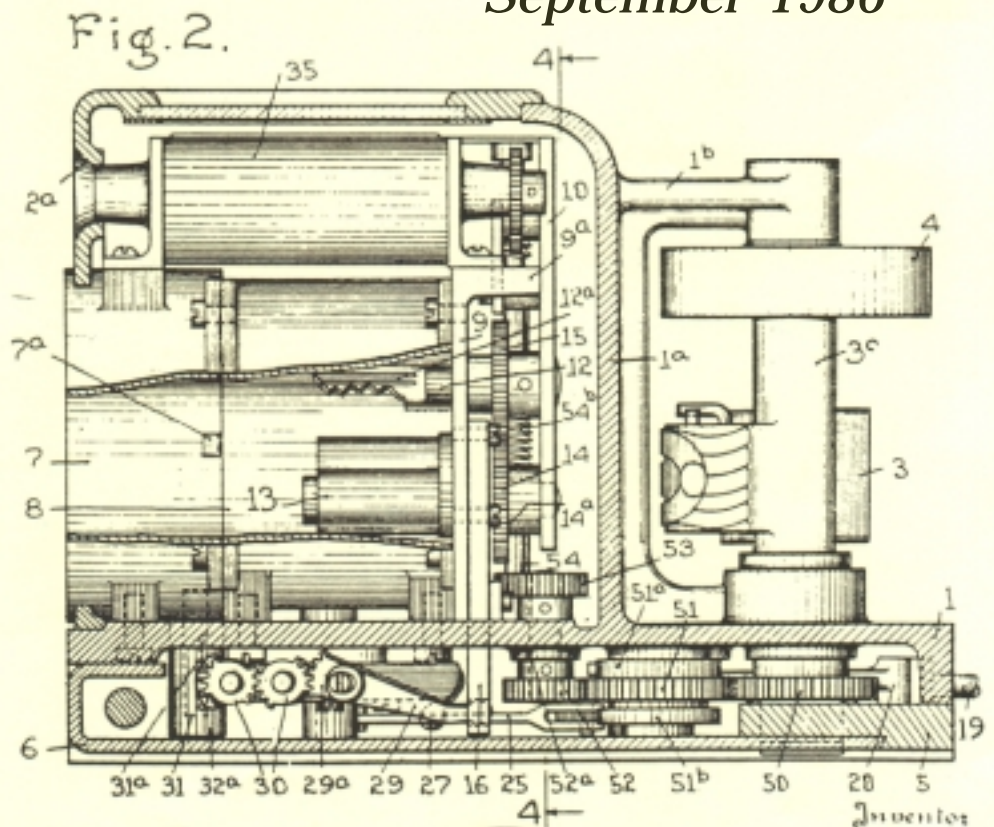


PITNEY BOWES MODEL M POSTAGE METER 1920

An International
Historic Mechanical
Engineering Landmark,
September 1986



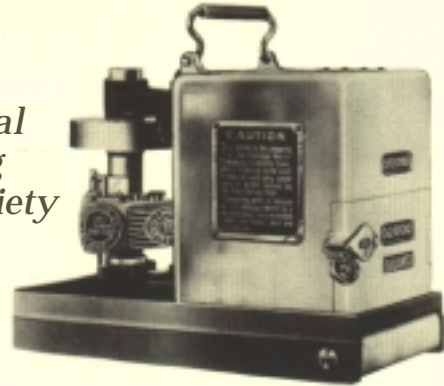
Arthur H. Pitney



The American Society of
Mechanical Engineers

PITNEY BOWES MODEL M POSTAGE METER

*Designated the 20th International
Historic Mechanical Engineering
Landmark by the American Society
of Mechanical Engineers
September 17, 1986*



*The original Pitney Bowes Model M
postage meter, circa, 1920.*

Since its creation in 1789, the Post Office has been driven to make the mail move faster, more frequently, and more safely. Private enterprise provided much of the innovation and success in improving the efficiency of postal service. Part of that history is the Pitney Bowes Model M postage meter, which on November 16, 1920, became the first commercially used meter in the world.

Though today's meters are more sophisticated, the basic principles of the Model M are still intact. The postage meter imprints an amount of postage, functioning as a postage stamp, a cancellation mark, and a dated postmark all in one. The well-known eagle meter stamp is proof of payment and eliminates the need for adhesive stamps and further postal servicing. Billions of letters and packages are meter stamped by private businesses and are transported through the postal system annually.

