material has been engineered to very high tolerances to permit the application of a variety of sophisticated laminates in the furniture industry. I find it is a worthy substitute to far more expensive milled aluminum bases.] On the common press, the form is held in a wooden frame called the COFFIN, so I call our form (with tympan and frisket) a coffin assembly.

### **Plank**

What else would the coffin slide on? On a full-size common press the end of the plank also has a GALLOWS, a wooden frame which serves simply to hold the tympan up when it is open. Our plank is essentially a wooden tray which the coffin assembly slides on under the platen. (If you should find it difficult to slide a heavy lead-filled coffin assembly on the plank, simply put a drop of baby oil on the plank.)

### **Base**

The press BASE is self evident; pressure applied to the form is resisted by the inertia of this solid chunk of wood. On the Franklin-era press this function was performed by the WINTER, a thick,

often oak, beam below the platen. I find this name interesting since in post and beam building construction a summer beam is used to carry the joists.

## **Tympan**

From the same root as the word for the percussion instrument, the TYMPAN was originally two pieces of leather or parchment stretched tightly over an iron and wood framework. The two pieces created a sandwich which was intended to hold pieces of packing in place to even the pressure of the press over what might be an irregular form. (Ideally all of the type and cuts would be exactly the same height, but in reality some pieces might be ever so slightly PROUD or SHY.) On the BookBeetle we create the tympan sandwich from bookboard which is held together with a paper tape hinge and closure. The book boards can be covered with a clear acrylic painting medium if you would like to use dampened paper for historical authenticity.

## **Points**

Two sharp tacks are positioned in the tympan to hold the sheet of paper in place and to allow perfect register when the sheet is backed up (printed on the back). On the BookBeetle two small, flat-headed thumbtacks are inserted in the book board sandwich to accomplish this. [It is important that one find tacks with heads as

nearly flat as possible to prevent creating too much of a bulge in the tympan.] Often when you are making a print you don't want holes in the paper. In that case I make small paper corners (about 3/4 inch by 3/4 inch) and glue these to the tympan. Two corners provide adequate registration. Three corners can provide the kind of tight registration you might desire for a multi-color print from blocks.

## **Frisket**

Originally the FRISKET was a piece of strong paper stretched over a metal frame and attached by hinges to the tympan. The BookBeetle uses a piece of synthetic paper (plastic), trade name "Yupo" to serve this purpose without a frame. A frisket was created to exactly match the layout of the printing form. A new frisket was created for each job. Holes cut in the frisket allow the inked printing surface to touch the sheet while the rest of the frisket would protect the sheet from errant ink spread across the form during inking.

## **Ink**

PRINTING INK was invented with the printing press. The inks of the early fifteenth century were thin and water-based, designed for use in quill and reed pens. Printers would need a sticky ink of about the consistency of toothpaste to stick to the relief surface of the form. Using the recent discoveries with boiled linseed oil to create paints

for fine artists, printers had a material which could be prepared having the thick, sticky consistency they needed. Simple lamp black (the carbon-rich soot produced when burning a candle or lamp) provided the black pigment. For printing with the BookBeetle, I recommend using a conventional artist's relief printing ink. An oil-based ink is relatively slow to dry and creates a rich, velvety color. Clean up of oil-based inks used to require toxic solvents really not suitable for the home or classroom. The nontoxic art materials movement has discovered that the use of baby oil as a cleaning material is quite effective for cleaning rollers and plates. Residual oiliness can be removed with table vinegar. Baby oil is difficult to use with movable type, a plastic plate, or a handmade cut. In this case, to clean the form, I continue to print the form onto newsprint or other waste paper without reinking. This removes almost all of the ink and the form can be stored and then brushed clean at reuse. A second alternative is to use the new water-miscible relief printing inks. These clean up well with soap and water. (I use simple dish soap.) When printing photopolymer plates attached to a waterproof wooden BookBeetle base, cleanup is easy - simply immerse the entire form (after removing the tympan and frisket) in a dishpan of soapy water and scrub with a brush or cloth. I find that this system, while not quite as satisfying as printing with a genuine oil-based ink, provides an adequate print.

## **Paper**

Traditionally, paper used on the screw press was hand made from linen rags. When dampened, this relatively soft paper printed well. Today we have a variety of artists' papers available and there is often not time or inclination to dampen the paper. To work well with the BookBeetle, a dry paper needs to be relatively thin and soft. A lightweight printmaking paper works well. (Heavier printmaking papers are difficult to get a good impression from a low pressure hand press.) Paper need not be a huge expense, One of the best papers for demonstrations is just a lightweight newsprint. I really like using a 24lb writing paper (Neenah Classic Crest Writing works well). I recently discovered that thin chip board like shirt cardboard can print quite well from well-inked wooden type.

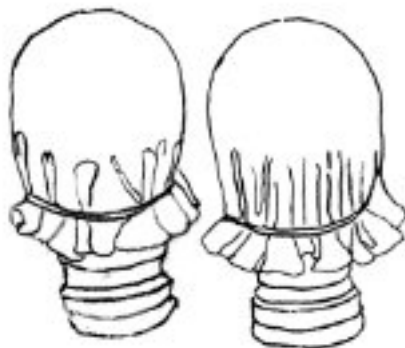
## **Ink Balls and Rollers**

Ink was applied to the raised surface of the form on the original common press using INK BALLS. Wool was packed into a cup-shaped wooden handle. Soft leather was attached over the wool and the resulting surface could be used to evenly distribute ink over the surface of the form. The improved capability of an ink roller was not available until the nineteenth century and thus a roller is not historically contemporary with the wooden hand press. For the BookBeetle I recommend using a soft rubber roller designed

for printing linoleum blocks. An ink plate will be necessary for rolling out the ink. When the traditional piece of thick plate glass (never thin window glass) is not available, a piece of freezer wrap (a plastic-coated paper sold next to wax paper at the grocery) can serve effectively. Simply tape a letter-size sheet of freezer paper to a piece of smooth, hard, book board and a suitable surface for rolling out ink has been created. Pleasantly a rolling plate such as this requires no clean up, the freezer paper can be removed from the book board and disposed of.

## ASSEMBLING INK BALLS

Small, hand-sized ink balls are now available for the BookBeetle press. These are constructed from a wooden handle (BALL STOCK), wool stuffing, and a soft leather cover. Traditionally held in place with tacks, a rubber band now does the job quite well since the ink balls must often be disassembled to care for the leather covers. It is essential that the leather covers be soft and pliable. Hard, dry, shoe-type leather WILL NOT serve. The soft chamois



leathers provided with the BookBeetle's ink balls need to be stored in water when not in use for a few days. For longer periods the leather covers can be covered with water and stored in a plastic container in the freezer. When assembling, the leather covers need to be well wrung out, creating a barely damp yet wonderfully soft inking surface.

