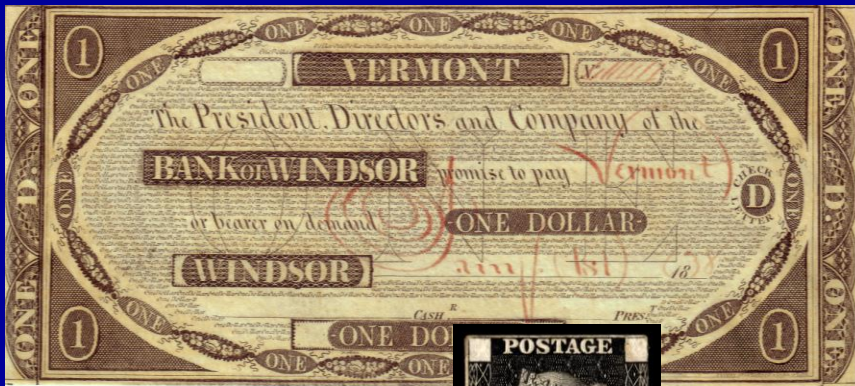


LINE ENGRAVED SECURITY PRINTING

1802 VERMONT BANKNOTE



1840 PENNY BLACK PROOF



1908 LINCOLN FIVE CENTS

WHAT IS LINE ENGRAVING?



1850 U. S. DIE

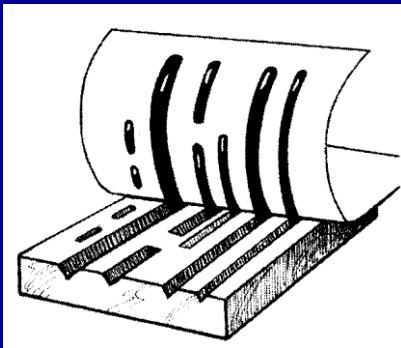
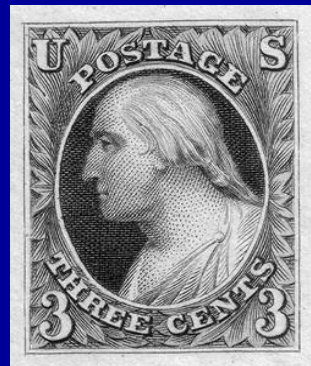


PLATE TO PAPER



PROOF

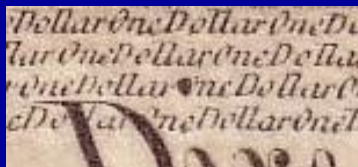
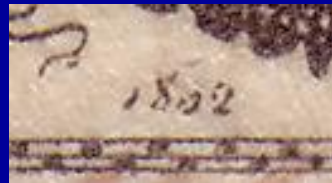
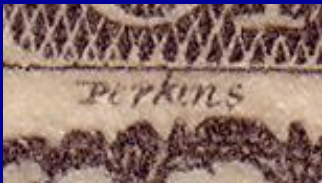
- **ALL LINES HOLDING INK ARE BELOW THE SURFACE**
- **ALL WHITE LINES ARE ON THE SURFACE**

ENGRAVING BREAKTHROUGH : JACOB PERKINS' KEY INVENTIONS

- 1. COPPER PLATE TO PLATE TRANSFER – 1790**
- 2. SOFTENING, ENGRAVING AND HARDENING STEEL – 1790s**
- 3. STEEL PLATE TO PLATE TRANSFER 1800**
- 4. TRANSFER ROLL AND PRESS 1813**
- 5. “D” PRINTING PRESS 1813**
- 6. GEOMETRIC LATHE 1815**
- 7. TRANSVERSE LATHE 1815**

