CLAIMS

1. A light projecting device comprising:

a flat plate-shaped light guide plate and a light source body that introduces light from a side peripheral surface of the light guide plate to the inside thereof, wherein a plurality of concave parts are formed on one plate surface of the light guide plate, and being so configured that

the light entering the light guide plate is reflected at the concave parts while spreading and is emitted to the outside from the other plate surface of the light guide plate and then is irradiated to a predetermined object, and the object can be observed through the light guide plate from a side of the one plate surface of the light guide plate,

wherein each surface of each of the concave parts is formed with a smooth concave curved surface, and a tangential angle θ is formed between a tangential line at an opening edge of the concave part and the plate surface, whereby the tangential angle θ is set to be less than or equal to 85° in a cross-sectional shape of the concave part cut by a plane that is perpendicular to the plate surface and passing through a center of a recess of the smooth concave curved surface of the concave part.

2. The light projecting device described in claim 1, wherein the tangential angle θ is less than or equal to 75°.

3. The light projecting device described in claim 1, wherein the tangential angle θ is greater than or equal to 55°.

4. The light projecting device described in claim 1, wherein the concave part is shaped like a portion of a sphere.

5. The light projecting device described in claim 1, wherein the concave part has an opening diameter of greater than or equal to 0.02 mm and less than or equal to 0.2 mm.

6. The light projecting device described in claim 5, wherein a pitch between adjacent concave parts is greater than or equal to twice and less than or equal to five times the opening diameter of the concave part.

7. A light projecting device comprising:

a plate-shaped light guide plate and a light source body that introduces light from a side peripheral surface of the light guide plate to the inside thereof, wherein a plurality of concave parts are formed on one plate surface of the light guide plate, and being so configured that

the light entering the light guide plate is reflected at the concave parts while spreading and is emitted to the outside from the other plate surface of the light guide plate and then is irradiated to a predetermined object, and the object can be observed through the light guide plate from a side of the one plate surface of the light guide plate, wherein

the concave part is shaped like a portion of a sphere and has a concave spherical surface with a center angle of less than 180°.

8. The light projecting device described in claim 7, wherein

the center angle is greater than or equal to 100° and less than or equal to 170°.

9. The light projecting device described in claim 7, wherein

the center angle is greater than or equal to 110° and less than or equal to 150°.

10. An inspection system comprising the light projecting device of claim 1 and a camera arranged on a side of one surface of the light guide plate, and being so configured that the object arranged on a side of the other plate surface of the light guide plate can be inspected by taking a picture with the camera through the light guide plate.