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Garrison et al.

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(54) **SIMULATING SHORT DEPTH OF FIELD TO MAXIMIZE PRIVACY IN VIDEOTELEPHONY**

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H04N 5/262 (2006.01)

(52) **U.S. Cl.** **348/239**

(58) **Field of Classification Search** 348/586,
348/239

See application file for complete search history.

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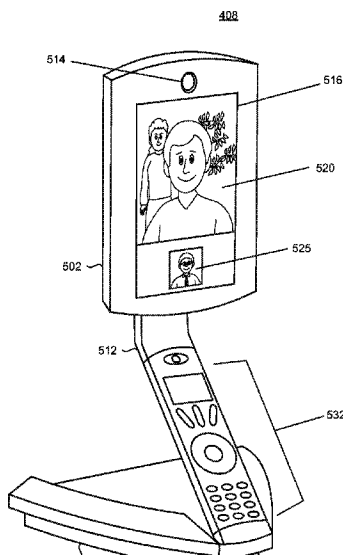
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(57) **ABSTRACT**

An arrangement for simulating a short depth of field in a captured videophone image is provided in which the background portion of the image is digitally segregated and blurred to render it indistinct. Thus, the displayed video of a user in the foreground is kept in focus while the background appears to be out of focus. Image tracking or fixed templates are used to segregate an area of interest that is kept in focus from the remaining captured video image. Image processing techniques are applied to groups of pixels in the remaining portion to blur that portion of the captured video image. Such techniques include the application of a filter that are alternatively selected from convolution filters in the spatial domain (e.g., mean, median, or Gaussian filters), or frequency filters in the frequency domain (e.g., low-pass or Gaussian filters). User-selectable control is optionally implemented for controlling the type of foreground/background segregation technique utilized (i.e., dynamic face-tracking or fixed template shape), degree of blurring applied to the background, and on/off control of the background blurring.

