The Production of Washington & Franklin 3rd Bureau Rotary Press Coils 1914-1922

The purpose of this exhibit is to show the steps in the production of rotary press coils made by the new Stickney Rotary Press. It will do so using production material to illustrate the different steps in production from start to finish.

Exhibit Plan

- Coil stamps: 1914 Issue
- Coil stamps: 1916 Issue
- Rotary Press Plates: Plate Layout/Design Size
- Rotary Press Design Types
- Plate Varieties: Special Plate Cracks
- Plate Varieties: Plate Numbers
- Plates: Gripper Cracks
- Paper/Ink Varieties
- Joint Lines
- Coil Construction: Perforations/Gumming
- Coil Construction: Splices/Repairs
- Coil Construction: Leader/Trailer Strips

Key items are matted in deep red.

Historical Significance

- Rotary Press coil production increased from 1 million to 6 million stamps per day.
- The Stickney press eliminated 23 steps from the previous printing method.
- The cost savings of the new printing process was over 50%
- The Bureau was able to print about 14 billion stamps per year saving the Bureau millions.
- The Stickney press was also adapted to print booklet and sheet stamps.
- Several countries, such as Canada and Sweden, bought the Stickney press to produce stamps.
- The Stickney press remained in use until 1962.

1914 Rotary Press Issue



The production of both rotary press issues was identical except for one minor difference. The 1916 issue was printed on unwatermarked paper. For this reason the production material has been done as one section for both issues.





Type I





The 1914 rotary press series consisted of 10 different issues with 5 values. It had three vertical coils and 7 horizontal coils. The 2 cent denomination consisted of three different design types. The Bureau made these design changes without any notification to the public that a new design was being released. Many of these design changes went unnoticed by collectors for a long period of time.



Earliest Documented Use for All Rotary Press Coils

The horizontal 2 cent Type I coil was the very first perforated rotary press coil produced by the Bureau of Engraving and Printing. This use is the earliest use of any perforated rotary press coil.





Single Line Watermark



Type I





Туре Ш

The different design types came about due to improvements made to the engravings when the Bureau felt the design was not up to printing standards. Some of the design types were in use for a very short



1916 Rotary Press Issue

Unwatermarked

Rotary Press Plates



The 1916 rotary press series contained 12 different issues made up of 6 values. It had 4 vertical coils and 8 horizontal coils. This was the first coil issue to have a 3 cent vertical coil. It was also the last of the 3rd Bureau coil issues. This issue also contained a 10 cent denomination for the first time since the very first flat plate issue in 1908.

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Stickney Rotary Press



Horizontal Plate Consists of a 17 x 10 layout



Rotary Press Plate Layout/Design Size



Note the difference in the size of the frame lines. The horizontal coils are wider while the vertical coils are taller. This is due to the plates being bent to fit around the rotary press cylinder. When the metal was heated and bent it stretched the design of the stamp.

Rotary Press Plates

Design Types

Rotary Press Plates

The different design types came about when the engraver determined certain parts of the design needed enhancing. These changes were not announced by the Bureau and were subsequently found by collectors as they appeared on the market, some being much scarcer than others.





Note, the three lines

of shading are of dif-

ferent lengths.

Two Cent Values

One of the defining features between Type I and Type II are the three lines of shading in the lock of hair behind the ear.

A second defining feature between Types I & II compared to Type III are the three lines of shading in the fold of the ribbon on the right side.





Note, the single line of shading in the fold of the ribbon.





Type III

Note, the two lines of shading in the fold of the ribbon.



Туре П

Note, the bottom one is longer.



Enlargement of center stamp



Enlargement of second stamp left to right in strip.





Vertical Plate Stress Crack



Three Cent Values

The defining feature between Type I and Type II are the two lines of shading in the lock of hair behind the ear.



Type I

Note, the bottom line of shading is shorter.



Type II

Note, the three lines

of shading are all the









Fractured Skull

Rosette, or Fractured Skull, is a result of the hammering out process done to the plate to remove extraneous material before printing. It occurs when the metal is brittle and has been found in only one position on the entire 400 subject plate.



Horizontal Plate Stress Crack This plate crack occurs from the heating and bending of the plate.

1 cent coil pair.

Plate Numbers









During the slitting stage the top and bottom margins of the pane were cut off.

