The History of Cash Registers

March 29 to July 7, 1996

Exhibit Companion

The Abacus: Precursor to the Cash Register

One of the earliest inventions for keeping track of commercial transactions is the abacus, an instrument that helps a person make arithmetic calculations. Invented over 4500 years ago in the mid-east, it was further developed by the Egyptians and Chinese into its present form. A variety of different abacus designs exist. The word "abacus" comes from the Greek abax, meaning "counting board." The device has other names in Asian languages. Cash registers today mechanically implement many of the functions of the abacus.

In ancient times the abacus was composed of a row of grooves in sand into which pebbles were placed. Later, the use of a slate or a board made it a portable device, widely used throughout Asia. Today, it is composed of beads strung on parallel wires in a rectangular frame, and is still in use where electricity and batteries are scarce or expensive. For example, a Russian version, the schoty, was still in widespread use within the last decade.

The abacus works on the principle of place-value notation: the location of the bead determines its value. In this way, relatively few beads are required to depict large numbers. The beads are counted, or given numerical values, by shifting them in one direction.

The Cash Drawer

By the middle of the 19th century, the cash drawer, with its dividers to hold bills and coins, was a common feature of retail establishments all over the world. But as business volume grew under the imputus of the industrial revolution and increasing urbanization, there arose a need for quick and accurate summeries of a daily transactions for each point of sale. Because there was no way to easily audit transactions, dishonest cashiers frequently augmented their incomes by removing cash when their supervisors were not present.

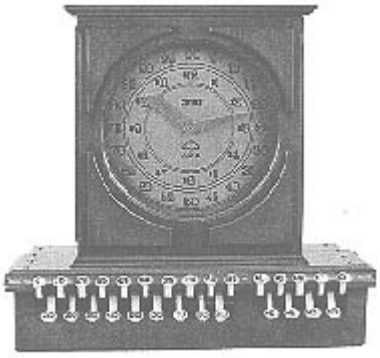
The Limitations of the Cash Drawer

John Patterson, founding president of the National Cash Register Company, used the following message from 1885 through 1915 to demonstrate the limitations associated with the outmoded cash drawer:


The cash drawer

"I am the oldest criminal in history.
I have acted in my present capacity for many thousands of years.
I have been trusted with million of dollars.
I have lost a great deal of this money.
I have constantly held temptation before those who have come in contact with me.
I have placed a burden upon the strong, and broken down the weak.
I have caused the downfall of many honest and ambitious young people.
I have ruined many business men who deserved success.
I have betrayed the bust of those who have depended upon me.
I am a thing of the past, a dead issue.
I am a failure.
I am the Open Cash Drawer."

Cash Register Invented



The cash register was invented in 1879 by James Ritty, a saloonkeeper in Dayton, Ohio. He patented a machine with a mechanism similar to one he had seen count the revolutions of an ocean liner's propeller in its engine room. His "Incorruptible Cashier" (left) used metal taps with denominations pressed into them to indicate the amount of the sale. There was a bell to "ring up" sales. It also had a total adder that summed all the cash values of the key presses during a day. Ritty's invention caught the eye of John H. Patterson when he purchased several machines for use in his retail store. Patterson bought the rights to Ritty's invention (from Jacob H. Eckert, who had purchased the rights from James Ritty) for $6,500 in 1884 and put it into production under the auspices of his newly formed company, National Cash Register, better known now as NCR.

Patterson, eccentric and aggressive, made NCR a successful business. Eighty-four companies sold cash registers between 1888 and 1895; only three (the St. Louis, Ideal and Michigan) survived for any length of time. Patterson set up an inventions department to create bigger, better and more thief proof registers. He began a training program for his salespeople, often terrifying the novices by auditioning their sales pitches himself.