The issuance of adhesive stamps in 1847, along with the introduction of personal mail boxes along routes and mail distribution by rail, pneumatic tube, and automobile, were pivotal innovations that made the U. S. Postal Office into a first class system. Key concerns were security against stamp thefts and how to process the mail within a reasonable time and at a reasonable rate. In 1860 the Pony Express carried mail for \$5 per half ounce. Over the next hundred years, the Postal Service progressed to a fully mechanized service that today operates facilities that electronically face and cancel letters and automatically transports them to 300 destination bins at a rate of 18,000 a minute. The Postal Service processed 139 billion pieces of mail in 1985 and is expecting an increase of 51 billion pieces by 1995.

THE INEFFICIENT POSTAGE STAMP

Less than fifty years after the first conventional postage stamps appeared in 1840 in England, designs to eliminate them were well underway. In 1884, Carle Bushe had conceived and patented a machine similar to the postage meter but the device was never used. In 1898, Elmer Wolf and William Scott experimented with a meter machine for large-scale mailers which offered the Post Office security from theft, but no record exists to indicate that a model was built. In 1903, the first government-authorized use of a mechanical device in place of adhesive stamps took place in Norway, but this was abandoned after a two-year trial.

Ernest Moss of New Zealand introduced a coin-operated stamping machine in 1904. Since it was not foolproof, it was withdrawn. A year later, the first credit machines (without locking devices) began operating. Traveling postal inspectors periodically examined these machines and charged customers accordingly.

About the time that airmail service was initiated and expanded coast-to-coast in the early twenties, inventor Arthur H. Pitney and entrepreneur Walter H. Bowes succeeded in demonstrating the Model M postage meter to the satisfaction of the United States Post Office Department.

With official acceptance by the Postal Service clearing the way for expanded commercial use of the postage meter, "The days of sticking hundreds of thousands of stamps is about gone," Bowes declared in 1920. While meter development met with difficulties from conception to full utilization over nearly three decades, Bowes' prediction proved true.



Arthur H. Pitney, inventor of the postage meter.

THE INVENTOR'S PERSISTENCE

Arthur Pitney, a wallpaper store clerk who evidently had never heard of the work of other postal meter inventors, devised his first mailing system in 1901, for which he was granted a patent on October 14, 1902. Shortly after, he formed the Pitney Postal Machine Company in Chicago, which became the American Postage Meter Company in 1912. In the interim, the machine's acceptance by the public and the postal administrations dragged on slowly without resolution.

This first machine consisted of a manual crank, chain action, printing die, counter, and lockout device. An electrically operated model that automatically sealed and stacked the envelopes along with printing the postage was patented later.

The speed of operation was hastened through the use of gearing in place of chains. The imprint indicated the license number of the machine and the register count. Its lockout was reset with a key, and the machine required a Post Office representative to reset the mechanism each time more postage was needed. This model was tested by the Post Office from November 1903 to January 1904, the first official test of such a device in U. S. history. While the test was regarded as highly successful, the Post Office permitted printed postage only on third- and fourth-class mail, not first-class as Pitney had hoped.

During a later demonstration in 1911, Pitney envisioned a way to detach the printing and registering mechanism from the mail-handling

machinery so that it could be brought to the Post Office for resetting instead of the Post Office representative traveling to it. This new system was tested from January 28 to May 28, 1914, at the Addressograph Company and other firms. Over 853,000 pieces were mailed during the trial, but the Post Office decided the new model was not needed.

ENTER THE ENTREPRENEUR

During the early years of the 20th century, Walter H. Bowes headed the Universal Stamping Machine Company, which manufactured post office canceling machines. Between 1912 and 1917 he achieved prominence in postal circles for his promotion of permit printing of mail, "similar to the way money is printed," according to one dismayed postal official who was concerned about the burden such a system would place on post office administration.

For Bowes, the canceling business had been increasingly successful, and in search of more space he moved his factory from New York City to Port Chester, N.Y., and then finally to Stamford, CT. In 1918, a postal official suggested that he contact Pitney. In October of 1919, a pessimistic Pitney arrived in Stamford. His patents were expiring, and some \$90,000 had already been invested in the machine with little to show for the effort. By 1919 the firms had been combined, and the efforts of the Pitney Bowes Postage Meter Company went into developing and promoting the postage meter.



Walter H. Bowes, the entrepreneur whose efforts helped secure U.S. Postal Service approval for the Model M.



Above: Postal workers sorting and facing mail for cancelling. Pitney's invention helped move the Postal Service away from this time consuming and inefficient process. Right corner: Walter H. Wheeler, Jr., the engineer who made a crucial design correction to the meter before final approval.

However, over the years Pitney had established some credibility with the Post Office, which was nearer to accepting a new mailing system than either man realized.

