layer. After curing of the photo resist layer by impinging light onto it through the transparent stamp, the stamp can be progressively released from the substrate leaving well-defined structures with dimensions of smaller than 100 nm.

In Mingato Li, et al., Fabrication of circular optical structures with a 20 nm minimum size using nano-imprint lithography, Applied physics letters, volume 76, number 6 page 673-675, it is described that a parallel plate imprint machine can be used to manufacture Fresnel Zone plates.

WO 2009/078881 describes an imprint lithography stamp having a regular pattern of sub-features, the stamp being made of silicon or polymeric materials.

In an embodiment of a security device according to the invention, the array of lenses is an array of elongated cylindrical lenses, the image pattern being comprised of groups of parallel image lines. In this manner, the elongated lenses may interfere with the underlying image pattern when the lenses are placed at an angle with the underlying image lines to generate a Moiré pattern of shifting dark and light bands that shift across the image are when the security device is tilted relative to the viewer. This technology is described in EP 1 894 169 in the name of the applicant.

In view of the above, according to an aspect of the present invention, there is provided a security document comprising a portrait image of a holder and an image area, an image pattern in the image area of mutually spaced image elements at a mutual distance D, a layer of a plastics material overlying the image area and an array of lenses in the layer, characterized in that the lenses are spaced at a mutual distance L which differs from D, the array of lenses overlying only a part of the image area surface and are formed in the layer of plastics material within an image contour, which image contour forms indicia displaying information pertaining to the holder and/or an issuing authority of the document.

According to another aspect of the present invention, there is provided a method of forming a security document comprising the steps of: providing a layer comprising an image area, an image pattern in the image area and a layer of a plastics material overlying the image area,

providing a portrait image of a holder in or on said layer, forming an array of lenses in the layer of plastics material within an image contour, which image countour overlies only a part of the image pattern and forms indicia displaying information pertaining to the holder and/or an issuing authority of the document.

Brief description of the drawings

Embodiments of a security device and method of manufacturing will by way of non-limiting example, be explained in detail with reference to the accompanying drawings. In the drawings:

Fig. 1a and fig. 1b respectively show a top plan view and a cross-sectional view of a security card having an image pattern prior to forming of the lenses,

Fig 2a and fig. 2b respectively show a top plan view and a cross-sectional view of the security card of figs. 1a and 1b after forming of the lenses within a contour,