



How to identify counterfeit US dollars

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Content description:	Every year people are victimized by the counterfeiting of United States currency and other U.S. obligations. Those who fail to carefully examine the money they receive or who cash checks and bonds without requesting proper identification are potential victims. Only with the public's cooperation can the United States Secret Service reduce and prevent these crimes.
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a. Introduction

“Forgery is a crime that is never committed randomly or without knowing, neither from passion, nor from poverty led to extreme. It’s a crime that is planned very meticulously by people owning advanced technical skills and investing a large amount of money for the equipment”¹.

In order to identify the counterfeit bills you need to follow two rules. First of all, you have to know the design and security features of a genuine banknote. Secondly, you have to check more than one of the security features of the banknote (especially when you find a genuine feature) because most of them had been counterfeited. This is also the main reason why the US authorities are always in the seeking of new security features that are difficult to counterfeit.

b. General issues

First rule in the identification of counterfeited banknotes is to know the design and security features of a genuine banknote.

The most banknotes that are in circulation are 1, 2, 5, 10, 20, 50 and 100 denomination. Next, I will briefly present them:

- **1 US bill:** portrait Washington; back: obverse and reverse of the Great Seal of the United States.
- **2 US bill:** portrait Jefferson; back: Monticello (United States Notes); Signing of Declaration of Independence (Federal Reserve Notes).
- **5 US bill:** portrait Lincoln; back: Lincoln Memorial.
- **10 US bill:** portrait Hamilton; back: U.S. Treasury Building.
- **20 US bill:** portrait Jackson; back: White House.
- **50 US bill:** portrait Grant; back: United States Capitol.

- **100 US bill:** portrait Franklin; back: Independence Hall.

Next, I will present some steps in order to identify counterfeit banknotes, but these are not compulsory to be applied to all bills.

1. Feel the texture of the bill.

Some people, identify fake bill instantly just by feeling it. Even if one does not have much experience, one has, most probably, handled enough money, so as to be able to detect many counterfeits just by feeling the texture and paying more attention.

The paper on which banknotes are printed, is not sold commercially. All paper must be 100 % rag content – 75% cotton and 25% linen, with long fibers to impart strength. The paper contains no watermarks. It has tiny red and blue fibers embedded throughout. Often counterfeiter tries to simulate these fibers by printing or hand drawing tiny red and blue lines on their paper, but the inspection of these ones reveals that the fibers are on the surface of the paper and not embedded throughout it.

Another important thing to consider is that genuine currency has slightly raised ink that is produced in the intaglio printing process. You should be able to feel the texture of this ink, especially if you are holding a new dollar bill. Intaglio engraving permits more delicate and intricate lines and has a greater range of light and shade.

2. Compare the bill with another of the same denomination and series.

If the bill seems genuine or if it raises suspicions of counterfeit, hold the bill side by side with another bill. You should get a note of the same denominations. Moreover, all denominations, except the \$1 and \$2, have been redesigned at least once since 1990, so it is recommended to compare the suspect bill to one in the same series, or date.

3. Notice the relative flatness and lack of detail on the fake bill. Look carefully at the printing quality.

The techniques through which real U.S. bills are printed cannot be replicated by regular offset printing and digital printing. Look for blurry areas, especially in fine details such as around the borders. The fine lines in the border of a genuine bill are clear and unbroken. On the counterfeit banknotes, the lines may be blurred and indistinct. The genuine portrait appears lifelike and stands out distinctly from the fine screen-like background. The counterfeit portrait is usually lifeless and flat. Details merge into the background which is often too dark or mottled.

4. Search for colored fibers in the paper.

Note that all U.S. bills have tiny red and blue fibers embedded in the paper. Counterfeiters try to reproduce these by printing or drawing these fibers onto the paper. However, a closer examination reveals that on the counterfeit note you can observe they are not part of the paper itself, but rather printed on it.

5. Examine the serial numbers.

Make sure that the serial numbers on a bill match, and examine them carefully. Genuine serial numbers have a particular style and are evenly spaced. There are printed in the same color as the Treasury seal.

Fake bills often have serial numbers that are not evenly spaced or that are not perfectly aligned in a row. If you received multiple suspicious bills, see if the serial numbers are the same on both bills. If they are the same, then one or more banknotes are not genuine.

You may even see a „star note”. A „star note” is a bill that has a serial number which is out of sequence with the others in the series. A star is printed after the number to indicate that it was placed in the series as a substitute.

6. Look for security features in all denominations, except the \$1 and \$2.

The easiest way to identify a fake \$5, \$10, \$20, \$50 or \$100 bill is to pay attention to the following security features, all of which are very difficult to fake.

