

The 'grill' essays of the United States: 1865 - 1868

Purpose

This exhibit shows how the embossed (or 'grill') stamps of the USA evolved – from Charles Steel's first experiments in 1865, to the first officially used grill in 1868, the 3c Z-grill.

Scope

The story begins in 1865 when Steel wrote to the USPO about his idea for an embossed stamp to prevent reuse. The exhibit then shows how the 'grill' evolved through Steel's many experiments. It includes the National Bank Note Company's attempts to sidestep Steel's patent with its own forms of punctured paper. The exhibit ends with an example of the earliest officially used non-experimental 'grill' stamp, the 3c Z-grill, in January 1868.

Exhibit Plan

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One set recorded



C-grill essay: perf 12, ungummed

Points up

Points down

Importance

Charles Steel's idea for an embossed stamp, was the only patent adopted by the USPO to prevent reuse. The earliest experimental stamps were issued in 1867, followed by the official issues in 1868. 'Grill' stamp production continued into 1871 and resulted in some of the most sought after stamps in USA philately.

Research

The exhibit has been built around new research (**highlighted in dark purple**) based on the recently released **Brazer archive**. The archive records the correspondence between the bank note companies and the USPO. It enables a precisely dated analysis of the trial and error that led to the eventual adoption of the 'grill'.

Magnified scans show how the 'grill' evolved

Late 1865
Flat square, points down
First experiments



Early 1867
Pyramid-shaped 'biscuit grill'
'A' and 'C' grill



Late 1867
Flattened pyramid
Steel's patent design



Early 1868
Horizontal 'rooftop' grill
'Z' grill



Exhibit highlights

Unique items are boxed in **blue**. Census numbers are noted in **bold blue** script. Highlights include:

- Steel's 'first experiments' of 1865 **2**
- The **earliest known use** of the experimental A-grill for postage (August, 1867) **6**
- A full, unprinted sheet of the **experimental C-grill** (ex-Earl of Crawford) **7**
- The **signed essay** of late 1867 which acknowledges **Steel as the inventor** of the grill **10**
- The die produced by the NBNC to test **Steel's design** for a **surface-printed grill** **11**
- The NBNC's '**scratch pattern**' alternatives to Steel's grill (ex-Earl of Crawford) **13**

References: [The Brazer Archive \(www.uspcs.org/resource-center/research-projects/the-brazer-archives\)](http://www.uspcs.org/resource-center/research-projects/the-brazer-archives); "Archival History of the Embossed Stamps of 1867-68 (Hofmeyr, [The Chronicle](#), Nov 2018); "The Neglected Details of Charles Steel's Patent for Grilled Stamps" (Hofmeyr, [The Chronicle](#), May 2019); "Essays for the 1861 3c Washington: the path to discovery" (Hofmeyr, [Scott Specialized Catalogue of US Stamps](#), 2021)

Steel's 'grill' concept

Charles Steel's idea for a stamp that could not be cleaned and reused, was for a stamp whose fibres had been broken by embossing. When cancelled, the ink was supposed to seep into the broken fibres and integrate into the paper. The name 'grill' comes from the shape of the embossing.

1865: Steel's first experiments

Two recorded



Research (from the **Brazer Archive**): "Sir... acknowledging the receipt of the samples of stamps submitted by you, with which **I am favorably impressed**. (But) ...no definite judgement can be formed of their actual merits until they shall have been passed through certain... tests."

December 20, 1865: Anthony Zevly of the USPO. Letter to **Charles Steel** of the NBNC

1865-66: The early experiments have a **flat square shape**

Magnified scan of the earliest grill



Indented squares on white wove paper

One recorded



Imperf, gummed

Embossed circle surrounded by perforations

Two recorded



Imperf, ungummed

Red '3' in circle tests printing on an embossed surface



Perf 12, gummed

Plain circle

Indented squares: a test using plates of the 1861 3c stamp

Imperf, gummed



Indented squares: cancellation experiments

Gummed



Tests a pen and ink cancel

e: PF

15 recorded



Cancelled: NY segmented diamond (mid- 1867)

Ungummed

1865-66: Steel also tested the square grills in a **raised format**

Magnified scan of the earliest grill



Raised squares: plate proofs, **pen** and **ink** cancellation tests

1. **Plate proofs:** imperf, gummed



Rose

2. **Stamps:** perf 12, gummed

Rose
Imprint
block



Black



Ink test
No 2

Raised squares: surface printing experiments using typographic adaptations of the 1861 stamp

Research:

In his patent 70,147 of October 22nd 1867, Steel argued that his idea would work best with surface printing.

Carmine

Imperf, gummed



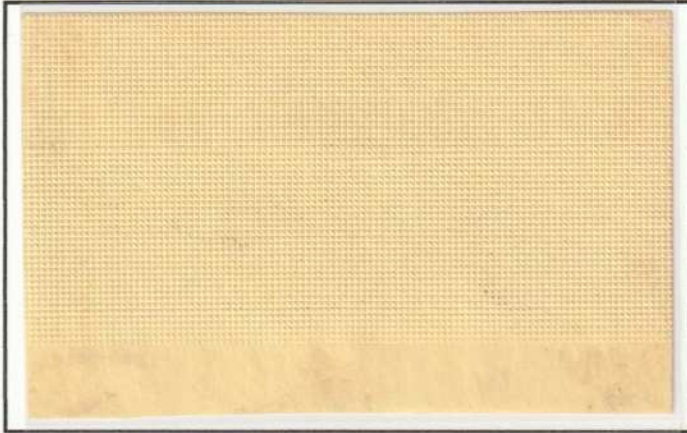
Carmine
Imperf, gummed



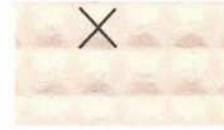
Annotated left
corner strip of five

The pyramid shaped “biscuit” (A) grill: late 1866 or early 1867

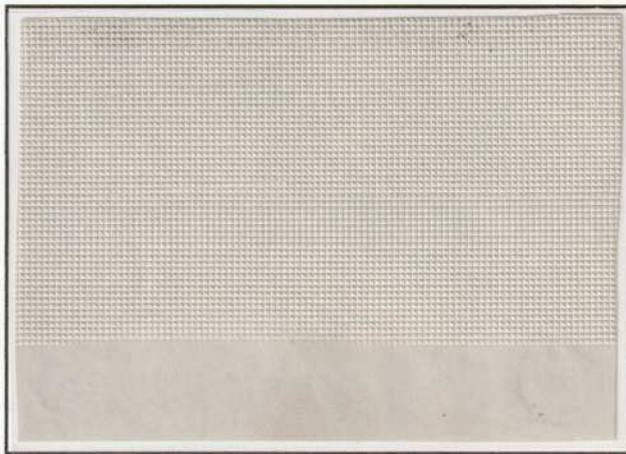
Experiments on various tinted papers: Imperf and ungummed



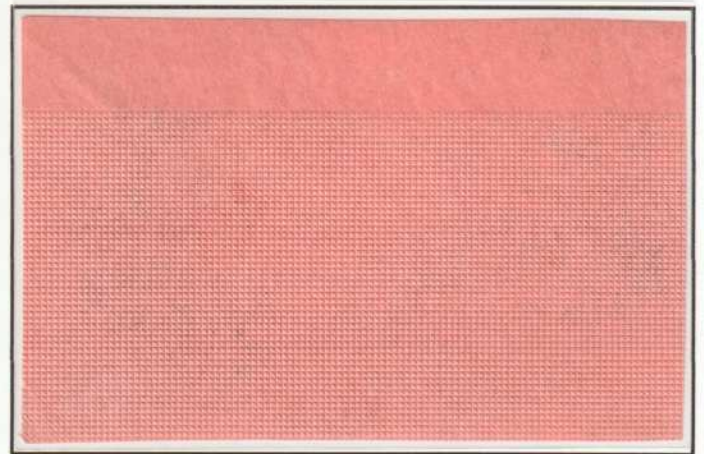
Light yellow
85 x 53 mm



Scan of the
pyramid grill



80 x 56 mm: *Light gray green*



87 x 56 mm: *Salmon*

A test of printing and cancelling: imperf and ungummed on white wove paper

Research: Steel was worried about the quality of printing on his embossed paper



This **important essay** tests:

- a) printing on embossed paper
- b). pen and ink cancellation

47 x 24 mm grill
On 97 x 48 mm white wove

On **July 26, 1867**, Zevly ordered **10,000 sheets** of the A-grill

Brazer Archive: *“After due inspection... I am free to say that the embossed stamps... are more desirable than any heretofore submitted... I suggest that 10,000 sheets of the 3-cent be printed...”*

‘A’ grill plate proofs gummed on stamp paper; points up

Bright Rose
Imprint block



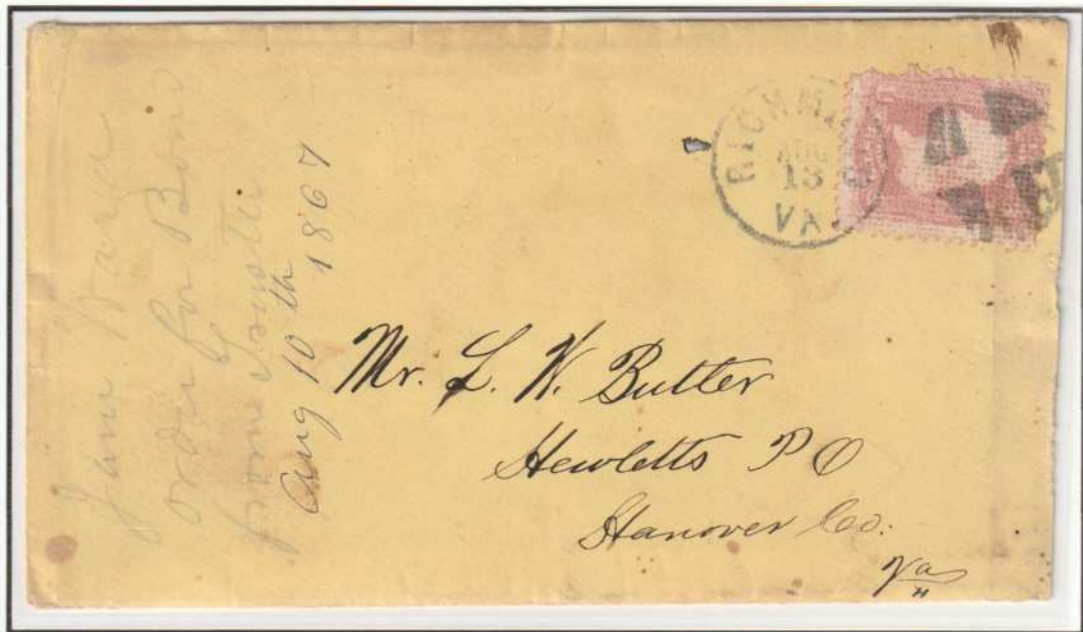
Plate block



On **August 13, 1867** the first experimentally used stamps went through the post

