

---

## History of Dental Impression Trays

This is part of the Encyclopedia of the History of Dentistry.

**Dr. Andrew I. Spielman, D.M.D., Ph.D.**, Professor of Molecular Pathobiology, Director of the Rare Book Library and Historical Archives, New York University College of Dentistry, New York, NY, USA.

[ais1@nyu.edu](mailto:ais1@nyu.edu)

**Dr. Forrai Judit, D.Sc.**,

Semmelweis University, Institute of Public Health, Department of History of Medicine, Budapest, Hungary

[forrajud@gmail.com](mailto:forrajud@gmail.com)

*Initially submitted on March 15, 2025; accepted for publication on 15 May 2025*

**Please cite this article as** History of Dental Impression Trays. In *Encyclopedia of the History of Dentistry*. Forrai J, Spielman AI eds. 2025. Doi: [10.32558/encyclopedia.dentistry.97](https://doi.org/10.32558/encyclopedia.dentistry.97)

---

### Abstract:

The evolution of impression trays in dentistry spans over two centuries, beginning with Christophe François Delabarre in 1820, who introduced a semi-elliptical metal tray for improved accuracy with wax impressions. By 1833, Jean-Claude F. Maury provided the first published illustration of a dental impression tray, with Chapin A. Harris and Joseph Fox integrating the concept into British and American dental education by the 1840s. Throughout the 19th century, materials evolved from metal to porcelain, and to plastic in the second half of the 20<sup>th</sup> Century. Today, impression trays come in various materials and designs but are gradually being replaced by digital scanning technology.

**Keywords:** Dental impression, edentulism, impression trays, impression materials

---

### The Evolution of Impression Trays in Dentistry

The development of complete dentures was a slow process. The earliest known evidence of complete dentures dates back to the 1500s, though these were crude, ill-fitting, and non-functional. Their fabrication did not involve impression-taking. The first recorded dental impression was taken in 1756 by Philipp Pfaff (1713–1766), the Prussian Imperial Dentist. Pfaff's method involved softening a block of sealing wax in hot water and pressing it against the edentulous arch. This wax impression was then used to create a plaster of Paris cast, marking the first documented use of an impression in dentistry.<sup>1</sup>

### Early Developments in Impression Trays

One of the primary issues with wax impressions was their low melting point and tendency to deform at room temperature. To achieve a more accurate reproduction of the dental arch, a rigid tray was required to support the wax during impression-taking. This innovation materialized in 1820 with Christophe François Delabarre (1784–1862), a French Royal Dentist.<sup>2</sup> In his book, *Traité de la Partie Mécanique de l'Art du Chirurgien-Dentiste*, Delabarre devised a semi-elliptical metal trough with a handle to hold the wax. However, despite the book containing 42 full pages of illustrations, the impression tray itself is not depicted. The only mention of the tray appears once in his 585-page, two-volume work (Fig. 1).

Delabarre describes it as follows: *the wax ... can be placed in a small tray or semi-elliptical box of tin or silver, on the front part of which is a handle.*

*(...on peut la déposer dans une petite gouttière ou caisse semi-elliptique de fer blanc ou d'argent, sur la partie antérieure de laquelle est une tige ou manche).*

The first published illustration of a dental impression tray appeared in 1833 in Jean-Claude F. Maury's (1786–1840) book *Traité Complet de l'Art du Dentiste d'Après l'État Actuel des Connaissances* (Fig. 2).<sup>3</sup> However, the adoption of impression trays in England and America took several years.

### The Adoption of Impression Trays in Dentistry

Chapin A. Harris, the founder of the Baltimore College of Dentistry, included impression trays in the first edition (1839) of *The Dental Art, Practical Treatise on Dental Surgery*. This was the first comprehensive dental textbook used in emerging dental schools.<sup>4</sup> In the section on "The Manner of Obtaining a Model," Harris refers to the use of an impression tray, although he calls it a "wax frame" instead. He states: "An impression of the posterior portion of the mouth cannot be taken without distorting the wax unless a frame is used to hold the wax." By the sixth edition (1855), Harris's text includes a wax impression of an edentulous upper arch with a tray (Figs. 3A and 3B). Similarly, Joseph Fox, a key figure in British dental education, incorporated dental trays in the 1846 edition of *The Natural History of Diseases of the Human Teeth* (Fig. 4).<sup>5</sup>

### Impression Trays in the Late 19th Century

By the 1860s, dental supply catalogs began referring to impression trays as "Impression Cups". Most early impression trays were made of metal alloys or silver, but alternatives also emerged. The 1866 S.S. White dental catalog featured porcelain impression cups and an innovative dual-arch impression tray designed by W. Franklin, a dentist from New Jersey. Franklin's tray was designed to capture both upper and lower impressions simultaneously, along with bite registration. It had a central groove for overflow and occlusal contact for both arches (Fig. 5).