## ASSEMBLING A FOLDING TYMPAN AND FRISKET

The folding tympan and frisket requires a bit of practice to use effectively. I recommend using the box chase and box base and the instructions for "Direct Printing" for simple printing. Building the tympan and frisket requires crafting skills similar to those used for simple bookbinding. Printing with the tympan and frisket is easy, but fine printing requires a bit of practice. A famous professor of printing history once said while teaching printing on a standing press, "You can read it can't you!" Using the BookBeetle Press is VERY MUCH like printing on a full-size wooden common press. Traditionally the process of preparing a form for printing on the wooden common press required a process known as MAKE READY. This time spent cutting the frisket, adjusting the packing in the tympan, and finding just the right amount of ink to use could easily take longer than the actual "editioning" of the printed piece.

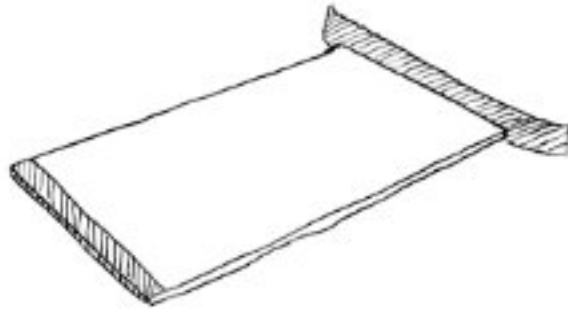
The BookBeetle's folding tympan and frisket are constructed from two pieces of 9x12 inch book binders' board, a 9x12 inch piece of synthetic paper (a washable paper like the brand known as "Yupo"), and a roll of 1-1/2 inch paper masking tape. You will be creating hinges on both 9-inch sides of two pieces of book board, so first cover each end with a strip of the masking tape centered in place. Then place the two pieces of book board together and use the masking tape to create a hinge on a 9 inch side. On the other end of the sandwich you have created you will make a reopenable closure by applying a strip of tape which has been narrowed by 3/16 inch by having one edge folded back upon itself. This technique creates a nonadhesive tab which can be used to open and shut the book boards when the tape is applied to the opposite 9-inch end of the book boards as a sandwich. This sandwich of book board is your tympan, it has just the right composition to absorb and apply the platen's pressure to the form. The reopenable hinge allows the tympan to be opened so that packing in the form of small pieces of paper can be added to increase pressure in different areas of the form. This is exactly the process used on a full-size common press.

You now need a way to "hang" the printing sheet to be printed on the tympan. Your sheet can easily be as large as 8-1/2 x 11 inches. Center your sheet on the tympan, find its center line along the

11-inch side and using a push pin or similar device push two holes through the paper into the book board. Remove your sheet of paper, open the book board sandwich and push those holes entirely through one book board. Now with the sandwich open, place a thumbtack snugly in each hole and close the sandwich and seal the reopenable end. You have created the POINTS on which you can hang the sheet. The sheet is simply pushed into place over the ends of the thumbtacks. (You need to clip the ends off the thumbtacks with a pair of wire cutters to get just the right length for them to fit into your form and yet still hold the paper in place.) Positioning the two points with one point closer to the edge of the book board than the other will create an asymmetry which allows you to perfectly "back up" the sheet when you print the opposite side. Points work well when printing a sheet to be folded. The holes left by the points hide in the fold. If you prefer not to imitate the technique used on the original wooden screw presses, you can create paper corners and glue them in position on your tympan. Two corners near the short edge of the tympan are sufficient, but for more perfect registration of multiple colors I use three corners. Dampened paper can be printed on this tympan if before taping it together you make the boards waterproof by brushing on a coat of clear acrylic medium.

To create the frisket, first cut 1/4-inch off one

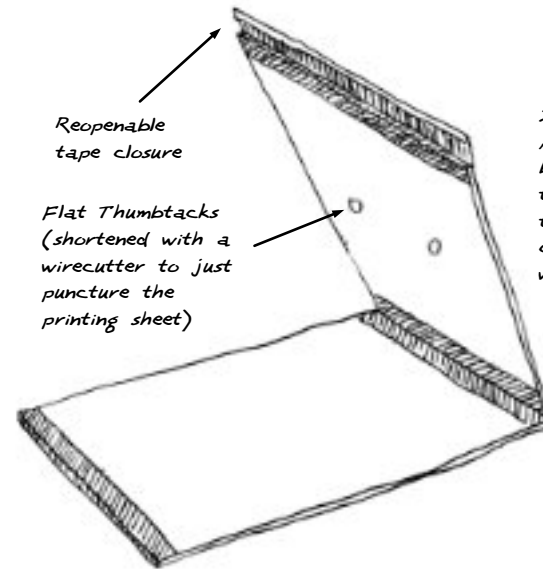
## bookbeetle



*STEP ONE*  
Taping the ends of two pieces  
of book board.

9-inch side of the synthetic paper. Use masking tape to hinge the 9-inch side to the tympan along the side with the reclosable opening (it is important you tape the frisket to the correct end of your sandwich). Now tape the other end of your tympan frisket assembly to either your solid wooden base (for photopolymer plates) or your wooden chase. Use a strong plastic tape to reinforce the corners of this hinge along the sides of your base or chase. A folded acetate reinforcing hinge can be inserted here to reduce fishtailing of the tympan when closing. Now to finish your frisket you need to cut out windows where your printed image is to show through. The easiest way to do this is to ink up your form and print your image on the frisket using the BookBeetle press. Remove your printed tympan by untaping it's

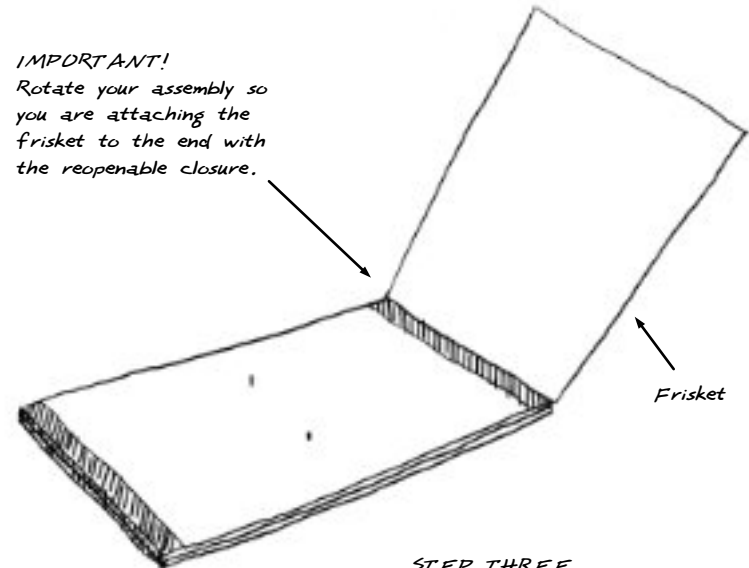
## assembly



Reopenable  
tape closure

Flat Thumbtacks  
(shortened with a  
wirecutter to just  
puncture the  
printing sheet)

*STEP TWO*  
Attach the two pieces of  
book board together with a  
tape hinge. Punch the  
thumbtacks in place and  
create a reopenable closure  
with tape.

