Transforming of Personal Grooming Tools into Paper Perforating Pens

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Conservators commonly use needles and scalpels to cut intricate shapes from paper for filing losses in paper artifacts. This method is slow and often stressful on the hands. The Crayola Cutter, sold as a toy for children, uses a wand fitted with a retractable needle to perforate paper, so that it can be pulled apart without the use of scissors. Some conservators have adopted it for cutting fill. The concept of the cutter is ingenious. In practice, however, its lack of power and awkward design prevent it from being considered a serious tool. The quest began to find a hand-held power tool that produces similar results without any of these issues. A design for a device seen on the Internet, made by prison inmates, came surprisingly close. It is a home-made tattoo gun, created by fitting a sewing needle to the shaft of a battery-powered spin toothbrush. The spin toothbrush actually operates in a linear motion, in that when a needle is attached to the shaft, it can punch a series of holes in paper, as the Crayola Cutter does. In fact, toothbrush tattoo guns are available for purchase online. They are fitted with a professional grade tattoo needle and are marketed to breeders for tattooing identification numbers inside the ears of show animals. Unfortunately, both toothbrush devices proved too bulky to hold comfortably in the hand and to manipulate. Modifying a smaller, more ergonomically designed appliance became the next logical step. Personal grooming tools such as nose, ear, and facial hair trimmers were selected because they are small, powerful and many operate in a linear motion. The grooming tools of choice, powered by an AA or AAA battery, can be modified using parts from mechanical pencils, and a sewing needle. Two versions, the larger for heavier weight papers, have been designed, built and tested. The paper perforating tools, paired with a cutting base, handle like a pen. They can be used effortlessly to draw a series of small holes in a fluid motion. The perforated line is then pulled apart to create a feathered edge. The beauty of these tools is that they can be used on a variety of paper thicknesses. Instructions on how to make two perforating pens from two models of trimmers presently on the market are illustrated below.

PAPER PERFORATING PEN MODEL #1
REMINING PRECISION PERSONAL TRIMMER

CONSTRUCTION
MATERIALS
Remington Precision Personal Trimmer Model Mpt 3900, Zebra Z-Grip, 7mm & Papermate Clear Point. 3mm mechanical pencils, #24 chenille sewing needle, Elmer’s epoxy, Pliastric Plastic Weld adhesive, disposable gloves, tape
TOOLS
Jeweler’s saw, wire cutter, tweezers, utility knife

PERFORATING PENS: HOW TO USE THEM
In order to operate smoothly, perforating pens must be used on a cushioned cutting base. Four techniques for using the pens are presented below.

CUTTING FILLS FOR LOSS COMPENSATION

Mouse pad cutting base, style on rubber 9.5” x 8”

- Step 1: Working on a light table, place fill paper over base. Trace fabric fiber line with a pencil.
- Step 2: Place straight edge along pencil line. Scribe a line with a paper knife. Begin thin separation there.

PERFORATING STRIPS FOR MENDING

Long fibered papers & heat/solvent set tissues
Strips for mending can be made in advance, by drawing lines consecutively across a sheet of paper with a perforating pen & a ruler. They can be pulled apart for use when needed. Sheets can be perforated in long strips or in a grid pattern. Vary the distance between the grid lines to create separations in a range of sizes ready to use. With heavier set tissues, the perforated edges are separated more easily. To separate perforated fill, do not let dry. Remove tape & repeat process if need be.

- Step 1: Place perforating pen onto paper. Tape in place & test on paper.
- Step 2: Scribe a line with a paper knife. Bring perforating pen tool to paper edge & sever. Begin separation there. Fold strip before pulling apart.

- Step 3: Remove strips with tweezers. Reapply paper & begin separation at new location.
- Step 4: Separate perforated lines with tweezers. Reapply paper & begin separation at new location.

- Step 5: To make narrow strips separate easily, fold punched lines before pulling apart.

- Step 6: Perforate line from outline to paper edge. Begin fill separation there. Push.9mm barrel onto Zebra Z-Grip.5mm & Papermate Clear Point. 3mm mechanical pencils, #24 chenille sewing needle to 9/16”. Put a strip of adhesive on the verso intact. When applied with heat or solvent, the punched edge gives the illusion of being feathered while keeping the strips in a range of sizes ready to use. With heat/solvent set tissues, the strips can be used on a variety of paper thicknesses. Can be painted onto perforated lines to make tearing easier.

- Step 7: Place perforating pen onto paper. Tape in place & test on paper. Begin separation there. Fold strip before pulling apart.

- Step 8: To separate perforated lines if they are drawn parallel with grain. Turn pens on & off several times & needle will retract fully to head position. Use heat/solvent set tissue, the strips can be used on a variety of paper thicknesses. Can be painted onto perforated lines to make tearing easier.

- Step 9: To separate perforated lines if they are drawn parallel with grain.

- Step 10: To separate perforated lines if they are drawn parallel with grain. Turn pens on & off several times & needle will retract fully to head position. Use heat/solvent set tissue, the strips can be used on a variety of paper thicknesses. Can be painted onto perforated lines to make tearing easier.

MORE USEFUL TIPS
- Speed: Holes are spaced further apart the faster the pens are moved across the paper. The distance between holes determines the degree of feathering on the perforated edge. MATERIA tests can be run on perforated paper to determine when best results are achieved. These tests can be used to determine what paper thicknesses are being perforated, sometimes useful when working with Western Textured papers.
- Precise: The pens work best using light pressure. FORCE: A series of small closely spaced strips can also be pulled apart to create a feathered edge. For medium to heavy weight papers, it is easier to separate perforated fill if they are drawn parallel with grain. SHUT DOWN: PERFORATIONS on a off several lines & tissue will retract fully into nano space. To make narrow strips separate easily, fold punched lines before pulling apart.

- Step 1: Replace cover plate & razor blade. Push tool halves apart with pliers for tight fit.
- Step 2: Shipped cover plate and razor blade. Pop tool halves apart with pliers after tool is installed. File cut edges smooth & level.
- Step 3: Tape covers to tool halves. Brush 3三层 of Fluid on paper. Let dry. Remove tape & repeat process if need be.
- Step 4: Place tracing on fill paper. Remove cover & razor blade. Push tool halves apart with pliers after tool is installed. File cut edges smooth & level.
- Step 5: Tape covers to tool halves. Brush 3三层 of Fluid on paper. Let dry. Remove tape & repeat process if need be.
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FOR USE ON LIGHT TO MEDIUM WEIGHT PAPERS
Finished Size: 4.75” L x .56” W. Weight: less than 1 oz. Cost: $20.00

FOR USE ON MEDIUM TO HEAVY WEIGHT PAPER
Finished Size: 8.5 x 2.375” W. Weight: 3.25 oz. Cost: $35.00

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