EKU

Four covers
recorded

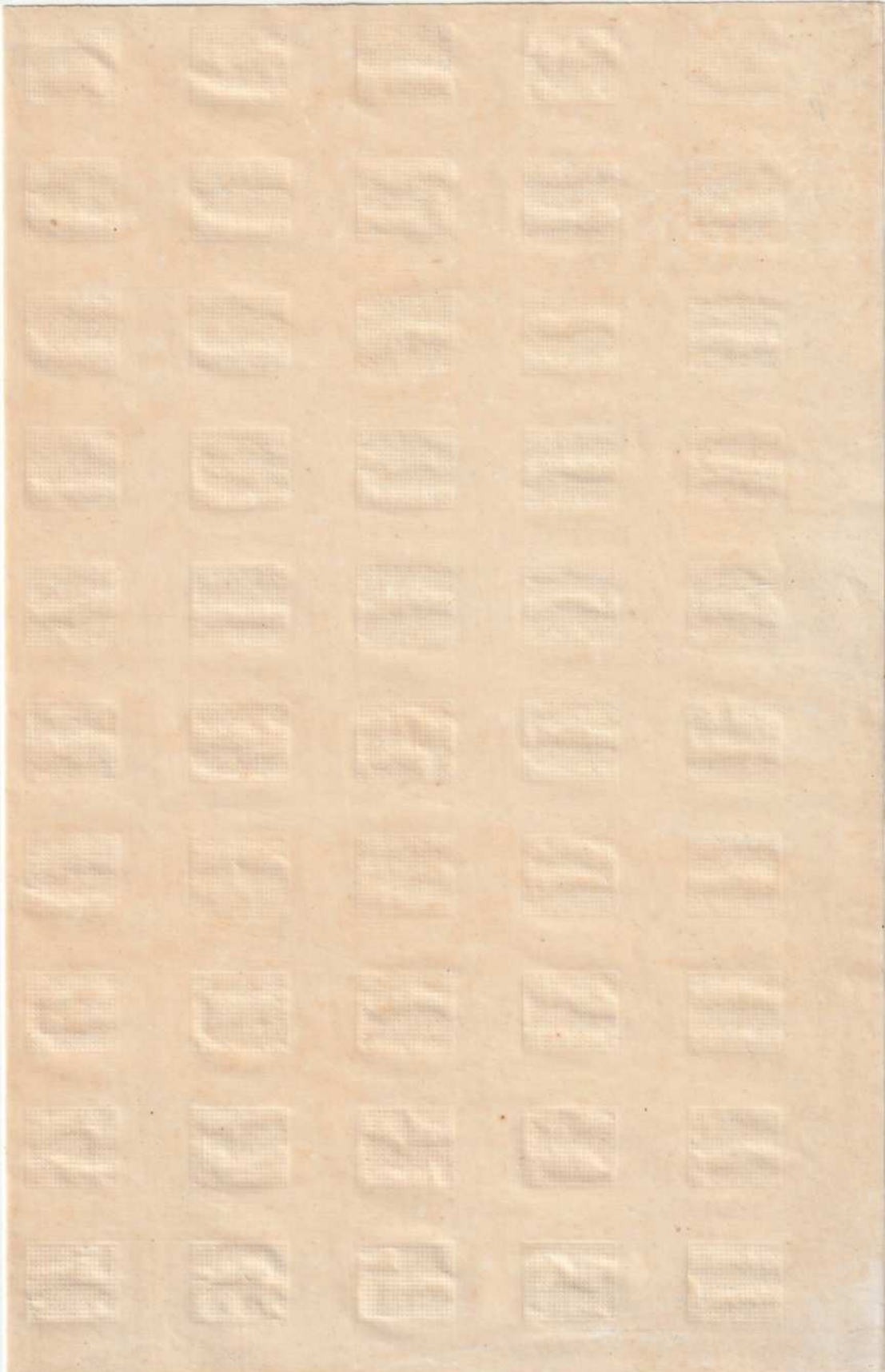


2: The second experiment for postal use – the C-grill

Blank plate proof

On **October 7**, in a letter to the NBNC, Zevely rejected the 'A' grill

Brazer Archive: *"I am awaiting the specimens promised by you, especially those with the embossed centre...
The stamps with entire surface embossed **will not meet** the wants of the Department"*



C grill: complete pane
Folded over and turned
sideways

One pane remains

Ex- Steel archive
Ex- Earl of Crawford

*This sheet was part of a
complete sheet of two panes.
They were split.*

*The Philatelic Foundation
retains the second pane, but
has cut it up into big squares.*

‘C’ grill pressure tests: gummed, perf 12, points down

Research: To improve the quality of printing after grilling, Steel argued that grilled paper should be flattened before printing. But this led him to worry about the **permeability** of flattened grills.