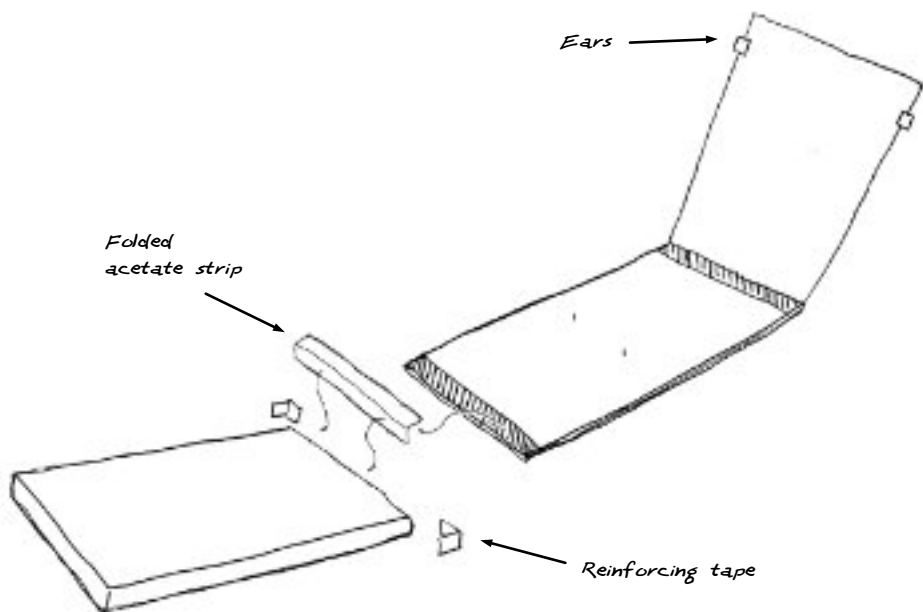


*IMPORTANT!*  
Rotate your assembly so  
you are attaching the  
frisket to the end with  
the reopenable closure.

Frisket

*STEP THREE*  
Use tape to hinge the frisket  
to the closed tympan sandwich.

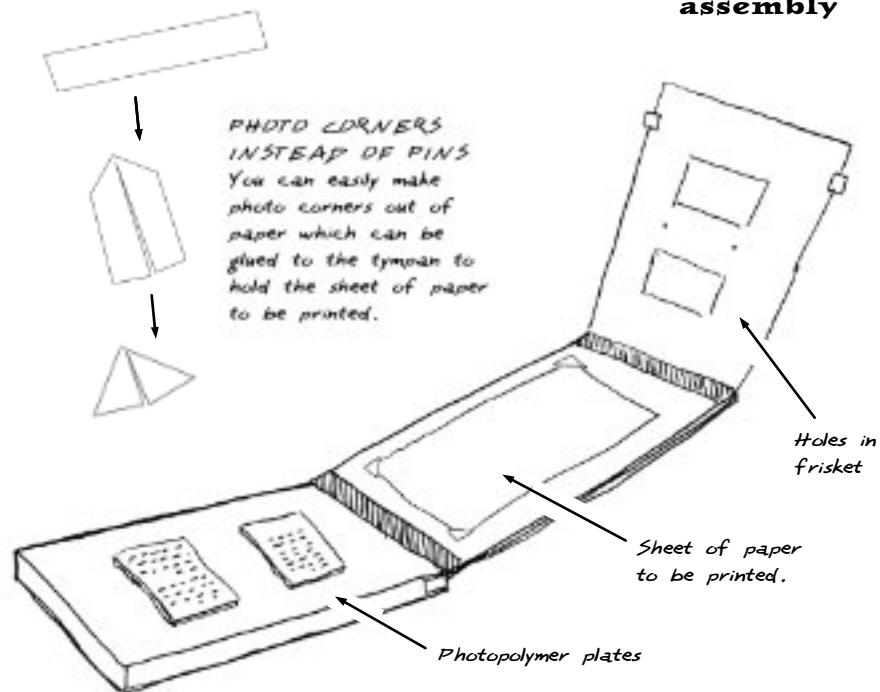
## bookbeetle



*STEP FOUR*  
Hinge the tympan to the wood base (or chase) with an acetate hinge held in place with double-sided carpet tape.

hinge and using a sharp craft knife, cut windows around the printed areas to remove them from the frisket. Retape the frisket to the tympan. You can add EARS to the frisket by using a small piece of masking tape to create a tab on each long side of the frisket. These tabs help you to hold the frisket shut as you open the tympan after printing. You have now completed your coffin-tympan-frisket assembly which very nearly

