

The Making of a Stamp ...Then and Now

First Installment By Don L. Evans
Associate Editor

[Editor's Note: Stamp collectors have been captivated by the recent furor over the erroneous design and subsequent issuance of a stamp showing a photograph of a different man than who was supposed to be depicted. But then, philatelists have always been intrigued by the process our postal system goes through in the design and production of the postage stamp. From the controversial *Premiere Gravures* of 1861, to the "Legends of the West" sheetlet of 1993, the making of a stamp has always been a process intertwined with difficulties and experimentation, not to mention human error.

USS&PH has asked Associate Editors Don Evans and Jack Williams, and former *BIA* U.S. Specialist Editor Charles Yeager to write a sweeping series of articles on how America has produced its stamps since their official *USPOD* inception in 1847. We intend that it be a series that will enlighten you, and that you will certainly want to retain on into the future years.]

The changes in stamp design and production between the first issue in 1847 and the methods used for producing billions of stamps on the high speed presses of today have been many and reflect the vast changes in technology and demands over the years.

Surprisingly, although the machinery and techniques have changed, the basic steps in producing a finished engraved stamp from the basic design have remained quite similar. In this article, the almost primitive methods used in the 1840s through the improvements enjoyed during the classic period of the 1860s



Figure 1. The 1c 1861 issue. Note the design excellence in the vignette and geometric line work.

will be discussed in some detail, and in a subsequent article, these will be contrasted with the modern techniques.

The fundamental activities in the development and production of a postage stamp are concept, design, printing and finishing activities, and distribution. The artistic abilities, mechanical expertise, business acumen, and just plain hard work that contributes to the final result provides a fascinating story. In this pair of articles, only the highlights can be covered to impart to the reader some idea of how it was done, then and now.

The peak of excellence in fine line engraving occurred in the period between 1850 and the end of the nineteenth century. It is reflected in the beauty of the stamps of that era; all of which were produced by engraved plates on intaglio presses. Engraving is an art which takes talent, a long period of apprenticeship and the willingness to spend weeks or even months to properly engrave a design. The product of printing a design in intaglio is unique in that of all printing methods it is the only one to produce a three-dimensional effect. Shadows from the raised ink pattern not only give the appearance of depth of design but also can simulate various shades of color.

Although engraving had been in use for centuries for artistic drawings, it received its commercial impetus in the United States during the early 1800s as a prevention to counterfeiting. The manufacture and passing of counterfeit currency was a common occurrence in the early days and was one of the reasons for the wide-spread distrust of paper money. One of the first pieces of U. S. paper money was printed from a copper engraving by Paul Revere in 1775, and was very simple in design.

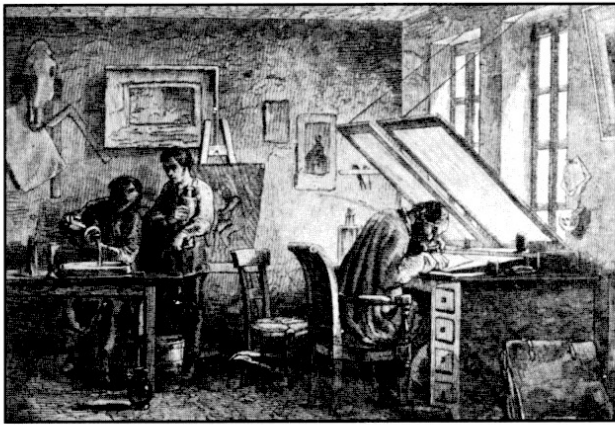


Figure 2. An engraver and etchers at Danforth, Wright & Co., 1853. From the *Illustrated Magazine of Art*. Courtesy of the Essay-Proof Society.

It was the simplicity of the early designs that made their counterfeiting possible, and it was soon realized that if complex designs with a high degree of artistic merit were engraved on plates for the printing of currency, it would be much more difficult for the counterfeiter to simulate the designs.

The invention of the geometric lathe was a breakthrough which allowed considerably more complexity in the engraved design. The geometric lathe was a device, perfected during the early 1800s by Asa Spencer, and its importance was recognized by Jacob Perkins, one of the most important early designers of banknote and postage stamp production machinery and methods. Perkins then incorporated it into his engraving and printing procedures.

