Henry Archer – the man who gave the postage stamp teeth

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How an Irish railway worker and entrepreneur changed the face of philately

The parallels between dentistry and philately are surprisingly close. Postage stamps, too, have teeth—those fine perforations that determine beauty and value. A cleanly perforated stamp resembles a well-kept set of teeth; missing teeth reduce its worth. Collectors pay attention to dry storage, avoid moisture and sticky residues—principles that any dentist would also endorse. But when collectors speak of “perforation,”

[17] https://www.youtube.com/watch?v=cHIRXFjh2ug

they mean far more than just the small serrations along the edge of a stamp. They are not only practical; they also tell a story of technology and postal history.

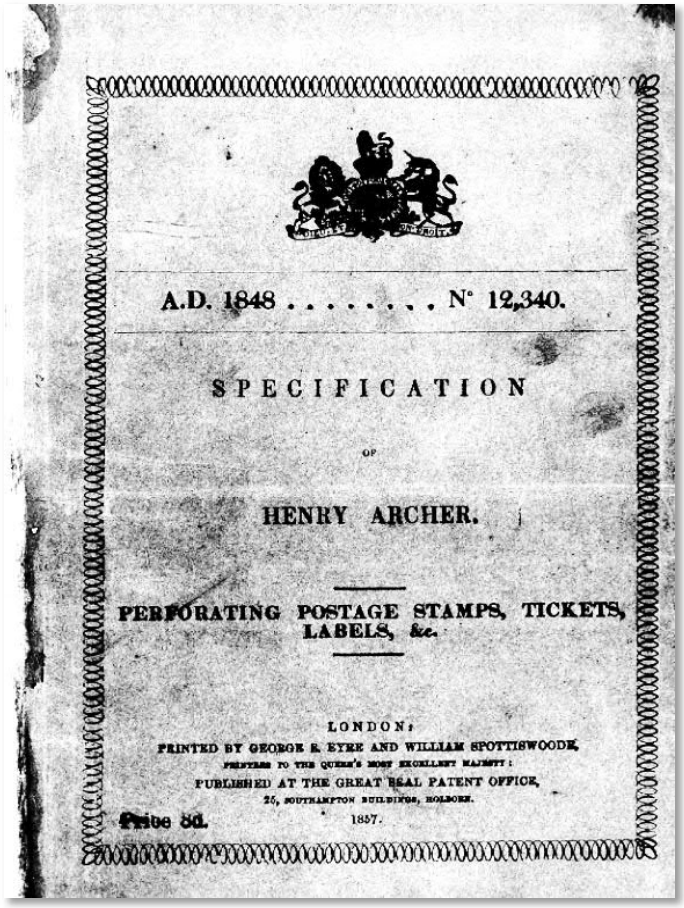
When the British Penny Black, the world's first postage stamp, appeared in 1840, it was a triumph for the postal system—but it posed a practical problem for postal clerks. The stamps were printed in sheets and had to be cut out individually with scissors. This was time-consuming and led to untidy edges, as there were often only narrow dividing lines between the stamps. Copies with wide, intact margins are highly prized today, while cut-into stamps are considered inferior.

Famous early postage stamps without perforation: The Penny Black (1840), the 9 Kreuzer Blue (1850), and the One Kreuzer Black (1849) are among the oldest stamps in Europe. Because they were still imperforate, they had to be cut out with scissors—hence their often unevenly wide margins.

Well-known examples include not only the Penny Black but also the Bavaria 1 Kreuzer Black of 1849 and the first Austrian issue of 1850. To cut the stamps as accurately as possible, some sheets—particularly those of the Thurn and Taxis issues of 1852—even featured visible colored lines between the stamps as printed cutting guides. Unfortunately,

Farbiger „Durchstich" auf Marken von Thurn und Taxis 1866. Dies war jedoch kein Durchstich, sondern eine Schneidehilfe

these were often referred to as "colored rouletting," which is misleading, as they are not rouletting (see below) but rather "guide lines."[18].


A.D. 1848 . . . . . N° 12,340.

SPECIFICATION

OF

HENRY ARCHER.

PERFORATING POSTAGE STAMPS, TICKETS, LABELS, &c.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:
PUBLISHED AT THE GREAT SEAL PATENT OFFICE,
25, SOUTHAMPTON BUILDINGS, HOLBORN.
Price 8d. 1857.

Patent specification No. 12340 by H. Archer, 1848

The Irish entrepreneur Henry Archer (1799–1868) recognized early on that this process of "cutting" could be mechanized. Archer was not an engineer, but a versatile businessman with a keen sense for technology. He came from a wealthy family in Donegal, studied in Dublin, and made a name for himself in railway construction—among other things through projects for the Irish Midland Railway. In philatelic circles today he is known as the inventor of perforation, but in his own time he was primarily known in railway and business circles.

