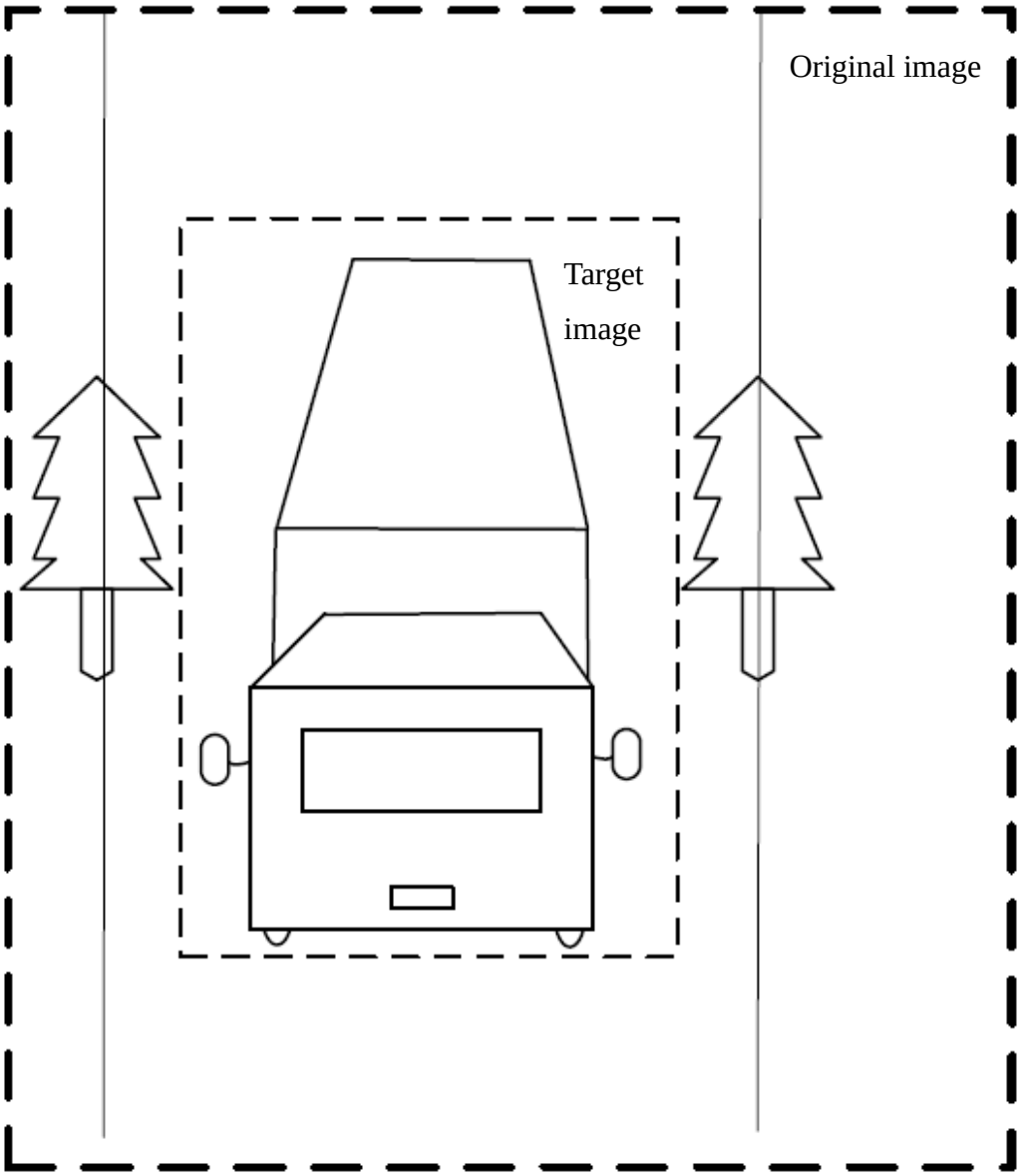

FIG. 1

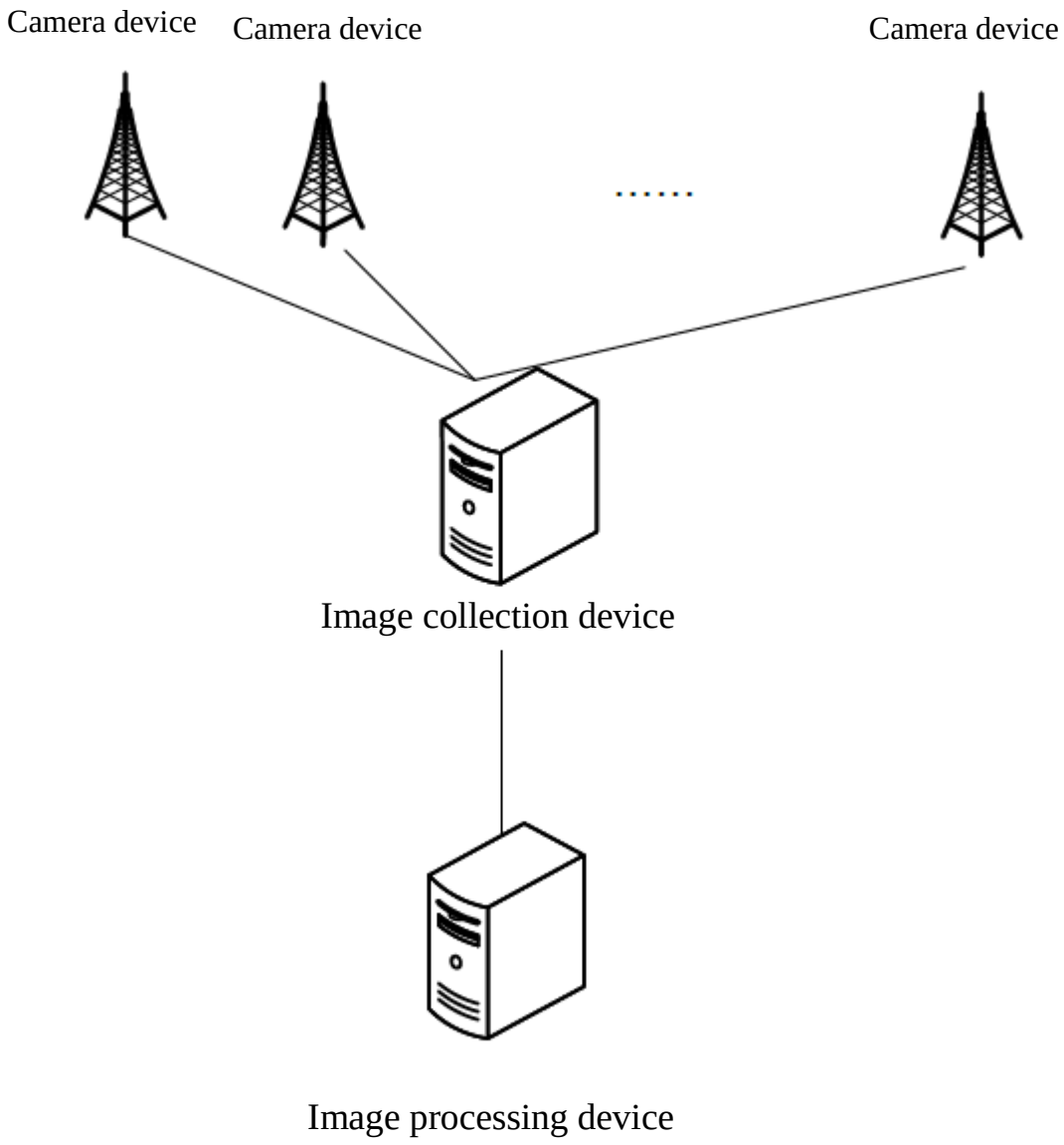
Camera device
Camera device
Camera device
.....
Image collection device
Image processing device