This lathe was, and still is, a very complicated piece of machinery which can accurately engrave repetitive circles, arcs, and lines, or combinations of these, into the intricate designs that we see in most of our currency and in some of the early engraved stamps. A sample of a lathe-produced geometric design is shown in Figure 3. The designs can be separated into parts and recombined in various ways to make any type of border or frame design. Lathe work was first introduced into United States stamp designs with the issue of 1851.

Two other developments which profoundly affected stamp production were the advent of steel engraving and the development of the transfer press. Jacob Perkins was instrumental in both of these developments, and laid the technical groundwork for the line engraved bank notes and postage stamps to be produced in the following years.

Early engravings were made on copper. It was easy to engrave, and if not too many impressions were made from the engraved plate, it produced excellent results. However, if the production run was in excess of approximately 10,000 impressions, the plate produced unsatisfactory results. The engraved lines became worn from the printing process and from the abrasive materials that were contained in many of the early inks; particularly the browns and reds. The resulting printed image became blurred and dull, with many of the finer lines disappearing from the print.

For many years, it was unknown to philatelists if the plates of the first issue in 1847 were of copper or steel. Current knowledge has determined that the plates and dies were steel, although it is likely that the steel was not hardened. Because of

the better wearing qualities of steel, finer lines could be engraved on the die, and be expected to last through a significant number of impressions. This allowed the engraver greater latitude in his rendition of the design on to the die, and produced a more artistic product.

Several involved operations were necessary to produce a plate which could be used to print postage stamps by the intaglio process. After the concept and design work was completed, it was engraved, in reverse, on a small block of steel called a die. The image on the die was then transferred by means of a transfer roller to the plate. The transfer process was repeated until as many images as needed had been impressed on to the printing plate. Each of these steps will be more fully explained as this article continues.

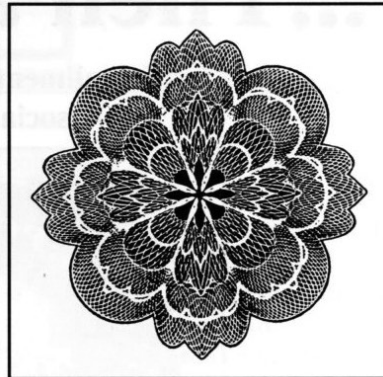


Figure 3. White line rosette pattern produced by a geometric lathe. From the American Bank Note Co.

the transfer press allowed as many exact copies as desired to be made with no additional engraving. This paved the way for large plates with one to two hundred, or more, identical stamp designs to be made for printing.

Exact uniformity of the printed product was the key to making life difficult for the counterfeiter. Finally, every bank note or stamp could be compared, and discrepancies were easily noted. This, of course, is of much greater importance in the case of but this feature has also reduced the counterfeiting of currency, postage stamps to a minimum.

Another fact that contributed to the uniqueness of the official designs was the use of several expert engravers to engrave different part of the designs. Vignette engraving is the most difficult of all, and it has been said that at any one time there are probably no more than twenty individuals in the world who have the ability to produce high quality line engraved portrait designs on steel.

The vignette engraver combined his talents with specialists in the engraving of borders, lathe work, and lettering. Each of these placed his own style on the engraving and further decreased the likelihood of illegal duplication since no single person, could reproduce the personal styles of several engravers.

The transfer press was a device whereby the incised design of an engraved steel die could be transferred under great pressure to another steel plate or roll to produce a counterpart of the original design, but in relief instead of intaglio. The process could then be repeated from the relief design, and another identical intaglio impression of the original design would be made. The



Figure 4. Inking a plate on a charcoal brazier, 1853. Courtesy of the Essay-Proof Society.

The early bank note firms, which were the producers of all United States postage stamps prior to the transfer of such work to the Treasury Department's Bureau of Engraving and Printing in 1894, were mostly organized and headed by engravers and craftsmen. The first company was formed in 1810 by George Murray, John Draper and Gideon Fairman. Each of these gentlemen were master engravers and the firm immediately became successful. They added Asa Spenser and Jacob Perkins as associates, and with them, the geometric lathe and transfer press. As the banknote business flourished, and the United States gained the reputation of having the best capabilities in the world, additional companies were formed, and the names of Rawdon, Wright, Hatch & Edson; and Toppan, Carpenter, Casilear & Co. became well known. These were the firms that produced our first issues of postage stamps in 1847 and 1851.