Porcelain trays, another alternative, were marketed for their ease of cleaning and reuse. A period dental catalog described the superiority of porcelain trays as follows: "The difficulty of having our trays kept sufficiently clean is not easily overcome with ordinary metal ones. Even silver presents the same objection and may cause unpleasant thoughts regarding their prior use in patients." It is important to note that in 1866, the concept of sterility did not exist, and dental instruments—including trays, burs, and tools—were reused for multiple patients.

One of the first patents for impression trays was granted to C.L. Wuestenberg of Pittsburgh, Pennsylvania, in 1869. His patent (#90,802) was issued on June 1, 1869 (Fig. 6).<sup>7</sup>

### The Refinement of Impression Techniques (1870s–1900s)

The use of impression trays evolved further with the introduction of preliminary and functional impressions. In 1871, the S.S. White catalog described the first "functional" impression technique, which involved a temporary gutta-percha tray that could be customized to the patient's mouth.

The same year, a second description of functional impression-taking appeared in the text *Impression Taking*.<sup>8</sup> This method introduced a double-impression technique, where a wax impression in a tray served as a base for a final functional plaster impression. The same text also featured improved metal trays with rounded edges and better-fitting surfaces. These trays came in multiple sizes and were designed by E.T. Starr (Fig. 7).

By the late 19th century, impression trays were available in various materials, including tin, aluminum, silver, and porcelain.<sup>9</sup> The first plastic impression trays were introduced in the late 1960s. Unlike metal trays, these were designed to be disposable rather than sterilizable.

## Modern Innovations and the Future of Impression Trays

In 1980, Dr. Rand Werrin introduced the Triple Tray (Fig. 8), a dual-arch impression tray similar to Franklin's 1866 design. This tray could register both arches and bite simultaneously, improving efficiency in dental practices.

Today, modern impression trays are classified into three primary types:

1. Stock Trays – Available in full-arch, quadrant, anterior segment, or edentulous variations.
2. Custom Trays – Individually fabricated to fit a patient's unique arch shape.
3. Sectional Trays – Designed for impressions of specific sections of the dental arch.

These trays are available in metal, plastic, and even 3D-printed materials. However, with the advent of digital impressions, the role of traditional impression trays is gradually becoming obsolete after 200 years of use.