FIG. 2

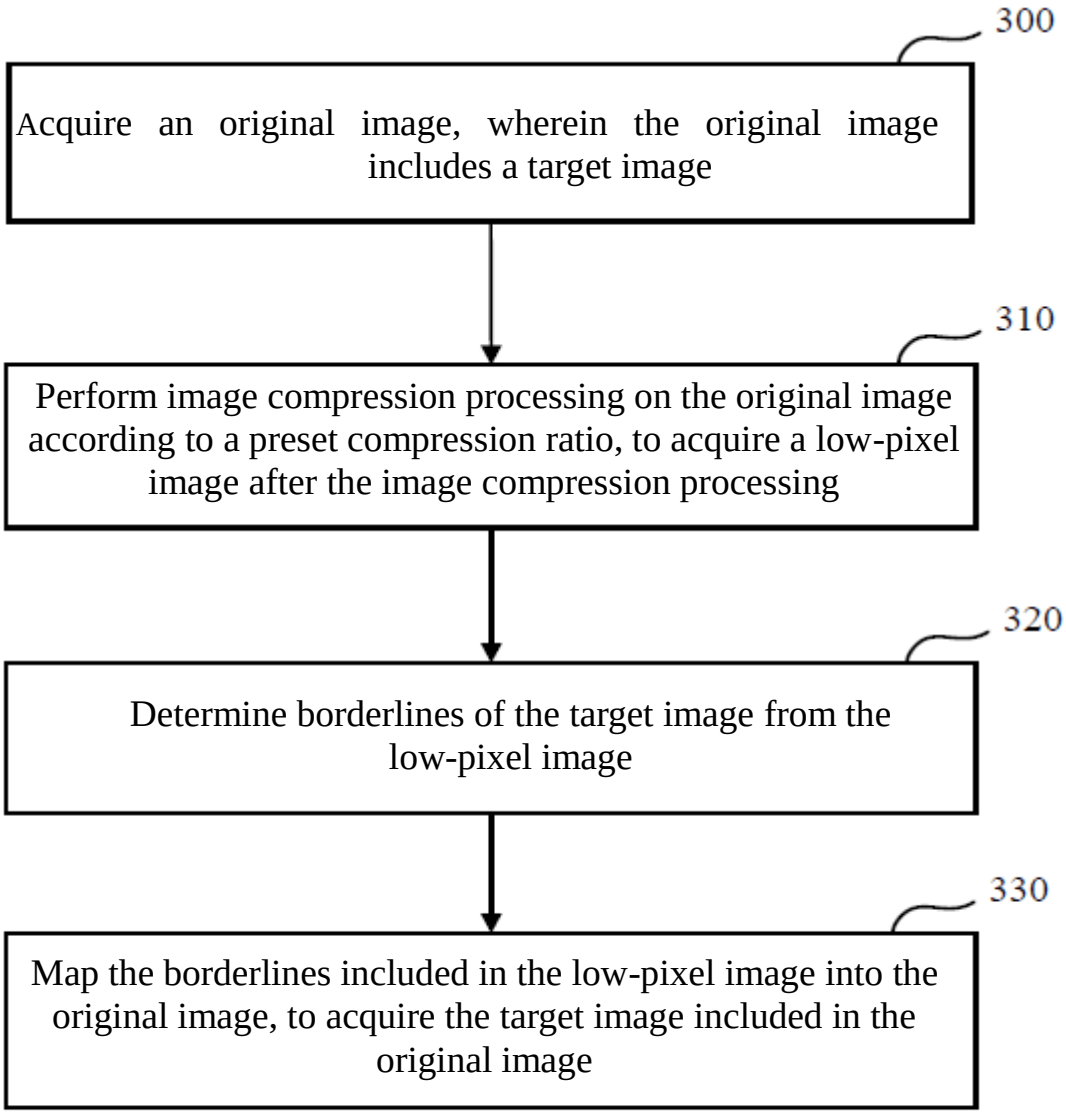
300
Acquire an original image, wherein the original image includes a target image
310
Perform image compression processing on the original image according to a preset compression ratio, to acquire a low-pixel image after the image compression processing
320
Determine borderlines of the target image from the low-pixel image
330
Map the borderlines included in the low-pixel image into the original image, to acquire the target image included in the original image

