On the upper surface of the housing **31** is provided an openable cover **46** through which the light-shielding plate **41** can be removed together with the ceiling cover **38** when it is desired to replace a source of light. An observation window **39'** is located in the central front portion of the housing **31** in alignment with the circular hole **39**. The two openings **39** and **39'** are connected by means of a mounted fitting ring **47**.

A specimen plate **50** is resiliently insertable and removable from the mounting base **36** so that the surface of a specimen **48** to be inspected can be correctly and easily located at a proper level **49** at which the specimen is in a horizontal position at a level corresponding to the bottom of an imaginary spherical surface which is an extension of the internal surface of the integrating sphere **32** in the illuminating hole **33**. The ends of a horizontal shaft **51** supporting the rear end of the specimen plate **50** extend through horizontal elongated guide grooves **52** in the right and left side walls of the base **36**. The guide grooves **52** guide the shaft **51** so that the specimen plate **50** can be moved laterally through the opening **34** from the normal position in which it supports the specimen **48** at level **49**, shown in full lines in FIG. **5**, to a withdrawn position, shown in chain lines in FIG. **5**, at which a specimen **48** can be easily mounted thereon. A coil spring **53** is attached to both ends of the shaft **51** for resiliently pressing the plate **50** upwardly so that the shaft **51** is against the upper edges of the grooves **52**. One end of each coil spring is fixed to the specimen plate **50** and the other end is slidable on and resiliently engaged with the bottom surface of the housing **1**. The front edge of the specimen plate **50**, i.e. the edge closest to the opening **34**, has at both ends projections **54** for resiliently pressing against the lower surface of the top plate **36***a*, and also has a grip **55** which extends forward from the central portion thereof. There is further provided a projection **51'** for restricting the countermovement of the spring when the specimen plate **50** is pulled out of the base **36** and the projection **51'** is guided in an elongated groove **52'** in the base **36** which extends forward and downward.

When the specimen **48** is observed through the observation window **39'** while the upper surface is illuminated with uniform light reflected from the inner surface of the integrating sphere **32** as shown in FIG. **5**, the specimen will always have its true color irrespective of whether the specimen has strong reflecting directivity, or even if the specimen is inclined or the position of the eyes is slightly changed. That is to say, the color of the specimen is what it would be if it were observed under conditions of natural daylight.

The two types of reflected light from the specimen, the light irregularly reflected by the surfaces of the metallic coating layer and the light regularly reflected by the metallic powder in a specimen with a metallic powder coated layer, and reflected light consisting of the light irregularly relfected by the surfaces of the anodically oxidized aluminum layer and the light regularly reflected by the aluminum base and passing through the colored layer in an anodically oxidized aluminum specimen, and the color of a specimen having a polarizing property, will be unchanged even when the viewing angle is viewed from the normal viewing angle of 45°, because the light is completely scattered in the integrating sphere and the regularly reflected light travels in the viewing direction as well. Consequently, bright and vivid color will be produced just as when the specimen is looked at in the brightness of daylight.

Therefore, with a light source device according to this invention, it is possible to visually observe the specimens in their true colors without the appearance being affected by a change in the viewing angles within the range of angles at which the specimen can be viewed through the observation windown **39'**, which effect is impossible with conventional light source devices.

Below are described experimental results of observations of colors of specimens using a conventional light source device and the light source device of this invention, in comparison with the results of observations made under daylight conditions.

The observation conditions were as listed in Table 1 below.

TABLE 1

| | Conventional light source device | Light source device of this invention | Daylight |
|---|---|---|---|
| Source of light | Lamp for $D_{65}$ light source | Lamp for $D_{65}$ light source | Daylight ($D_{65}$ distributed) |
| Illuminating condition | Illuminated from one direction | Completely scattered illumination | Blue-sky scattered light |
| Angle of eyes of observer | At an angle of 45° | At an angle of 45° | At an angle of 45° |

The specimens, which were colored aluminum, were visually observed in comparison with coated plates having no luster and no directivity of reflection as representative examples of general colors.

(1) Comparison of the brightness of the specimens:

Five colored aluminum specimens were observed using the conventional light source device, the light source device of this invention, and under the daylight condition. The order of brightness during observation of the specimens, with the brightness decreasing from 1–5, is shown in Table 2, and the order of brightness during observation of three coated plates having no luster and no directivity of reflection is shown in Table 3.

TABLE 2

| Color of colored aluminum specimen | Conventional light source | Light source of this invention | Daylight |
|---|---|---|---|
| Dark blue | Order 3 | Order 5 | Order 5 |
| Pale Blue | 5 | 3 | 3 |
| Yellow | 2 | 1 | 1 |
| Yellowish red | 1 | 2 | 2 |
| Red | 4 | 4 | 4 |

TABLE 3

| Color of coated plate | Convention light source | Light source of this invention | Daylight |
|---|---|---|---|
| Blue | Order 3 | Order 3 | Order 3 |
| Yellow | 1 | 1 | 1 |
| Red | 2 | 2 | 2 |

From these observations, it can be seen that although the brightness of the coated plates having no luster and no directivity of reflection observed under both the conventional light source and that of the present invention were in agreement with those observed under the daylight condition, the brightness of the colored aluminum specimens observed under the conventional light source device differed from those observed under daylight. However, the order of brightness, when the specimens were observed using the light source device of