## assembly



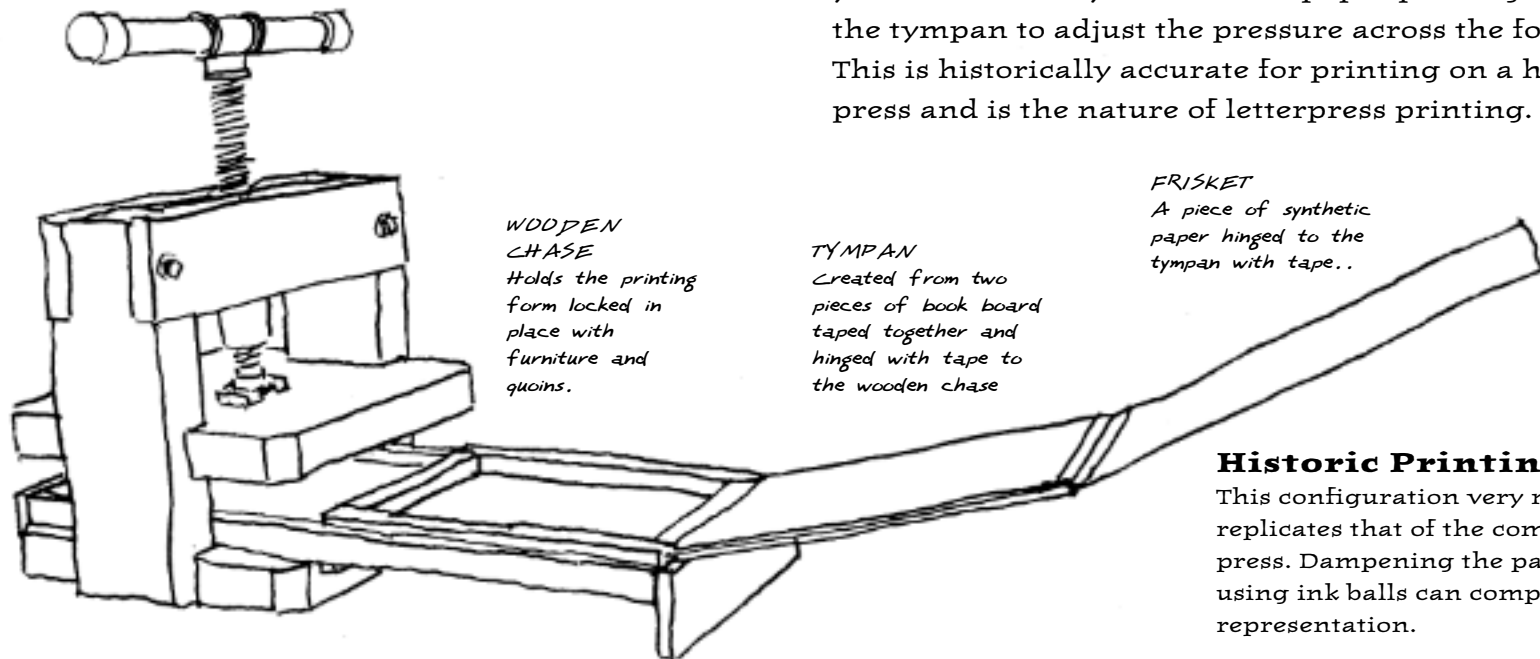
*THE COMPLETED COFFIN ASSEMBLY*  
Diagram shows photopolymer plates attached to the wooden base. (This could be replaced by a wooden chase containing a type lockup.)

replicates these parts of the original wooden common press. When you hang the sheet to be printed, folding the frisket in place will protect it from inking in the wrong places. If areas of your printed sheet appear to be light even after you have carefully and evenly inked your form, you can open the tympan sandwich and position pieces of paper between the boards as "packing patches" to increase the pressure in that particular area. I find that tearing pieces of "Post-It"

material for this purpose works nicely since the removable adhesive holds them in place. Finally, if you are doing a lot of printing from small metal or plastic type, you will find that the book board tympan eventually becomes dented and will affect the quality of your printing. This denting can be reduced a bit by taping a sheet of mylar or acetate to the tympan.

## PRINTING MOVABLE TYPE

You can build a form from movable metal and wood type in the wooden chase in the same manner as you would for any other letterpress.



**WOODEN CHASE**  
Holds the printing form locked in place with furniture and quoins.

**TYMPAN**  
Created from two pieces of book board taped together and hinged with tape to the wooden chase

**FRISKET**  
A piece of synthetic paper hinged to the tympan with tape..

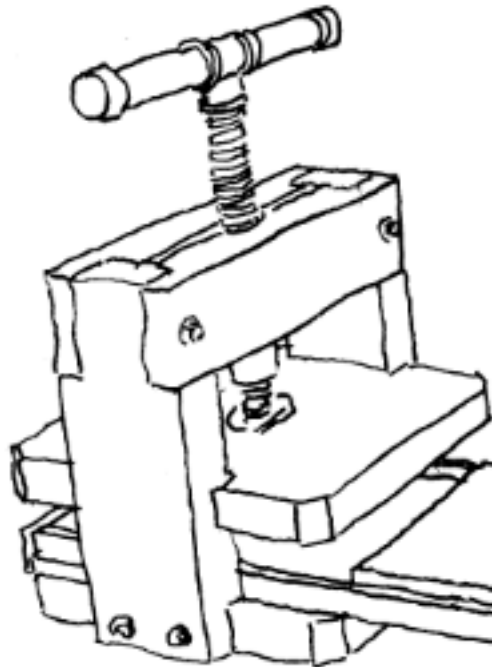
### Historic Printing

This configuration very nearly replicates that of the common press. Dampening the paper and using ink balls can complete the representation.

The wood furniture and quoins (wedges) supplied with the press can help you create a secure LOCK-UP. (If the wedges don't hold well, wax their surfaces with beeswax.) Ink your form with an even, thin layer of ink using an ink roller and inking plate. Alternatively ink balls can be used for an historically-accurate printing demonstration. Hang your sheet on the tympan using points or paper corners. Carefully close the coffin assembly, place it on the plank (the wooden tray), and slide it under the platen of the press. Now screw the platen down firmly against the tympan to print your sheet. Experiment with different inkings and pressure on waste paper until you obtain just the impression you seek. You may want to add paper packing inside the tympan to adjust the pressure across the form. This is historically accurate for printing on a hand press and is the nature of letterpress printing.



The irregularities and imperfections created when using the hand press are part of the charm of this form of printing. Play with these surprising contributions from the press and consider the press an equal collaborator in your creative process. Metal type is almost infinitely reusable (with care) and the BookBeetle is a low pressure press reducing the possibility of crushing type (a common problem on cylinder and clamshell presses). Carefully clean your movable type with mineral spirits. I use a little baby oil to clean my inking plate and roller. If it is still greasy after cleaning, I use table vinegar to complete the cleaning. I highly recommend minimizing the use of toxic chemicals in your printmaking.