Sometimes the coils were miscut and partial plate numbers are visible along the top edge of the coil.

Plate numbers are scarce and not usually seen because they were removed in the production process.





Vertical Coil with Plate # 13929

There are only 3 reported examples of vertical rotary press coils with partial plate numbers.

Gripper Cracks

Printing Varieties

U







Gripper Cracks

Vertical and horizontal gripper cracks are caused by the plates being clamped to tight to the cylinder on the press. These type of cracks are always found on one of the stamps next to the joint line.



Vertical Gripper Crack This enlarged scan shows the vertical crack running through Washington's forehead along the hairline.



Single Paper to Double Paper

S

P

This production piece occurred in the actual making of the paper. In the pulp stage the paper was over lapped or joined together to create the long piece of paper needed for the making of rotary press coils. This is a unique production example.

Preprinting Paper Fold



A paper fold is a pronounced fold over in the paper where as a paper crease is more like a minor wrinkle in the paper

Plate Wiping Note, the excessive ink smear left on the stamp from the plate wiping process.



Single Line Watermark

Note, letters are actual size and style used by the Bureau on the first rotary press issue. To save costs during the war the Bureau printed the stamps on unwatermarked paper.



S

Enlarged color scan of reverse side of coil pair in fluid.





Preprinting Paper Creases





Ink Splatter Note ink splatter across the 3 left stamps.

Production

Joint Lines



Joint lines are created when ink flows into the seam or joint between the two plates on the cylinder. During printing excess ink from the seam shows up as a joint line between every 15th stamp on vertical coils and every 17th stamp on horizontal coils.





Printing Varieties

Production

Perforations and Gum



Small Hole Variety

One of Two Joint Line Pairs Small Hole Variety

A total of 5 documented pairs of the small hole variety are known, of those 5 there are only 2 joint line pairs.







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Small Hole		Large Hole	



A1	Printed web, or coil roll.	I
B 1	& B2 Smooth guide rollers.	I
C1	Male perforating pins.	E
C2	Female dies.	I



Misaligned Plates

The plates were not always lined up exactly on the cylinders. This is what caused the stamp designs on each side of the joint line to be out of alignment.

Enlarged scan



The regular spacing between stamp designs is 2.5mm. Depending on how close the plates were placed together, the spacing between designs at the joint line varies. Note, the spacing on the strip of six is 2.5mm between stamp designs and 3.5mm at the joint line.

It is believed that small hole perforations came from two sources. A prototype perforator



Large Hole Variety

Perforation Holes

Large hole diameters 1 to 1.1mm Small hole diameter 0.9mm.

· An inline perforator detached from the original experimental Stickney Rotary Press.



The gum was applied with a roller. The line in the vertical and horizontal coil strips is from a wheel designed to evenly spread the gum as it was applied to the paper.

Rotary Coil Perforator

- D1 Knurled roller pulls web through perforator.
- D2 Roller guide with smooth outer surface.
- E1 Receiving station, web rolled up.
- F1 Scraper blade removed punched holes.

Coil Construction



There are two types of perforated splices. The bright white paper, perforated 10, are believed to be pieces of dummy coils, perforated on the Stickney coiler. These were used to splice in sections of coil to rolls that were identified by inspectors to have defects in material.



The darker paper splices, perforated 11, were added on the stroke perforator to gummed paper and used across the full width of the web before slitting. These splices occur once every 6,000 sheets in a coil roll. They are usually found on the joint line. This was how the workers kept count of where they were at in the roll.



Trailer Strip Splice An unusual splice where a trailer strip broke, note the left stamp, and then a piece of trailer strip was used to splice the coil together.



the splice repair.



Scarce perforated splice repair paying the first class war rate for post cards.









Double Splice Note, the left stamp has a double splice and the two stamps are of different shades indicating they came from two different rolls.





This is a repair splice where a section of the coil was either removed or rejoined. Note, the splice does not fall on the joint line and is the white paper variety perforated 10.





Broken Web

Note the joint line on each coil, this occurs when the web breaks. To keep count the worker removed the excess stamps between joint lines and spliced the coil together.

Trailer Strip Repair

During the production of the coil the trailer strip broke. Since it was at the beginning of the roll a repair splice was used to rejoin the coil to the trailer strip. Note the piece of perforated trailer strip underneath

Leader & Trailer Strips