FIG. 3

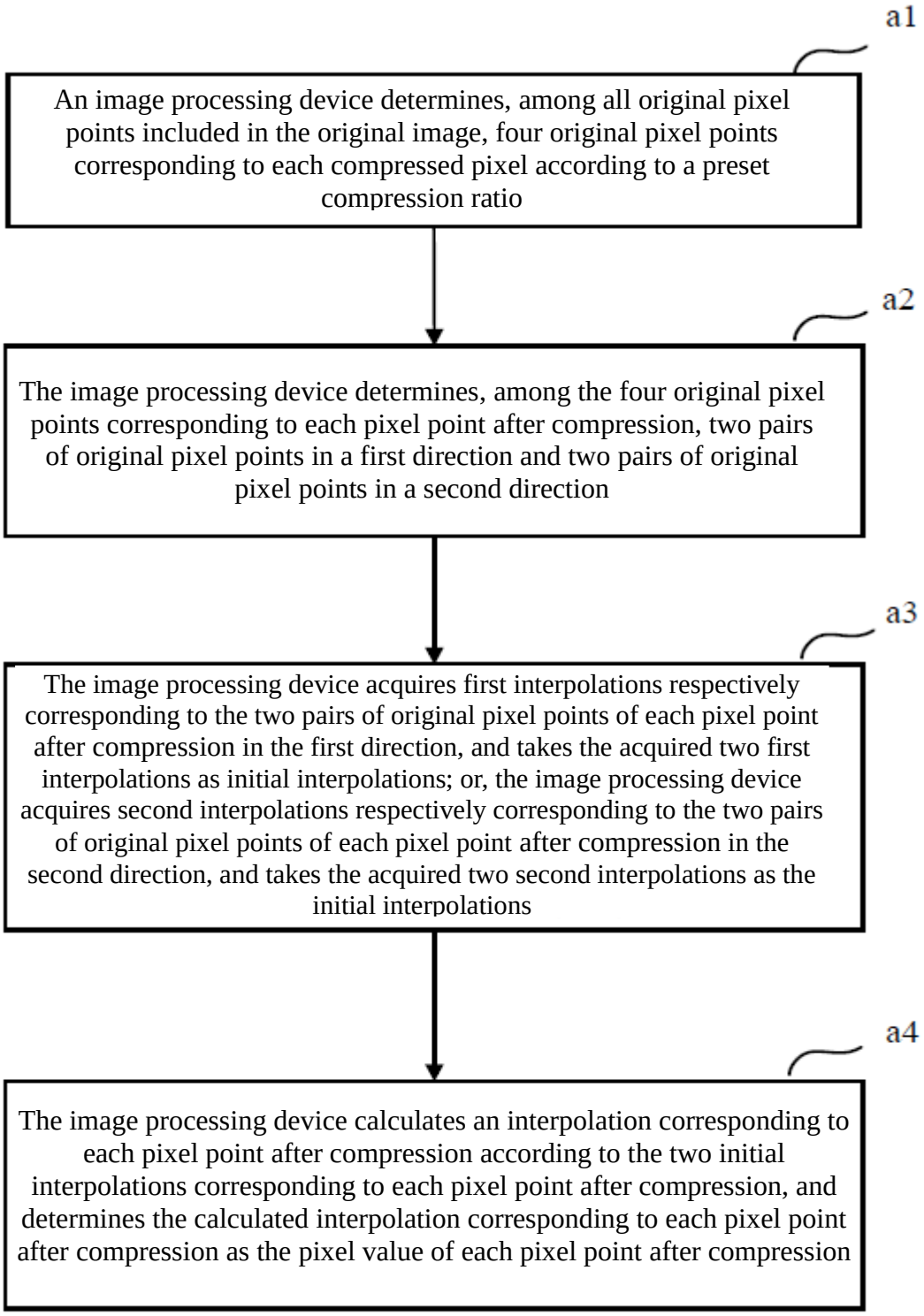
a1
An image processing device determines, among all original pixel points included in the original image, four original pixel points corresponding to each compressed pixel according to a preset compression ratio
a2
The image processing device determines, among the four original pixel points corresponding to each pixel point after compression, two pairs of original pixel points in a first direction and two pairs of original pixel points in a second direction
a3
The image processing device acquires first interpolations respectively corresponding to the two pairs of original pixel points of each pixel point after compression in the first direction, and takes the acquired two first interpolations as initial interpolations; or, the image processing device acquires second interpolations respectively corresponding to the two pairs of original pixel points of each pixel point after compression in the second direction, and takes the acquired two second interpolations as the initial interpolations
a4
The image processing device calculates an interpolation corresponding to each pixel point after compression according to the two initial interpolations corresponding to each pixel point after compression, and determines the calculated interpolation corresponding to each pixel point after compression as the pixel value of each pixel point after compression