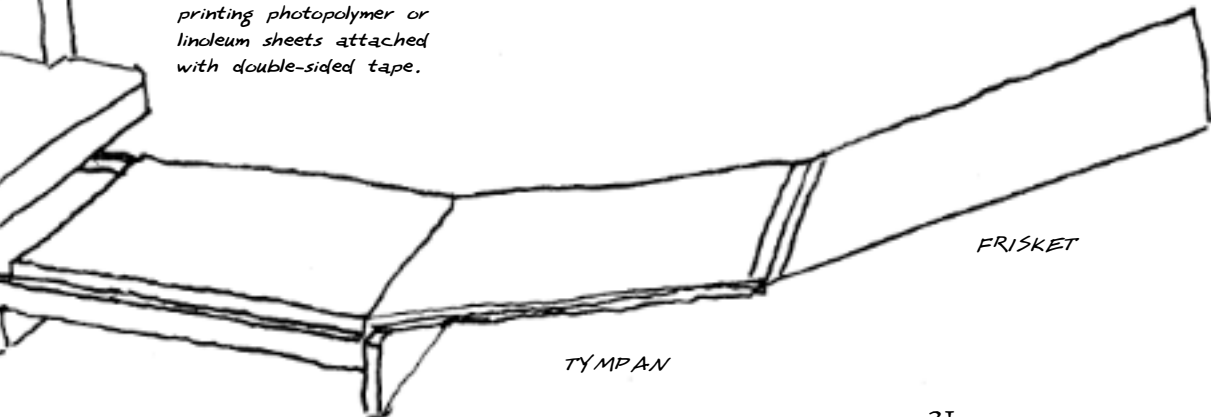
*A WOODEN BASE  
instead of a chase.  
A piece of MDF  
provides a surface  
sufficiently uniform for  
printing photopolymer or  
linoleum sheets attached  
with double-sided tape.*

## PRINTING FROM A PHOTOPOLYMER PLATE

The use of a photopolymer plastic plate allows you to print from any line image or type you create on your computer. The image you create is saved as a high resolution PDF and is sent via the web to a photopolymer plate-making company such as Boxcar Press. Your perfect relief plate is returned to you by mail. (Photopolymer plates are expensive, and you may want to consider learning how to compose and set reusable metal type following safe lead-handling recommendations instead.) Order your photopolymer plate with a removable adhesive back. Remove the adhesive's protective covering and position your plate on the

### Printing Photopolymer

Attaching a photopolymer plate directly to the wooden base eliminates the need to use the wooden chase, wooden furniture, and quoins.



specially finished wooden base provided and you will have created your form. Print your plate using the same procedure outlined earlier to print movable type. After printing, clean your plate as recommended by its manufacturer, or if you are using some of the new water-miscible oil-based relief printing inks, you can immerse your entire waterproof wooden base with plate attached (after removing the tympan and frisket) in a dishpan of warm soapy water for easy cleanup. After your plate is dry, reattach the protective sheet to the adhesive and store your plate for future use.

## **PRINTING LINOLEUM CUTS OR WOODCUTS**

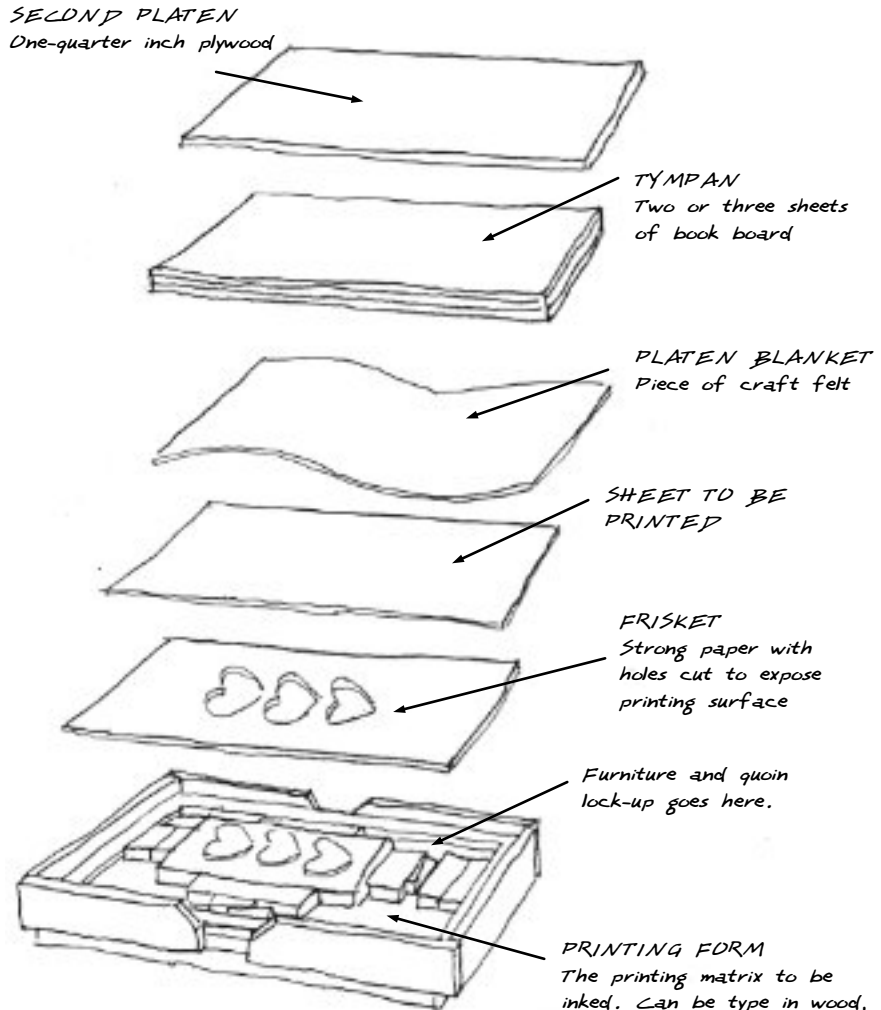
The BookBeetle is a perfect tool for printing editions of relief prints from linoleum or wood. It is far easier to use than rubbing with a hand baren, yet it still permits the careful control of inking and pressure artists seek from the printing process. The BookBeetle allows good registration of multiple colors when using the box chase or box base. Linoleum mounted to a block is easy to “lock up” with furniture and quoins in the wooden box chase. Sheet linoleum can be directly placed in the box base or attached to a 9 x 12 piece of acetate or shirt cardboard for perfect registration.

## **DIRECT PRINTING WITH THE BOOKBEETLE**

A wooden desktop screw press is probably the easiest and safest way to enjoy relief printing. There are no complicated metal parts or rolling cylinders to catch unwary fingers or hair. It can be used at whatever speed the operator likes.

Relief printing is a bit like simple cooking. It requires a bit of time and practice to get to know the tools and materials and how they behave. But like working in the kitchen, the skills are not difficult to master. Essentially, relief printing is the application of a thin film of ink to a relief matrix. This matrix or raised surface can be metal or wood type, carved blocks in linoleum or wood, plates created photographically from plastic, or collages of various printable materials. The ink used is not like drawing ink, which would roll off the printing surface. Instead print making ink is thick and sticky, more like creamy peanut butter. This allows it to remain on the top of the printed surface ready for the application of the paper. Once the paper is applied, even pressure is created to transfer the matrix image to the paper **IN REVERSE**. These few variables, the nature of the ink and how much is used, the type of paper used, and the amount of pressure used will determine the quality of the print.