Why John Patterson Needed a Cash Register

John Patterson, founding president of the National Cash Register Company, the first manufacturer of cash registers, had previously owned a grocery and

general store in Ohio. He tells the story as to why cash registers became a necessity for his business:

"We were obliged to be away from the store most of the time so we employed a superintendent. At the end of three years, although we had sold annually about $50,000 worth of goods on which there was a large margin, we found ourselves worse off than nothing. We were in debt, and we could not account for it, because we lost nothing by bad debt and no goods had been stolen. But one day I found several bread tickets lying around loose, and discovered that our oldest clerk was favoring his friends by selling below the regular prices. Another day I noticed a certain credit customer buying groceries. At night, on looking over the blotter, I found that the clerk had forgotten to make any entry of it. This set me to thinking that the goods might often go out of the store in this way-without our ever getting a cent for them. One day we received a circular from someone in Dayton Ohio, advertising a machine which recorded money and sales in retail stores. The price was $ 100. We telegraphed for two of them, and when we saw them we were astonished at the cost. They were made mostly of wood, had no cash drawer, and were very crude (Ritty's Incorruptible Cashier). But we put them in the store, and, in spite of their deficiencies, at the end of twelve months we cleared $6,000."

Cash Registers become Ubiquitous

During the period 1888 to 1915 the cash register, clothed in fancy cast-metal cases, spread into nearly every retail establishment. This period is best typified by the cast brass-encased registers, many of which are still available in antique markets today.

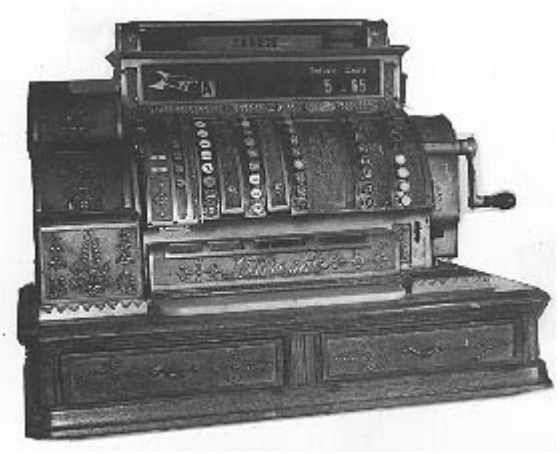
There were registers made of materials other than brass. Cast-iron, wood, and even metal stampings were used. Finishes included polished brass, nickel-plate, antiqued copper, paint, and even silver and gold plate. Brass dominated the National Cash Register Company line, which grew to represent 95% of the total market. NCR ran the largest brass foundry in the world in that period, hence, the characterization of that time as the "Brass Era."

World War I marked the end of the antique era for cash registers. There was a definite turning point after World War I when mechanics were no longer a fascination. Their creators were no longer interested in adding to their cost in order to achieve beauty of form along with function.

Early Cash Registers-Good for Business

It is difficult to imagine any type of store without a cash register. Yet before 1879, merchants had no such equipment. Few business owners actually knew if they were operating at a profit or a loss. No wonder then, that cash registers became such a boon to companies. Not only were cash registers theft deterrents, they were instruments of a new analytical approach which resulted in a systematized use of information to produce profits. There were accounting and executive information features in the turn-of-the-century cash register that do not exist in some machines today.

There were two groups of people who despised the new cash registers, or "thief catchers," as they were called when they were invented in the 1879: dishonest clerks and honest ones. By recording every sale, cash registers made it difficult for dishonest salespeople to steal receipts. Honest employees felt their integrity was being questioned.



Electrically operated
double drawer NCR register.
This type was made after 1906

Shop owners, however, welcomed the machines, not only because they kept track of daily sales, but because they aided bookkeeping and inventory control. Between 1884 when the register became popular and 1916 (World War 1), more than 1.5 million were sold. During WWI, brass and bronze were appropriated for the war effort.

John Patterson, The Great Litigant

The 1880s and 1890s saw the emergence of bitter legal and competitive tactics among companies. Most of the standard practices at that time would not be permissible today, but many laws governing competition had not yet come into effect.

A case in point is the National Cash Register Company and its founding president, John Patterson. Eventually, NCR found ways to sue all of the makers of premium registers. There were less than two dozen firms that put up any kind of competitive fight. It was NCRs strategy to use every means of legal protection and every competitive technique to weaken the competition or to put them out of business altogether. Many businesses were acquired. For instance, NCR bought out the Union Cash Register Company in 1892 because it was too good to be allowed to compete. It had a number of features that NCR felt it should have in its own machines.

A company called Heintz Cash Register made a machine in 1894 which, instead of ringing a bell for a sale, used a bird that would "cuckoo." NCR filed suit for patent infringement and secured a permanent injunction which silenced the cuckoo. In 1905, NCR bought out thousands of old cash registers from the Hallwood Company, a major competitor, so that Hallwood would have a low inventory. NCR continued to buy out the competition or to sue them for twenty more years.

