Beginner's Corner

The Master Die

By **John A. Wexler,** NLG

In the last installment of this column, we took a look at how the master die is made and the things that could go wrong in the process. This time out, we will take a closer look at how the master die is made. Remember, the master die for a given year will be used to produce all of the working hubs for that year which, in turn, will produce all of the working dies for that year. It is the working dies that are then used in the coining presses to strike the coins which we collect.

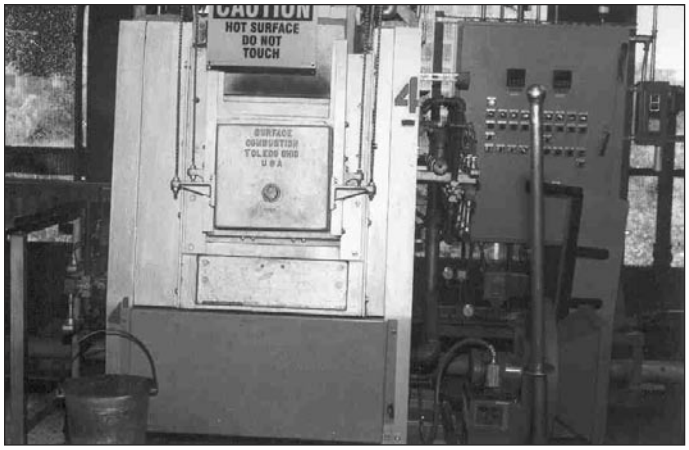
Once the master hub had been completed, it was taken to a hubbing press. The hubbing presses for modern coinage dies are hydraulic presses capable of exerting several hundreds of tons of pressure. The master hub was inserted in the top of the hubbing press chamber and a blank steel bar which would become the master die for that year was placed directly below the master hub. Once the master hub and the blank steel bar were aligned properly, the press was activated.

Here is one of the single-squeeze hubbing presses in use at the Philadelphia Mint during our 1998 tour of that facility. The older presses that required multiple hubbings to produce a satisfactory image were very similar to this in appearance.

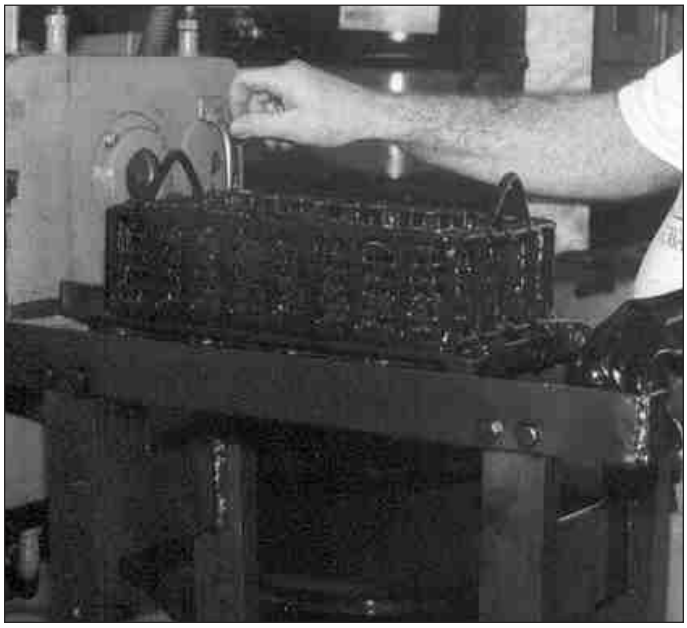
The hydraulic force of the hubbing press lowered the master hub into the face of the blank steel bar forcing an impression into that bar. Prior to 1996, despite the intense pressure of the hubbing press, it became necessary to stop the press before a perfect impression had been made in the blank steel bar. The intense pressure of forcing the master hub into the blank steel bar quickly hardened the alloy of the steel bar. If the pressure had continued too long, there was a risk of cracking or shattering the steel bar.

The incomplete master die was removed from the hubbing press and taken to the annealing ovens. These ovens would heat (anneal) the incomplete master die to a temperature high enough that it would "soften" the alloy of the master die. The master die was then taken back to the hubbing press where it was reinstalled and another impression or "hubbing" could be made to strengthen the design image on that master die. Even after a second hubbing it was frequently necessary to anneal the master die and return it for additional hubbings several times before the image on the master die was satisfactory.

This photo shows some of the blank steel rods that would be used in the hubbing press.



This is one of the annealing ovens at the Philadelphia Mint. The unfinished master die would be brought here and placed in this oven. The intense heat from the oven would soften the incomplete master die so that additional impressions could be made with the master hub.



An employee at the Philadelphia Mint is removing a tray of either working hubs or working dies which had been in the annealing oven to be "softened."

The fact that the master die had to receive multiple impressions for a satisfactory image to be formed opened the door for errors to occur. If there was any type of misalignment between the images on the master hub and the images that were already on the master die, a doubled image would appear on the master die. In future installments of this column we will explore the different types of misalignment that occurred. These various types of misalignment produced unique characteristics to the doubling found on the hubs and dies. Each identifiable type of misalignment produced one of the "classes" of doubled die varieties.

Once the hubbing and annealing process was completed for the master die, it needed to be finished by punching or engraving the last two digits of the date into it. Remember, the master hub only had the first two digits of the date so that it could be used over a period of several years to produce master dies.