An historic screw press uses the addition of two extra bits to facilitate to printing: the tympan



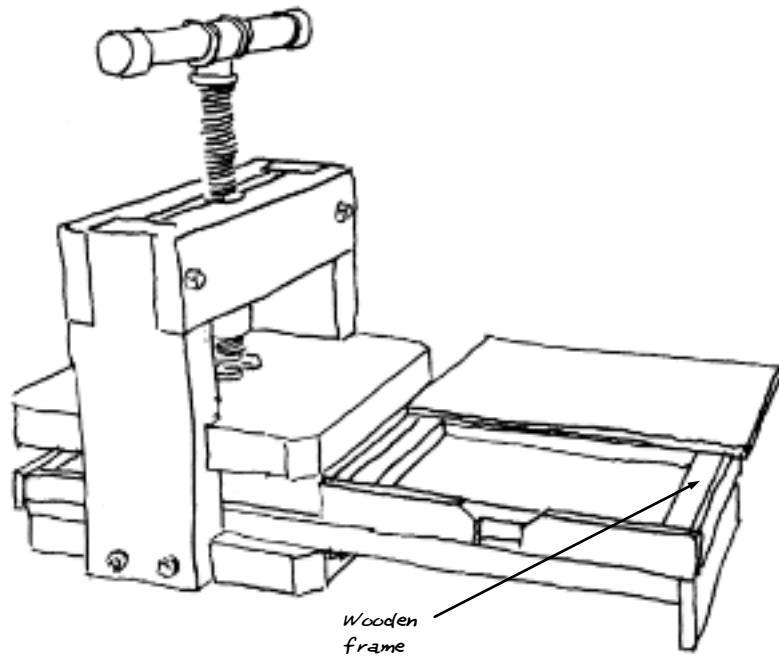
**Creating a Direct Printing “Sandwich”**

Stacking the materials shown is the easiest way to print on the BookBeetle. Careful inking may allow you to dispense with the frisket as well.

and the frisket. The tympan, pieces of hard yet compressible book board, spreads the pressure evenly over the inked matrix. [The use of a piece of craft felt as a platen blanket assists in spreading the pressure.] The frisket is a sheet of paper which is cut to the contours of the printed image to protect the printing sheet from ink spread elsewhere on the matrix.

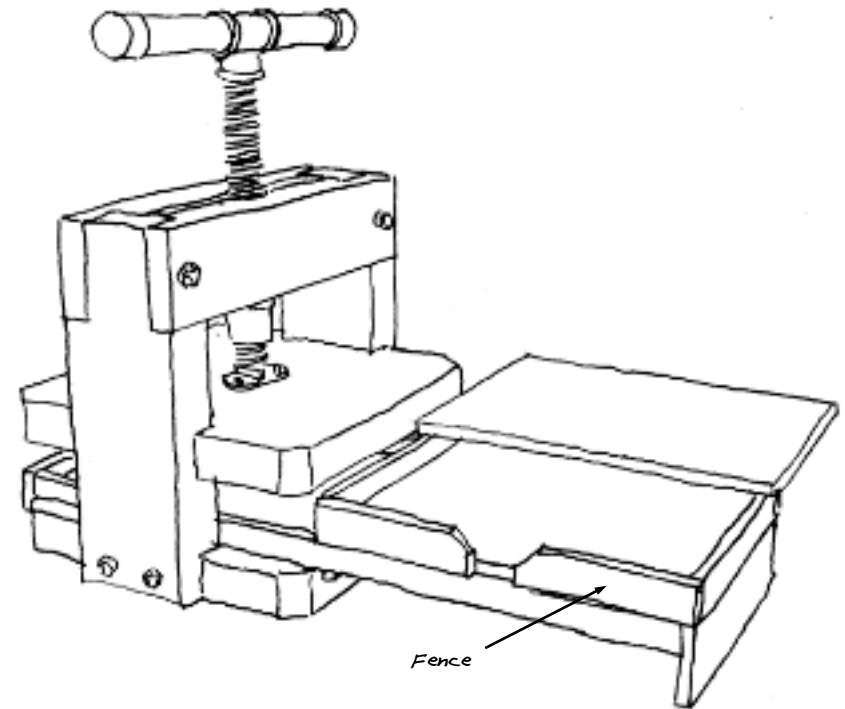
In DIRECT PRINTING with the BookBeetle a box chase or a box base is used and all printing is based on a 9x12 inch module. Printing paper, tympan boards, platen blanket, and the frisket sheet are all cut to this exact dimension and held within the sides of the low wooden fence which creates a box around the chase or the base. Laying the printing sheet, frisket, platen blanket, and tympan boards over the inked matrix is fast and easy. Even children can do this without smudging. Pressure is then added by sliding this “sandwich” of materials under the platen and turning the screw. When the screw is released and the box is slid back out, the tympan, frisket, and platen blanket are removed to reveal the printed sheet.

The 9x12 size accommodates most printing projects. Printed pieces smaller than 9x12 are easily trimmed down from the larger sheet just as is done in commercial printing. Stationery letterhead fits on a 9x12 sheet. Booklets as large as 6x9 can be created by folding, trimming, and sewing together printed sheets. [This essential booklet form is the basic unit of every book. It has often been called a



### Printing with the Box Chase

The Box Chase has a one-inch wooden frame which imitates the steel chase used on large letterpresses. The printing material is locked up within this chase using furniture and quoins.



### Printing with the Box Base

The Box Base has no outside frame. A sheet of linoleum or photopolymer can be attached to a 9x12 inch piece of card stock with double-sided tape and placed within the fence edges. Multiple colors can be easily printed by creating multiple forms all attached to sheets of 9x12 inch card. Similarly, adhesive-backed craft foam can be cut into desired shapes and attached to 9x12 inch card stock to create a printing form.

“chapbook” when used for poems or short texts.]

Multicolor printing can be easily accomplished since the 9x12 box allows almost perfect register between impressions. One of my favorite ways to introduce printing to children is to have them cut out pieces of adhesive foam (sold by arts and crafts suppliers) and attach them to a piece of 9x12 inch shirt cardboard. Rolling this foam and cardboard matrix with ink and then using it to print from in the BookBeetle provides quick and practically painless printing.

## PRINTING TIPS: INK & PAPER

The BookBeetle allows very careful exploration of all of the factors involved in making a good impression. These factors, as I understand them, are ink, pressure, and paper. (Of course, the nature of your printing matrix has the most direct effect.) It is the range of possibilities that can be obtained using these three elements of the process which make printing an art form. Wonderfully, printing is not a solitary expression of creativity, instead it is a collaboration; the artist working

**printing is ... a collaboration; the artist working closely with the variables introduced by the press and the materials chosen for printing.**

closely with the variables introduced by the press and the materials chosen for printing.