FIG. 4

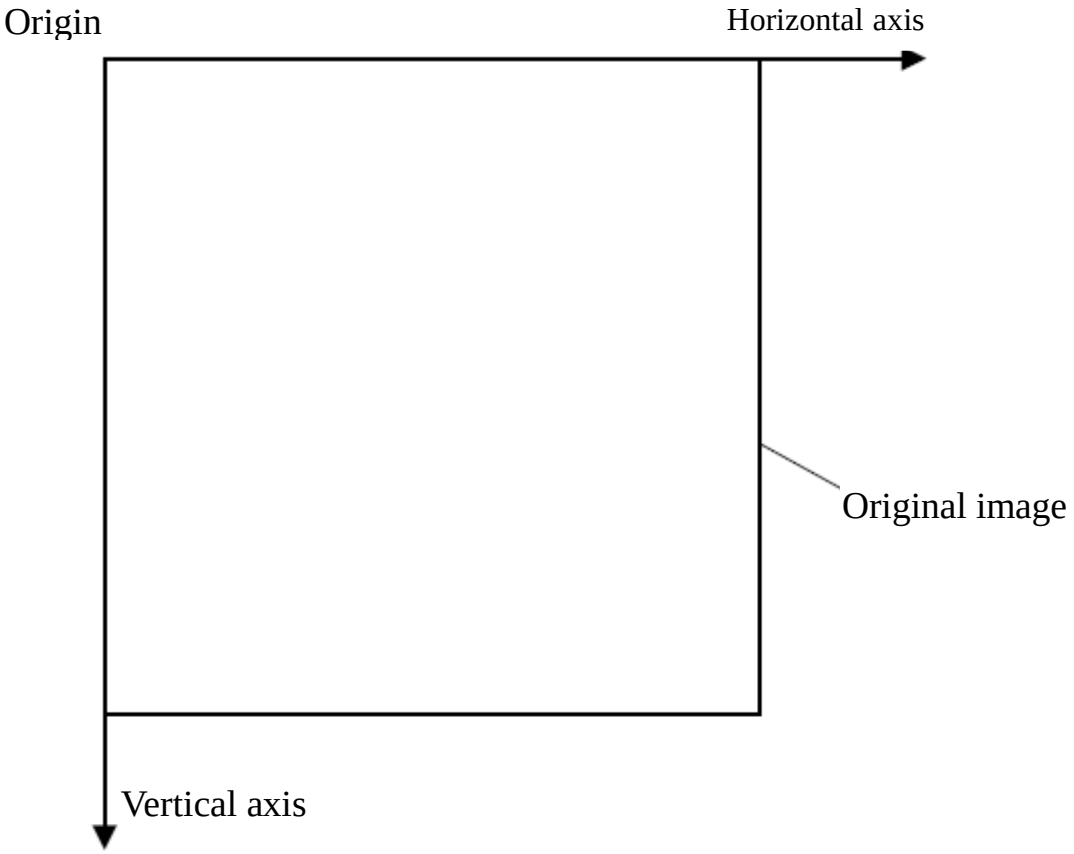

FIG. 5a

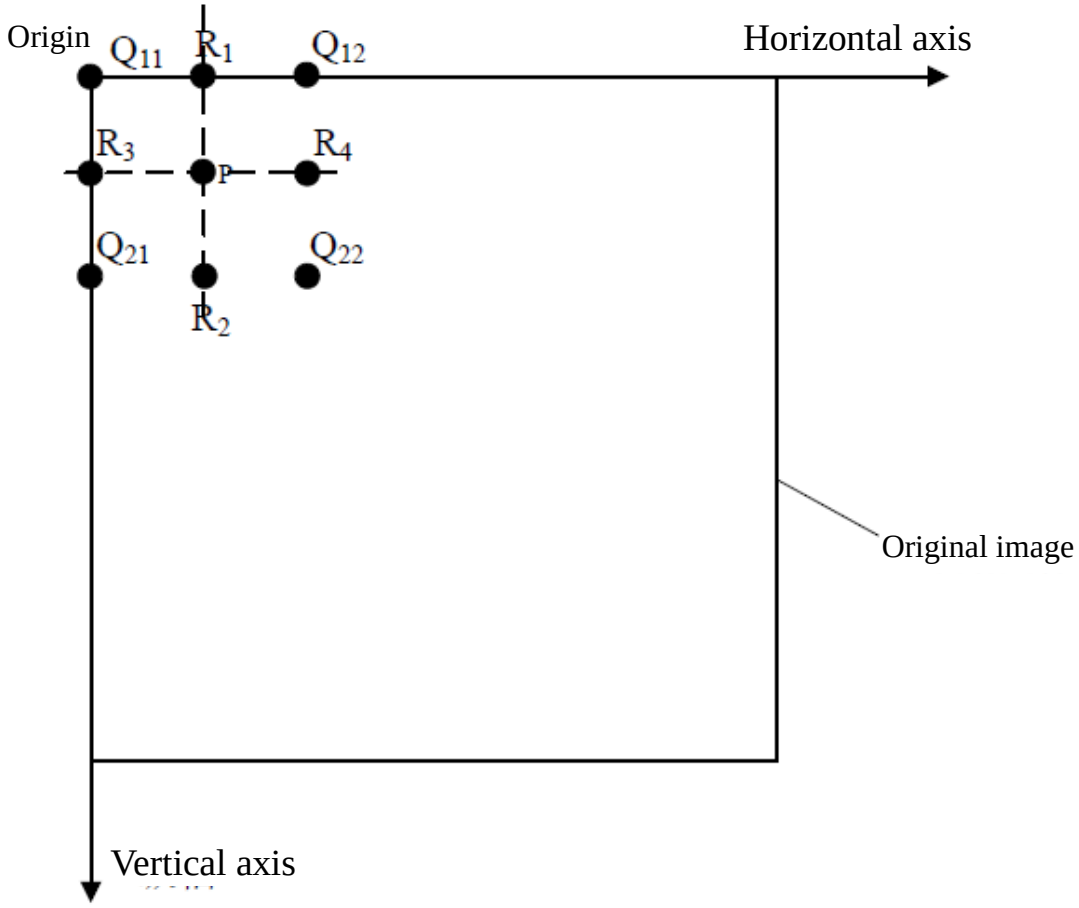
Origin
Q11
R1
Q12
Horizontal axis
R3
P
R4
Q21
Q22
R2
Original image
Vertical axis