1. No pressure

Pale pink wove



2. Some pressure

White wove

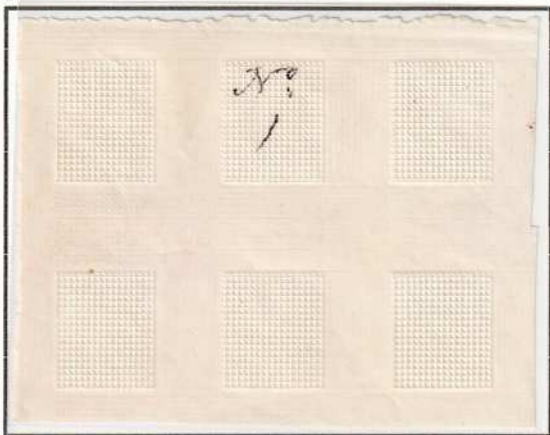


3. Sustained pressure **Two recorded**



Approved:
by officers of the
NBNC

Permeability test on unflattened grill: 'No 1'



Imperf,
gummed

Permeability test on flattened grill: 'No 2'



Perf 12,
gummed

Research: on **October 16** Zevely ordered **one million** 'C' grill experimental stamps

Plate proofs

Imperf, gummed, points up



EKU: November 18th 1867



c: PSE

*Double grill,
one split*

Grill varieties



On **October 22** Zevly told the NBNC to produce a **surface printed** stamp

‘C’ grill experiments with a **surface printed** design

i) Various wove papers: *points down, imperf, gummed*



Black on Lilac-grey



Dark Blue on White



Blue on Pale blue

ii) Gray-green chemical paper: *perf 12, gummed*

Points down



Blue



Orange



Black

Points up



Green

iii) Points down: *white wove, perf 12, gummed*



Black



Yellow



Blue



Red



Green



Yellow-orange

iv) Points up: *white wove, perf 12, gummed*



Red



Yellow



Brown



Pink

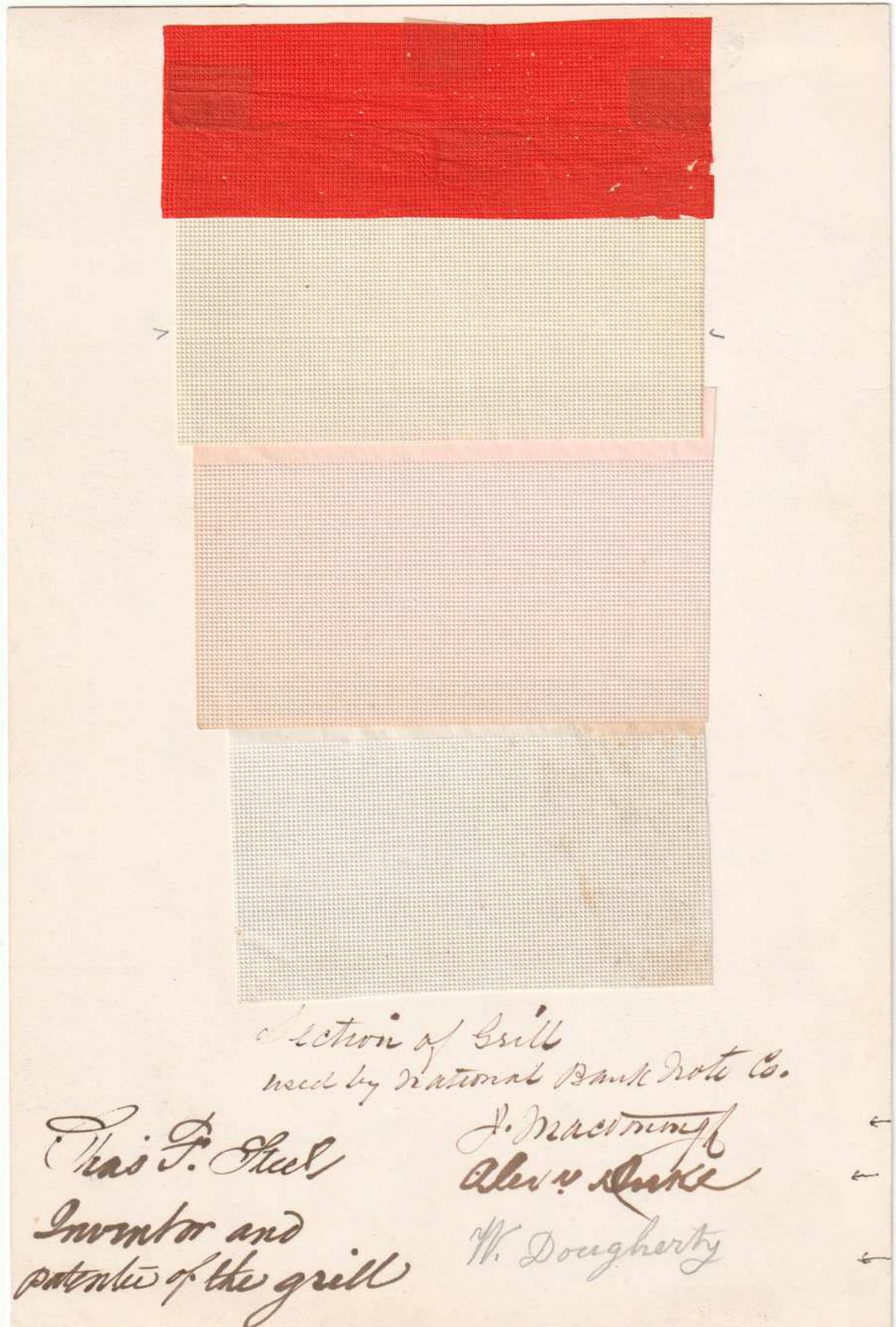
4: Steel's design for a surface printed 'grill' stamp