## Inking on the BookBeetle

I experiment with different inks all the time, but I return to oil-based inks. I am still learning a lot about the nature of this classic ink which uses linseed oil and pigment. Oil-based ink prints nicely, stays open (does not dry on the plate) long enough for me to fiddle and play with make-ready. And I like cleaning up oil-based ink with baby oil. It just smells relaxing.

I have recently been experimenting with Akua water-clean up ink as well. This remarkable ink stays open on the plate and is supposed to dry only on paper.

Inking the BookBeetle is very hands on. You have absolute control of how thick the ink layer is going to be on the printing surface. The challenge is to duplicate that thickness when printing an edition. I use a Speedball soft rubber roller (brayer) to roll ink out on a glass plate and apply it to the printing surface. This allows me to really see how the ink is behaving and how thick I want it to be. It also gives me a chance to carefully mix inks to get exactly the color I am seeking.

## Paper for the BookBeetle

Nothing seems to print as well as newsprint. Go figure, the news industry has spent millions developing this material. It is hard surfaced, not

too absorbent, and lightweight. All make for easy clean printing. Changing the printing paper's surface, weight, and absorbency will have a dramatic affect on the printed image. Printing on traditional heavy soft cotton printmaking paper is challenging. It requires careful adjustment of the ink layer and the pressure. I really like using a 24lb writing paper (Neenah Classic Crest Writing works well). Surprisingly inexpensive shirt cardboard, "chip board", has a polished hard surface that is easy to print on. I love to use this with children since the resulting piece will stand up to rough handling.

## PRINTING TIPS: PRESSURE

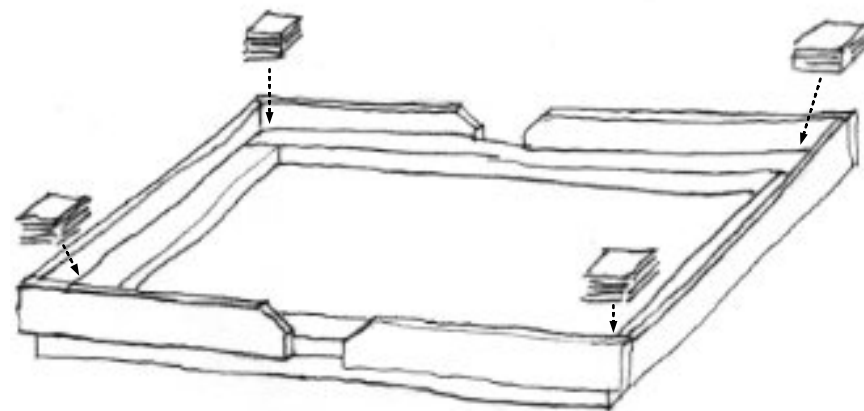
The screw on the BookBeetle allows the operator to very carefully adjust how much pressure is used on the inking surface. But unlike a cylinder press, a screw press has had an inherent weakness since its original invention. The pressure under the platen varies. It lessens with the distance from the center point of the platen. When printing forms made up of only type, this is often not noticeable. But when printing large solids from cuts, the pressure change can be apparent and requires careful makeready to eliminate.

What is "makeready"? Makeready is the process of preparing the form for the ideal impression. Makeready is a large part of the

process of printing on a letterpress. When the first sheet is printed and reviewed, it may be discovered that there are improvements necessary to obtain an even impression across the sheet. The time invested in "making ready" can occasionally exceed the time spent printing an edition!

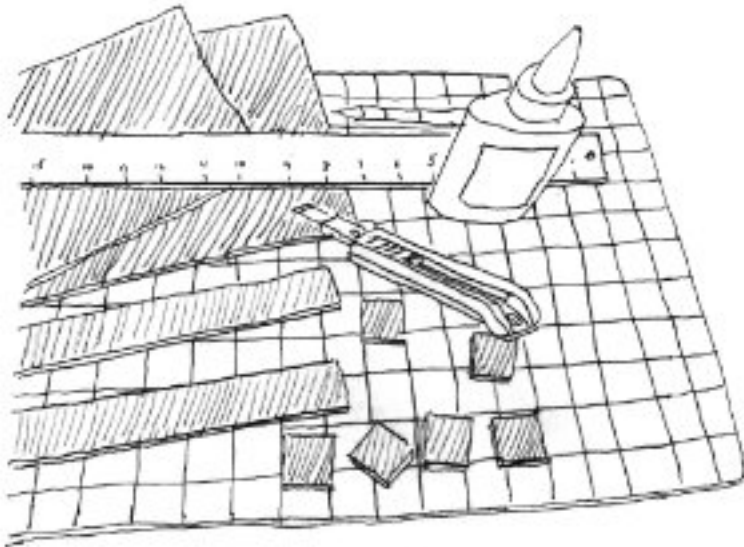
There are three adjustments that can be made in the make ready process: form bearers, platen blankets, and packing patches.

**Form bearers** are small stacks of book board inserted into each of the four corners of the form.



### Using Form Bearers

This diagram shows the use of form bearers to ensure that the platen descends evenly over your printing surface. I use one-inch by one-inch pieces of book board stacked and glued together. I then set each small cardboard column loosely in the corners of the base (shown is a box chase).



### **Making Form Bearers**

Cutting scrap pieces of book board into one-by-one inch squares and glueing together into columns.

These ensure that the platen is resting evenly across the form as it adds pressure behind the sheet. The platen descends and rests securely on these four corners (they act like the legs on a table). As the pressure is increased on the screw, the platen settles evenly across the form with even pressure from side to side and top to bottom.

**Platen blankets** adjust the “hardness” of the platen’s impression. The book board tympan provides a moderate amount of hardness as it presses against the printing material. Adding a piece of felt as a blanket just above the printing sheet and below the tympan will soften the



### **Placing a Platen Blanket**

I use of piece of 9 x 12 inch craft felt as a platen blanket. I place it directly over the sheet to be printed and under the bookboard tympan. It helps to spread the platen’s pressure more evenly.

pressure and spread it more evenly across irregular sections of the printing form. Occasionally you may want to experiment with harder packing, in that case a sheet of acetate is used instead of the felt. [When you switch to a new form with new material to be printed, you will find that the last printing will have left indentations in your book board tympan. If these interfere with the evenness of the printing of your next form, you can place a new piece of book board below the tympan in place of the felt or acetate.]