The *security thread* is a polyester strip which is running from top to bottom. Starting 1990, an embedded (not printed) security thread was added to all bills except the \$1 and \$2 bills. If you hold the bill up in the light (transmitted light), you will see the strip and printing on it. The printing says "USA" followed by the denomination of the bill, which is spelled out for \$5, \$10, and \$20 bills but presented in numerals on the \$50 and \$100 bills. These threads are placed in different places on each denomination to prevent lower-denomination bills being bleached and reprinted as higher denominations. Compare a real bill of the same denomination, to make sure that the position of the thread is correct. If it is not, the bill is not genuine.

On the \$5 bill it is written "USA FIVE" on the thread, the \$10 bill has "USA TEN" written on the thread; the \$20 bill has "USA TWENTY" written on the security thread, while the \$50 bill has "USA 50" written on the thread; and the \$100 bill has the words "USA 100" written on the security thread.

When you examine a banknote in a UV light, if it is authentic, the security thread in the bill will glow: the \$5 bill glows blue, the \$10 bill glows orange, the \$20 bill glows green, the \$50 bill glows yellow and the \$100 bill glows pink. If it turns dark or black then the banknote is a counterfeited one.

Micro-printing represents a small text that can be read only with a magnifier and is very difficult to be copied by the forgers. It can be found around the portrait as well, on the security threads and in other parts of the banknotes. Starting 1990, very tiny printing was added to certain places (which have periodically been changed since then) on \$5 and higher denomination bills. The exact location of the micro-printing is not an issue. Counterfeits will often have either no micro-printing or very blurred micro-printing. On a genuine bill, the micro-printing will be crisp and clear.

Watermark represents an image that can be observed when the banknote is held against a light source. It does not copy on color printer.

On all \$10, \$20, \$50, and \$100 bills series 1996 and later, and on \$5 bills series 1999 and later, you can find a watermark bearing the image of the person whose portrait is on the bill. The watermark is embedded in the paper to the right of the portrait, and it can be seen from both sides of the bill. If it turns dark or black in a UV light, then the banknote is a counterfeited one.

Color-shifting ink – is an ink that appears to change color when the bill is viewed from different angles. For example, the color changes from copper to green. This security feature is a latest one and is very difficult to be counterfeited. Some of the counterfeit dollars have the color-shifting ink security feature which is reproduce quite well.

Red and blue fibers embedded in the paper. These fibers are visible with the naked eye and they didn't react in an UV examination. Instead, these fibers react in IR light.

Facts regarding the U.S. dollars bills:

- A common misconception is that if the ink smears when you rub the bill on something, the bill is not genuine. This is not necessarily true, but if the ink does not smear, it does not mean that the bill is genuine either.

- A very simple type of counterfeit is "raised bills", where numerals are glued onto a low denomination bill to make it look like a higher denomination. These fakes can be identified by comparing the numbers in the corners to the denomination printed in letters at the bottom of the bill. Furthermore, you can compare the bill to another bill of the same denomination.
- On the \$100 bill you can see the words "the United States of America" micro printed in the lapel of Benjamin Franklin jacket.
- The Secret Service and U.S. Treasury do not recommend relying only on a counterfeit-detection pen that is often used by clerks in stores. These pens can only indicate whether the note is printed on the wrong kind of paper (they simply react to the presence of starch). They will catch some counterfeits, but they will not detect more sophisticated fakes and will give false-negatives on real money that has been through the wash.
- The fine lines in the border of a genuine bill are clear and unbroken. On the counterfeit, the lines in the outer margin and scrollwork may be blurred and indistinct.
- The genuine portrait stands out distinctly from the background and appears lifelike. The counterfeit portrait is usually lifeless and flat. Details merge into the background, which is often too dark or mottled.
- Although the ink used in U.S. currency is magnetic, this is not a method for detecting counterfeits. The strength is very low and is useful only for automated currency counters. With a small but strong magnet, you can lift a genuine bill. Although you cannot lift the bill off of a table, you can definitely tell that it is magnetic.
- Look for differences, rather than similarities. If they are any good at all, counterfeit bills will be similar to real ones in many aspects, but if a bill is different in just one way, it is probably fake.

c. Conclusions

The goal of this presentation is that its readers will be able to identify easier some of the security features of U.S. dollars in order to distinguish a genuine banknote from a counterfeited one. Of course, this presentation does not include all of the security features that are found on a banknote but only those which could be examined without specialty knowledge and expensive highly specialized technique, making them accessible to verify by common people.

I consider that an increased degree of knowledge regarding the detection of counterfeited banknotes, found among the population can considerably help the economy and wellnes of the whole society, as well as the efficiency of the police in its continuous fight against this type of crime.

d. Bibliography

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¹ Robert H. Jackson (1892 – 1954) – Associated Judge at the US Supreme Court.