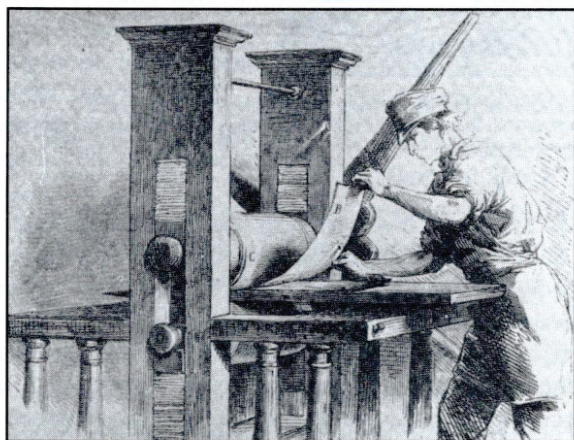


Figure 5. Plate printer and press at Danforth, Wright & Co., 1853. Courtesy of the Essay-Proof Society.

They were followed by the familiar names of the National and American Bank Note Companies, which were formed largely as a result of mergers between the many small banknote firms that previously existed. Through the years further consolidations were made, and by the end of the production of postage stamps by private firms in 1894, the American Bank Note Co. had absorbed most of the other companies. With the above introductory background in place, examples of the production of postage stamps during the first two decades of adhesive postal issues will now be described in some detail.

CONCEPT

In the early years, the need for new stamps was usually determined by the POD and was based on a need for new denominations, a change in design, or the completion of a previous contract. With the 1861 issue it was the completion of the previous contract with Toppan, Carpenter & Co., coupled with an immediate need to change the designs and demonitize the 1857 issue so that stamps in the hands of Confederate post offices could not be used to raise money for the Southern cause.

Postmaster General Montgomery Blair, in the Spring of 1861, advertised for bids to produce engraved stamps of fine quality. The request for proposals did not go into details of the desired design for the new issue, other than to state that they should be "of the general style and description of those now in use. The heads of Washington and Franklin are to be preserved as the 'leading designs.'"

In addition, the request required that each design have the denomination shown in figures as well as in letters, and that examples of the finished stamps be included as part of the bid. The requirement for denomination figures to be included was deemed to be sufficient to make the stamps distinctly different from the previous issue.

The Third Assistant Postmaster General, in the 1860s, had the principal responsibility for the production and distribution of postage stamps and was involved in monitoring designs and production throughout the life of a printing contract. He advised the Banknote companies of the Department's desire for changes in shades of color, design or production procedures, as well as authorizing experimental work toward improving the quality or usefulness of the stamps.

DESIGN

The stamp designer was a member of the banknote company, and it was his job to incorporate the subject, lettering and frame designs into an overall design that would be artistically pleasing, capable of being reproduced by line engraving on steel, and printed to the specifications of the Post Office Department.

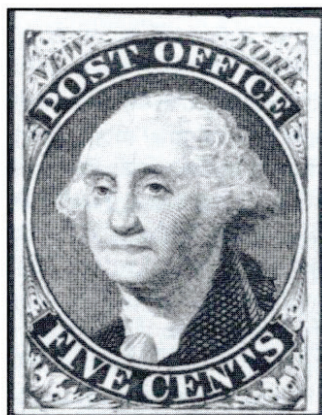


Figure 6a. 1845 New York City Postmaster's Provisional stamp.

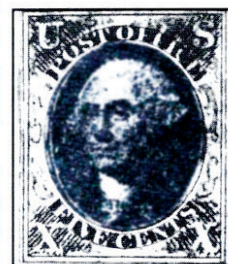


Figure 6b. Initial model for the 1847 10c denomination.



Figure 6c. Head of George Washington from a standard stock die used on numerous forms of engravings.

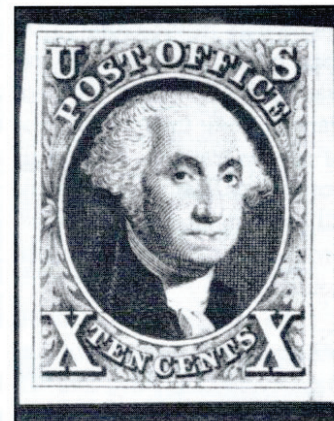


Figure 6d. Ten-cent stamp (Scott No. 2), as issued in 1847.