Steel's patent is recognized

On **October 23** Zevely wrote to Steel *"I think your company will finally do you justice"*

Steel's patent had
been granted on
October 22

This is **the only** essay
that recognizes Steel as
the 'grill' inventor.
Zevely's letter helps to
date the essay.

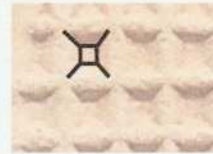


Ungummed "Biscuit" grill
on colored papers stuck to card

Steel patent 70,147 for an embossed stamp: October 22 1867



- Steel's idea:
 - To use lithographic printing for the design
 - To leave the center portion blank for embossing
 - To use chemically sensitive yellow paper
- The essays on this page best represent Steel's patent



Most of these essays use a flattened pyramid

On **November 6** MacDonough asked Steel for his **new stamp design**

One recorded



Die on yellow-gray wove
Pale orange brown

Nov 15: MacDonough to Steel:

"I send you the first impression made under your instructions"

"The die must be deepened around the figure '3' so that it will print clear..."

One recorded



Die on thick yellow laid, partial gum
Deep pink. Hand drawn '3' in red

Black on yellow wove



Deep pink on yellow-orange wove



Deep pink on white wove



Additional essays for Steel's surface printed design

1. Steel used the **flattened pyramid** for his '3 in circle' experiments



'3 in circle' grill.
Tan paper, perf 12, gummed



White wove paper
Steel's patent calls for **pressure**
to flatten the embossing.
This essay records 'a half hour's
pressure after embossing'.

2. **Model:** He created a model combining his 'shield' design with an embossed '3 in circle'

Cut out frame **pasted**
over '3 in circle'
Perf. 12, gummed



Orange paper,
frame in **red**.

One recorded

Tests **pen** and **ink**
cancellation

3. He tested his typographic 'shield' design in **blue** with **earlier** grills



Flat square grill
One known

Yellowish paper
Imperf, ungummed

'All over' pyramid grill



Blue on white wove
Imperf, gummed

Scratch pattern grills (undated): imperf and ungummed on white wove paper

Research: correspondence in the **Brazer Archive** indicates that the NBNC did not support Steel's proposal. These are probably 'punctured paper' alternatives produced by the NBNB.