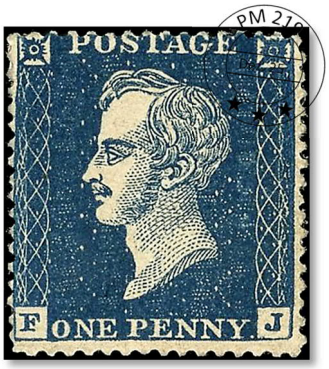
Between 1847 and 1848, Archer developed his first rouletting machine. It worked with fine blades or toothed wheels that scored tiny parallel cuts into the paper between the stamps. The paper bridges weakened in this way made it possible to separate individual stamps without cutting them completely apart (Patent No. 12,340: *Perforating Postage Stamps, Tickets, Labels, etc.*, 1848). This method basically worked, but it was …

[18] The *Michel Germany Specialized Catalogue*, Volume 1 "Old German States" (2023/24), notes for the Thurn and Taxis issues of 1866 (Michel Nos. 45–54) that "printing and 'perforation' were carried out in a single operation." However, the term "perforation" here does not mean mechanical rouletting in the usual sense, but rather a simultaneously printed, flat-pressed dividing line that served as a visual and tactile cutting guide. The paper was not fully weakened or cut through by this process. The often frayed edges of these stamps arose when they were manually separated along these lines on the soft paper, creating the misleading impression of a genuine rouletting.

sensitive to paper moisture and the length of the cuts. The British postal administration considered it too impractical for mass use, yet the idea spread: the rouletting process was adopted in several countries in the following years—such as Finland (1860) and Denmark (1863). Regular issues were produced there that were rouletted rather than perforated, and the principle remained in use until the 1870s. Archer's machine was therefore not a failure, but an important technical intermediate step on the path to modern perforation..

Rouletting on an early Finnish stamp ("tongue rouletting," named after the shape of the separations; 1860) and on an early Danish stamp (1863).

Around 1849, Archer fundamentally revised his idea. He replaced the cutting blades with small metal pins capable of punching round holes into the paper. In doing so, he invented perforation—the modern form of stamp perforating that remains the standard to this day. The new device consisted of an upper cylinder fitted with pins and a lower plate with corresponding holes. With a single stroke, entire rows of small holes were created, precise and uniform. On August 23, 1850, Archer was granted British Patent No. 13,228, entitled *"Improvement in Cutting or Separating Paper."* This marked the first time that the separation of paper by punching was legally protected—a milestone in postal technology.



1850 – 1d "Prince Consort" Essay, blue, perforation 16. Rare trial piece from Archer's perforation tests, one of only three blue examples known worldwide. Private collection. Estimated value approx. £25,000.

For practical tests of his new perforating machine, Henry Archer had special trial printings produced around 1850/51 by Perkins, Bacon & Co.—the famous "Prince Consort Essays."[2122]. These letterpress-produced samples depicted Prince Albert, the consort of Queen Victoria, since trial stamps bearing the Queen's portrait were not permitted. The prints served exclusively to test Archer's second, improved perforating machine (Patent No. 13,228 of 1850) and are therefore not essays in the strict philatelic sense, but rather technical trial printings (*printer's sample stamps*). Archer experimented with different hole spacings (perforation gauges), paper thicknesses, and guiding mechanisms in order to optimize the uniformity of the rows of holes. Surviving examples sometimes show irregular or interrupted perforations—clear traces of the early experimental phase. Only about 25 to 36 specimens are actually perforated (perforation 16, see image[23]); the majority remained imperforate. Nevertheless, the "Prince Consort Essays" are regarded as the world's first perforated postage stamps and rank among the greatest rarities of classic philately.

The first perforated Penny Reds were produced with a very fine perforation of 16 holes (left). However, because the stamps tended to separate unintentionally, the system was soon changed to the more robust perforation 14 (right)—it remained easy to separate but was significantly more stable.

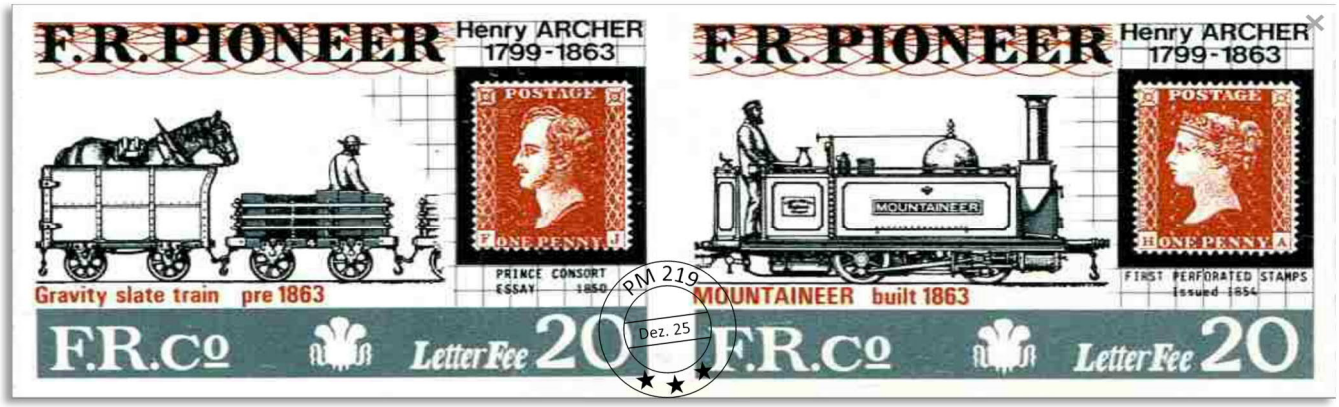
Between 1850 and 1853, the first experiments with the perforated "Penny Red" were carried out in parallel. It was printed by Perkins, Bacon & Co. in London using the traditional line-engraving process (steel engraving) on moistened paper, which shrank slightly as it dried—a circumstance that made mechanical separation of the stamps more difficult. For his trials, Henry Archer used a machine he had developed himself, which produced an experimental perforation with gauge 16. These stamps served solely for technical testing and were never officially issued. The results still showed irregular or incomplete rows of holes, but they marked the decisive step toward the industrial production of perforated stamps. Only a few sheets of this early experimental printing have survived, which is why these "perforated Penny Reds" are today among the rarest items of classical