The initial rough design was usually done in pencil and ink, and in an enlarged format. Vignettes, frames and lettering were sketched, and when a satisfactory combination of these elements was obtained, the design was further refined by skilled artists until a finished product was obtained. This was then reduced by hand to the actual size needed for the stamp, and became the model for design approval and for the engraver.

Some of the basic steps that were used to construct a model for the ten cent value of the first issue of United States postage stamps in 1847 are shown in Figure 6.

The stamp was to be printed by Rawdon, Hatch, Wright & Edson. The company used a stock die from their previous printing of the 1845 New York Postmaster's Provisional stamp (Figure 6a) for part of the design. The original model is shown in Figure 6b, a trimmed print from the die of the Postmaster's Provisional. The vignette and the engraved words "POST OFFICE" and "FIVE CENTS" were mounted and the letters 'U' and 'S', and Roman numerals 'x' added in card, in ink, with a wash drawing of the frame to complete the initial model.

For the final design, a different picture was used for the head of George Washington (Figure 6c). This vignette was taken from a stock die used in several banknote currency designs, and pictured Washington facing to the right, and with a more alert and pleasant countenance. The change was definitely an improvement. The lettering was changed in style, and the denomination lettering changed to "TEN CENTS". These new design elements were combined into the final approved model, the engravings were made, and the issued stamp was printed as shown in Figure 6d.

When possible, the stamp designer incorporated stock engravings in the required design. If a die of the vignette or parts of the frame were in the company's inventory of dies, it was possible to make copies of the needed part of the dies to be transferred to the new die, and thus save the time and expense of new engraving. It is for this reason that many of the same portraits of Washington, Franklin and others are found on many different stamps as well as on banknotes and stock certificates produced under private contract for different companies and countries.

The designer of all of the stamps of the 1861 issue was James Macdonough, who at that time was Secretary of the National Bank Note Company, and who later became the President of the American Bank Note Company during its pre-eminence in the late 1800s.

Except in the case of competitive bidding, the proposed designs were usually submitted to postal officials for approval,

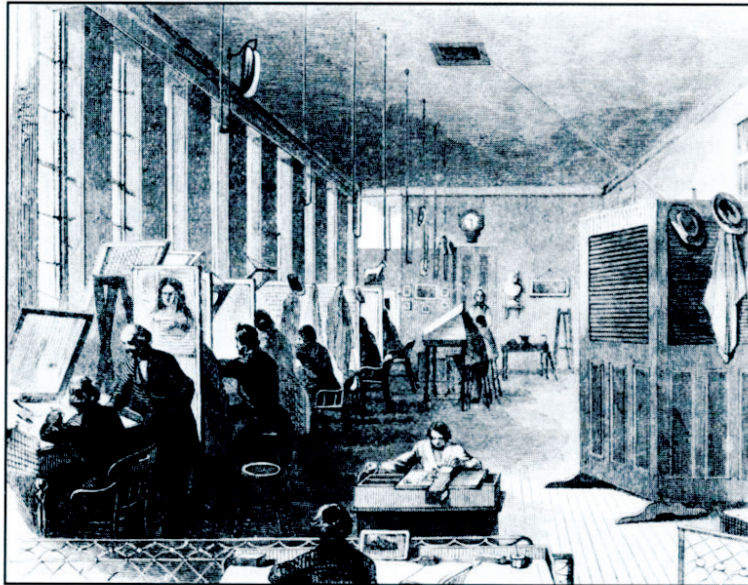


Figure 7. Engraving Room of the American Bank Note Company in 1861. Each engraver is seated and at work in his own private alcove next to a window in order to provide ample light. From an 1862 *Harper's Monthly* woodcut.

and copies of these signed and approved designs are much sought after as corollary material for stamp collections

ENGRAVING THE DIE

The blank die which was to receive the design was a piece of high quality soft steel, usually about three and a half inches square and about a quarter of an inch thick. The face of it was highly polished, and with slightly beveled edges to prevent them from cutting into the paper during printing.