Ex- Earl of Crawford

One of each recorded



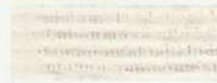
Oval



Mainly horizontal scratches



Cross



Short vertical scratches



Oval

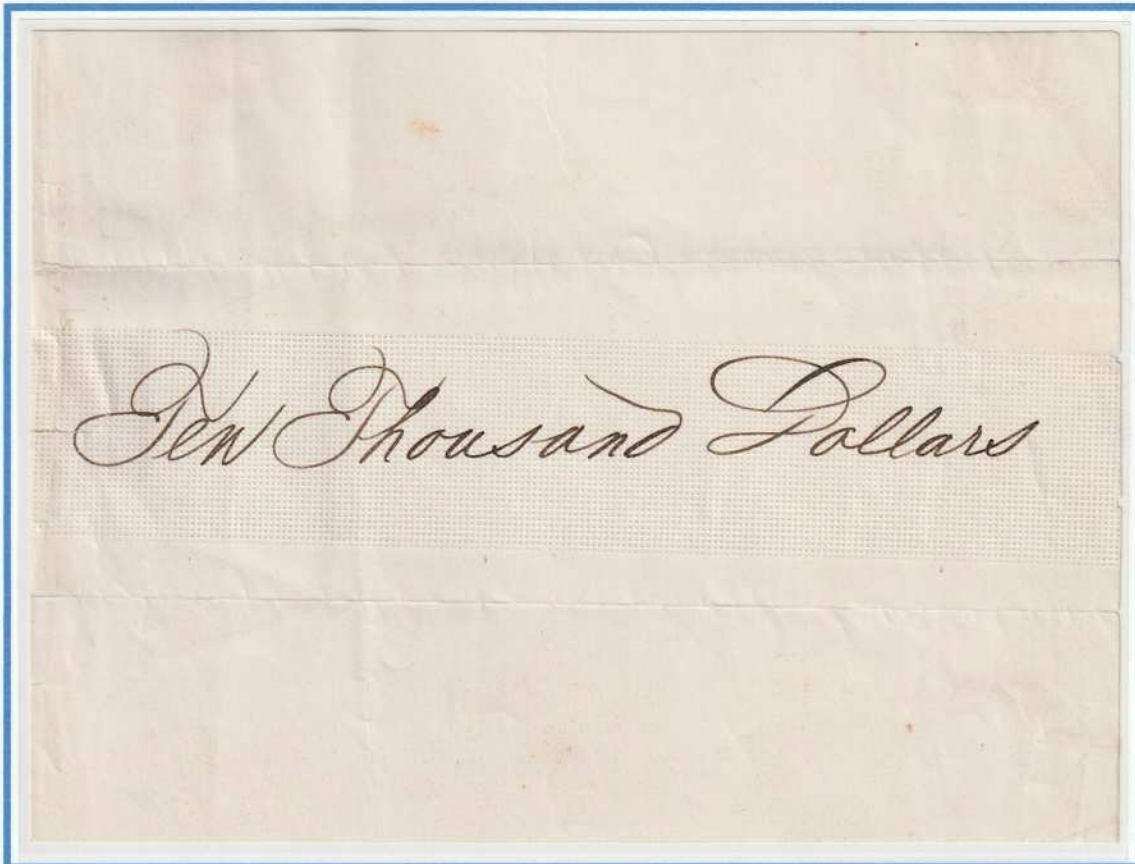


Star



Greek-style pattern

Punched horizontal slits: imperf, ungummed



Hypothesis

A test of the grill for cheque books

Pin hole "music box" grills

Research: as with the **scratch pattern grills**, the only resemblance that these have to Steel's idea, is that they involved **paper that has been punctured**.

