# The Liberty Seated Coinage – The New Steam Presses

by Craig Sholley, LSCC #1081

## Introduction

Before discussing the rather incredible improvement in coining operations resulting from the installation of the new steam presses, it is first necessary to have at least some appreciation of the screw presses used by the mint from 1792 to 1836.

The mint began operations in 1792 in a building at John Harper's saw manufactory using one of the screw presses he would have employed for stamping parts. The mint's coinage building was completed on Sept. 7, 1792 and shortly thereafter workmen began installing the screw presses supplied by John Harper.

Harper had supplied at least two presses as implied by a notation in Chief Coiner Henry Voigt's account book that, on Sept. 21, "Flude began, after breakfast, trimming the heavy press." Voit's account book shows that an additional press arrived on April 1, 1793. These presses proved too light to strike anything but the cents, half cents, and the half dimes struck at Harper's, so the mint replaced all of them in 1794 and 1795 with far heavier presses.

As to the design and operation of the screw presses, most authors have unfortunately relied on the relatively crude drawings in Samuel Thompson's "Essay on Coining" or the drawing of an early 18th century press in Diderot's encyclopedia. However, a woodcut circa 1811 showing the operation of the screw presses in the British Tower Mint provide a much better view of the design and operation of later screw coining presses.

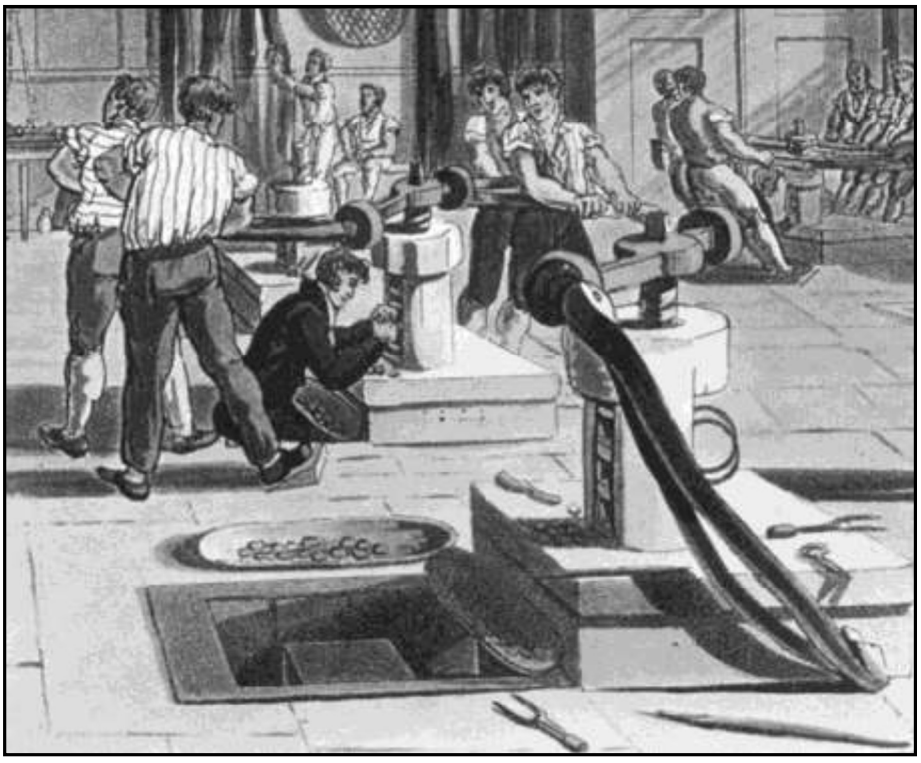

*Figure 1. Tower Mint screw presses from Ackermann's "Microcosm of London" circa 1811.*

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Records show that the U.S. and French mints had developed an "auto-feed" mechanism. Planchets were manually stacked into a "feed-tube" which then dropped them, one-by-one, into "feed-fingers." The fingers then extended into the press, dropping the planchet onto the lower die, ejecting the previously struck coin, and retracted back to pick up another planchet as the swing-arm was swung back-and-forth.

Presses had replaceable weights on the ends of the swing-arm to somewhat adjust the striking pressure, but the presses still had to be "sized" according to the size of the coin being struck. Smaller coins, such as cents and half cents, only required one man feeding and another swinging the arm.

Larger coins, such as half dollars, required one feeder and three to four men on the swing arm. Since the striking rate was only about 35 per minute, large volume minting required multiple presses and, obviously, a lot of men to operate those presses. Manual coining was a very labor-intensive operation.

The great British engineer Matthew Boulton was the first to solve the "labor problem," using a steam engine to drive the press and thus reducing the manpower required to a single person who merely kept the feed-tube filled with planchets. Despite Boulton's labor-saving, his presses were quite expensive and required a dedicated steam engine. Furthermore, the drive-mechanism was extremely complex and, as Franklin Peale noted in his 1835 report, very inefficient.