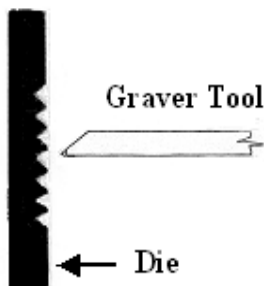
1802

EARLIEST KNOWN USE OF STEEL PLATE TO PLATE TRANSFER



‘ONE DOLLAR’ REPEATED 700 TIMES

PERKINS' TRANSFER ROLL PROCESS



Step 1.
Cut Design in Master
Die and Harden



Step 2.
Transfer from
Die to Softened Roller



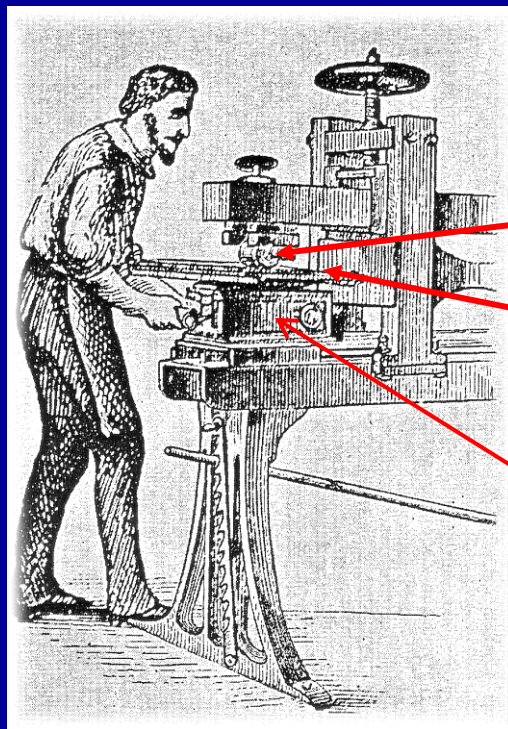
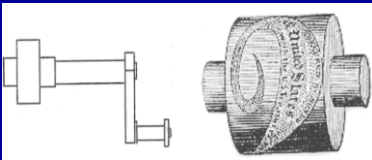
Step 3.
Harden Roller and
Transfer to Softened Plate



Finished Plate
Ink is Rolled in and
Wiped Off.

