contain all the press plate **21**, screw **22** and ring **23** inside the polygon mirror **15**, thereby saving space.

[**0029**] FIGS. **7**(*a*) and **7**(*b*) are schematic diagrams showing an example of a side face of the polygon mirror **15** serving as a light scanning face, in which both ends of the upper portion and/or the lower portion of the side face are chamfered. Therefore, the working efficiency for a mirror finish of the polygon mirror **15** is improved. Moreover, since cutting of the air during rotation decreases, noise is reduced.

[**0030**] Furthermore, this polygon mirror **15** is made of nickel or stainless steel. Although a typical material for the polygon mirror **15** is aluminum, if nickel or stainless steel whose specific gravity is about three times greater than that of aluminum is used, the rotation of the motor **18** is stabilized.

[**0031**] In addition, an aluminum film and an SiO_2 film are layered in this order on a surface of the nickel or stainless steel. In an optical position detecting device such as an optical scanning-type touch panel, since the surface reflectance of the polygon mirror is reflected in the SiN ratio, the surface reflectance is an important element, and thus the aluminum film is provided on the surface to improve the surface reflectance. Besides, the SiO_2 film performs the function of preventing oxidation of the aluminum film. Furthermore, it is preferred to set the thickness of these aluminum film and SiO_2 film according to the wavelength of the laser light so that the reflected light from the surface of the SiO_2 film and the reflected light from the interface between the SiO_2 film and aluminum film interfere with each other for strengthening.

[**0032**] **FIG. 8** is an illustration showing a state of mounting of the motor **18** on the optical unit main body **19**. As shown in **FIG. 8, a** ring-shaped groove **18***b* is formed in a peripheral section of the motor shaft **18***a*. The width and depth of the groove **18***b* are not less than 0.5 mm and 0.2 mm, respectively. With the formation of such a groove **18***b*, it is possible to prevent the vicinity of the motor shaft **18***a* from having a convex shape. If the vicinity of the motor shaft **18***a* has a convex shape, the polygon mirror **15** tilts with respect to the motor **18**, and therefore the light can not be scanned at a fixed position. Hence, with prior arts, a large number of adjustment steps are required to solve a tilt of the polygon mirror caused by the convex shape. Whereas in the present invention, since the groove **18***b* is provided to prevent the convex shape, such adjustment steps are not required, thereby significantly shortening the mounting time. Besides, by setting the size of the groove **18***b* at the above-mentioned values, such a groove **18***b* can be readily formed.

[**0033**] Collimation Lens

[**0034**] **FIG. 9** is an illustration showing a fixed state of the collimation lens **12**. The collimation lens **12** is fixed in a cylindrical lens holder **31** which is inserted into the hollow section of the optical unit main body **19**. The peripheral surface of the lens holder **31** has a groove **31** running in a direction perpendicular to the optical axis, and this groove **31***a* is connected to a hole **19***b* of the optical unit main body **19**. By inserting a later-described deflecting jig **32** into this hole **19***b* and groove **31***a* in a direction perpendicular to the optical axis and moving the deflecting jig **32**, it is possible to move the lens holder **31** in an optical axis direction.

[**0035**] **FIG. 10** is an illustration showing a state of implementing of the positional adjustment and fixing the collimation lens **12**. In order to perform the positional adjustment of the collimation lens **12**, a collimate adjustment is carried out by inserting the deflecting jig **32** into the hole **19***b* and groove **31***a* in a direction perpendicular to the optical axis and moving the lens holder **31** to make a fine adjustment to the distance between the light emitting element **11** and the collimation lens **12**, and, after the adjustment, the lens holder **31** is pressed by a plate spring **33** from a direction perpendicular to the deflecting jig **32** and then the plate spring **33** is fixed using two detachable screws **34***a* and **34***b*. At this time, washers **35***a* and **35***b* with a diameter larger than the diameter of the respective screws **34***a* and **34***b* are interposed between the screws **34***a*, **35***b* and the plate spring **33**, respectively.

[**0036**] **FIG. 11** shows another example of fixing of the plate spring **33**, in which, after performing the positional adjustment of the collimation lens **12** in the same manner as in the above-described example, the lens holder **31** is pressed by the plate spring **33** from a direction parallel to the deflecting jig **32**, and then the plate spring **33** is fixed with the two detachable screws **34***a* and **34***b*.

[**0037**] According to the present invention, since the collimate adjustment is performed in the above-mentioned manner, it is possible to carry out the adjustment with high accuracy and significantly shorten the adjustment time. With prior arts, in general, the lens holder is fixed directly by a screw, and thus there is a high possibility that the lens holder is displaced when tightening the screw and the collimate state is impaired, while the present invention can apply a small pressure to the lens holder **31** during the adjustment because the lens holder **33** is fixed using a plane of the plate spring **33**, thereby preventing a sudden big movement of the lens holder **31** and facilitating the collimate adjustment.

[**0038**] Since the washers **35***a* and **35***b* with a diameter larger than the diameter of the respective screws **34***a* and **34***b* are interposed between the screws **34***a*, **35***b* and the plate spring **33**, it is possible to press the plate spring **33** with a washer surface, thereby achieving close contact between the lens holder **31** and plate spring **33**. Besides, in the case where the lens holder **31** is fixed by the plate spring **33**, if an end of the plate spring **33**, which is distant from the lens holder **31**, is fixed first with the screw **34***b* and then the other end close to the lens holder **31** is fixed with the screw **34***a* after the collimate adjustment, it is possible to further improve the close contact between the lens holder **31** and the plate spring **33**. Additionally, by arranging the ratio (P:Q in **FIG. 10**) of the distances from the lens holder **31** to the two fix positions of the plate spring **33** not to be larger than 1:3, it is possible to facilitate the application of a small pressure to the lens holder **31** during the adjustment.

[**0039**] FIGS. **12** through **FIG. 14** are illustrations showing the shape of the plate spring **33**. In the example shown in **FIG. 12, a** section which comes into contact with the lens holder **31** is made wider in a concave shape. In the example shown in **FIG. 13**, the width of the plate spring **33** is larger than the width of the lens holder **31**. In the example shown in **FIG. 14, a** section which comes into contact with the lens holder **31** has a cross shape, and an end portion of the cross-shaped section has a curved surface. By designing the plate spring **33** in a shape as described above, it is possible