20 Claims, 9 Drawing Sheets



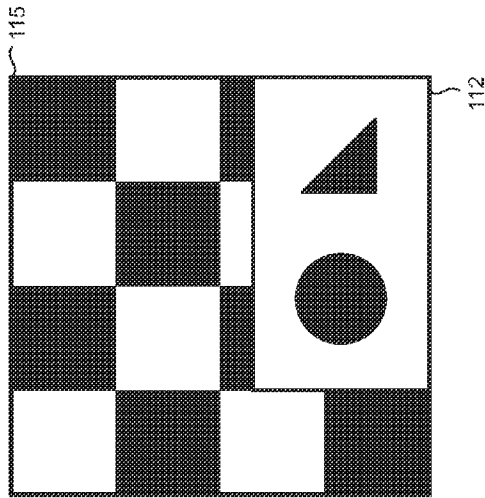


FIG. 2

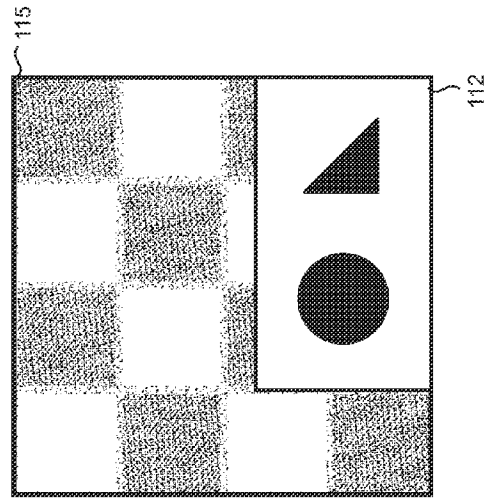


FIG. 3