1813

**PERKINS AND HIS PARTNER, MURRAY,
INVENT TRANSFER ROLL AND PRESS**



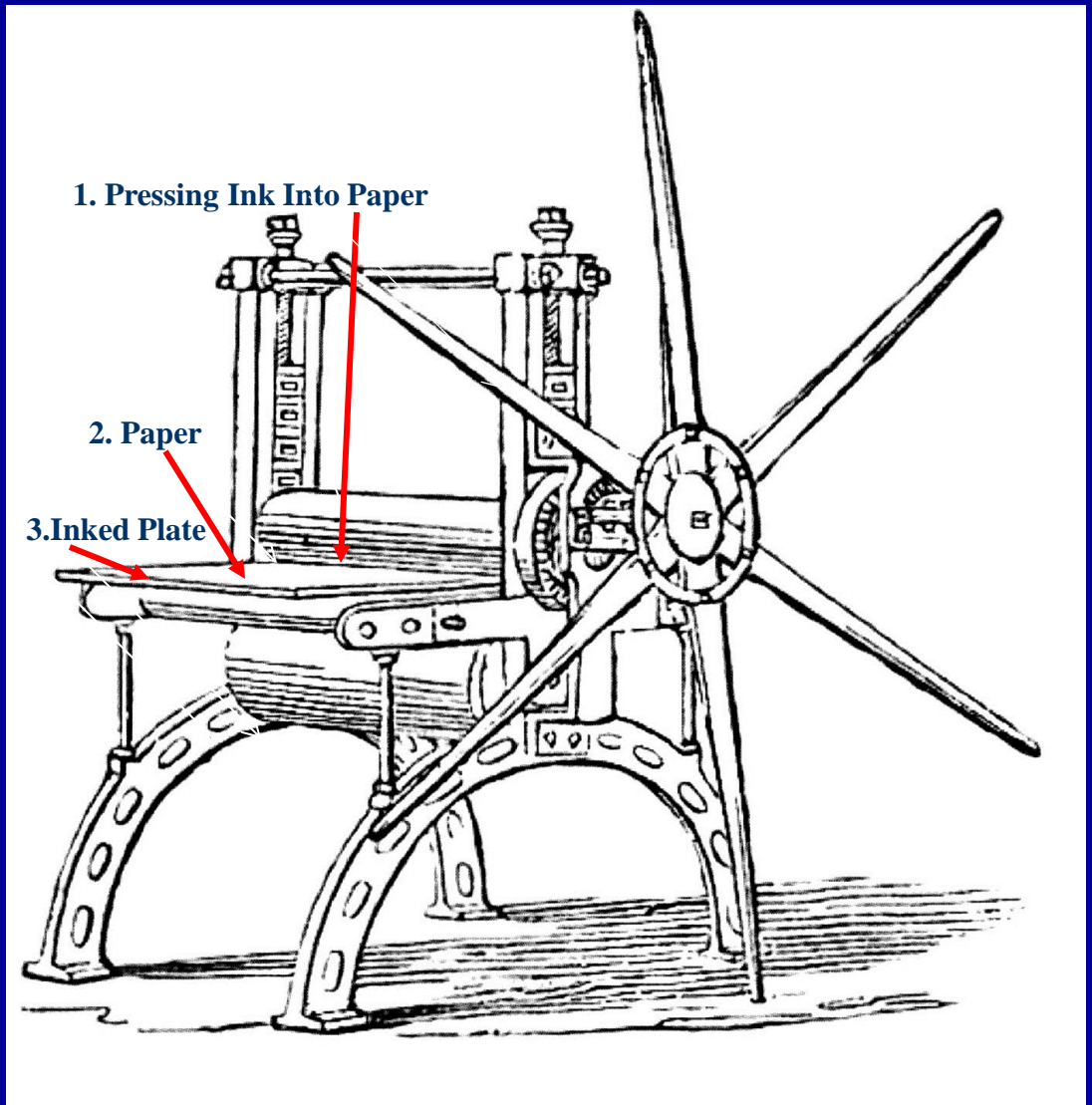
**TRANSFER
ROLL**

PLATE

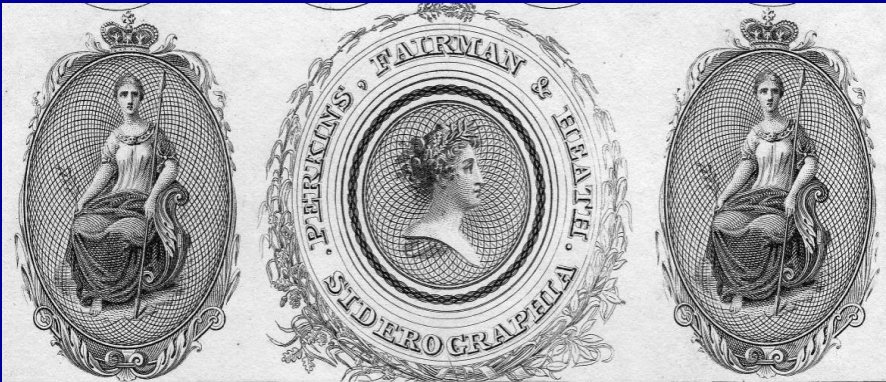
**RACK AND
PINION GEARS**

**C. 1815 RACK AND PINION,
AND BEAM TRANSFER PRESS**

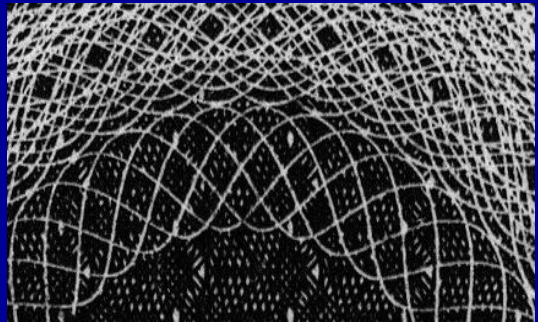
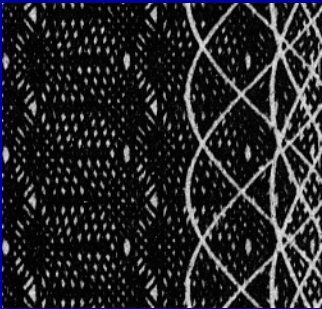
CIRCA 1850 PRINTING PRESS AS WOULD HAVE BEEN USED IN THE US



