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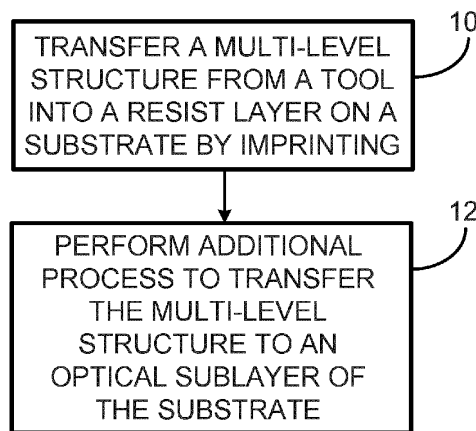


FIG. 1

(57) Abstract: The present disclosure describes optical structures and methods for manufacturing the optical structures. In some implementations, a method includes imprinting a multi-level structured surface of a tool into an imprint material that is disposed on a substrate so that the imprint material is imprinted with a multi-level structure corresponding to the multi-level structured surface of the tool. The substrate includes sublayers disposed on a support, and the sublayers are disposed one atop another and include an optical sublayer on the support, a first hard mask sublayer on the optical sublayer, a spacer sublayer on the first hard mask sublayer, and a second hard mask sublayer on the spacer sublayer. Etching operations subsequently are performed to cause the imprinted multi-level structure to be transferred into the optical sublayer of the substrate.

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