FIG. 5b

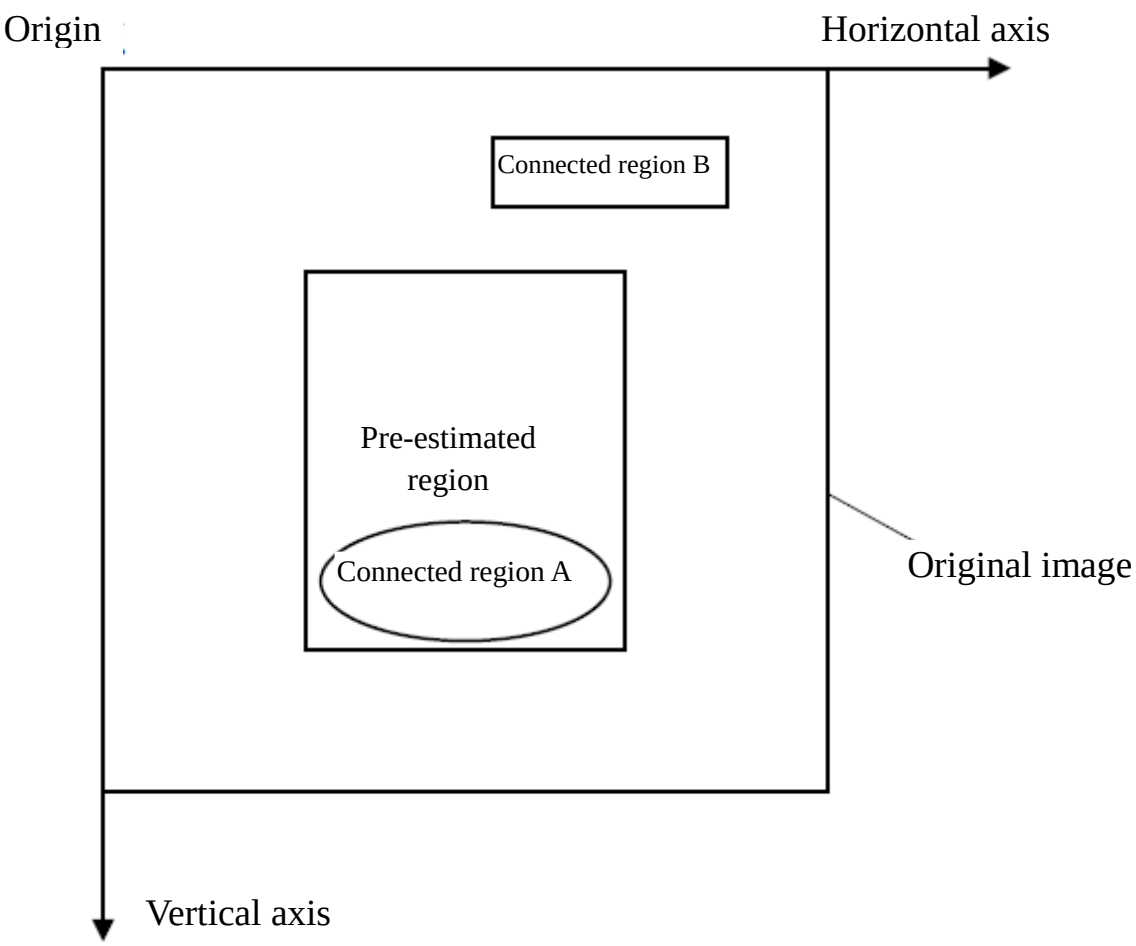
Origin
Horizontal axis
Connected region B
Pre-estimated region
Connected region A
Original image
Vertical axis

