

Linotype® and Hell® share a rich history of technological innovation. Many important patents, trademarks, and technological developments have been recorded by these now-joined companies. These range from early hot metal Linotype concepts all the way to advanced electronic screening techniques.

Linotype and Hell have applied for and received hundreds of patents. In some cases, multiple patents may apply to the same technological development. It is not the intent of this article to provide a comprehensive overview of Linotype-Hell patents, but only to paint a picture of their importance to the industry.

Finally, since patents are valid only for a limited period of time,<sup>1</sup> some of the patents mentioned here have expired, but they are nonetheless of considerable historical importance.

<sup>1</sup> A utility patent in the United States is valid 17 years from the issue date. In other countries it may be 20 years from the filing date. A design patent in the United States is valid 14 years from the issue date.

**Early history**

One of the earliest Linotype patents was awarded to Ottmar Mergenthaler in November of 1899 for “Universal Milling Machines”. This, of course, refers to the hot metal Linotype machine. Dr. ing. Rudolf Hell followed thirty years later with a patent for the “Hell-Schreiber for direct transmission of characters”. Another early Hell patent was in 1954 for an “Automatic block engraving machine, the Klischograph”. A modern version of the Klischograph®, the Helio-Klischograph®, is used today for engraving gravure cylinders.

**Typefaces**

Much of the innovation from the Linotype side of the company came not from patents (although there were many), but instead from design innovations related to typography. Many well-known type designers created typefaces for Mergenthaler (as the company was called until the 1970s). A representative listing is shown in the chart below.

In the United States, typeface designs are not in themselves patentable.<sup>2</sup> Technological innovations or software programs related to producing typefaces may be patentable or copywritable, but the faces themselves are not. This is why you may see many faces that resemble Helvetica® which have a name that is not Helvetica. The name Helvetica is a Linotype-Hell trademark and may not be used without the permission of Linotype-Hell. Trademarks, unlike patents, may be renewed.

<sup>2</sup> It is possible to get a design patent for typeface designs in many European countries.

Designer	Typeface	Year
William Addison Dwiggins	New Caledonia®	1938
Adrian Frutiger	Univers®, Frutiger®	1957, 1976
Max Miedinger	Helvetica®	1959
Stanley Morrison	Times®	1931
Rudolf Ruzicka	Fairfield®	1939
Rudolf Wolf	Memphis®	1929
Hermann Zapf	Palatino®, Optima®	1950, 1958

Note: This is only a selection of the best-known Linotype-Hell typeface trademarks. Some of these typefaces were initially developed at other type foundries. Later the rights were acquired by Linotype.

U.S. patent	Date	Type of screening	Title
#3,657,472	4/18/72	<b>Rational tangent</b>	Method and apparatus for the dot-by-dot and line-by-line rastered recording of picture signals obtained by scanning picture originals with a raster rotated with respect to the recording direction. <i>Inventors: Heinz Taudt and Hans Keller</i>
#4,084,183	4/11/78	<b>Rational tangent</b>	Method for the electro-optical reproduction of half-tone pictures. <i>Inventors: Hans Keller, Roman Koll, Heinz Taudt</i>
#4,482,923	11/13/84	<b>Frequency modulated</b>	Method for autotypical tonal value analysis. <i>Inventors: Gerhard Fischer, Karl Scheuter</i>
#4,499,489	2/12/85	<b>Irrational tangent</b>	Production of screen printing blocks. <i>Inventors: Winrich Gall, Klaus Wellendorf</i>
#4,700,235	10/13/87	<b>Irrational tangent</b>	Method and apparatus for producing half-tone printing forms with rotated screens on the basis of randomly selected screen threshold values. <i>Inventor: Winrich Gall</i>

### Digital font technology

Some early milestones in digital font technology may be traced back to work done by English engineers for Linotype-Paul (the name used by the English Linotype up until the late 1970s). Linotype-Paul developed the well-known Linotron® 202, a CRT (cathode ray tube) typesetter which employed an early vector or outline font scheme. This method allowed one digitally-stored master letter to be used to regenerate letters over a complete range of sizes from 4½ to 128 points. These early vector font techniques foreshadowed some of the work done with Bezier curves in the PostScript™ page description language.

### Screening and color

The best known patents from the Hell side of the company relate to screening and color. A selection of five screening patents is shown in the box above. Two relate to rational tangent screening, two relate to irrational tangent screening, and one relates to a frequency modulated method of screening.<sup>2</sup> (Many people in the United States prefer to use the term 'stochastic screening' even though the term 'frequency modulated screening' better describes the way the technology actually works.)

<sup>3</sup> For more information on screening technologies, please refer to the following articles from the Linotype-Hell technical information series: *Rational and Irrational* (1992 notebook), and *Halftoning Overview* (1993 notebook)

In the area of picture processing, the Hell side of the company produced important patents for retouching and color correction that were originally developed for use with Chromacom.<sup>3</sup> These include *Method and Apparatus for Partial Electronic Retouching of Colors* (US patent #4,393,399) and *Method for Partially Smoothing Retouch in Electronic Color Reproduction* (US patent #4,516,155)

### Conclusion

As for the future, Linotype-Hell engineers continue to apply for patents in all areas related to film recording, scanning, color separation, and printing.

### Acknowledgements

I would like to thank Richard Auckland, Larry Feller, Otmar Hoefer, Vern Kellie, Gus Keysor, Hans Günter Leufer, Klaus Schäfer, Ricky Schreiber, and Christine Stella of Linotype-Hell for their help in producing this article. Also many thanks to Walter Ullrich for his insights on Linotype Company.

**Please direct any questions or comments to:** Jim Hamilton, Marketing Department, Linotype-Hell Company, 425 Oser Avenue, Hauppauge, NY 11788 (For subscription information on the Linotype-Hell technical information series, please call 1-800-842-9721.)

June 1994, Part Number 7035

© 1994 Linotype-Hell Company. All rights reserved.

- Caledonia, Chromacom, Fairfield, Frutiger, Helio-Klischograph, Hell, Helvetica, Klischograph, Linotron, Linotype, Memphis, Mergenthaler, Optima, Palatino, Times, and Universe are registered trademarks of Linotype-Hell AG and/or its subsidiaries.
- PostScript is a trademark of Adobe Systems, Incorporated which may be registered in certain jurisdictions. All other company and product names are trademarks or registered trademarks of their respective owners.