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(12) **United States Patent**  
**Stein et al.**

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(54) **STEREO ASSIST WITH ROLLING SHUTTERS**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(51) **Int. Cl.**

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**G06K 9/00** (2006.01)

(57) **ABSTRACT**

An imaging system for a vehicle may include a first image capture device having a first field of view and configured to acquire a first image relative to a scene associated with the vehicle, the first image being acquired as a first series of image scan lines captured using a rolling shutter. The imaging system may also include a second image capture device having a second field of view different from the first field of view and that at least partially overlaps the first field of view, the second image capture device being configured to acquire a second image relative to the scene associated with the vehicle, the second image being acquired as a second series of image scan lines captured using a rolling shutter. As a result of overlap between the first field of view and the second field of view, a first overlap portion of the first image corresponds with a second overlap portion of the second image. The first image capture device has a first scan rate associated with acquisition of the first series of image scan lines that is different from a second scan rate associated with acquisition of the second series of image scan lines, such that the first image capture device acquires the first overlap portion of the first image over a period of time during which the second overlap portion of the second image is acquired.

(52) **U.S. Cl.**

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USPC ..... **348/148**; 348/153

(58) **Field of Classification Search**

USPC ..... 348/111–118, 142–160, 837

See application file for complete search history.

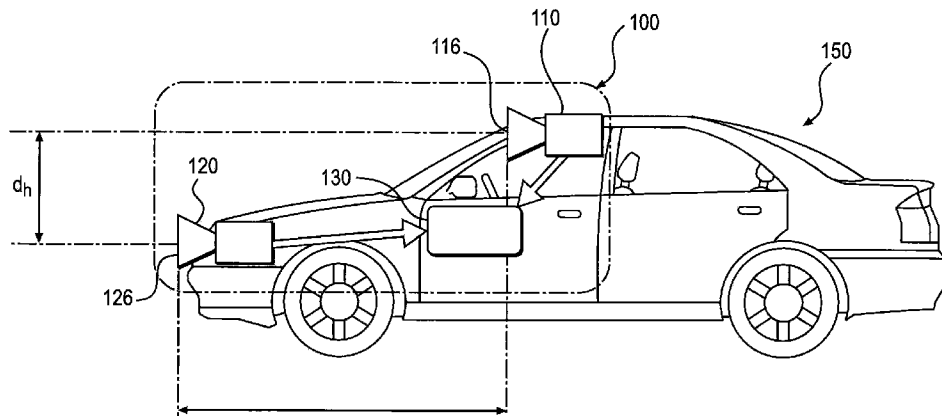
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**23 Claims, 18 Drawing Sheets**