The engraver carefully transferred the model design in reverse to the surface of the die block which had been

prepared by coating it with varnish or some other material that would allow the polished surface to receive an image. This could be done by several different methods, and each resulted in the basic features of the design showing on the face of the steel block as a guide for the actual engraving. At times the subject of the design might be from an artist's painting or a large engraving, or possibly a sculpted figure, and later in the century, from a photograph. In these cases, the vignette engraver worked directly from the rendition of the subject.

Faint guide lines were cut into the die to outline the exact size of the stamp and sometimes to divide the space into quarters to help in determining balance and proportion. To assist in the very demanding work of engraving, individual work desks were placed in front of windows with a northern exposure and the light filtered by screens of white paper. An 1862 engraving room is shown in Figure 7, and already the improvement in working quarters over the preceding decade shown earlier in Figure 2. is apparent.

The engraver first lightly incised the lines and dots of the design into the die, gradually developing the design and deepening the lines to obtain the desired effects in the printed product. Great care was taken at all times, and progress proofs were taken at frequent intervals to check the accuracy and artistry of the work.

Small errors could be removed by burnishing and reengraving, but serious errors could require much or all of the design to be reaccomplished. It should be remembered that the original die is in reality a mold from which the design is transferred by means of a transfer roller to the printing plate. The only prints taken directly from the master die are the die proofs.

[Editor's note: *Don Evans' special article on The Making of a Stamp will be continued in the Summer '94 issue of U.S. STAMPS & Postal History.*

The Making of a Stamp

By Don L. Evans, Associate Editor

Because of the ability to transfer designs from one steel plate to another, the transfer press allowed several engravers to work on different parts of a design on separate blank dies at the same time, and subsequently to combine these separate efforts onto a single master die. In this manner, the lettering and frame work could be done simultaneously by experts in those particular fields with a resulting savings of time. It was, of course, absolutely imperative that exact registration of each of these engravings was accomplished within identical guide lines on the separate dies to insure that the sections of the final die would combine into the desired design.

After the master die was completed to the satisfaction of the engraver and the banknote company, die proofs were "pulled" to submit to the Post Office Department for their approval. These die proofs were usually printed in the proposed color for the issue, and represent the best example of the engraver's and printer's art since they were accomplished with a new die and printed with great care on special paper with the finest of inks.

The proof press was a small hand operated unit with a heavy roller that passed over the bed holding the inked plate and paper. The paper usually was a thin sheet called India paper which was made from bamboo and imported from China. This special paper had the ability to be easily pressed into the finest of lines on the surface of the die where it picked up the ink and formed an exact reproduction of the design with raised printing.

The preparation of the die and paper and ink for printing was painstaking. The inks of the period were all made of natural materials. The ink pigments were finely ground and mixed with a carrying agent to form the final product. The master printers of the day each had their own recipes for the formulation of inks, and these formulas were jealously guarded and kept proprietary. The inks for engraved printing were thick and stiff and had to be heated in order to be pliable for use. The dies or plates also had to be heated so that the ink would not become too viscous during printing. This was usually accomplished by use of charcoal braziers.

Before inking, the die was carefully inspected for unwanted foreign matter in the engraved lines, and was cleaned and polished. The heated ink was applied to the die with an inking knife or spatula, and forced into all of the incised lines until each was completely filled. The excess ink was wiped from the surface with a rag, and then the remaining film of ink was removed by carefully polishing the surface with the palm of the hand. This was a critical part of the operation. All of the ink had to be removed from the surface between the engraved recesses, but no ink was to be removed from the lines below the level of the surface. It required great dexterity and experience to remove the exact amount of ink necessary, but no more.

The inked and polished die was then placed on the bed of the printing press where a sheet of dampened India paper, slightly larger than the dimensions of the die, was carefully placed on the die. A small amount of paste in powdered form was sprinkled on the dampened paper, and a cardboard "blanket" was placed on top of the India paper. The paper was dampened to promote its ability to be forced into the recesses of the engraving, and the soft cardboard blanket protected the



Figure 8. Die proof, 1c 1861 issue.

paper and also helped the roller to press the paper into the design. After the hand roller was passed over the die, the cardboard blanket and the adhering India paper proof were carefully removed from the die, and placed aside for drying. Figure 8 shows a typical die proof of the period with the characteristic outlines of the die block impressed into the cardboard backing by the force of the proof press.