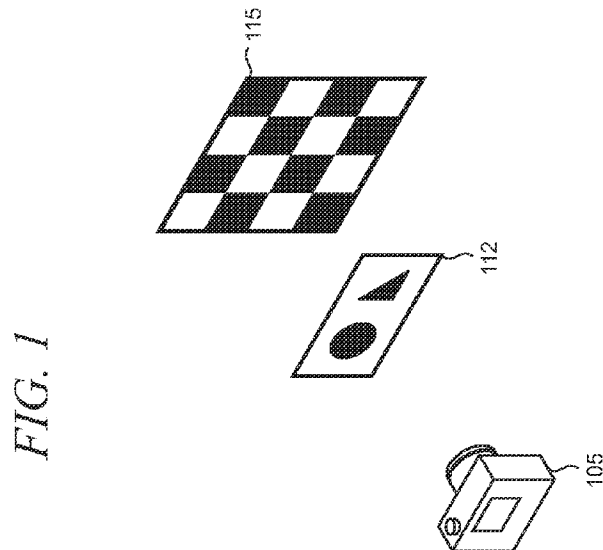


FIG. 1

FIG. 4

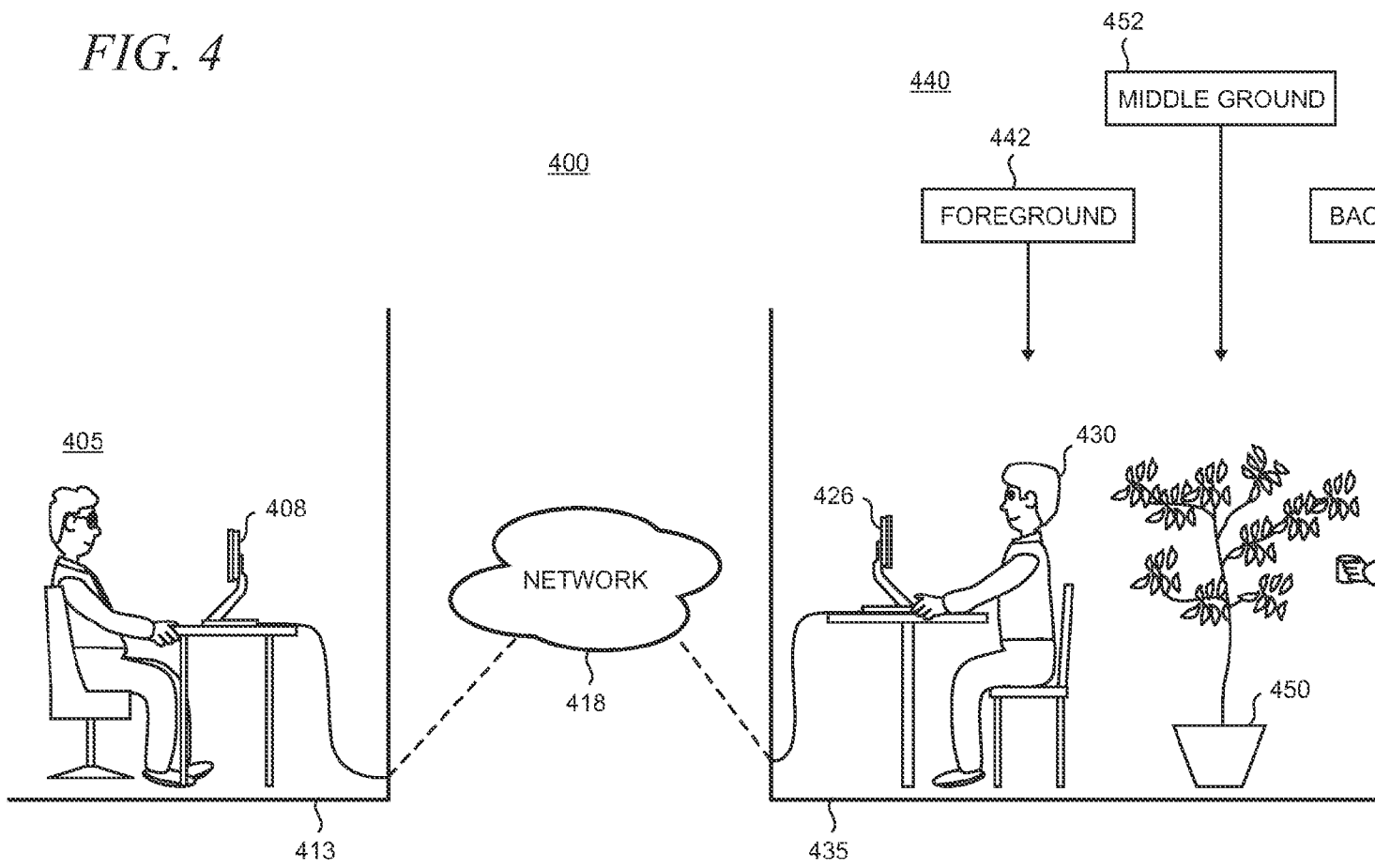


FIG. 5

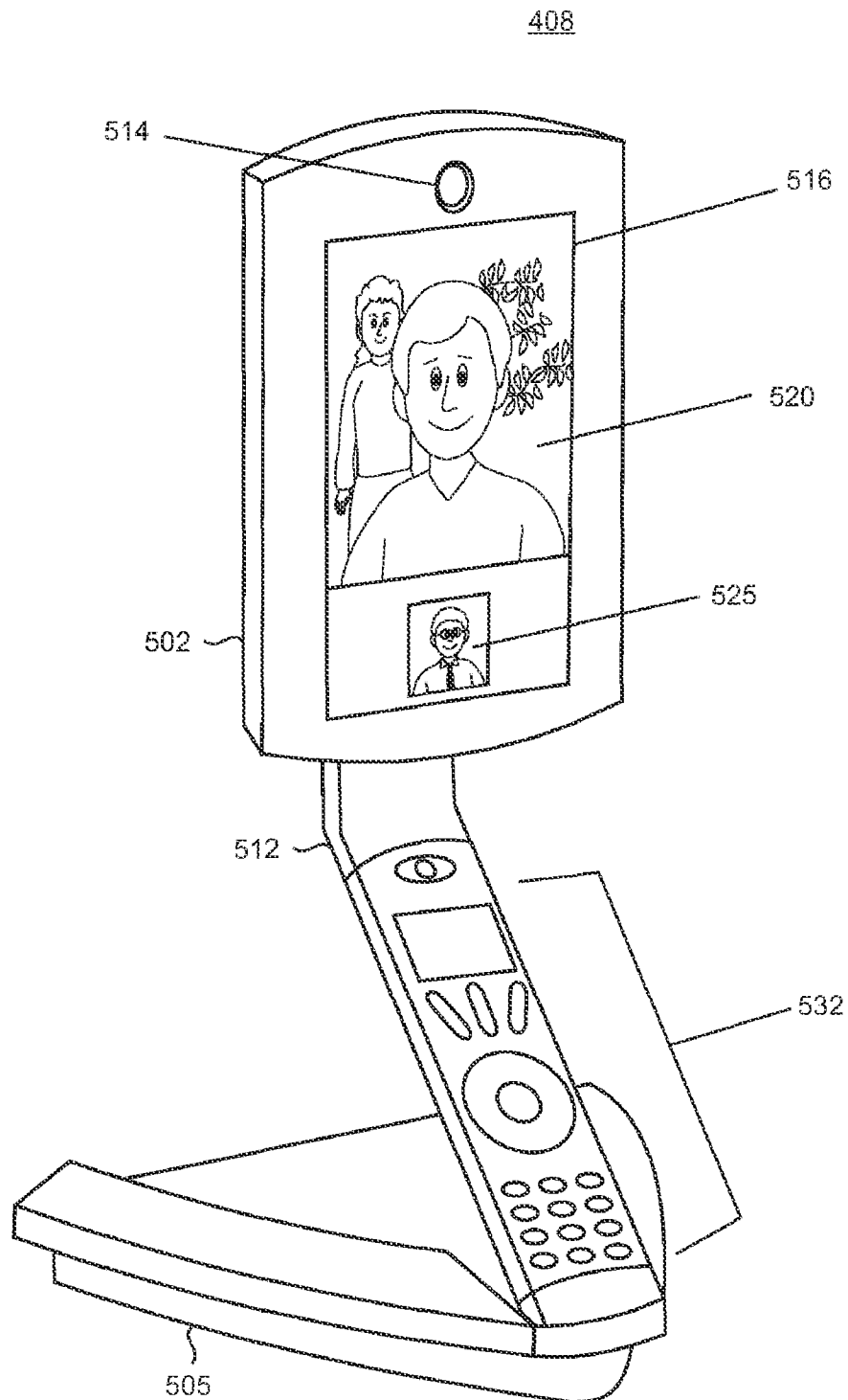


FIG. 7