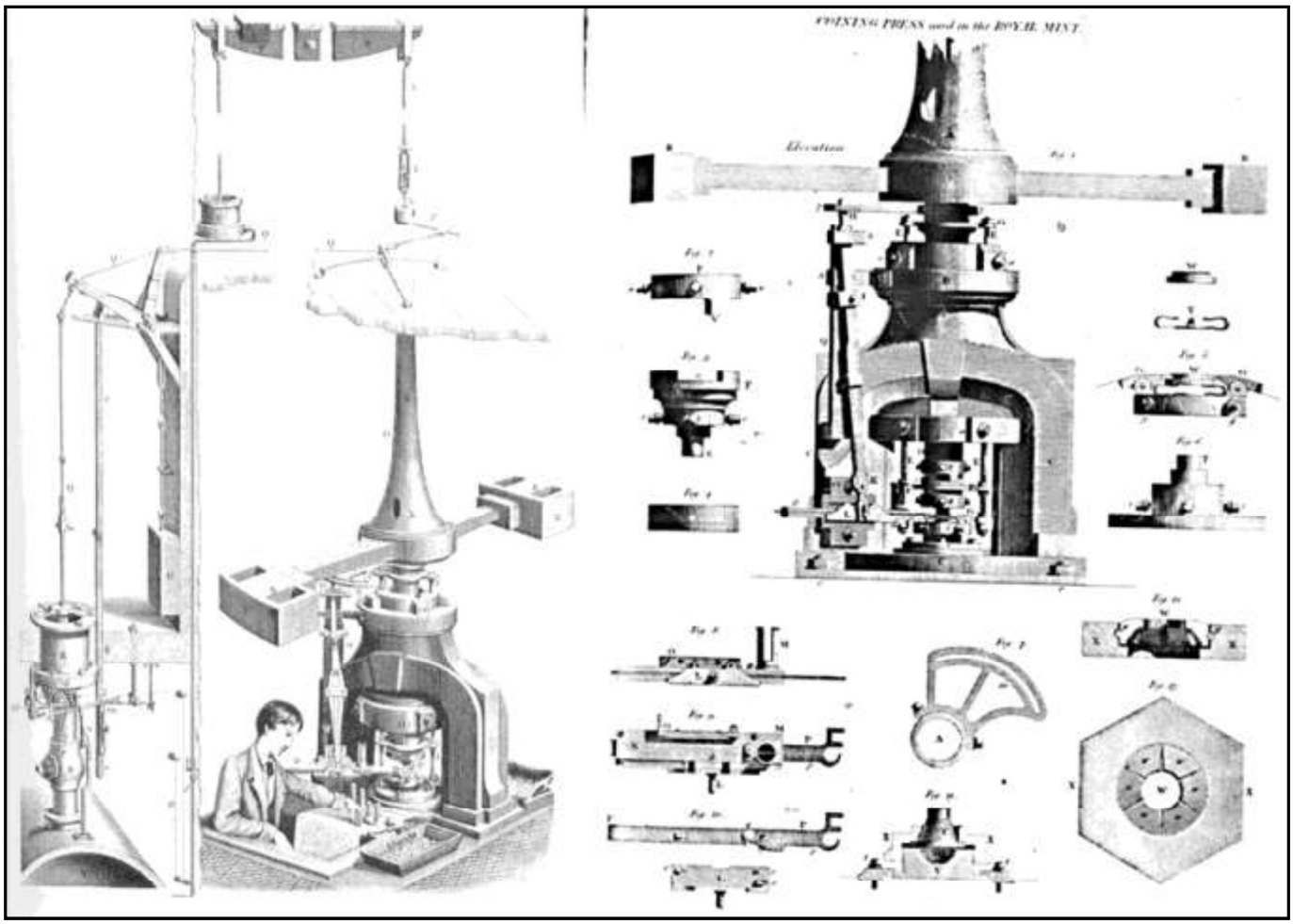

*Figure 2. Boulton's steam-powered screw press.*

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Additionally, the press was still a screw press with all the attendant problems of that design. The strike was still an impact resulting from the rapidly descending screw, and thus tough on dies. The planchet feeding mechanism was complex, as were the assemblies to depress the collar for ejection and to isolate the upper die from the torque of the screw.

Nonetheless, Boulton's design was "rock-solid" with quite a few of his presses still in operation for a hundred years or more. Moreover, they still were a vast improvement, not only saving labor, but at a striking rate of 60 per minute, nearly twice as fast as a manually-operated press.