The United States Grand Jury issued an indictment against Patterson and other NCR officials in 1912, charging them with criminal conspiracy under the Sherman Antitrust Law. The government contended that NCR was doing 95%

of all cash register business and charged that this was a monopoly. A jury found the company guilty on all counts.

NCR'S Questionable Sales Techniques

John Patterson, the founding president of the National Cash Register Company, is generally credited with devising the steps associated with today's approach to sales and marketing. Yet the following in-house circular letter used by National Cash Register shows how the company also encouraged deceptive sales techniques. NCR was sued by the Federal government under antitrust laws in 1913 and was found guilty.

Circular Letter
The National Cash Register Company
Dayton, Ohio, U.S.A.,
February 4, 1892

To All Managers:

We send you under separate cover devices for beating the Simplex Cash Register which consists of a lead bullet with a common horse hair attached. We want you to have your agents call on the parties who are using the Simplex Register, in your territory, and explain how easy it is to beat them. (But do not show them how to do it.)

You can easily ask the proprietor to step away about twenty feet from the machine, and then by concealing the bullet in your hand register any amount you with by simply dropping the bullet in the small hole directly under the amount you wish to register.

In all cases be sure and withdraw the bullet from the machine at the same time that you open the cash drawer (that is providing you can get the combination of the lock) which can be easily done.

Of course, if you do not want to open the cash drawer you can step away from. the machine and the proprietor (unless he has an eagle eye) cannot discover the horse hair protruding from the machine. Be particularly careful to cut the horse hair off so that it will protrude only about one inch from the opening. We think agents will have little trouble in using the above simple device effectively and Impressing users that they have a machine which can easily be beaten and is worthless.

Kindly let us know what success you have in using the above device.

NCR, After 1908

After the National Cash Register Company had been in business almost twenty-five years, John Patterson, NCR's president, realized that changes were due. Many of the company's top executives left in 1908, allowing the company to make a fresh start. Patterson remained an aggressive competitor, at one point observing "To succeed in business it is necessary to make others see things as you see them."

The post-1908 catalogs were impressive in their comprehensiveness - a machine for every price, every feature, and every establishment. NCR was flexible. If the customer would pay for it, John Patterson would have his engineers make a cash register do almost anything. The cash register is

surely one of the earliest examples of flexible manufacturing. NCR's millionth cash register was sold in 1911, and by 1915, the company was Dayton's major employer, with over 5900 workers on the payroll. The two millionth machine was sold only nine years later.

NCR Today

Despite a successful entry into the computer market in 1957, NCR was unable to remain competetive as a computer manufacturer in the long run and was victim of a $7.4-billion hostile takeover by AT&T in 1991. It was renamed AT&T Global Information Solutions. In 1994, it took back its name and won complete independence as part of AT&Ts decision to split into three separate companies. In an effort to stem its money-losing ways, NCR cut 8,500 jobs. It also got out of the PC manufacturing business and instead focused on high-end symmetrical multiprocessing and massively parallel processing computers for commercial data warehousing.

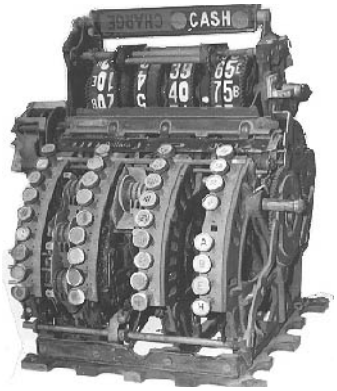
What is a Cash Register?

The early cash registers recorded the amount of each sale upon a paper roll, but provided limited help in the way of transaction summaries. The following advertisement in 1886 touted the virtues of the cash register:

"It is an automatic cashier which records mechanically every sale made in a store. It never tires. It never does one thing while thinking of another, and never makes a mistake. It is a mathematical prodigy in brass and steel, all of whose computations are invariably correct. It is a machine which will save the money you make and thus pay for itself over and over again."

Adders

One of the most important parts of the cash register is the "adder." The first cash registers had "detail adders"; later ones, "total adders."