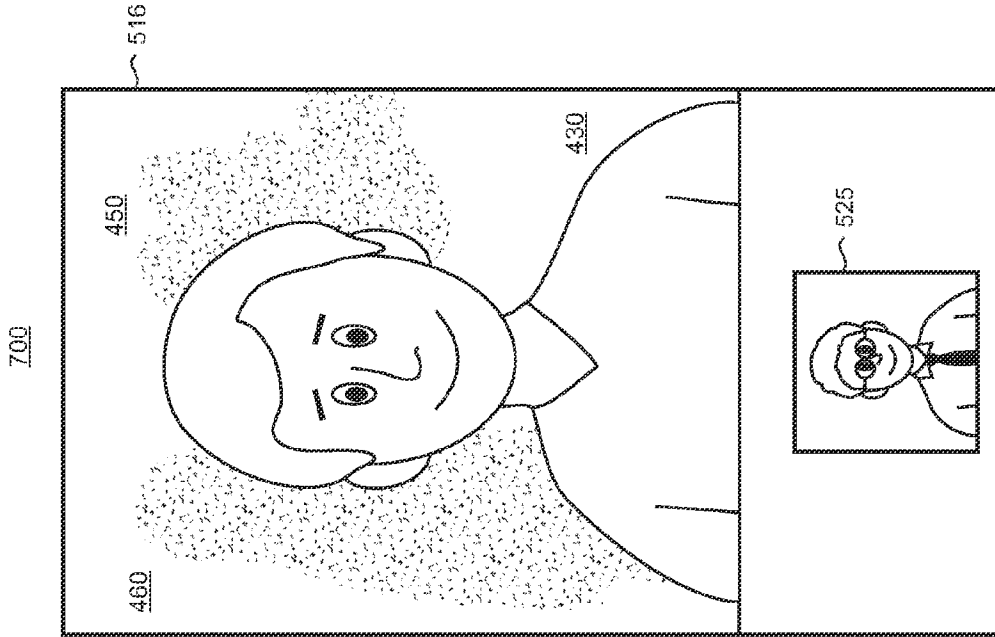
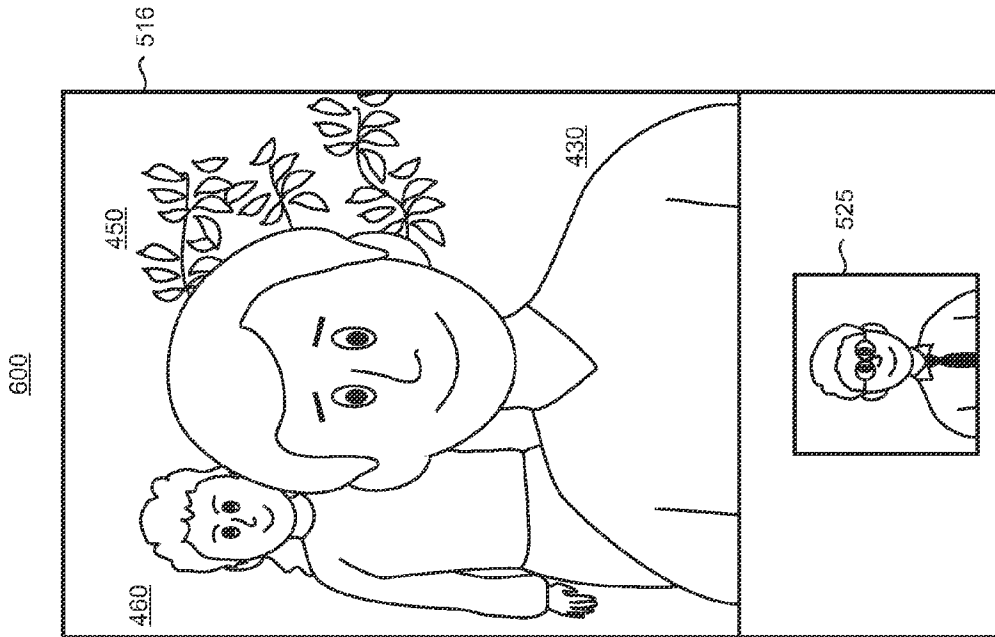


FIG. 6



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