By the mid-1820s, the expanding U.S. economy and political stability in Latin America led to a massive influx of silver bullion (and some gold) into the United States. This sudden influx began to place a serious strain on the Mint's capacity. The situation was further compounded by increasing production of gold in the southern states and it became apparent that the mint's current facilities and equipment could not meet the country's growing needs for coinage.

In 1827, as he was preparing cost estimates for a new mint, Director Samuel Moore wrote to Boulton about supplying presses. However, negotiations quickly hit two insurmountable sticking points. Moore demanded, that detailed drawings of the equipment be provided as part of the contract; a provision to which Boulton and Watt would not agree since the Americans could simply copy his design. Another problem was the Boulton's insistence that the Mint pay for the equipment in advance rather than on delivery and proof of operation. Neither side would budge and negotiations were dropped.

## The New Steam Presses

A solution came about in May of 1833 when Moore decided to send Franklin Peale on a tour of the mints in England, Germany and France to review their equipment and overall operation. Contrary to popular myth, this trip was not an "industrial spy mission". Moore had written to our ministers in the respective nations seeking permission to visit and the nations were more than happy to cooperate. Not only was the U.S. a growing commercial market, but it was also becoming an important political and military force as well; friendly relations were a good idea.

During his travels, Peale reported back to Director Moore about the superior "Uhlhorn-type" presses he had seen in Germany and France. Named after Diederich Uhlhorn, who developed this type of press in 1812, these presses were a true fundamental improvement in minting technology. Uhlhorn's presses were so technologically superior that within a decade they came into wide use throughout Europe. In the Paris mint that Peale saw the Thonnelier press, there was yet a further refinement of the Uhlhorn design.

Rather than using the impact from a descending screw to accomplish the strike, these presses used the "squeeze" applied by a "knuckle joint". Furthermore, Ulhorn's design was as simple as it was elegant. The press was driven by simple belts and pullies directly from the steam engine's fly-wheel and the striking and feeding mechanisms were so mechanically efficient that it had less than half the parts of the Boulton's press.

Peale was so impressed with the speed and reliability of the Paris mint's Thonnelier design that he immediately wrote back to Director Moore extolling its virtues. Legend has it that Peale "stole" the design from the Paris mint by making detailed drawings of the press. However, another letter from Peale to Moore tells quite a different story. The French gave Peale the design even providing mint workers to help him in producing the drawings and explaining mechanical details, all that was asked is that Peale pay for their time, which, of course, he happily did.

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Upon Peale's return, Moore sought bids for their construction and subsequently placed a contract with the firm of Merrick, Agnew and Tyler for the construction of three Thonnelier presses. Rufus Tyler (who would later become the Chief Coiner of the New Orleans Mint) was the mechanic in charge of their construction.

