[0059] In FIG. 14, δ represents a scanning start angle (the angle formed by the optical axis of parallel light from the aperture 15a and the optical path of scanning light corresponding to Ps in FIG. 1 that actually strikes the recurrence reflection sheet 7), and the scanning start angle δ is expressed by the sum of an angle α formed by a scanning reference line (the line connecting both the optical units 1a and 1b) and the optical axis of parallel light from the aperture 15a (i.e., the angle of tilting the optical unit 1a, 1b from the scanning reference line toward a non-scanning region side (non-detection region side) and an angle β formed by the scanning reference line and the optical path of the scanning light corresponding to Ps. Besides, D represents the distance from the aperture mirror 15 to the polygon mirror 14, w is a width on the aperture mirror 15 from the optical path of the scanning light to an end on the scanning region side (detection region side), and W is a width on the aperture mirror 15 from the optical path of the scanning light to an end on the non-scanning region side (non-detection region side).

[0060] Here, when the beam width of the scanning light is denoted by d, if the following condition (1) is further satisfied, it is possible to receive the reflected light of the scanning light from the recurrence reflection sheet 7 by the light receiving elements 13 without being cut-off by the optical units 1a and 1b. Hence, the positions of the respective optical members are designed to satisfy this condition (1).

$$d/2+w<D\tan\delta \quad (1)$$

[0061] By adopting such design specifications, it is possible to eliminate unnecessary space for mounting, scan light within the scanning range and receive the reflected light, and receive only the recurrence reflected light even at the start of scanning. Further, an example of specific numerical values is, for instance, α=6 degrees, β=3 degrees, δ=9 degrees, w+W=7 mm, d=3 mm, and D=45 mm. In this case, the aperture mirror 15 may have an asymmetrical shape ($w \neq W$) or a symmetrical shape (w=W).

[0062] By the way, as described above, in order to secure the minimum quantity of light in scanning the diagonal section (the direction of 60 degrees from the scanning reference line) within the scanning region, when the polygon mirror 14 with four faces is used, since the angle of incidence is 33 degrees (the scanning angle is 66 degrees) for a scanning start angle δ of 6 degrees, it is possible to secure an effective light receiving area of cos 33° of the face width of the polygon mirror 14. Accordingly, when the face width of the polygon mirror 14 is 11 mm, the width (w+W) of the aperture mirror 15 is given by $11\times\cos 33°=9.23$ mm.

[0063] Like the above-described aperture mirror 15, when the surface of the polygon mirror 14 rusts, the reflectance characteristic is impaired. In the present invention, therefore, as shown in FIG. 15, the surface of the polygon mirror 14 is covered with a protective film 14a made of a dielectric such as SiO and SiO_2 for protecting the mirror-finished surface from moisture and dust which cause rust.

[0064] FIG. 16 is a graph showing the relationship between the film thickness of the protective film 14a and the reflectance when light having a wavelength of 780 nm enters the polygon mirror 14 having the protective film 14a made of SiO_2. In FIG. 16, the single-dashed line, the short dashes line and the double-dashed line indicate the characteristics when the angles of incidence are 33 degrees, 66 degrees and 90 degrees, respectively. Considering the offset angle, the angle of incidence on the polygon mirror 14 is not smaller than 45 degrees. By setting the film thickness of the protective film 14a within a range between 2500 Å that gives the maximum reflectance when the angle of incidence is 66 degrees and 2800 Å that gives the maximum reflectance when the angle of incidence is 33 degrees, it is possible to set the maximum reflectance for the angle of incidence between 33 degrees and 66 degrees.

[0065] Next, the following description will explain an operation of calculating the position and size of the indicator S by the optical scanning-type touch panel of the present invention. FIG. 17 is a schematic diagram showing a state of implementation of the optical scanning-type touch panel. In FIG. 17, however, illustration of the constituent members other than the optical units 1a, 1b, recurrence reflection sheet 7 and display screen 10 is omitted. Incidentally, FIG. 17 shows an example in which a finger is used as the indicator S.

[0066] The MPU 5 controls the polygon controller 4 to rotate the respective polygon mirrors 14 in the optical units 1a and 1b, thereby angularly scanning the laser light from the respective light emitting elements 11. As a result, the reflected light from the recurrence reflection sheet 7 enters the respective light receiving elements 13. The quantity of the received light that entered the respective light receiving elements 13 as mentioned above is obtained as the light receiving signals which are the outputs of light receiving signal detectors 3a and 3b.

[0067] Further, in FIG. 17, $\theta 00$ and $\phi 00$ represent the angles from the scanning reference line to the respective light receiving elements, $\theta 0$ and $\phi 0$ represent the angles from the scanning reference line to the ends of the recurrence reflection sheet 7, $\theta 1$ and $\phi 1$ represent the angles from the scanning reference line to one end of the indicator S on the reference line side, and $\theta 2$ and $\phi 2$ represent the angles from the scanning reference line to another end of the indicator S on the opposite side to the reference side, respectively. Here, $\theta 00$ or $\phi 00$ correspond to the above-mentioned angle α; $\theta 0$ or $\phi 0$ correspond to the above-mentioned angle β; and $(\theta 00+\theta 0)$ or $(\phi 00+\phi 0)$ correspond to the above-mentioned scanning start angle δ.

[0068] When the indicator S is present on the optical path of the scanning light on the display screen 10, the light projected from the optical units 1a and 1b and then reflected by the indicator S does not enter the respective light receiving elements 13. Therefore, in a state as shown in FIG. 17, the reflected light does not enter the light receiving element 13 in the optical unit 1a when the scanning angle is in a range between 0° and $\theta 0$, the reflected light enters that light receiving element 13 when the scanning angle is in a range between $\theta 0$ and $\theta 1$, and the reflected light does not enter that light receiving element 13 when the scanning angle is in a range between $\theta 1$ and $\theta 2$. Similarly, the reflected light does not enter the light receiving element 13 in the optical unit 1b when the scanning angle is in a range between 0° and $\phi 0$, the reflected light enters that light receiving element 13 when the scanning angle is in a range between $\phi 0$ and $\phi 1$, and the reflected light does not enter that light receiving element 13 when the scanning angle is in a range between $\phi 1$ and $\phi 2$,