## References

1. Pfaff P. (1756). Abhandlung von den Zähnen des menschlichen Körpers und deren Krankheiten. Paragraph 78, p. 153.  
<https://archive.org/details/b3300500x>
2. Delabarre CF. (1820). Traité de la partie mécanique de l'art du chirurgien-dentiste. p.164.  
<https://gallica.bnf.fr/ark:/12148/bpt6k5623698q.texteImage>
3. Maury J-C F. (1833). Traité complet de l'art du dentiste d'après l'état actuel des connaissances. Atlas de planches. Planche 32. Imprimerie d'Abel Goujon, a Saint-Germain-en-Laye.  
[https://archive.org/details/BIUSante\\_APHPF00109/page/n32/mode/1up](https://archive.org/details/BIUSante_APHPF00109/page/n32/mode/1up)
4. Harris CA. (1839). The Dental Art, Practical Treatise on Dental Surgery. Baltimore, MD. p.348.  
<https://wellcomecollection.org/works/vm5xcctx/items?query=impression>
5. Fox, J. (1846). The Natural History and Diseases of the Human Teeth. United States: E. Barrington and G.D. Haswell. Plate 28.  
[https://www.google.com/books/edition/The\\_Natural\\_History\\_and\\_Diseases\\_of\\_the/mBYtpLPagw8C?hl=en&gbpv=0](https://www.google.com/books/edition/The_Natural_History_and_Diseases_of_the/mBYtpLPagw8C?hl=en&gbpv=0)
6. Franklin's Improved Cup for Taking Impressions of the Lower Jaw. Am J Dent Sci. 1856 Jan;6(1):156-157.
7. Wuestenberg CL. U.S. Patent 90,802. June 1, 1869. Improved Impression Dental Cup.  
<https://patents.google.com/patent/US90802A/en?q=U.S.+Patent+90%2c802>
8. White JW. (1871). Taking Impressions. Philadelphia, S.S. White. p. 55-75.  
[https://www.google.com/books/edition/Taking\\_Impressions\\_of\\_the\\_Mouth/FVBDAQAAMAAJ?hl=en&gbpv=1&dq=Franklin%27s+Impression+Cup&pg=PA76&printsec=frontcover](https://www.google.com/books/edition/Taking_Impressions_of_the_Mouth/FVBDAQAAMAAJ?hl=en&gbpv=1&dq=Franklin%27s+Impression+Cup&pg=PA76&printsec=frontcover)
9. S.S. White Dental Catalog (1877). Catalogue of Dental Materials, Furniture, Instruments, Etc. for Sale. Philadelphia, Samuel S. White. p.297-317.  
[https://www.google.com/books/edition/Catalogue\\_of\\_Dental\\_Materials\\_Furniture/xUVHAQAAMAAJ?hl=en&gbpv=0](https://www.google.com/books/edition/Catalogue_of_Dental_Materials_Furniture/xUVHAQAAMAAJ?hl=en&gbpv=0)

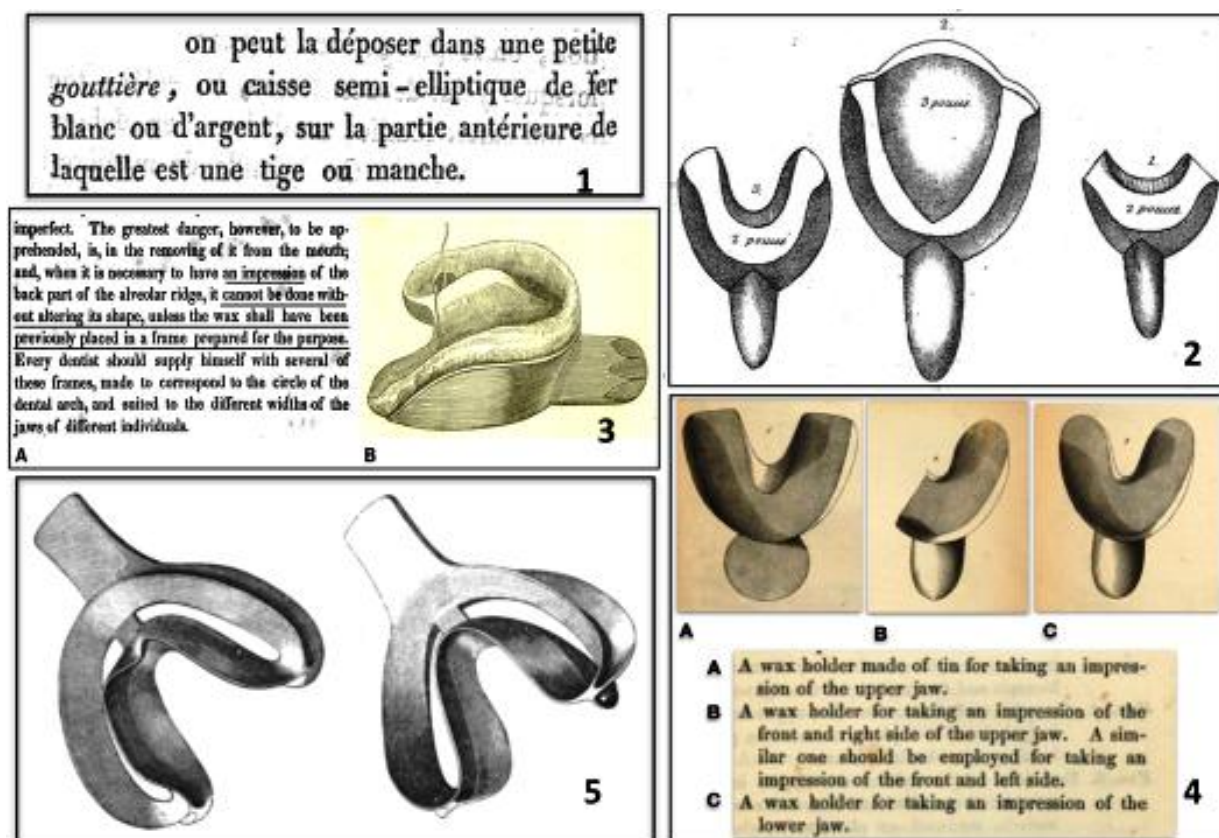


Fig. 1. C.F. Delabarre's description of a tray for impression taking.<sup>2</sup>

Fig. 2. Impression Trays - F. Maury, France, 1833. Maury used the word « cuvettes », a small tube-like container. The current term, « porte-empreinte dentaire », was not yet introduced.<sup>3</sup>

Figs. 3A. Harris' description of the impression tray.<sup>4</sup> 3B. A wax impression with tray from the 1855 edition.

Figs. 4. Joseph Fox's 1846 edition displays three "wax holders".<sup>5</sup>

Figs. 5. Franklin's Impression Cup showing both upper and lower side.<sup>6</sup> One used it to take an impression on both arches at the same time.

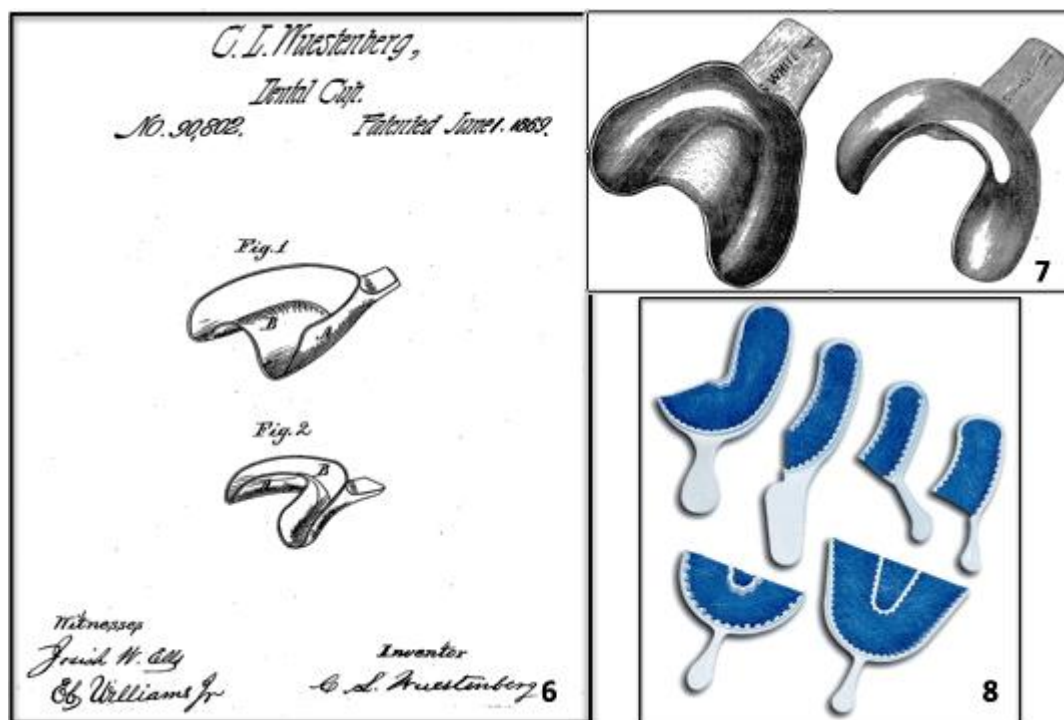


Fig. 6. C.L. Wuestenberg, a Pittsburgh dentist's patent for a modified dental cup (tray) issued on June 1, 1869.<sup>7</sup>

Fig. 7. Impression Trays from 1871 designed by E.T. Starr and sold by S.S. White.<sup>8,9</sup>

Fig. 8. Triple Tray Impression Trays were introduced in the 1980s as dual arch trays.