1819
EXAMPLES OF JACOB PERKINS
UNIQUE LINE ENGRAVING LATHES



EPICYCLICAL BACKGROUND CUT
WITH GEOMETRIC LATHE

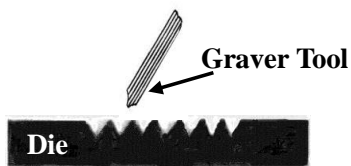


WHITE LINE ENGRAVING

WHITE DECORATIVE LINES CUT WITH GEOMETRIC LATHE

DARK BACKGROUND LINES CUT WITH TRANSVERSE LATHE

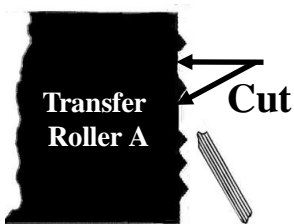
PERKINS COMPLEX WHITE LINE WITH BACKGROUND DESIGN



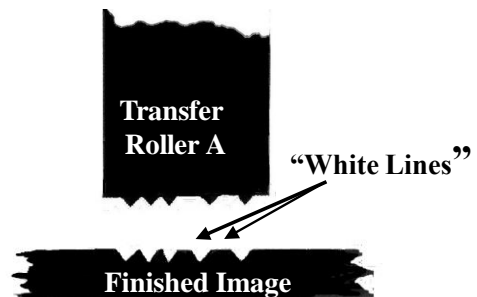
Step 1.
Cut Background
in Die & Harden



Step 2.
Transfer from Die
to Soft Roller



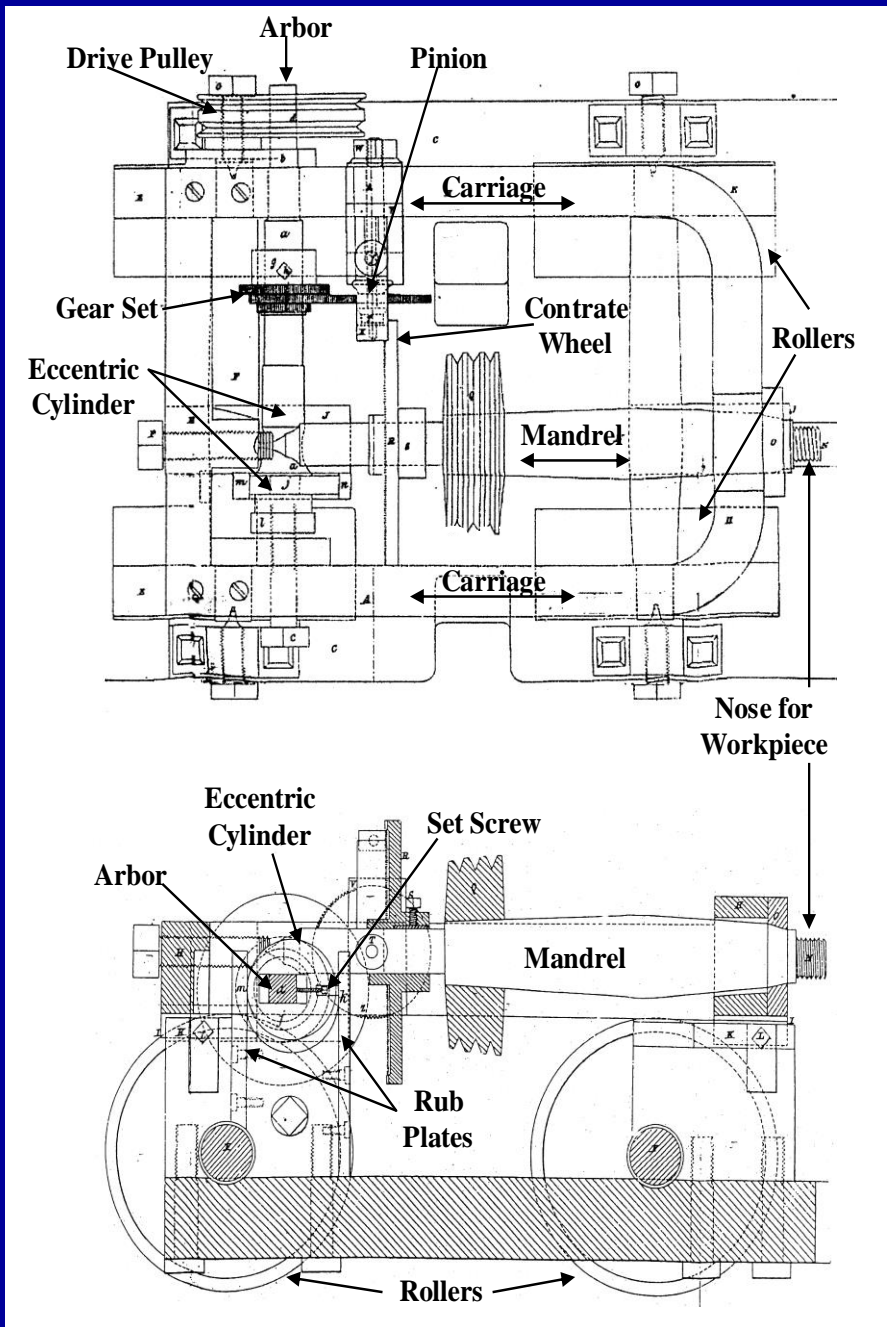
Step 3.
With Spencer Lathe Cut
Through Lines in Relief



Step 4.
Harden Roller and
Transfer to Plate

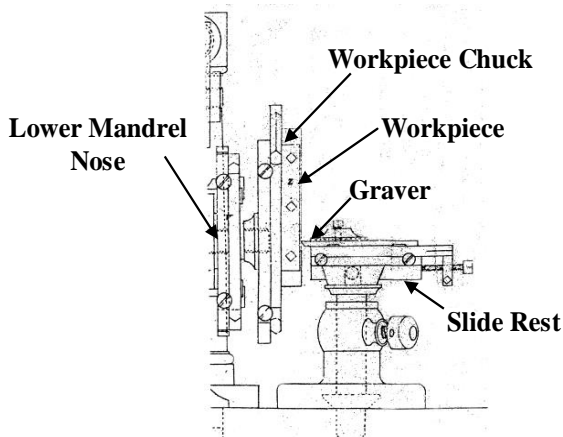
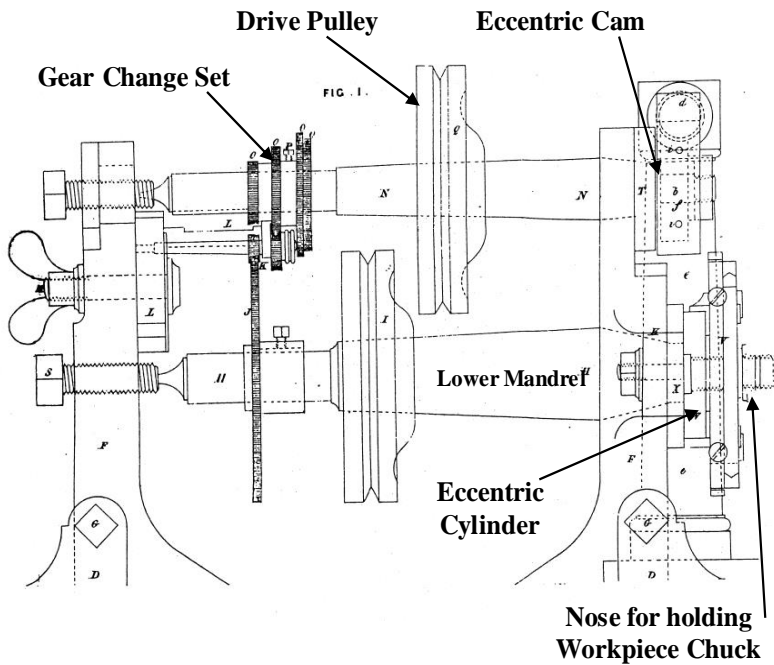
1815

