



## THE 1868 Z GRILL

**T**HE RAREST UNITED STATES STAMPS ARE the 1c, 10c and 15c Z Grills. Only two 1c, two 15c and six 10c Z Grill stamps have ever been found and certified genuine. Their appearance is quite ordinary, and the subtle difference between the Z Grill and its counterpart in size, the E Grill, could be easily missed—if one were not so aware of the value attached to the rarer of the two grills.

The Zoellner collection had a complete set of Z Grills, which is something only one collector at a time can possess, because the key to completeness—the 1c stamp—exists in only two places, as far as we know, and one of those places is the New York Public Library. The library is permanent home to the collection donated by Benjamin K. Miller in the 1920's, so unless another 1c Z Grill is discovered, there is only one example available to collectors.

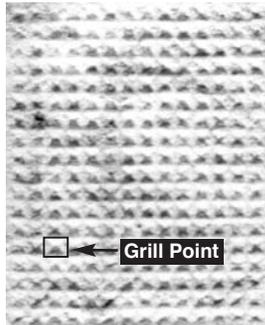


Figure M. Z Grill

The Z Grill is significant in the study of grill production for several reasons. First, the grill itself is unlike all other grills used on United States stamps. As the enlarged photo in Figure M shows, the top of each pyramidal point has a ridge that runs horizontally across the grill point. Some collectors call this the rooftop. Only on the Z Grill is the rooftop line horizontal—all others have

either an X-shaped point or a vertical ridge. The Z and E Grills are the same size, but the distinctive horizontal ridge on each Z Grill point is its identifying feature. Collectors and dealers who know what to look for have found Z Grill stamps misidentified as the more common E Grill.

The Z Grill is significant for a second reason that is not widely appreciated. It was the *first* grill put into regular production after the experiments with the A and C Grills. We know the Z Grill was an early creation, because it is found on essays and experimental papers from 1867. When grilling entered the contract phase on January 1, 1868, it most certainly was Charles F. Steel—the grill's inventor and the National Bank Note Co. employee responsible for grilling—who chose the Z as the grill for the job. Based on records of dated examples, the Z Grill probably went into production during the first week of January and was used exclusively until the D Grill machine was added to the process two weeks later.

How and when the Z Grill was used leads us to the third and final aspect of its significance. The Z Grill was labelled "Z" because William L. Stevenson, who classified the grills in the early part of this century, could not place this type in the scheme of grill production. Today, much of the Z Grill's

history still remains a mystery. There are no contemporary grill-production logs, and philatelic classification (Z, D, E) was never applied to Stamp Agent delivery records, so those dates and figures do not establish beginning and ending dates for the different types of grills. Educated guesswork, based on earliest recorded uses, Stamp Agent records, relative scarcity and observations made of the material itself, is the only means to answering basic questions about grill production. What is known and our own conjecture, based on the available information, have been used to create a timeline of 1st quarter 1868 grill production on the following page.

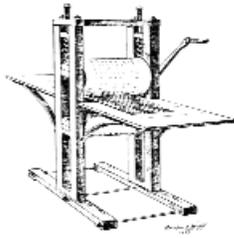
The reader is referred to pages 130-132 for general background information on the 1867-68 Grilled Issue. There are several valuable publications on grills, beginning with the overview in Volume I of Lester G. Brookman's work on 19th century United States stamps, which updates earlier work by Stevenson and others. William K. Herzog's article, "The Story of the United States Grilled Postage Stamps" (*44th Congress Book*, 1978) thoroughly analyzes the Stamp Agent records and establishes reliable quantities issued, arranged by quarter and denomination. Further analysis of 1867-68 and later grill production was presented by Calvet M. Hahn in his article, "The National Bank Note Issues" (*Collectors Club Philatelist*, Vol. 68, No. 5).

An accessible and well-articulated grill history appears in the Linn's publication, *The United States 1c Franklin 1861-1867*, by Don L. Evans (with contributions from C. W. Bert Christian). Articles on grills have been published in the U.S. Classics Society's *Chronicle*, including "The Three-cent All-over Grill Essays: Origin of the Trial Cancellation" (May 1987, No. 134) and "Anachronistic Postal Markings and Expertizing" (February 1998, No. 177). Ken Lawrence's articles in the *Congress Book* and *Chronicle* provide a valuable contribution by tracing the original discovery of the Zoellner 1c Z Grill back to William L. Stevenson in 1916 (the stamp was rediscovered in 1957), indicating that its provenance pre-dates general awareness of the Z Grill. Lawrence also documents Elliott Perry's authentication of the Zoellner 15c Z Grill, which in 1961 was discovered in the Saul Newbury collection misidentified as an E Grill.