THE CREATIVE TRIANGLE: INVENTOR, PROMOTER, AND ENGINEER

Pitney was the inventor. Bowes concentrated his activities in Washington, lobbying for passage of the necessary legislation permitting first-class mail to be carried without postage stamps affixed. The bill passed in early 1920, and for all their work, neither Pitney nor Bowes was ready--the model was not complete and the final contract for the merger of their respective companies had not been worked out.

Within a month, on April 23, the company was organized and incorporated. The Post Office requested a demonstration no later than August. Just before the deadline, Walter H. Wheeler, Jr., the 23-year-old stepson of Bowes, joined the design team. While he was not formally trained as a mechanical engineer, he was mechanically gifted and had sales experience. In addition to his skill in demonstrating the machine, he is credited with the innovation and implementation of design

details that permitted the new prototype to operate flawlessly.

An improved version that separated the registering mechanism from the printing die, thereby removing the incidence of dirt, grease, and coagulated ink from the printing process, was demonstrated to the Post Office in August of 1920. The Model M Postage Meter was authorized on September 1 and was put into commercial use in Stamford on November 16, 1920.

METER MANUFACTURING EVOLVES

Manufacturing began in Stamford, Connecticut, in a modest way. The present, greatly expanded vertically integrated plant exists in the same location. Throughout the years many special processes have been developed to produce the precision parts of a product that has performed with a high degree of reliability.

The Model M meter provided only a single-denomination imprint and was equipped with fixed imprinting dies. Several generations later, the Model H provided multidenominations that the customer could select, adding complexity to the design, which now included an amount-selection

device that had to be securely linked to the accounting registers. The new design required the production of parts with greater precision, and the manufacturing branch responded to the challenge by introducing new metal-working techniques, such as, upsetting or "swaging," and by applying new materials, such as, powdered metals.



Manufacturing of the first Pitney Bowes postage meters began in this building in Stamford. The company's present manufacturing facility in Stamford is located on this very spot.

The need to expand service to customers was met by providing a Model J meter that could imprint any amount of postage up to the design's limits. The device grew still further in complexity, requiring further development of manufacturing skills. Such development continues today with the increased use of plastics and other materials that assist in controlling cost. Computer-controlled machinery is now commonplace along with the new equipment required to produce the designs that followed the Model J meter.

Early 1939 saw the introduction of still another version of the J meter. The design objectives were still to provide security of postal revenues an objective that always dominated the Pitney Bowes postage meter. After World War II production, still further developments took place in meter design. Both meter and mailing machine became one stand-alone device, enabling smaller businesses to benefit from the metered mail system. New designs continued to emerge to provide the postage customer further convenience. Customers could now reset their meters without going to the post Office.

The character of meter design still changes with the marriage of electronics to the once wholly mechanical devices, which for example allows automatic setting of postage from weighing devices.



Mailing machines in full production at the Pitney Bowes plant.



A depiction of the original Model A mailing machine which housed the Model M postage meter.

The evolutionary growth of postage meter design has always been based on sound engineering principles. The rewards over the years have been in reliable and secure performance.

THE IMPRINT

The official imprint of metered mail, as authorized by the Post Office Department on September 1, 1920, is an oval indicia showing the mailer's license number, the register number of the meter, and the denomination of postage. The location, date, and time are imprinted to the left of the oval. At first, metered mail was available in 20 denominations, but today the meters can be set for the amount of precise postage required for the particular size, weight, and class of mail.

A KEY FEATURE: LOCKED AND SEALED

The design of the Model M meter was conceived to provide security to postal revenues. Once a meter was set by the Postmaster, it was locked and sealed. The automatic locking-out or disabling of the meter was an important feature of the design. Customer credit and use were recorded on two separate counters.

Two sealed but visible registers comprise a sort of bookkeeping system, a self check for accuracy. The ascending register, which is inaccessible even to Postal Service employees, maintains a running dollar-and-cent total of all postage printed. The descending register tells the user the value of postage remaining for use.

As long as the sum of these registers matches post Office records, the Postal Service knows how much is owed. When the descending register has run down, the meter locks automatically and will not print until it has been reset by the Postal Service or, today, frequently by telephone access codes.

The postage meter can only be rented and used by Postal Service-licensed mailers whose assigned registration number appears on the meter stamp itself.

IMPACT OF THE INVENTION

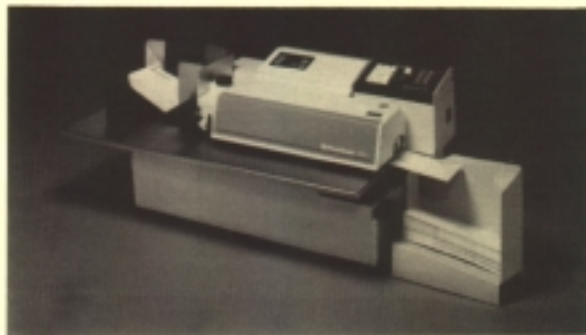
About half the mail in the United States is metered, representing the largest single source of postage revenue, nearly \$13 billion. More than a million postage meters are being used by large and small quantity U. S. mailers in business, industry, and other categories.

Estimated savings to the Postal Service in fiscal 1985 totaled \$466 million. The heaviest cost-cutting came by eliminating the task of culling, facing, and canceling 47 billion pieces of adhesive-stamped mail. Nearly 20 percent of all savings resulted from eliminating the printing, distributing, selling, and inventorying some 55 billion adhesive stamps.

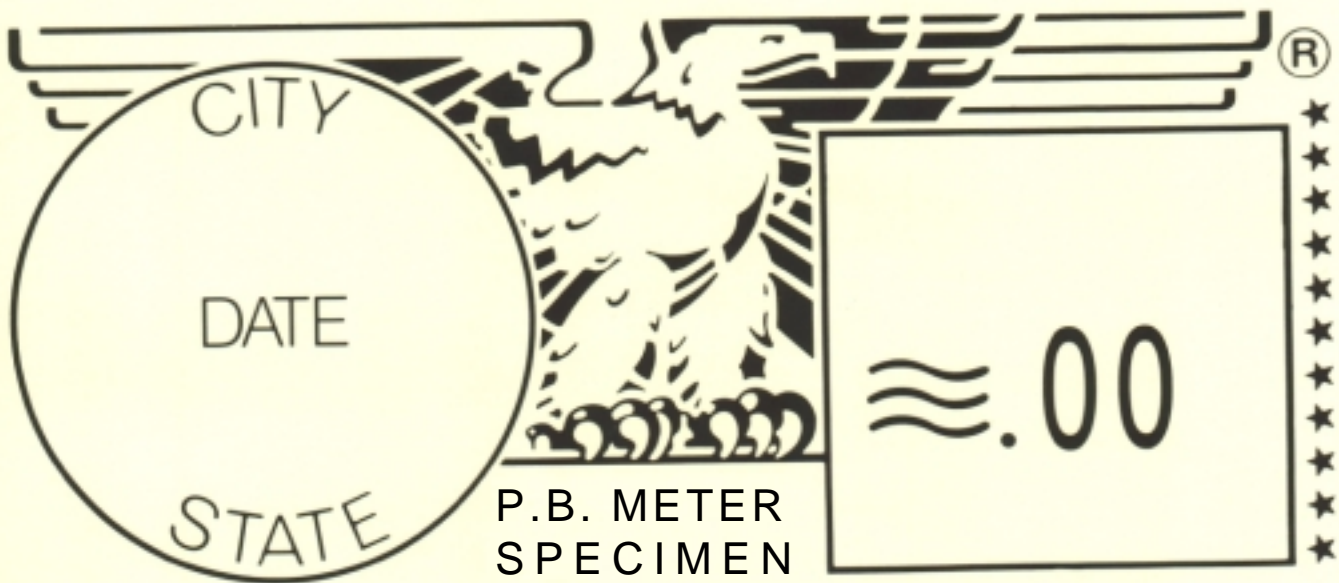
In a letter to an old friend, dated September 1920, the prophetic Bowes wrote, "Out of this thing is going to grow a big industry."

Today Pitney Bowes is a multinational business equipment, supplies and financial services company. With offices in every major city, this Fortune 250 company provides mailing, shipping, copying, dictating, and facsimile systems, retail price marking, product identification and security systems, business forms and supplies, and equipment leasing and other financing.

A reconstructed Model M meter from the first production run of 1920 is on display in the main lobby at Pitney Bowes' main plant on Walter H. Wheeler, Jr., Drive in Stamford, Connecticut.



The mailing machine has come a long way—one of the newest Pitney Bowes mailing machines, the model 5630.



The famous Eagle meter stamp which has become the most widely used trademark in the world.

ACKNOWLEDGMENTS

The Pitney Bowes Model M Postage Meter is the 20th ASME International Mechanical Engineering Landmark to be designated since the program began in 1971. Since then, ASME's History and Heritage Committee has designated 83 National, 20 International, and 9 Regional Landmarks throughout 29 states, Puerto Rico, England, France, and Australia. Each represents a progressive step in the evolution of mechanical engineering, and each reflects an influence on society. ASME History and Heritage Programs provide an annotated roster for engineers, students, educators, historians, and travelers, and help establish reminders of where we have been, where we are, and where we are going along divergent paths of discovery.

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