PERKINS BUYS RIGHTS TO ASA SPENCER'S TRANSVERSE LATHE

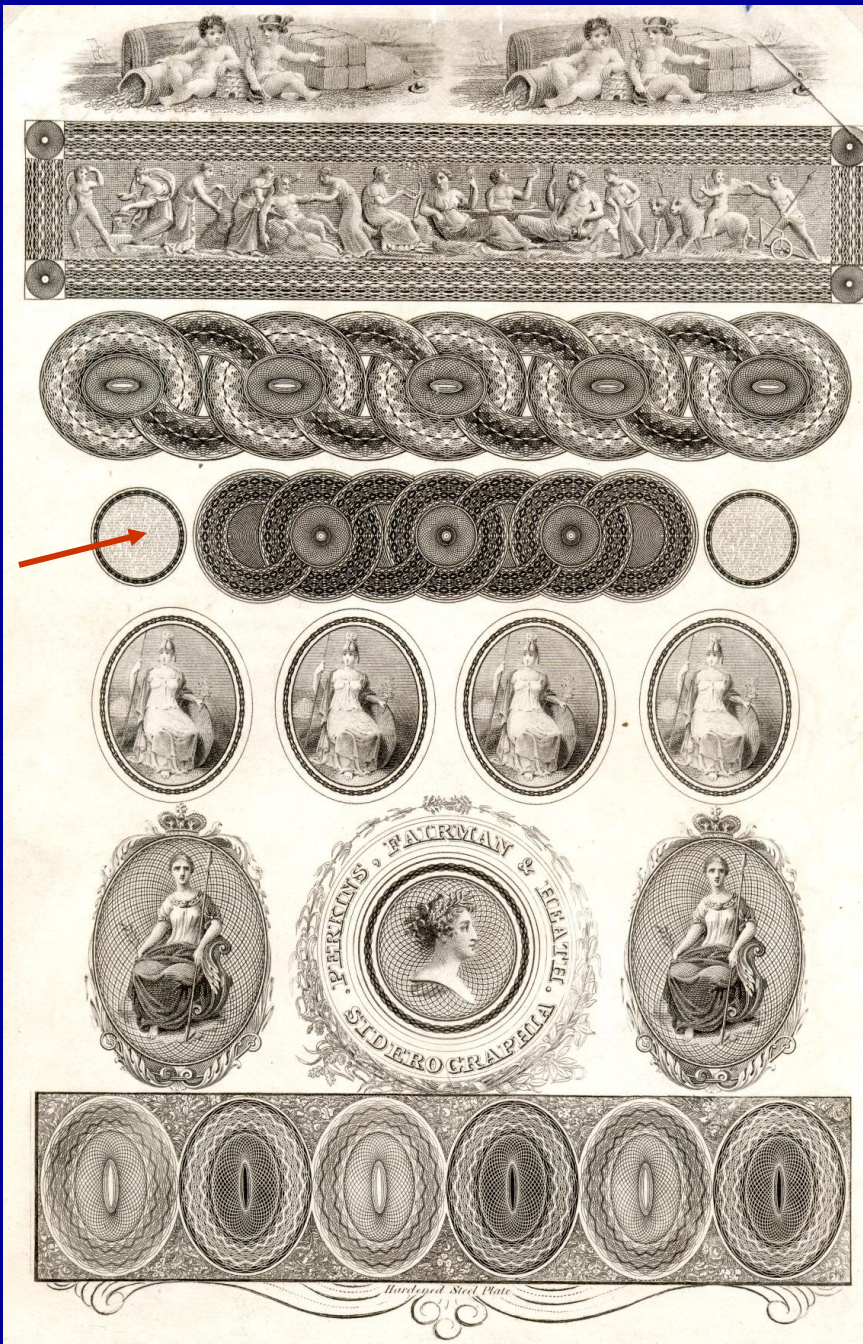


1815

PERKINS BUYS RIGHTS TO ASA SPENCER'S GEOMETRIC LATHE



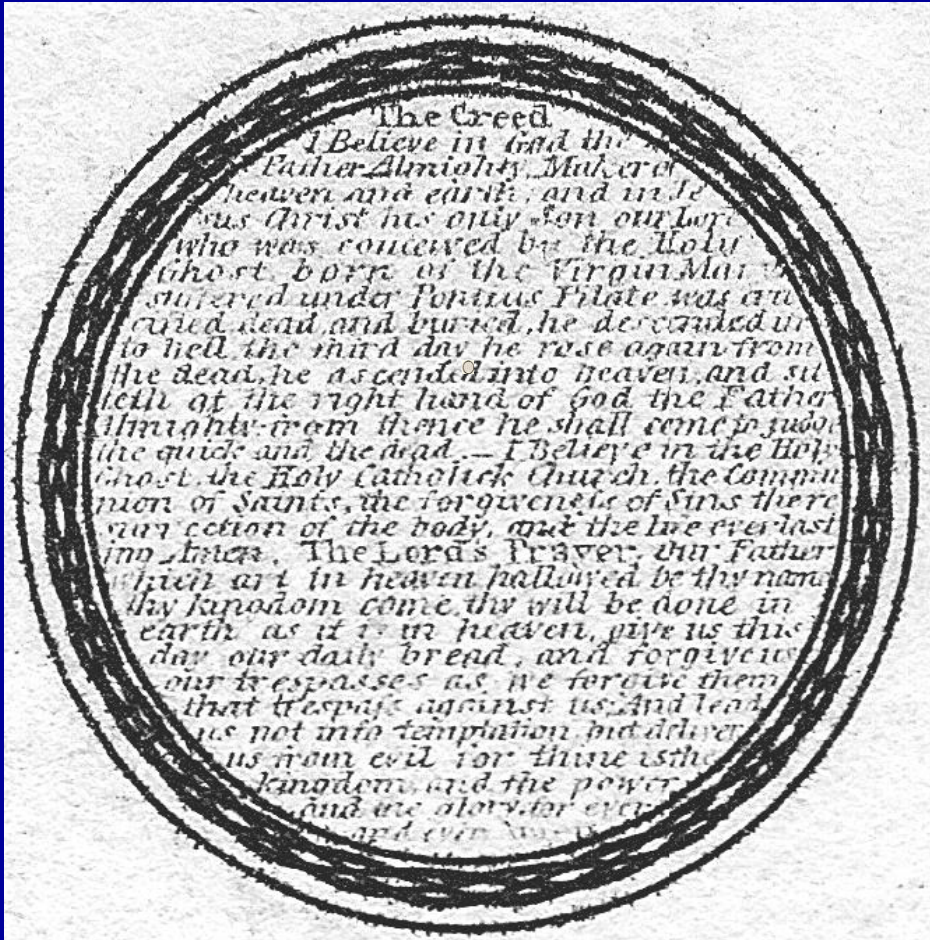
1819 SAMPLE SHEET