Finally, what I call “**packing patches**” can be used to increase the pressure over a particular part of the form where the impression seems to be light. A packing patch is created by slipping a bit of paper between the tympan boards to increase the pressure in the light areas. This has been the operating procedure for screw presses since their first appearance. This is why the Franklin-style common press and its predecessors had a two layer tympan. The two layers are easily separated to insert the patches [Occasionally, when printing a wood block or linoleum block, a slip of paper can be placed UNDER the block to increase pressure.]

Makeready is the process of preparing to make the most perfect impression possible from the form. In many cases, the unevenness of the impression can be found to be desirable, creating a “letterpress look.” In that case the makeready process can be abbreviated or dispensed with.

## USING THE BOOKBEETLE WITH CHILDREN

The BookBeetle is an ideal press to use to introduce children to the joys of letterpress and relief print-making. It is a completely kid-friendly machine! All moving parts are controlled by gentle hand pressure and there is no opportunity for fingers to be crushed or hair tangled in moving machinery.

**The BookBeetle allows printing without any lead materials whatsoever. I call this system “Lead-Free Letterpress.”**

One of the major barriers to involving children in letterpress printing is the preponderant use of lead for type and other printing materials. Children should not be exposed to this hazardous material. The BookBeetle allows printing without any lead materials whatsoever. I call this system Lead-Free Letterpress. New wood type, unexposed to lead dust, and similar wood spacing material can easily replace metal type. Photopolymer can be used to create friendly printing plates from computer files. Children can also create printing matrices from the new relief printing materials available from art and craft suppliers. Adhesive sheet foam can be cut into letters or shapes and attached to a 9 x 12 inch piece of shirt cardboard to create the easiest



matrix. Vinyl sheet (known as “Easy-to-Cut Linoleum”) can be carefully carved with linoleum tools. The cut sheet can then be attached to the 9 x 12 inch cardboard with double-sided tape,

Finally it is important to me to reduce the exposure of everyone to toxic solvents. For this reason, I advocate the use of baby oil for the clean up of oil-based inks. Water-based and water-miscible inks can be used with the BookBeetle, making sure to dry the wood surfaces after use. (The BookBeetle’s wooden surfaces have been coated with a waterproof sealer to protect them from moisture and to facilitate ink clean up.)

## **WOOD TYPE**

Wood type can now be purchased with the BookBeetle. This font, BookBlossom, created especially for the BookBeetle is simple and easy to use. It provides an essential introduction to typesetting (“composition”) for beginners. It also introduces the principles of “locking up” a form in a chase. BookBlossom is a monospaced, all-caps font in an easy-to-handle size. Most importantly, made of wood, it allows children a typesetting experience without the danger of exposure to lead. Wooden spacing material is provided for word and line spacing. The word spacing comes in two sizes: the “M-space” (the same width as each letter of type) and the “N-space” which is half the width of an M-space. The line spacing is

“pica” thick (1/6 of an inch). (The pica is the basic unit used along with points in typesetting.) Two different lengths of line spacing allow use of a portrait or landscape format when “locking up” the “form” in the chase. Names and short sentences or phrases can be easily set with this type to give beginners an accurate introduction to printing with movable type.

## **MAGNETIC BASES**

Friends at the University of Maryland BookLab suggested the use of a steel insert in the box base. This allows one to avoid the need for furniture or quoins all together. Simple magnets are used to lock type and cuts into place. These bases are now available for purchase.

### **Important Note**

The steel carpenters’ shoulder vise used to create the BookBeetle Press is powerful. It is important to NOT OVER TIGHTEN THE PRESS. Over zealous students can clamp the press down and discover the limits of the strength of the sturdy wooden structure and steel bolts. New versions of the BookBeetle use bolts more than twice as strong as those used in the first version. Nonetheless, if you do experience a failure of any parts of the BookBeetle press please contact Josef Beery and I will arrange for repairs.

## ADDITIONAL SUGGESTIONS

BRACING THE BOOKBEETLE on the workbench is helpful. I screwed strips of wood to my table top to hold the press. Alternatively you can attach the base to your workbench top with small steel angles. Some folks report that certain types of non-slip mats are effective.

PRINTING LARGE SOLIDS, like wood cuts and wood engravings requires careful work. For a low pressure press like the BookBeetle you will get best results with a thin smooth paper like newsprint. Shit cardboard with its smooth surface works well, too. Experimentation can be done with dampening heavier printmaking papers. Although not traditional for artist's prints, coated papers can be experimented with as well.

## THE BOOKBEETLE COMMUNITY!

An Instagram site has been created to share all of our activities with the BookBeetle press. You can find it at [@bookbeetlepress](#). Additionally postings are made to [#bookbeetlepress](#) and [#bookbeetle](#). Please feel free to link your activities with the BookBeetle to these sites with photos, videos, and descriptions. I am thrilled to hear from BookBeetle owners about their experiences and see the work they are producing. Feel free to write me at [josef@josefbeery.com](mailto:josef@josefbeery.com) with your stories or questions!

## **FURTHER READING**

Warren Chappell, *A Short History of the Printed Word*, Hartley and Marks Publishers

Denis Diderot, *Encyclopédie*. Vol. 7, *Letterpress Printing (Imprimerie)*, Briasson

Denis Diderot, *Encyclopédie*. Vol. 8, *History of Printing (Imprimerie)*, Briasson

Stephan Füssel (Douglas Martin translator), *Gutenberg and the Impact of Printing*, Ashgate Publishing

Philip Gaskell, *A New Introduction to Bibliography*, Oak Knoll

Elizabeth Harris and Clint Sisson, *The Common Press*, 1978, David R. Godine Publisher

Keith Houston, *The Book*, WWNorton Publishers

Albert Kapr, (Douglas Martin translator), *Johann Gutenberg The Man and His Invention*, 1996, Scholar Press

John Man, *The Gutenberg Revolution*, Bantam Books

Joseph Moxon, *Mechanick Exercises on the Whole Art of Printing*, 1683, Dover Reprint

Sarah Werner, *Studying Early Printed Books 1450-1800*, Wiley Blackwell

Lawrence C. Wroth, *The Colonial Printer*, 1931, Dover Reprint

## **SUPPLIES**

Boxcar Press, [www.boxcarpress.com](http://www.boxcarpress.com) Photopolymer plates

Skyline Type Foundry, [www.skylinetype.com](http://www.skylinetype.com) New type and furniture

Virgin Wood Type, [www.virginwoodtype.com](http://www.virginwoodtype.com) Brand new wood type, unexposed to any lead

Speedball, [www.speedballart.com](http://www.speedballart.com) Inks (including Akua) and relief printing tools

McClain's Printmaking Supplies, [www.imclains.com](http://www.imclains.com) More inks and relief printing tools

Graphic Chemical and Ink, [www.graphicchemical.com](http://www.graphicchemical.com) Inks and paper



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