One recorded



e: PSE
Imperf essay
Regular pin holes
Rose, points down
Ungummed

Two recorded



Irregular pin holes
Rose, points down

CDS: Sept 24,
1867. New York

Pen cancel tests the effect of the grill

Pin-hole grill perf 12, gummed



Points up
Rose, irregular pattern

Imprint pair



Points up
Rose, irregular pattern

Points down
Rose, irregular pattern



Imprint block



The 'Z' grill: dimensions, 13-14 x 18-21 points; 11-11.5 x 13.5-14 mm



A scan shows the 'rooftop' shape of the 'Z' grill

Test of the the 'Z' grill on white wove



On **December 16 1867**, Zevly ordered experiments with tinted papers

1c frame on stamp paper: imperf and partially perfed 12

Two recorded



Red brown on pink



Red brown on white

Red brown on yellow



Brown red



3c on various tinted papers: perf 12

Brown on salmon laid paper



Green on green



Red on salmon



Brown on pale violet



Black on yellow



Red on yellow



Brown on yellow

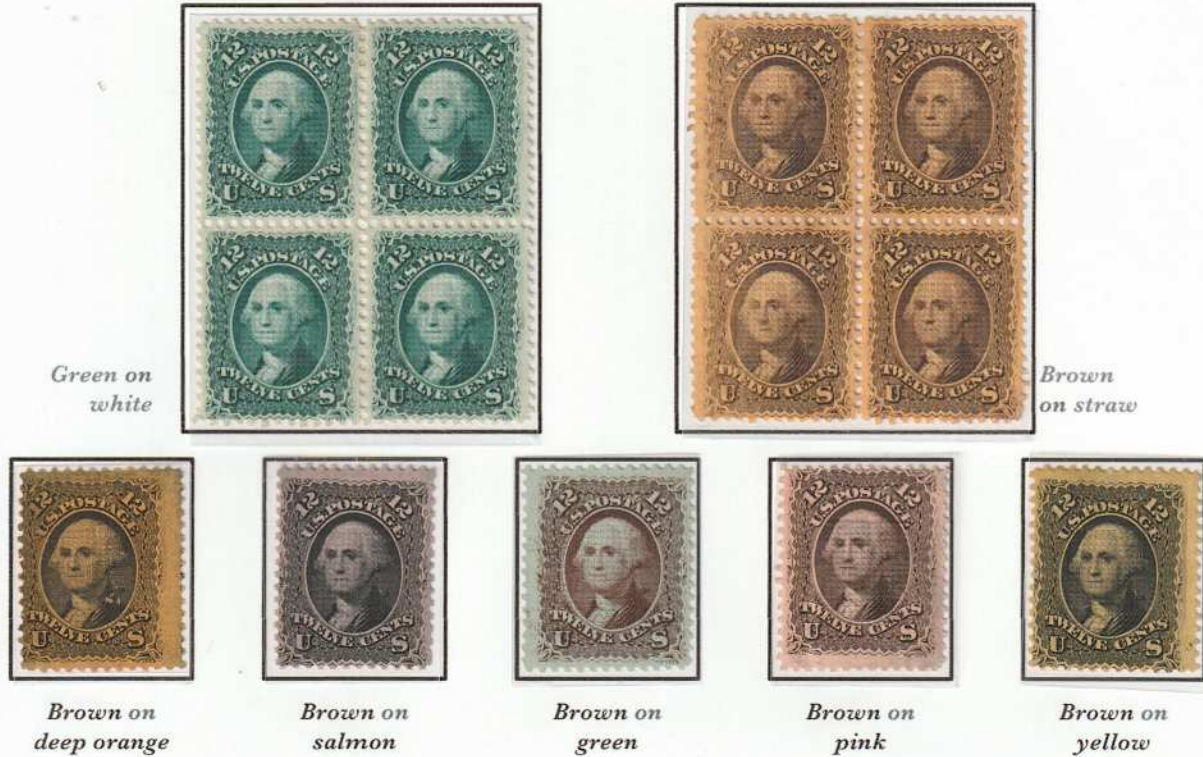


Red on straw



The ‘Z’ grill: dimensions, 13-14 x 18-21 points; 11-11.5 x 13.5-14 mm

12c on various tinted papers: perf 12



A copy of the issued stamp

(3c EKU: January 25th 1868)

Brown red
Perf 12, points down



c: PSE

Conclusion: a summary history of the postally used grill stamps

A grill: 10 000 sheets ordered for postal trials on July 26, 1867. EKU: August 17, 1867

C grill: 1 000 000 stamps ordered for postal trials on October 16, 1867. EKU: November 16, 1867

Z grill: first grill ordered for general use. EKU: January 1868. Replaced by the D, E, and F grills from February through to August, 1868.

B grill: four copies discovered on an envelope posted in 1869. May be the result of the NBNC delivering ‘remainders’ from their stock before the retirement of the 1861 definitives.