FIG. 6

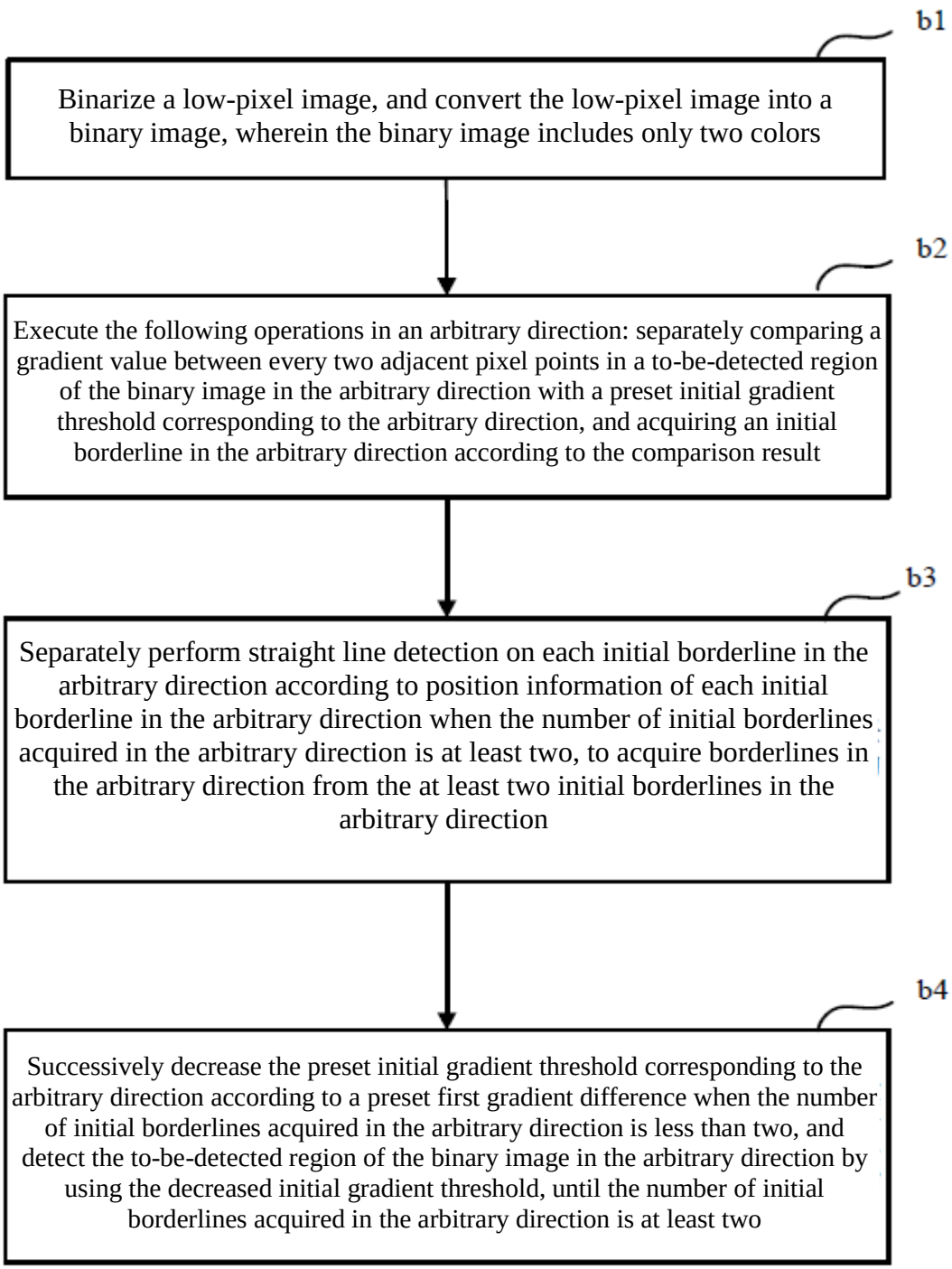
b1
Binarize a low-pixel image, and convert the low-pixel image into a binary image, wherein the binary image includes only two colors
b2
Execute the following operations in an arbitrary direction: separately comparing a gradient value between every two adjacent pixel points in a to-be-detected region of the binary image in the arbitrary direction with a preset initial gradient threshold corresponding to the arbitrary direction, and acquiring an initial borderline in the arbitrary direction according to the comparison result
b3
Separately perform straight line detection on each initial borderline in the arbitrary direction according to position information of each initial borderline in the arbitrary direction when the number of initial borderlines acquired in the arbitrary direction is at least two, to acquire borderlines in the arbitrary direction from the at least two initial borderlines in the arbitrary direction
b4
Successively decrease the preset initial gradient threshold corresponding to the arbitrary direction according to a preset first gradient difference when the number of initial borderlines acquired in the arbitrary direction is less than two, and detect the to-be-detected region of the binary image in the arbitrary direction by using the decreased initial gradient threshold, until the number of initial borderlines acquired in the arbitrary direction is at least two