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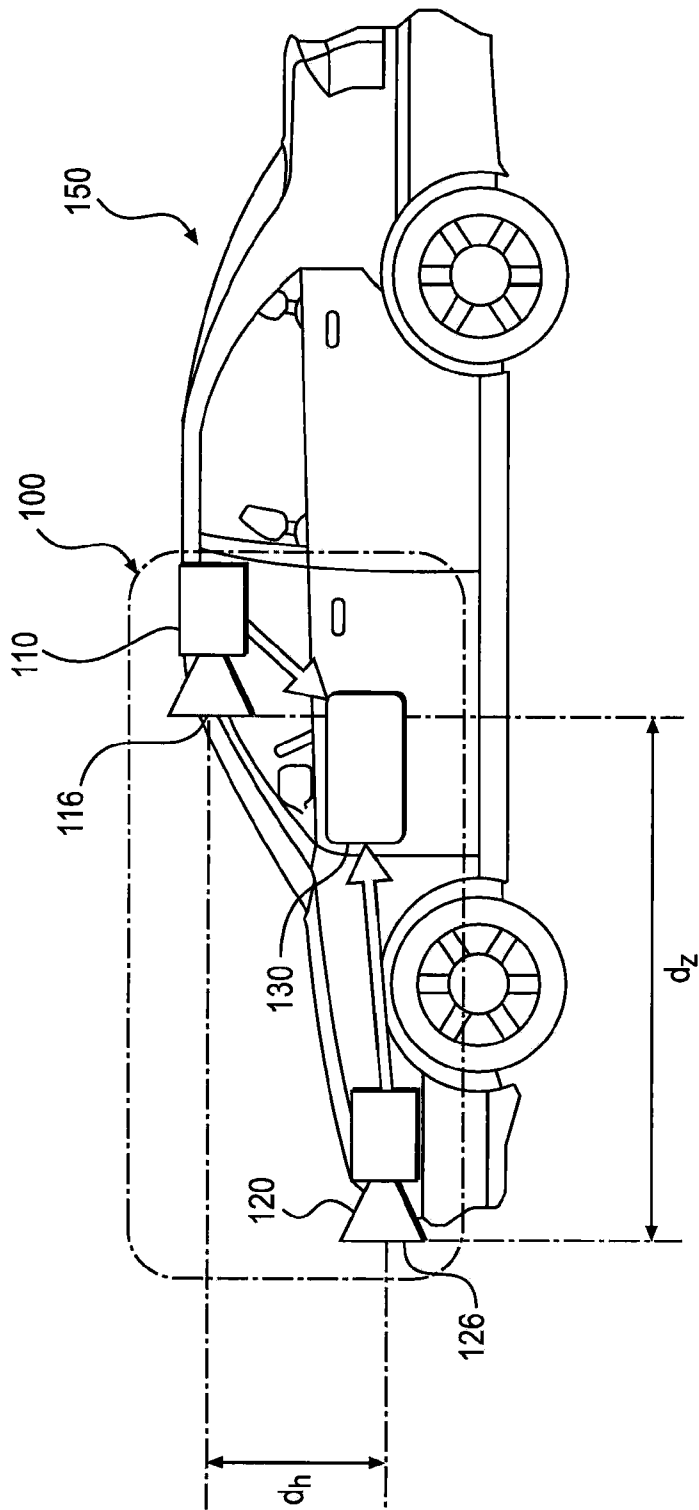
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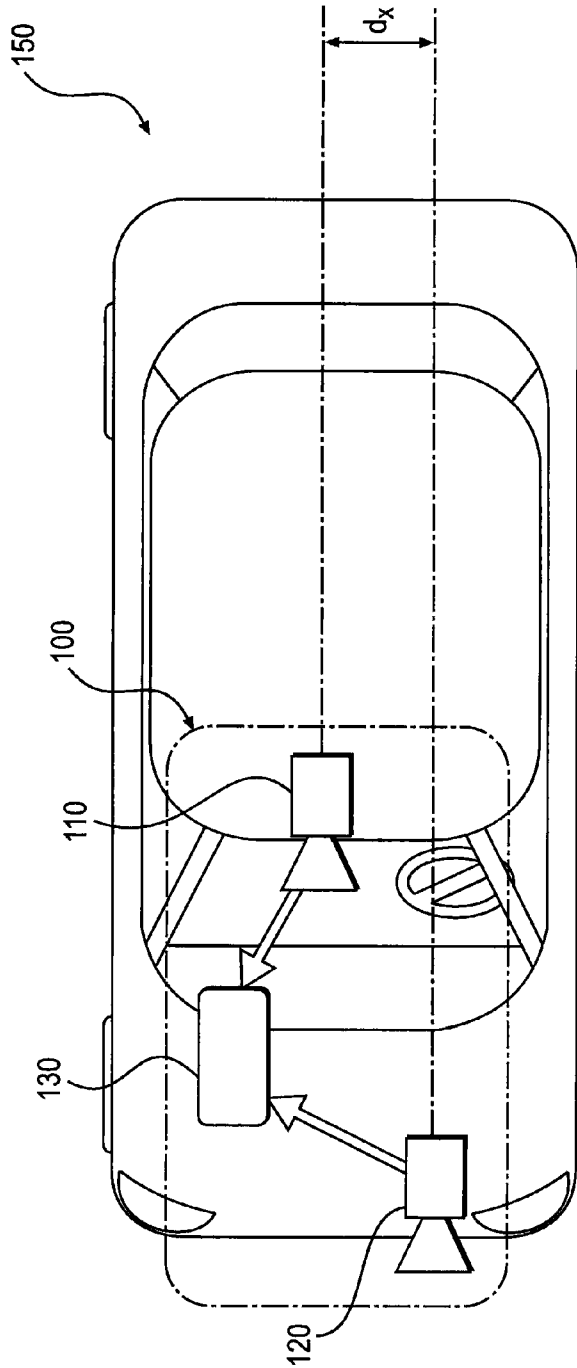
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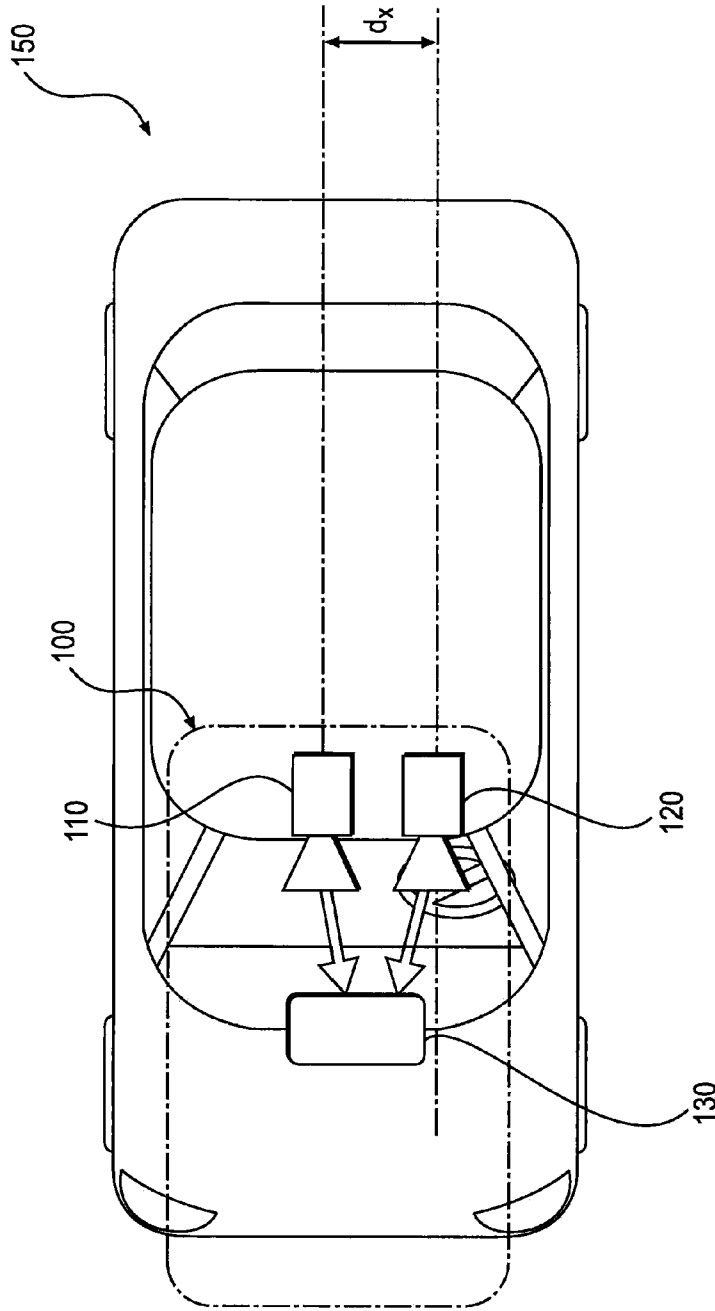
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**FIG. 1a**



**FIG. 1b**



**FIG. 1c**

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