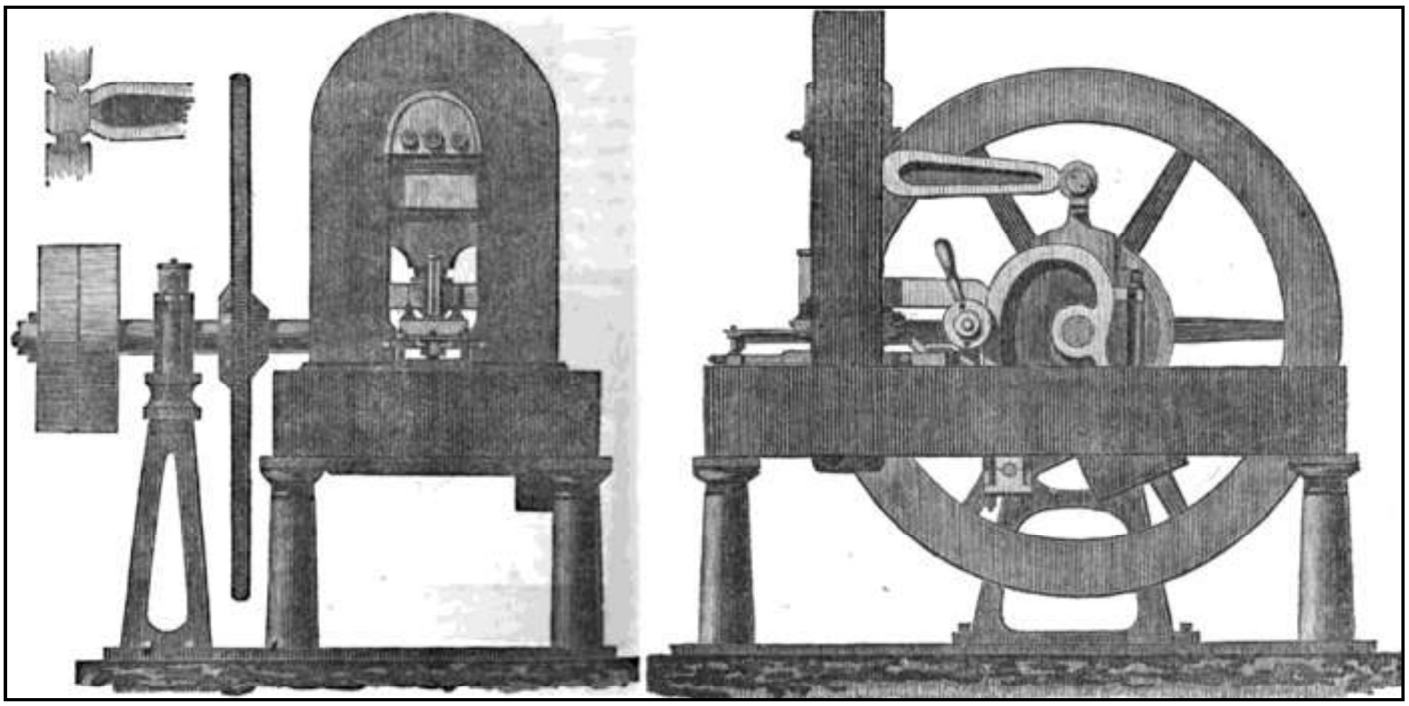

*Figure 3. Left, front view of press showing the lever arm and knuckle-joint assembly in the upper left. Right, side view of press showing lever arm, driven by a crankshaft, which straightened the knuckle-joint at top, causing the strike.*

The first press, used for cents and quarters, arrived in late January. There was an aborted test on Feb. 8, 1836, during which a few original "steam press tokens" were struck. As a result of the test, some minor modifications were made and on March 23rd, 1836 the press was fully operational and used to strike the majority of the steam press tokens. The first circulation coins struck on the press were cents, followed by quarters. Both coins were struck at the rate of 80 per minute, which was over twice the rate of a screw press and half again the rate of the Boulton and Watt presses.

In early November the mint tried to strike the new reeded-edge half dollars on the press; however, the flywheel was too small and could not store enough rotational energy to continuously strike the larger diameter coins. As Director Robert Maskell Patterson noted in a March 1, 1837 letter to George Newbold, president of the Bank of America and who was pressing for delivery of half dollars, "…we have occasionally used the press made for quarter dollars and cents in coining half dollars, but it halts & breaks down under the work, which is too heavy for it." The letter thus explains the small mintage of 1836 Reeded Edge half dollars.

Exactly when the half dollar and dollar press arrived is unknown, but on June 30, 1837, Director Patterson wrote to Secretary of the Treasury, Levi Woodbury, "One of the steam presses has coined 400,000 cents within the last two weeks, without interruption or accident, and our largest press has been coining half dollars with perfect success."

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The mint had also ordered a third press to be used for small gold and silver. I have not found exactly when that press arrived. However, the new presses were so successful that three more were ordered and the mint had six in operation by 1850. In a Sept. 10th memo of that year to Director Patterson, Chief Coiner Franklin Peale bragged that they had "never been occupied a tenth of the time…" While I would not put too much faith in Peale's braggadocio, the point is that the steam presses were vastly more efficient than the old screw presses.

In 1875, George Soley purchased the mint's first steam press as a relic, restored it, and used it to strike numerous small tokens which he sold for a quarter. Soley displayed the press at major events, including the opening of the Brooklyn Bridge in 1883, the Columbian Exposition in 1893, the Pan American Exposition in 190l, and the Louisiana Purchase Exposition in 1904. In 1927, the Franklin Institute acquired the press from his widow and refurbished it to run on electric. Aluminum tokens were struck for visitors dropping a small coin in a slot. I saw the press as a child, and if I recall correctly, the cost was a nickel or a dime.

During some research in the late 1990s, I rediscovered the press, confirmed that it was the first press by the engraved brass plate on the head stock noting it had been modified by David Gilbert in 1858. While the press was not operational at that point, it was a numismatic treasure. I immediately contacted the ANA and they were instrumental in getting Joe Rust and Ron Landis of the Gallery Mint Museum to restore the press. It was on display at the 2000 ANA Convention and is now on loan to the ANA Museum in Colorado Springs.

As those who saw it on display at the 2000 ANA will attest, the mechanism operates so smoothly it sounds much like a sewing machine. The loudest noise is that of the coins dropping into the collection box beneath the frame. It is an incredible work of engineering and manufacturing!

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Nominator _____ LSCC Member Yes / No
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3. Published Writings (Liberty Seated Books, Articles, etc.)
4. Club Contributions (promoting or assisting the LSCC in its mission)
5. Numismatic or LSCC Awards
6. Miscellaneous Data that might add to Nominee's consideration & Nominators Comments