FIG. 7

i^{th} row	Z_{i1}	Z_{i2}	Z_{i3}
$(i+1)^{th}$ row	$Z_{(i+1)1}$	$Z_{(i+1)2}$	$Z_{(i+1)3}$

FIG. 8

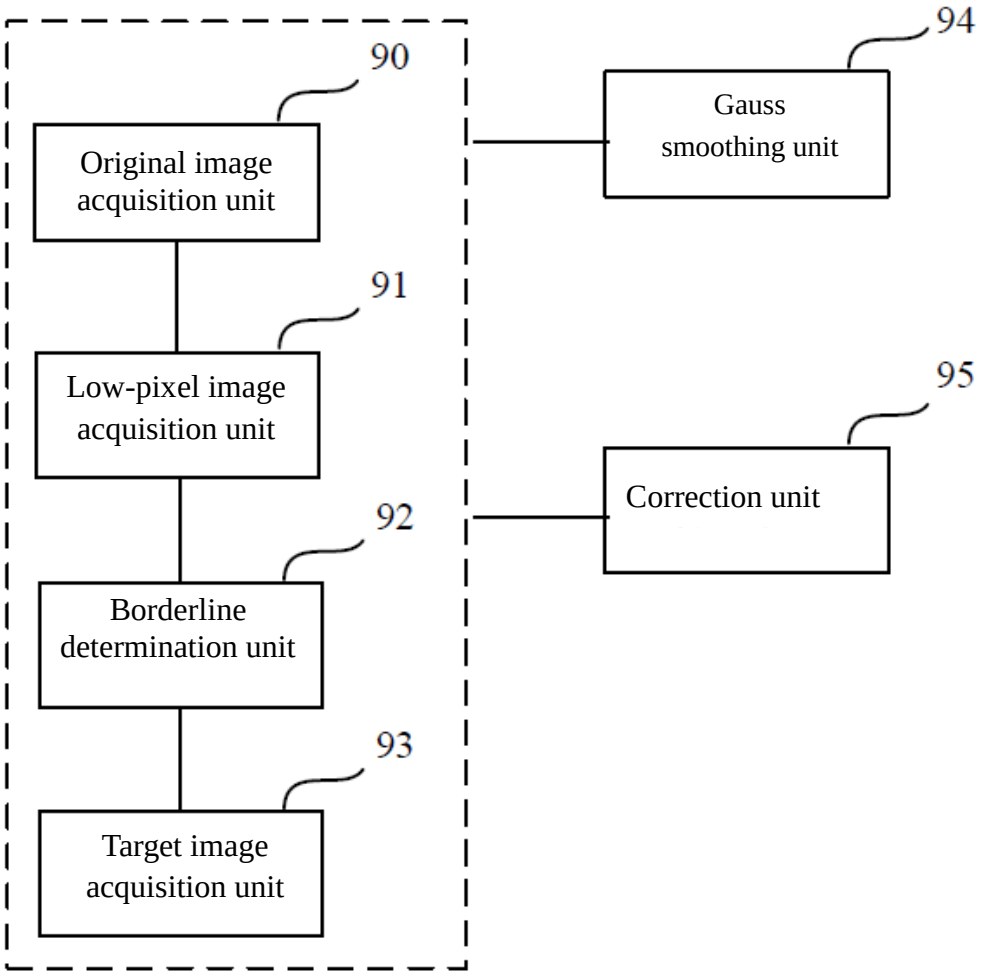

FIG. 9