When the proofs from the master die were approved by the POD, the preparation of the plates for production printing began. The approved die was then hardened, and this was done by carbonizing the soft steel in a process developed early in the century by Jacob Perkins. The die was placed in an airtight crucible with a packing of charcoal, and heated. This caused some of the carbon to unite with the steel molecules and resulted in a very hard metal. Great care had to

be taken to insure that the proper temperatures and rate of heating and cooling were correct. Mistakes in this part of the work could result in brittle or cracked dies, and a need to reaccomplish the entire engraving. After hardening, the die was cleaned and turned over to the siderographer to make the plates.

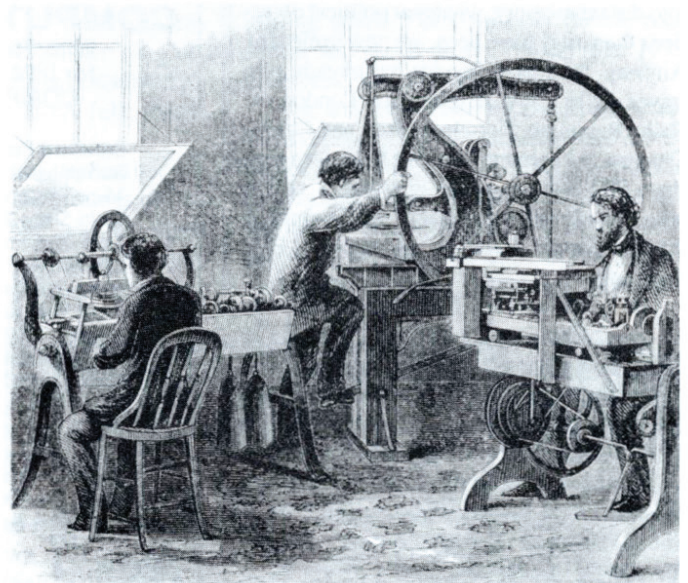


Figure 9. Siderographers at work in the transfer lathe room. Originally published in *Harper's Monthly* magazine, 1862.

MAKING THE PLATES

The siderographer was the artisan who operated the transfer press, and who transferred the original engraving to multiple copies on the printing plate through the intermediary step of the transfer roller.

The transfer roller was made by placing the hardened die in the transfer press, where under great pressure, the die was pressed into the surface of a soft steel cylinder. The impression was made by rocking the roller into the die many times until the soft steel of the roller was forced into every line of the die. The result was an exact mirror image

counterpart of the die design, but in relief. The roller with its relief design could then be used as the pattern to transfer as many duplicate images as desired to the printing plate. Each of those images would be a precise copy of the original master die.

After the transfer roller was made and inspected for flaws, it was hardened, and then replaced in the transfer press to begin the making of the plate.

The plate was a sheet of soft steel, about a quarter of an inch thick. For the 1861 issue it was about 13 by 19 inches in size. The blank plate was carefully marked with fine lines and dots to lay out the desired position for each of the images, and to actually guide the siderographer in rocking in the design from the transfer roller in exactly the correct places. Markings were placed when possible where they would be later obscured by the design, and others were removed by burnishing after the plate was made. It is not unusual, though, to see some evidence of these position marks on issued stamps, and they are easily seen on plate proof printings that were taken during the platemaking process.

After the stamp lay-out was completed, the siderographer placed the plate on the bed of the transfer press, and began the delicate process of rocking the design into each designated space on the plate.

The transfer operation was hand-powered. By a system of levers, the operator controlled the pressure, and with a large wheel moved the plate back and forth under the transfer roller as needed. It is obvious that correct placement and depth of impression had to be accomplished to insure that the final printed image would be of the desired quality and uniformity. The siderographer, like most of the craftsmen in the production of postage, was a master of his trade, and took great pride in his work.

After all of the impressions had been made on the soft steel plate (in the case of the 1861 issue, this was 200), the plate was removed from the transfer press, polished and inspected, and then proof printings were made to further check the accuracy of the work. It was sometimes necessary to replace the plate in the transfer press to reenter some of the impressions and correct minor flaws. After obtaining a satisfactory proof the lay-out lines and dots, as well as any small scratches, were burnished out where possible. A final proof was taken, and the plate was polished again and hardened for its coming role in printing millions of stamps.