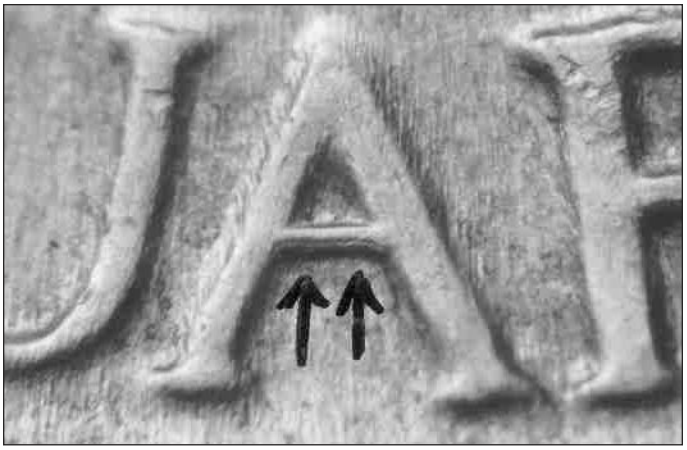
This finished master die would then be used to produce all of the working hubs for that denomination in that year. The working hubs were produced in the same fashion as the master die. Likewise, the working hubs would then be used to produce the working dies for that year. The working dies were then installed in the coining presses to strike the coins.

If doubling did occur on the master die when it was produced, then that doubling was transferred to all of the working hubs made by that master die. In turn, the working hubs passed off that doubling to all of the working dies for that year. If a single master die was used in a given year, which was generally the case, then all of the coins of that denomination would have the exact same doubling in that year.

It is important to know when a doubled master die is involved in the doubling that we see on a coin. If that doubling is on all coins of that denomination produced that year, then there is no extra value for that doubling on the coin. They are far too common to have any value.

In 1930 the reverse of the Standing Liberty Quarters fell victim to a doubled master die. The three stars under the eagle show tripled left points. Some of the letters of QUARTER DOLLAR show doubling.

If you look closely at the left point of the star, you can see close tripling. This tripling is on the master die so all quarters produced for this year show the exact same tripling.



Doubling is seen on the underside of the horizontal bar of 'A' in QUARTER. This is part of the master die doubling found on the reverse of all 1930 quarters.

1972 is well-known for the major doubled die and the numerous lesser doubled dies that were produced on the Lincoln cent that year. Some folks aren't aware that a doubled master die was also produced that year for the Lincoln cents. This is a case where more than one master die was used that year.

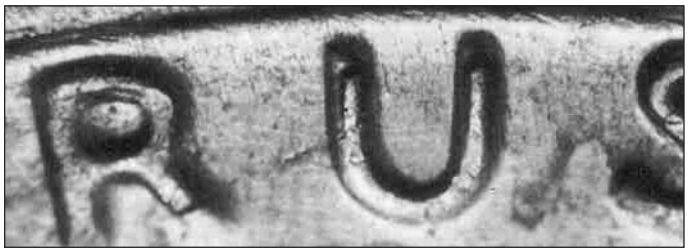
Shortly after the various doubled die cents for that year were produced, the Lincoln cent master die for 1972 failed and a new one had to be produced. It was clear from all of the doubled die varieties that were produced that year that the Mint was having problems with the hubbing process. Those problems carried over to the second master die that was produced that year. That second master die was produced with minor doubling. It is now estimated that the second master die was produced around April or May of 1972. All Lincoln cents produced from working dies that descended from that doubled master die show this minor doubling.

The doubling can be seen on the letters of IN GOD WE TRUST, the letters of LIBERTY, and very slightly on the date. Since about 60% to 70% of all of the Lincoln cents for 1972 show this doubling, it is far too common to have any value. This includes the D-Mint, S-Mint, and proof coins produced that year.

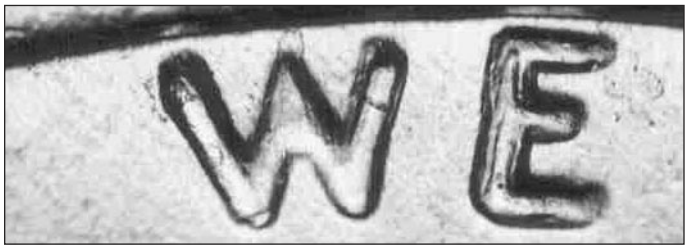
Collectors must be very careful when responding to ads for 1972 doubled die cents. A number of individuals try to sell specimens of this doubled master die for premiums far in excess of what they should be. You shouldn't pay more than the normal numismatic value of a 1972 cent which is around 10 to 20 cents for one of these.

Those trying to sell them to unsuspecting buyers advertise them as "genuine doubled dies" which they are. The ads are truthful but they don't tell you that it is a doubled master die which you can easily find on your own at any coin show. Back when they were first listed, they were assigned the listing number of 1972 1c MD-5-O-I+II. Those trying to sell these to unsuspecting buyers identify them as 5-O-I+II where they leave off the master die indicator "MD."

If you are fairly new to doubled die collecting, don't let yourself fall victim to these scams. If you would like to add specimens of this master die to your collection, go out and look for them yourself. Since the majority of the 1972 cents show this doubling, you will find one for the cost of a "regular" 1972 cent.



In this photo you can see the master die doubling for the 1972 cents on the upper U of TRUST.



The E of WE actually shows tripling from the master die. An extra vertical bar of the E of WE can be seen on both sides of the normal vertical bar of the E.

Here we see the master die doubling for the 1972 cents on the letters of IN.

The master die doubling for the 1972 cents can also be seen on the upper B and upper R of LIBERTY.