Inside the cash register
Circa 1930

Detail Adder

The detail adder (now almost obsolete) is the earliest type of register excepting the original paper-roll machine. It is a non-printing register with counters connected individually with each key so that amounts registered by each key are totaled on separate counters. For example: three depressions of the five-cent key would be shown on the counter for that key as 15 cents. Each counter is a single wheel divided into approximately thirty divisions and when a complete revolution of a counter has been made the total is transferred automatically to a second counter. As the transfer is made, the first counter automatically resets to zero. To find the day's total, it is necessary to read off and cross-add the amount of each counter.

Total Adder

The newer type of register incorporated the total adder. It is the most widely used type. The total of the day's sales are carried and added in a single counter under the cover. Total adders many be equipped with or without counter resetting devices.

By 1902, you could get an audit trail of transactions, a customer count, detailed amounts rung and cumulative totals. You could get all this for each of several sales clerks, and identify individual product transactions. This permitted special sales promotions, individual clerkincentive schemes and the collection of quantitative market research data. The cash register could also extend credit. All of this with just mechanical gears and levers, housed in a beautiful case of wood or embossed brass. Cash registers can be acknowledged for expanding business opportunities as much as any economic incentives.

Cash registers were first electrified in 1906, when John Kettering, then employed by NCR, designed the first model driven by an electric motor. Kettering subsequently moved to General Motors, where he invented the electric automotive engine starter.

Today the functions of the mechanical cash register are more often performed by electronic versions, or by computer-driven POS (Point of sale) systems that monitor activity in an entire store, recording sales, analyzing business, and controlling inventory.

A Short History of Money and Coins

The oldest written records of when money was first used dates back to ancient Mesopotamia (now southern Iraq), about 4,500 years ago. Money was generally used to pay fines and settle social obligations, such as marriage and compensation payments. Payments were made with weighed amounts of silver. Since then, weighed amounts of metal have been used as money in many parts of the world, and the practice led to the invention of coins.

The earliest known coins were made during the seventh century B.C. in the kingdom of Lydia (now Turkey). Weighed lumps of electrum (a mixture of gold and silver) were used by Lydians as money, and were stamped with pictures to confirm their weight and therefore their value in payments. Since the weight set its value, the shape and size of the metal used as money was unimportant.

Paper Money

It was the Chinese who first saw the advantages of handling money in the form of printed paper documents. During the tenth century, the Chinese government issued heavy iron coins that had little value. People started to leave their coins with merchants and to use the handwritten receipts the merchants gave them instead.

In the early eleventh century, the Chinese government took over from the merchants and printed paper receipts that could be used officially as money. To make the system simpler, the receipts were given fixed values.

Susan B. Anthony

In 1971, a dollar coin portraying feminist leader Susan B. Anthony was issued. But it was often mistaken for a quarter, and is no longer made. In 1996,there were 441 million dollars under lock and key awaiting their fate.

Coin Changing Devices

There were two types of coin changing devices:

1. The payer type delivers the amount indicated by the key which is selected. For example, upon pressure of the key marked 67, the machine would deliver 67 cents in change.

2. The changer type is constructed to deliver the difference in change between the amount of sale and $ 1. 00. For example, upon pressure of the key marked 67, the machine delivers 33 cents in change.

Brandt Automatic Coin Changer
Patented in 1895

Bibliography

Web sites

Brass Cash Register Shoppe A site for collectors, this site primarily trades parts, but has a good collection of photos of various antique registers, including some of NCR's competitor's products.

Cash Flow A short article published in *Inc*. magazine on the impact of the cash register.

Intermec: Pioneer in computerized cash registers A summarized history of a pioneer in POS equipment.

Who is NCR? A brief history of National Cash Register Company - NCR

Books

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James W. Cortada, 2000, Princeton University Press

The Incorruptible Cashier, Richard L. Crandall, 1990, Vestal Press

Wherever Men Trade: The Romance of the Cash Register, Isaac & Asaac Marcosson, 1972

Our Special Thanks

The exhibit entitled "Ka-Ching! Ka-Ching! The History of Cash Registers" featured cash registers from the Museum of American Heritage collection and from the collection of Frank Livermore. A money collection included in the exhibit was provided by Carl Schmitt. The museum also wishes to thank the following people for their achievements in presenting the exhibit:

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Photo credits and acknowledgements

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