Frederick Eugene Ives (1856–1937) was a U.S. inventor, born at Litchfield, Connecticut. In 1874–78 he had charge of the photographic laboratory at Cornell University. He moved to Philadelphia, Pennsylvania, where he was one of the founding members, in 1885, of the Photographic Society of Philadelphia. He was awarded The Franklin Institute's the Elliott Cresson Medal 1893, the Edward Longstreth Medal in 1903, and the John Scott Medal in 1887, 1890, 1904, and later in 1906.

Color and stereoscopic photographyIves was a pioneer of color and stereoscopic photography, and demonstrated a system of natural color photography at the 1885 Novelties Exposition of the Franklin Institute in Philadelphia.

As early as 1900, Ives was tinkering with stereoscopic motion pictures. In 1903 Ives patented the "Parallax Stereogram" a method by which an image made up of interlaced stripes would animate when placed behind a stationary array of opaque, vertical bars and moved laterally. By 1922, he and fellow inventor Jacob Leventhal were producing a popular series of anaglyph 3-D novelty shorts called Plastigrams. The first one was for Educational Pictures released in December 1922, and the latter ones for Pathé Films. On 22 September 1924, one of the Plastigram films, Luna-cy!, was re-released in the DeForest Phonofilm sound-on-film process.

In 2009, Ives' color photographs of San Francisco taken shortly after the 1906 earthquake were discovered during cataloging of the collection at the National Museum of American History.[4][5] These images are thought to be the only existing color images of that disaster, as well as the earliest extant color photographs, in general, of San Francisco.

His son Herbert E. Ives was a pioneer of telephotography and television, including color facsimile.

Halftone process

Although he held a patent for the half-tone letterpress as of 1878, the half-tone photoengraving process was first invented by Canadians George-Édouard Desbarats and William Leggo. The process was first employed in 1869 in the Canadian Illustrated News.

Ives' development of the halftone photoengraving process in 1881 and later the crossline screen for direct photographic halftone reproduction stand out as a transition period in the history of printing and publishing. He contributed directly to the technology and method for reproducing with ink-on-paper printing processes all of the tonal values and richness of detail from an original photographic image. Prior to this discovery, imagery in print was confined to the highly skilled and time-consuming efforts of handicraft wood engravers whose product resembled works of art more than an actual scene as perceived by the human eye.

In its essential features, the halftone process remains in use today as the most common method for photographic reproduction in print. It is safe to say that the offset lithographic process, the predominant printing technology of the past half-century, could not exist without Ives’ contribution. Each day millions upon millions of printed products — newspapers, books, magazines, brochures, calendars, wrapping paper, greeting cards, packaging materials, billboards, to name only a few — are produced by machinery that utilizes what was once known as the “Ives process.”

Simply put, the halftone is an optical illusion: small dots of various sizes that are equidistant from each other create the appearance—at an appropriate viewing distance—of continuous gradations of tone. Because many printing processes can only transfer a solid film of ink to a sheet of paper (or other substrate), the halftone is the most effective method for reliably simulating a continuous-tone image such as a photograph. Measured in lines per inch, the halftone screen is the essential building block of the printed page upon which everything else depends.