The order of production hypothesized in the timeline is based on two premises. First, that there were two grilling devices in operation for most of the grilled-issue period. Second, that the earliest known date of use for any grilled stamp is approximately ten days after grilling. Ten days allow for the grilled sheet to be perforated, pressed, delivered to the official Stamp Agent (on premises) and then shipped to the post office. The printer and Stamp Agent were located in New York City, a large post office, and many of the earliest known

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# Timeline of D, E, F and Z Grill Production—January to April 1868



## Grilling Device No. 1

Begins on 1/7/68 with Z Grill

Jan. 7—2c Z Grill production  
Scott 85B eku 1/17/68

21.5 days of grilling are required to produce the total number of 2c grilled stamps issued in 1st Q 1868 (Z, D, E, F Grills).  
14,400,200 2c stamps = 72,000 sheets, at 3,350 sheets per day



Jan. 15—3c grilling briefly on Device No. 1 (Z Grill)  
Scott 85C eku 1/25/68 (see lot 231)

64 days of grilling are required to produce the total number of 3c grilled stamps issued in 1st Q 1868 (Z, D, E Grills).  
42,864,700 3c stamps = 214,323 sheets, at 3,350 sheets per day

Feb. 5—The first 12c grilled stamps are produced on Device No. 1 (Z Grill)  
Scott 85E eku 2/15/68



1 day of grilling is required to produce the total number of 12c grilled stamps issued in 1st Q 1868 (Z and E Grills).  
639,100 12c stamps = 3,195 sheets, at 3,350 sheets per day

2.2 days of grilling are required to produce the total number of 1c grilled stamps (Z, E) issued in 1st Q 1868.  
1,489,800 1c stamps, or 7,445 sheets, at 3,350 sheets per day

1 day of grilling is required to produce the total number of 10c grilled stamps (E, Z) issued in 1st Q 1868.  
671,770 10c stamps, or 3,358 sheets, at 3,350 sheets per day



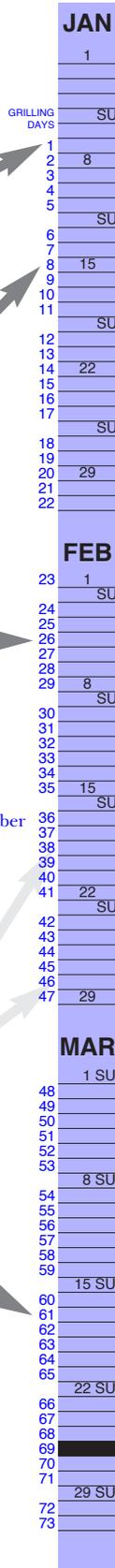
Between Feb. 19 and 28—Grilling of 1c, 10c and 15c on Device No. 1 (Z Grill), probably at the same time sheets are grilled on Device No. 2 (E Grill)



3/17/68  
New F Grill  
Replaces Old Z Grill

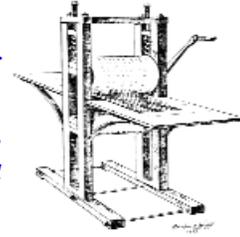
Mar. 17—2c first stamp on Device No. 1 with new F Grill (approx. 8 days of production—5.36 million stamps, or 26,800 sheets—to Stamp Agent before end of 1st Q 1868)  
Scott 93 eku 3/27/68 (earliest use of any F Grill)

**TOTAL GRILL PRODUCTION FOR 1ST Q 1868**  
Records show 300,327 grilled sheets of all values. With a capacity of 3,350 sheets per day/per machine, approx. 90 grilling days are required. Device No. 2 was available for 54 of the 68 grilling days (180,900 sheet capacity) during 1st Q 1868. Balance of production (119,427 sheets) would require approx. 36 grilling days on Device No. 1.



## Grilling Device No. 2

Begins on 1/23/68 with D Grill



Jan. 23—3c grilling on new Device No. 2 with D Grill  
Scott 85 eku 2/2/68



Feb. 5—2c grilling on Device No. 2 stops after short run when D Grill is replaced with new E Grill  
Scott 84 eku 2/15/68



2/10/68  
New E Grill  
Replaces Old D Grill



Feb. 10—3c grilling with new E Grill begins  
Scott 88 eku 2/19/68 (eku for any E Grill)



Feb. 19—10c and 12c E. Grill production on Device No. 2  
Scott 89 eku 2/29/68  
Scott 90 eku 2/29/68

Feb. 28—1c and 2c E. Grill production on Device No. 2  
Scott 86 eku 3/9/68  
Scott 87 eku 3/11/68



Mar. 25—Last day that grilled sheets can be finished in time to reach Stamp Agent in time to be counted in 1st Q 1868 figures

**AFTER 1ST Q 1868**  
Regular 15c grilling begins in April with E and F Grills applied concurrently. Also in April 3c F Grill production begins, followed by 10c and 12c F Grills in May. 1c F Grill production does not occur until July, and the 5c, 24c, 30c and 90c low-volume production begins in November 1868, exclusively with F Grill.

NOTE: EKU dates based on census data. All other dates are conjectural, based on premise that earliest known use occurred ten days after grilling.

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usages are postmarked at New York City, so the time between grilling a stamp and its actual use should be fairly narrow—ten days seems to be a sufficiently accurate benchmark.