FROM 1819 SAMPLE SHEET



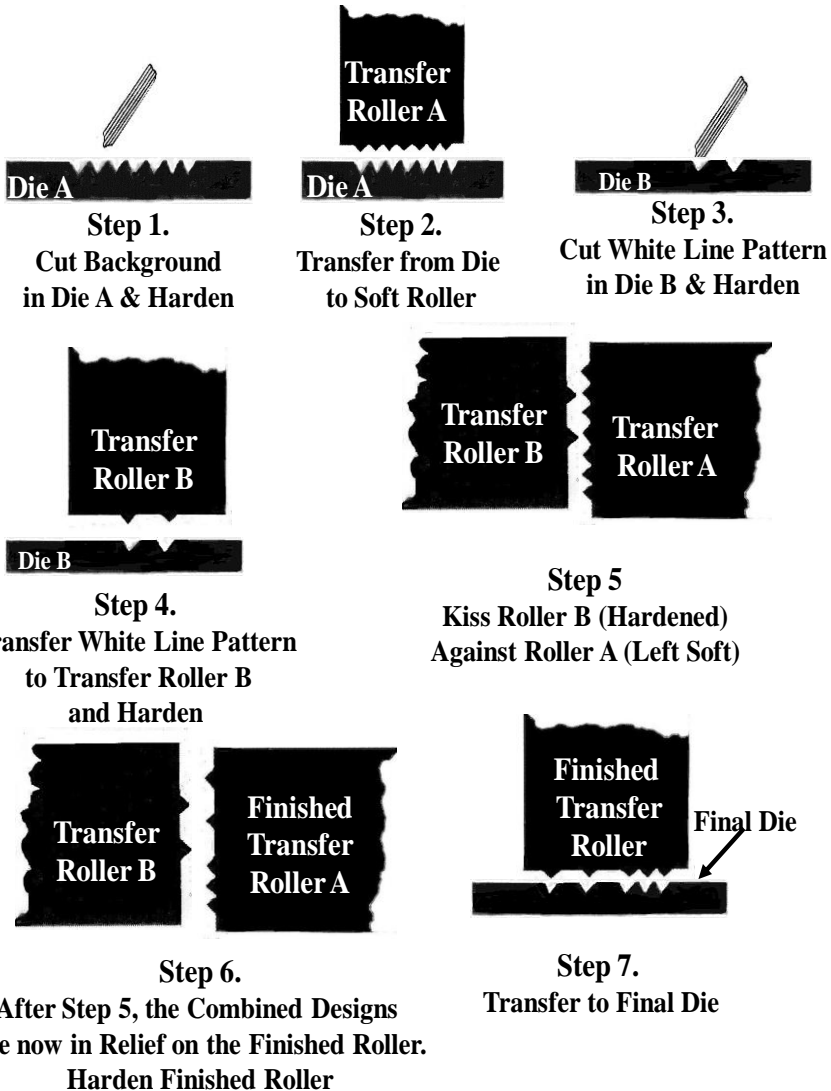
ACTUAL SIZE



ENLARGED TEN TIMES

DETAIL OF LEFT MEDALLION IN WHICH THE
 CREED AND THE LORD'S PRAYER ARE
 ENGRAVED

TOPPAN WHITE LINE NO BACKGROUND DESIGN



**PLAIN WHITE LINE ENGRAVING
USING ROSE ENGINE
(TOPPAN CARPENTER)**



JACOB PERKINS

**BORN IN NEWBURYPORT
MASSACHUSETTS IN 1766**

MOVED TO ENGLAND IN 1819

DIED IN LONDON IN 1849

40 USA AND UK PATENTS