The plate proofs, like the die proofs, were made with special care and high quality inks and printed on India paper. While the quality may be marginally less than that of the die proof, they still reproduced the design with great clarity and fidelity and are a desired addition to any collection. Although usually printed in the prospective color of issue, both die and plate proofs were sometimes printed in other colors. These are called trial color proofs. Engravers, to check their work, frequently made progress proofs in green or black since inks with a high degree of quality for both of these colors were readily available at the bank note manufacturers, and the colors made excellent impressions for viewing.

With the completion of the plate, the actual production of the postage stamp could then begin. In many ways, this has always been one of the most difficult processes.

POSTAGE STAMP PRODUCTION

The printing presses of the 1860s were still almost all hand-powered. Steam presses were just beginning to be used, and both the National and American Bank Note Companies advertised their new acquisition of these faster presses, but they were not used for stamp production until the 2c (*Scott No. 210*) issue in 1885.

The general procedures for the production runs for stamp printing were similar to those used in making proofs. The primary difference was that speed and economy were the major driving forces and consequently, the finished product never reached the level of quality of the proof impressions.

Paper for printing, usually a hard, high quality paper in the early years, had to be prepared for printing. Since the printing of engraved stamps required the paper to be damp, packages of sheets of paper, interleaved with wet cloths were prepared and stacked in a closed room until the paper had received the required amount of moisture. This was another operation that required experience and craftsmanship since there were no instruments in those days to measure the water content of the paper.

Ink pigments were ground, and as Figure 10 shows, steam power



Figure 10. Ink mill for grinding pigments. Belt provides power from a stationary steam engine in another room. *Harper's Monthly*, 1862.

was used as early as 1862 to power the ink mills as an aid in the previously difficult task of grinding the pigments to a fine powder and mixing them to obtain the desired color. The nature of the raw ingredients was not always constant, and the following of the color recipes varied to some extent so the various shades that characterized much of our early stamp production is not surprising.

With the plates and printing ink in the press room, and both of them warmed by the charcoal braziers, it was time to bring out the dampened paper and to begin the printing operation. The plate was inked, wiped and polished by hand, then placed on the bed of a press, the dampened paper being carefully placed on the inked plate. This was another critical operation, since lateral movement while placing the sheet on the plate could result in a smearing of the ink onto the paper. No cardboard blanket was placed on the paper, but a soft blanket covered the press roller, and served the same purpose. The printer turned the spokes of the press wheel and the plate passed through the press under pressure and an impression was made.

At the other end of the press, the printer's helper carefully removed the sheet of paper, quickly inspected it, and replaced it with another dampened blank sheet. The plate and paper were then run through the press in the opposite direction, where the assistant removed the printed sheet and replaced it with another blank sheet.

This process was repeated until the printer determined that it was time to re-ink the plate. On occasion, too many copies were made before re-inking and the resulting "dry plate" impressions showed areas of weak or absent printing.

The printed sheets were placed on tables adjoining the printing presses, where, when sufficiently dry, they were stacked. If the sheets were placed on top of each other while the ink was still wet, some of the ink would be transferred to the next sheet forming what is called an offset print. These are frequently found on the backs of stamps printed during the 1870s and 1880s, and are characterized by the off-



Figure 11. Press room at the American Bank Note Co. Woodcut from *Harper's Monthly*, 1862.

set image being reversed and usually not centered. In some production facilities, sheets of blotting tissue were placed between the freshly printed sheets to avoid this problem.

After printing, the still damp sheets were placed in a steam-heated drying room for two to seven days, depending on the ambient humidity. After drying, they were taken to the gumming facility where workers applied liquid adhesive with a brush to the reverse side of the sheets and then placed them on wooden drying racks. While this operation did not require great skill, the results of uneven application and poor adhesives in the form of lumpiness and discoloration can be seen on the reverse side of many classic stamps.

The racks were returned to the drying room until the gum was completely dry, and the sheets were then rolled in two directions to partially break the gum and thus discourage curling of the paper.

The next step was pressing under high pressure. Stacks of dried and gummed sheets were placed in presses for a period of about twelve hours to impart a smooth surface to the sheets. Following the pressing, the sheets were normally cut into two panes to facilitate handling and then transported to the perforating facility. A variation to this sequence occurred during the period from 1867 to 1871 when the stamps were grilled to prevent cancels from being removed and the stamps reused. In that period, the sheets were run through the grilling apparatus immediately after pressing, and then perforated.

