



Course: Master of Mathematics (MMath)

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The original comptometer prototype by Dorr E. Felt

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This machine was designed and created by Dorr Eugene Felt in 1885; it is more commonly referred to as the Macaroni box model. The Macaroni Box is an early key driven comptometer® from the late 19th Century. A comptometer though technically a registered trademark refers to a class of machines that performs arithmetical calculations.

The materials used in the construction of this model demonstrate remarkable Felt's creativity and resourcefulness. The machine is so named because the 22 year old engineers purchased a macaroni box from a grocery store which formed the frame for the machine. Elastic bands, staples and skewers were also used in its construction. Felt made use of public holidays to construct this model, it is the only model ever made. The first fully operational comptometer was completed the autumn 1886. Felt's comptometer performed arithmetic calculations considerably faster than contemporary mechanical calculators did.

Previous attempts to create a key-driven comptometer had encountered the two major problems of over rotation and carrying the leading digits of an addition into the next column. This was a particular problem when multiple carries were required as in the summation: $999,999 + 1$ where six carries are required. This means that the units cog must have sufficient force to turn six other wheels. Felt was the first inventor to solve these two problems. Some special purpose machines had a built in multiplication table the information was stored using vertical metal rods attached to the base. Special purpose comptometers were also produced for working with currencies, times and weights. Often these special purpose devices were only purchased by larger institutions on account of their cost and size. The cost of a comptometer was typically between \$US 300 and \$US 400

Felt started the Felt and Tarrant Manufacturing Company in partnership with Robert Tarrant, which later became part of the Victor Comptometer Corporation. All desktop mechanical calculators were based on Felt's Macaroni Box right up until they were rendered obsolete by their electronic counterparts.

[1]<http://www.yesterdaysoffice.com/index.cfm?fuseaction=ShowArticle&articleid=12>

Comptometer: Macaroni Box Calculator

[2] http://www-1.ibm.com/ibm/history/exhibits/attic3/attic3_040.html

International Business Machines (IBM) Archives

Felt and Tarrant Comptometer (2004)

The Macaroni Box Model is currently on display in the Smithsonian, Washington, D.C.