OPTICAL PRODUCTS, MASTERS FOR FABRICATING OPTICAL PRODUCTS, AND METHODS FOR MANUFACTURING MASTERS AND OPTICAL PRODUCTS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority to U.S. Provisional Application No. 62/192052, entitled "OPTICAL PRODUCTS, MASTERS FOR FABRICATING OPTICAL PRODUCTS, AND METHODS FOR MANUFACTURING MASTERS AND OPTICAL PRODUCTS," filed July 13, 2015, to U.S. Provisional Application No. 62/326706, entitled "OPTICAL PRODUCTS, MASTERS FOR FABRICATING OPTICAL PRODUCTS, AND METHODS FOR MANUFACTURING MASTERS AND OPTICAL PRODUCTS," filed April 22, 2016, to U.S. Provisional Application No. 62/328606, entitled "OPTICAL PRODUCTS, MASTERS FOR FABRICATING OPTICAL PRODUCTS, AND METHODS FOR MANUFACTURING MASTERS AND OPTICAL PRODUCTS," filed April 27, 2016, to U.S. Provisional Application No. 62/329192, entitled "OPTICAL PRODUCTS, MASTERS FOR FABRICATING OPTICAL PRODUCTS, AND METHODS FOR MANUFACTURING MASTERS AND OPTICAL PRODUCTS," filed April 28, 2016, and to U.S. Provisional Application No. 62/326707, entitled "OPTICAL SWITCH DEVICES," filed April 22, 2016. The entirety of each application referenced in this paragraph is incorporated herein by reference.

STATEMENT REGARDING FEDERALLY SPONSORED R&D

[0002] This invention was made with government support under Contract No. TEPS 14-02302 awarded by the Bureau of Engraving and Printing. The government has certain rights in the invention.

TECHNICAL FIELD

[0003] The present application generally relates to optical products, masters (e.g., master and/or daughter shims) for fabricating an optical product, and methods for manufacturing the masters and optical products. In particular, the optical product can be configured, when illuminated, to reproduce by reflected (or refracted) or transmitted light, one or more 3D images (e.g., one or more images that appear three-dimensional) of at least a part of one or more 3D objects.

DESCRIPTION OF THE RELATED TECHNOLOGY

[0004] Optical products can be used for a variety of purposes such as to reproduce a 3D image. Such products can be placed on decorative signs, labels, packaging, and consumer goods. Some optical products can be used as an anti- counterfeit feature, for example, on currency (e.g., a banknote). Holograms have traditionally been used as a counterfeit deterrent. However, this technology has become so widespread with hundreds if not thousands of holographic shops around the world that holograms are now viewed as having poor security.