Perforating machinery was invented in England in 1848. The process was first used in the United States by Toppan, Carpenter & Co. for the production of the 1857 issue. A copy of the machine was made, and used by the National Bank Note Co. for the 1862 issue. Only one machine was available, and this caused a bottleneck in production. The device was foot-treadle operated and resembled a sewing machine. The sheets of stamps were fed individually between two cylinders, one of which was studded with pins, and the other with holes in corresponding positions. As the paper was fed through the machine, the perforations were cleanly punched from the paper. The spacing between the pins and between the holes was adjustable, and the procedure was to adjust them for the correct spacing between the rows of stamps and to perforate a large number of sheets in the horizontal direction, then to re-adjust the spacing for the columns and to repeat the operation to punch the vertical perforations.

The perforators and gummers, as was the case for most of the employees, did not receive very high wages. An expert perforator received \$5.00 per week, and an expert gummer received \$4.00 per week. The term "expert" meant that the individual could complete a specified number of operations per day with satisfactory results. The number was not small. In the case of the gummers, the required production rate was 1000 sheets per day. Assuming a ten hour day and some reasonable time for rest and lunch, this required that about two sheets per minute had to be gummed. Not much time remained for "gossiping at the water cooler."

By 1871, the number of perforating machines had been increased to four and they were steam powered. The presence of the additional machines, now obviated the need to reset the spacing, and two machines

could be set for perforating in one direction, and the other two for the other direction. Rollers also began to be used for the application of gum, and resulted in smoother coatings and faster application.

As the years progressed, a constant series of technological and operating improvements continued to be made that contributed to more efficient production, but the artistry of the line-engraved stamp of the classic period has never been surpassed.

The last step in the production cycle was another pressing. Stacks of the finished sheets were placed in the hydraulic presses under 300 to 500 hundred pounds of pressure for about twelve hours. This renewed the smooth surface, and the stamps were then ready for final inspection and distribution.

SECURITY AND DISTRIBUTION

After the completion of the production cycle, the sheets of stamps were carefully inspected by the production manager, and all sheets that did not meet the necessary quality standards were set to one side. For security reasons, all sheets that contained errors or which were damaged in some way continued through the entire production sequence, no matter at what stage the problem occurred. A careful count of the total number of sheets of stamps was made, and compared to the number issued.

Before printing began, the number of sheets of paper that were assigned to production were counted and receipted to the paper wareroom. At each stage of production when sheets of paper passed from the control of one group to another, a count was made, and the number of sheets registered. In this manner, the possibility was eliminated for anyone to pilfer sheets of printed stamps without the documentation trail leading back to the responsible group. The sheets of imperfect stamps were delivered to the resident stamp agent of the Post Office Department, and subsequently destroyed by burning in the presence of both the stamp agent and a representative of the Bank Note Co.

The plates and dies that had been made were the sole property of the United States Government, and also whenever they were not in actual use, they were stored in the company vault, and could only be removed by a written order from the stamp agent or an officer of the company. Careful guard was maintained over the plates and dies when they were out of the vault, and every effort was made to provide for absolute security for these items. Records of all die and plate proof impressions were also supposed to be kept, but it is likely, since these proofs were not government property, that a significant number of unrecorded proof impressions were made.

Orders from the postmasters throughout the country for stamps were approved and processed by the Post Office Department in Washington, and forwarded to the resident stamp agent. These orders were then filled by the stamp agent, and the manager of stamp production of the Bank Note Company, working together, from the stock of stamps that had been completed and inspected. They were assisted in this work by employees of the Bank Note Company under the terms of the contract. The requisitions of the postmasters were filled in order of receipt, and enclosed in envelopes or packages, sealed with the agent's seal and locked in U. S. mail pouches for delivery by a special messenger to the city post office where they were dispatched by registered mail to the requesting postmasters.

A few days or weeks later the stamps were residing in the drawer of a post office, to be moistened and affixed to a letter or package, and again sent on their way, and eventually with luck, ending up in an appreciative collector's album where their beauty and philatelic history could be truly appreciated.