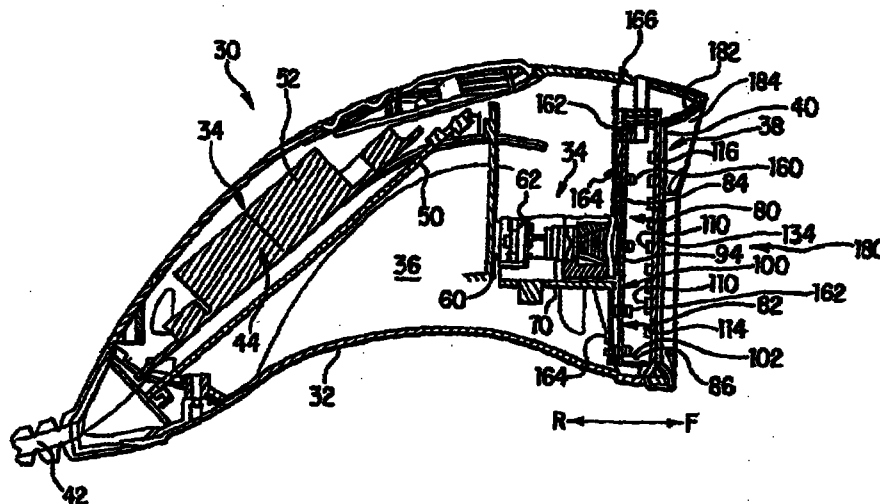




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(54) Title: DIFFUSE SURFACE ILLUMINATION APPARATUS AND METHODS**(57) Abstract**

An illumination apparatus (80) is provided for a hand-held imager (30) preferably to provide diffuse illumination for encoded symbology carried directly upon an article, component, etc., or upon a substrate carried by an article. The illumination apparatus (80) is disposed proximate the front of the hand-held imager (30) and is configured to permit light reflected from the target to pass through the illumination apparatus (80) and onto a CCD image receiver (60). An array of unlensed LEDs (114) is disposed to cast approximately or substantially lambertian illumination in a direction away from the target to be imaged and into the hand-held housing (32) to impinge upon surfaces of an illuminator (82) to receive the illumination and, in turn, project efficient and diffuse dark field illumination through the array of unlensed LEDs (114) and towards and onto a location where a target to be imaged would be disposed. The illumination apparatus (80) further includes a bright field illumination source (166) including a plurality of forward facing, towards the target, lensed LEDs (162).