

Hektograph and Spirit Duplicators

The stencil copying systems described above involved pressing or extruding ink through stencils onto sheets of paper. In the hektograph process, which was introduced in 1876 or shortly before, a master was written or typed with a special aniline ink. The master was then placed face down on a tray containing gelatin and pressed gently for a minute or two, with the result that most of the ink transferred to the surface of the gelatin. Gelatin was used because its moisture kept the ink from drying. Copies were made by using a roller to press blank papers onto the gelatin. Each time a copy was made, some ink was removed from the gelatin, and consequently successive copies were progressively lighter. In practice, up to fifty copies could be made from one master. **Plate 33** is an 1876 ad for J. R. Holcomb & Co.'s Transfer Tablet hektograph. **Plate 33B** shows another hektograph, Lawton & Co.'s Simplex Printer, which was introduced by a predecessor company, General Copying Apparatus Co., by 1889. The Simplex was \$3 to \$29.50, depending on size. Yates (p. 122) reports that "By 1885 the [Illinois Central Railroad] Freight Office's need for a neat alternative to printing had led it to adopt...the hektograph....Using a hektograph in the Freight Office, rather than sending the rate circulars to be printed, was faster as well as cheaper. And although the hektograph duplicating process itself was messy, the final products were neater and more readable than those produced with the Edison Electric Pen." An 1887 ad stated that a hektograph could be used to make 15 to 40 good copies of a letter typed on a Hall index typewriter. Hektograph copiers were still marketed by Heyer in the 1950s.

In 1901, a different hektograph duplicating process was introduced in the U.S. (W. H. Leffingwell, *The Office Appliance Manual*, 1926, p. 378.) Rather than using a gelatin pad, this process, which was invented in Germany in 1880 and marketed as the Schapirograph, used a roll of paper coated with gelatin, glue, and glycerin. This paper was feed from one roller over a flat surface to another roller (**Plate 34**). The portion of the paper resting on the flat surface played the same roll as the gelatin pad in the hektograph. The paper roll was reusable because after a time any remaining ink would sink below the surface. These were advertised as late as 1922. The Commercial Duplicator, which was advertised in 1917, appears to have used a similar technology to produce copies of documents written in duplicator ink.

Beginning in 1910, Ditto, Inc., sold gelatin duplicators that were essentially large mechanical versions of the Daus Tip-Top Duplicator pictured to the right. The Ditto process could be used for up to 100 copies. **Plate 34A** is a 1925 Ditto machine. "When preparing the original, hard bond paper and a special kind of ink [containing aniline dyes] are used. This may be in the form of a duplicating typewriter ribbon, a duplicating ink, or even an indelible pencil. The original is placed face down on the copying surface and smoothed with the palm of the hand or a roller. It is then lifted off, having left its impression on the gelatin. The blank sheets are placed one at a time on the gelatin surface and allowed to remain a few seconds until the imprint is made." The Ditto machine in Plate 34A was \$200. In 1925, other models were \$117 to \$395.

The spirit duplicator, which was introduced in 1923 and which was marketed for several decades, evolved from the hektograph and Ditto machines described above. The best-known spirit duplicator company was Ditto, Inc. The Ditto process involved the creation of masters and the transfer of ink from masters to copies. A Ditto carbon consisted of a sheet of slick, impermeable paper (the master) attached to the front of a second sheet that had on its face a

coating of paste-like ink. When one typed or drew on the front of the master, a reverse image in heavy ink was transferred to the back side of the master. The master was then detached from the second sheet and attached to the drum of a rotary press with the inked surface outward. When the drum was rotated, the inked surface of the master was wiped with a solvent such as spirit ether to wet the ink, and until the ink was exhausted impressions were made on papers that were fed under the drum.



Ads for Ditto machines, 1954 and 1965, respectively.

The Ditto Machine

ORDERS FILLED

SALESMAN INFORMED

RECORDS KEPT

STATEMENTS ANALYZED

PRODUCTION SPEED

DITTO

Business Systems

PRODUCTION • PURCHASING • PAYROLL • ORDER BILLING

A spirit duplicator (also referred to as a Ditto machine) was a low-volume

printing method used mainly by schools and churches. The term "spirit duplicator" comes from the alternative term for alcohols, which is "spirits." Alcohols were a major component of the solvents used as "inks" in these machines. The spirit duplicator was invented in 1923 by Wilhelm Ritzerfeld. The best-known manufacturer in the United States was Ditto Corporation of Illinois, hence that name.

A ditto machine used a solvent like methylated spirits or ammonia to transfer ink from the master copy (the template, if you will) onto other

300 DRY COPIES
FOR LESS THAN
1/4¢ A COPY
WITH NO STENCILS, PLATES OR INK!

- 22" x 30" in. max. sheet
- Duplicate 100% (100% good copy) - direct, ready-to-use!
- 1, 2, 3 - Key features in ONE operation!
- For 100% weight paper, max. 100 lbs. per 1000!

Ditto

pieces of paper.

The master copy was a smooth, waxy piece of paper which was thickly inked when printed. The procedure for printing on a master was like the reverse of a carbon-copy; instead of writing on the normal paper and having the carbon underneath, the text and pictures were printed onto carbon paper of varying colours to transfer print to the master. If you want to know exactly how thickly a master was inked, put your printer on the best quality and print about two or three passes onto the same sheet of paper (so that you are printing over the previous printing, I mean).

The master was then wrapped around a drum, and the solvent was applied as the drum rotated. The solvent either softened or melted the ink so that just enough of it would stick to the blank sheets of paper. A lot of the copies produced in this way came out with purple ink because purple "provided the best contrast" As you can see in the following photo Ditto copies were far

from easy to read.

Both the isopropanol and the methanol found in ditto solvents are toxic substances. These chemicals can cause a host of medical problems when humans are improperly exposed. Material Safety Data Sheet (MSDS) guidelines recommend the use of personal protective equipment during exposure to methanol, however, most chemists work with methanol and isopropanol wearing only medical exam grade gloves, goggles and a working fume hood as the chief, no-ingested or inhaled reaction with methanol is limited skin irritation.

Ditto machines were popular in schools and churches as no electricity was needed to make quick stinky copies. Nothing smells quite like a fresh slightly wet Ditto copy.

They have gone the way of the typewriter and the dictaphone.

They Always Come Back:

Thanks to the efforts of [this site](#) they are not forgotten.

6:22 PM →

[ditto machine](#)

4 comments:

Luke said...

Ah, the ditto machine. The school I used to work at had the machines in a tiny, unventilated room. It was bad enough when you ran dittos on regular paper, but when you had to ditto on thick, hyperabsorbent construction paper- that's when the fun would start. I'm sure a good chunk of my brain has been killed by

those fumes.

Then they tried to make them safer by switching to a water-based solvent. It made fewer fumes, but took forever to dry.

You know who still uses ditto machines? Low rent tattoo parlors. YOU bring in or choose a design, and they run it through the **Thermofax** to make a ditto master. Then they rub deodorant on the spot where you want the tattoo, and press the ditto to your skin.

February 11, 2008 8:31 PM

Marko said...

Wow, you have really done your research on this stuff. It's pretty amazing!

February 12, 2008 1:44 PM

Ms. Bizarro said...

I love the smell of Ditto in the morning! Smells like... grammar school.

February 12, 2008 3:25 PM

Scot said...

makes me think of math tests and helping Mom on "TAP" days