[21] David Bailey: *How an Angry Inventor Tried to Put an End to Line-Engraved Stamps*, in: *Stamp Collector Magazine*, Collectors Club of Great Britain, 2023.

[22] *Wikipedia (en)*: „Prince Consort Essay", abgerufen am 15. Nov. 2025.

[23] https://www.easyliveauction.com/catalogue/lot/1d4a80eb1c2417e4af3b342d8d31963f/0af8d24542e81eb9357e7ef448a6646f/the-phillips-collection-of-great-britain-stamps-part-ii/

philately. They are regarded as the first practically usable, mechanically perforated postage stamps in the world. With them, the era of the officially perforated postage stamp began. The London engineering firm



This Private Office issue (Great Britain, 1987) dedicated to Henry Archer—the inventor of postage stamp perforation—takes up an already existing risk of confusion with a railway pioneer of the same name and even reinforces it by merging both biographies into a single person. Archer is sometimes confused with the namesake director of the Ffestiniog Railway, who lived in roughly the same period, as both men came from Ireland and had professional connections with railways; however, there is no evidence that the two individuals were in fact the same person. The stamps depict early means of transport of the Ffestiniog Railway, which have nothing to do with the "philatelic" Henry Archer, while at the same time commemorating his decisive contribution to philately: the introduction of mechanically perforated Penny Reds. Shown are a perforated Prince Consort issue (left, see text) and a Penny Red with perforation 14 (right), i.e. an official postal issue. Apart from the advertising cancel of this Private Mail issue, I was unable to find any further philatelic items directly relating to Henry Archer himself.

David Napier & Son soon improved the system to such an extent that entire sheets could be punched in a single operation[24]. From 1854/55 onward, the official perforation of the Penny Red was carried out using the more precise Napier machines (perforation 14). Archer's basic principle had thus definitively become the industrial standard.

After selling his patents, Archer largely withdrew from public life and once again devoted himself to railway projects. When he died in Dublin in 1868, his role in the development of the postage stamp had been almost forgotten. Philatelic material from his own hand—such as letters or official correspondence—is unknown; Archer was not a collector, but a technician. His work took place in workshops and machine halls, not at the post office counter. Only decades later did philatelists recognize his importance for the history of the postage stamp. Today, Henry Archer is regarded as one of the great pioneers of postal technology—a man who, through perseverance and inventive spirit, led the postage stamp from scissors-cut paper to a precision product.

The perforation gauge of a postage stamp (i.e., the perforation, mentioned several times above) indicates how many hole intervals lie within 2 cm and is determined using a perforation gauge. Common values usually range between 10 and 14, with higher gauges allowing easier separation of the stamps. In addition to uniform perforations, there are also compound perforations, in which the horizontal and vertical sides have different values. For collectors, a clean, undamaged perforation and a well-centered design are important, as misalignment or damaged teeth reduce a stamp's value.

In summary: Perforation is far more than a technical detail along the edge of a stamp. It represents inventiveness, precision, and postal practice—a small detail with a great history. As in dentistry, the same applies here: what is cared for endures. An intact edge is always a reason to smile.

Using a perforation gauge, the perforation of a postage stamp can be determined precisely by placing the stamp so that its hole spacing matches one of the scales. The first example on the right shows a classic compound perforation 12½ : 10½ of the Austrian 2-Heller value of 1899, in which the horizontal and vertical sides have different perforations. The second example below illustrates a more modern type of perforation—here too the perforation gauge is applied, in this case yielding a measured value of 8¾.

[24] **D. Napier & Son**, founded in London in 1808 by David Napier, was a leading manufacturer of precision, printing, and coining machinery before the company specialized in automobile and aircraft engine construction in the 20th century. (cf. Napier Heritage Trust; Wikipedia, "D. Napier & Son").)