After arranging the stamps on the timeline by their date of use and extrapolated production date, we must begin to make assumptions about the two machines. The first assumption is what it looks like, based on proof presses of the period. The next assumption is that the grilling plate or cylinder—we do not know exactly what it was—could be removed and replaced, but that one grill (Z, D, E or F) was used on one machine at a time and stayed in use until replaced by a new grill. Why a grill would be taken out of production has never been determined, but quality control and the desire to increase output speed are two probable reasons.

Looking at the timeline, the two devices, No. 1 and No. 2, are arranged to the left and right of the calendar line, with their respective grill products arranged underneath in chronological order. How can we be certain that no more or less than two machines were used in 1868? Contemporary sources in 1871 state that four grillers were employed at the rate of \$5 a week. Two operators per machine is a logical division of labor.

To verify the two-machine theory, we can also look at production figures for the whole period and apply them to the first quarter of 1868. During the four quarters from April 1868 to the end of March 1869, the grilled stamps delivered to the Stamp Agent averaged 487,250 sheets (of 200 stamps) per quarter, without much deviation from the mean. A quarter, or twelve weeks, represents 72 working days (a six-day week was the norm). That yields an average daily grilling output of 6,767 sheets. For most of the 1868-69 grilling period, two machines equipped with E and F Grills were operating. The average daily output divided between two machines gives us a round number of 3,350 sheets per day, per machine, as the standard daily grilling rate.

Applying this daily rate to the 300,327 grilled sheets (all denominations) delivered to the Stamp Agent between January 1 and March 31, 1868, a total of 90 grilling days would be required (300,327 divided by 3,350). The timeline shows that there are 68 working days available in the first quarter. The first production day is January 7, based on the earliest known use of the 2c Z Grill (see Figure N). The cut-off point for grilled sheets to be perforated and pressed in time to reach the Stamp Agent by March 31 is the end of the March 25 work day. Eliminating Sundays from this period in 1868, there are exactly 68 working days.

It is not logical for one machine to grill sheets at a rate that would add 22 days worth of product to a 68 working-day period. The analysis shows that two machines were used. Device No. 1 produced Z Grills from January 7 until March 17, when the F Grill replaced the Z. From that date, this machine continued to produce F Grills until the close of the quarter. The rarity of Z Grills indicates that Device No. 1 was not a high-volume producer during the first 60 working days. Device No. 2 started later (January 23), but it was clearly the high-volume machine, especially after the E Grill was installed, because among the large number of 3c grills (64 production days), there were far more E Grills than other types (Z, D).



**Figure N.**  
Earliest known  
use of any Z  
Grill (1/17/68)

The timeline shows the number of grilling days allocated to each denomination, based on the Stamp Agent records and the 3,350 sheets per day/per machine rate. Because two machines were operating, the total number of grilling days may be divided between Device No. 1 and No. 2. In fact, the co-existence of different grills on the same value shows that sheets were divided or transferred between machines. In this respect the 12c Z and E Grills are intriguing, because only one day was required to complete grilling of the 3,195 sheets of 12c stamps were delivered to the Stamp Agent in the 1st Q 1868. However, we have a 12c Z Grill used as early as February 15, 1868, and a 12c E Grill used two weeks later on February 29. Obviously, a short run of 12c stamps was made on Device No. 1 (Z Grill) and another short run was made on No. 2 (E Grill). The extreme rarity of the 2c D Grill is also indicative of something unusual occurring in production. The 2c D and 12c Z Grills share a common earliest known date of use, February 15, immediately preceding the February 19 eku for any E Grill. It appears that grilling of 2c sheets on Device No. 2 was stopped so that a replacement grill, the E Grill, could be installed.

The ultimate mystery is when the 1c, 10c and 15c stamps were grilled on Device No. 1, the Z Grill. Our hypothesis is that production of grills for the first 46 days was limited almost exclusively to high-volume stamps, the 2c and 3c. The only other value we know was grilled during this 46-day period was the 12c—just one day's production was split between both machines. Between February 19 and 28, the 1c, 2c, 10c and 12c stamps were grilled on Device No. 2 (E Grill), and the existence of 1c, 10c and 15c Z Grills proves that some sheets of those values were grilled on Device No. 1 when it was still equipped with the Z Grill. We assume this took place concurrently with E Grill production, but we cannot be sure. Delivery records and eku dates for the 15c E and F Grills indicate that regular grilling of 15c stamps began in April. Grilled 15c stamps from February or March may have been stockpiled or added to ungrilled sheets.

The double grills and unsatisfactory impressions on many Z Grill stamps suggest that something was wrong with the process. The F Grill might have been the solution. There is also the possibility that the paper thickness of imperforate gummed 1861 sheets printed in 1867 proved troublesome in the grilling process. Based on the variation in grill impressions seen on a large number of stamps, it appears that more than one sheet was passed through the griller at one time. The thicker 1867 paper would impede multiple-sheet grilling. Perhaps for this reason the change from the Z to F (and D to E) was made.