



### **BORDER SECURITY**

# ADVANCED ANTI-COUNTERFEIT SECURITY ELEMENTS

TECHNIQUE FOR PRODUCING ADVANCED AND UNIQUE PRINTING DESIGNS DRAMATICALLY IMPROVES COUNTERFEIT RESISTANCE FOR SECURITY DOCUMENTS LIKE PASSPORTS, VISAS, BIRTH RECORDS, AND BANKNOTES.

Sensitive documents such as banknotes, passports, visas, and birth records often contain proprietary security features to deter counterfeiters. However, these documents remain subject to fraud despite continual developments in anti-counterfeiting technologies. Adding proprietary security features to documents can increase costs, create fragile supply chains, and complicate manufacturing and quality control processes.

The suite of technologies designed by the US Department of State and US Immigration and Customs Enforcement entails methods and techniques for applying advanced design elements to sensitive documents to increase document security without requiring reliance on proprietary technology. These design strategies create a high barrier to counterfeiters and can be performed with existing high-end printing equipment and software already owned by secure document producers. DHS owns a related patent family [see <a href="Systems and Methods for Interrupting Traditional Counterfeiting Workflows">Systems and Methods for Interrupting Traditional Counterfeiting Workflows</a>] that obscure printing processes of identification documents to deter counterfeiting.

#### **KEY BENEFITS**

- Inhibits both traditional and digital counterfeiting
- + Does not require new consumables or new manufacturing workflows
- + Improves ease of identifying counterfeit documents

STAGE OF DEVELOPMENT Proven System PARTNERSHIP SOUGHT

License

**INVENTORS** 

Joel Zlotnick
Jordan Brough
Troy Eberhardt
Tyra McConnell
Elizabeth Gil
Traci Moran

#### DHS COMPONENT

U.S. Immigration and Customs Enforcement

The Technology Transfer and Commercialization Branch (T2C) within the Office of Industry Partnerships (OIP) of the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) serves as the centralized point to manage technology transfer activities throughout DHS and the DHS laboratory network. **T2C@hq.dhs.gov** 

## THE TECHNOLOGY

Tiny disks called planchettes are more advanced than typical security fibers usually embedded into secure documents. The planchettes are incorporated into the paper when it is made, before the document artwork is applied. Planchettes are easy to see, big enough to contain printed images or text, can be cut into various shapes, and designed to respond to ultraviolet light. These different graphic design options can be leveraged to create custom and unique design signatures that are difficult to simulate in counterfeit documents.

To further enhance the safety and security of sensitive documents and banknotes, the suite of technologies also includes techniques for security-based microprinting. The microprinting invention includes a methodology and system for marking a document with specialized, micro-sized characters on both the front and back sides. The characters can include different colors and different color saturations. After printing, the characters can be viewed in reflected, ultraviolet, transmitted, or other lighting conditions to confirm the document's legitimacy.



A hexagonal planchette template from Figure 17 of US Patent Application 17/961,951.



Microprinted embossing plate design, showing each character partitioned into a mix of tactile and matte elements, shown in Figure 72 of US Patent Application 17/961,951.

#### **APPLICATIONS**

The technology has several potential end users:

- + Security printers and secure document issuers
- + Border control authorities and forensic laboratory staff
- + Printing suppliers and paper manufacturers

#### PATENT INFORMATION

US Patent Application number: 18/102,002



US Patent numbers: 11,850,878, 11,890,888 and 12,083,814







See related patent family "Systems and Methods for Interrupting Traditional Counterfeiting Workflows"



**CONTACT INFORMATION** 

+ T2C@hq.dhs.gov

FOR MORE INFORMATION ABOUT THE DHS TECHNOLOGY TRANSFER & COMMERCIALIZATION BRANCH:

