display regions 1111, 1121, 1131, and 1141 may also be performed by handwriting.

[0056] Further, an ID of the original plate 1100 may also be displayed on the display regions 1111, 1121, 1131, and 1141. On the display regions 1111, 1121, 1131, and 1141, the display by the stencil, for example, is performed. However, the display on the display regions 1111, 1121, 1131, and 1141 may also be performed by handwriting. This similarly applies to the display with respect to the display region 201 and the display by the label 202. Hereinafter, the display regions 1111, 1121, 1131, and 1141 are assumed to be display regions by the stencil.

[0057] When the plates 1110, 1120, 1130, and 1140 are manufactured, it is possible to capture a captured image of a region including the display regions 1111, 1121, 1131, and 1141 by the stencil of desired plates, by using a first image capturing device held by an operator (worker), for example. Note that the first image capturing device held by the operator (worker) may be, for example, an information terminal device (a tablet terminal, a smartphone, or the like) provided with the first image capturing device. Further, the operator (worker) may operate an unmanned aircraft provided with the first image capturing device, to thereby capture a captured image of the region including the display regions 1111, 1121, 1131, and 1141 by the stencil of the desired plates by using the first image capturing device.

position derivation unit 1206 derives a circumscribed rectangle defined by positions of the components of the display items by the stencil recognized in step S1702, having the maximum value of the x-axis, the minimum value of the x-axis, the maximum value of the y-axis, and the minimum value of the y-axis. Subsequently, the position derivation unit 1206 derives, when the components of the display items by the stencil are seen so that top portions thereof are positioned upward, a position of a vertex, out of vertices of the derived circumscribed rectangle, positioned on the lower left side (the negative direction side of the x-axis and the positive direction side of the y-axis), for example, as the position of the point S in the first captured image. Note that when the display by the label is performed in the first captured image, the position derivation unit 1206 derives, when the components of the display items by the label are seen so that top portions thereof are positioned upward, a vertex positioned on the lower left side, for example, out of vertices of the label having the rectangular shape, as the position of the point S in the first captured image.

[0121] The position of the point Q in the first captured image is a position on a straight line passing through the position of the point S in the first captured image and parallel to the y-axis, and a position corresponding to a center of a horizontal angle of view when performing the image capturing (an

bottom surface of the plate at the lowermost position out of the plurality of stacked plates.

[0139] In Fig. 19, ∠BRD (= ϕ_B) and ∠PRO (= ϕ_P) are determined based on the positions of the point P, the point B, and the point D in the second captured image, and a center position of the optical system (lens) when it captured the second captured image (a center position of the optical system that is used for defining a focal length), for example. By a straight line connecting the point P in the second captured image and the center position of the optical system (lens) when it captured the second captured image, a direction in which a line segment RP extends is specified. By a straight line connecting the point B in the second captured image and the center position of the optical system (lens) when it captured the second captured image, a direction in which a line segment RB extends is specified. By a straight line connecting the point D in the second captured image and the center position of the optical system (lens) when it captured the second captured image, a direction in which a line segment RD extends is specified. The ∠BRD (= ϕ_B) is determined based on the direction in which the line segment RB extends and the direction in which the line segment RD extends. The ∠PRO (= ϕ_P) is determined based on the direction in which the line segment RP extends and the y-axis direction.

[0140] Further, for example, the position derivation unit 1206 derives, based on measured values of a

captured by the second image capturing device that is different from the first image capturing device that captured the first captured image. The second captured image includes the first captured image and the plate (to be the target of tracking). The tracking device 1200 derives, based on the acquired second captured image and the position of the second image capturing device, the position in the height direction (z-axis direction) of the display region 201 by the stencil. Subsequently, the tracking device 1200 derives, based on the position in the height direction (z-axis direction) of the display region 201 by the stencil, the first captured image, and the position of the first image capturing device that captured the first captured image, the three-dimensional position of the display region 201 by the stencil, as the three-dimensional position of the plate. Therefore, even in a case where the position in the height direction of the plate cannot be derived even if the first captured image and the sensor provided to the first image capturing device are used, it is possible to perform tracking of the plate.

[0155] Further, in the present embodiment, it is set that the display by the stencil and the display by the label are the pieces of information capable of being identified by a person. Therefore, it becomes easy to perform management of actual articles by an operator (worker). Consequently, the convenience in the management of actual articles is improved.

[0156] Further, in the present embodiment, it is set

same as those illustrated in Fig. 18.

[0160] In Fig. 20, a length of a line segment PT is set to h_p. Further, a length of a line segment PF is set to h_1, $\angle FPT$ is set to Θ_1 (rad), a length of a line segment PE is set to h_2, $\angle EPT$ is set to Θ_2 (rad), and $\angle EPF$ is set to Θ (rad) ($\Theta = \Theta_1 + \Theta_2$). Further, a length of a line segment FT is set to w_{01}, and a length of a line segment ET is set to w_{02}.

[0161] Accordingly, an x-coordinate x_e of the point E has a value as a result of adding a length l_p of a line segment OT to an x-coordinate x_p of the point P ($x_e = x_p + l_p$). A y-coordinate y_e of the point E has a value as a result of subtracting the length w_{02} of the line segment ET from a y-coordinate y_p of the point P ($y_e = y_p - w_{02}$). Therefore, if the length l_p of the line segment OT and the length w_{02} of the line segment ET are derived, the x-y coordinates (x_e, y_e) at the position of the point E (the origin of the position in article of the stencil) are derived.

[0162] The length l_p of the line segment OT is expressed by the following formula (5).

$$l_p = \sqrt{(h_p^2 - H^2)} = \sqrt{(h_1^2 \cos^2\Theta_1 - H^2)} = \sqrt{(h_2^2 \cos^2\Theta_2 - H^2)} \quad \cdots (5)$$

The length w_{02} of the line segment ET is expressed by the following formula (6).

$$w_{02} = h_2 \sin\Theta_2 \quad \cdots (6)$$

Therefore, if, for example, the length h_2 of the line segment PE and the $\angle EPT$ ($= \Theta_2$) are derived, the length l_p of the line segment OT and the length w_{02} of

system, for example) provided to the first image capturing device. Other than the above, it is also possible to derive the length h_2 of the line segment PE based on the length H of the line segment OP and ∠OPE.

[0164] The x-coordinate x_e and the y-coordinate y_e of the point E are derived as described above. Further, the position derivation unit 1206 reads x-y coordinates (Ls10, Ws10) at a position corresponding to the point S, from the information stored in the section of position in article in the management table 1300 as the information of the label of the plate specified in step S1705. Subsequently, the position derivation unit 1206 derives a value as a result of adding Ls10 to the x-coordinate x_e of the point E, as an x-coordinate x_s of the point S ($x_s = x_e + Ls10$). Further, the position derivation unit 1206 derives a value as a result of adding Ws10 to the y-coordinate x_y of the point E, as a y-coordinate y_s of the point S ($y_s = y_e + Ws10$).

[0165] <<Second modified example>>

As in the present embodiment, it is preferable that the customer name 302, the standard 303, the size 304, the ID 305, the customer code 306, the order number 307, the standard 311, the ID 312, the size 313, the delivery date 314, and the customer code 315 are set to the pieces of information capable of being identified by a person, since it becomes easy to perform management of actual articles by an operator (worker). However, at least one of the customer name 302, the standard 303, the size 304, the ID 305, the