

PATENT SPECIFICATION

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DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION.

Photographic Camera with Flash Attachment.

We, FRANKE & HEIDECKE G.m.b.H., a body corporate, trading as Rollei-Werke Franke & Heidecke, of 196 Salzdhumerstrasse, Braunschweig, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to photographic cameras, more especially miniature cameras, having a flash attachment fitted in or on the camera.

The parallax which occurs because of the spacing between the optical axes of the camera and the flash lamp has no disadvantageous influence on the uniform illumination of the image field at exposure distances of 1 metre and more. With shorter exposure distances, such as are usual when the camera is used for the reproduction of documents or for enlarged exposures, this parallax cannot however be disregarded. In addition, the lighting power of the flash lamps is not adapted to such short distances, so that the stopping down possibilities of the camera objective are no longer sufficient. Especially with so-called programme shutters, difficulties can arise as regards the expedient diaphragm-speed combination.

In order to make possible the uniform illumination with close-up exposures while still leaving the flash attachment rigidly connected to the camera, according to the invention a light-permeable wedge plate, advantageously in the form of a stepped wedge, is fitted in front of the light-exit opening of the flash attachment, whereby the light from the flash bulb is deflected in the direction towards the optical axis of the camera. In addition, the wedge can either itself be given a toning, advantageously a grey toning, for subduing the light,

or it can be provided with a holder device for an interchangeable subduing or grey filter. The wedge plate can be hingeably or removably arranged on the flash attachment. It can alternatively be connected by means of a separate auxiliary frame in interchangeable manner to the flash attachment.

It has been found that the usual flash attachment reflectors have a sufficient dispersion effect, so that the angle of the wedge or wedge prism plate is not particularly critical, and it does not necessarily have to be disposed perpendicularly of the lamp axis with a suitable wedge angle; in fact, the effect of the wedge plate is only slightly changed if it assumes an angle differing more or less from 90° in relation to the optical axis of the flash attachment. This has the advantage that it is also possible to use flash lamps which project from the front surface of the reflector, this being predominantly the case with the extremely small flash attachments which are usual at the present time. In this case, the wedge plate can be hinged upwardly, i.e. towards the flash attachment, to the extent permitted by the flash bulb, whereas when the camera is used for normal exposure ranges, the wedge plate can be hinged completely out of the path of rays of the flash attachment; on the other hand, when the flash attachment is not in use and has no bulb, the wedge plate can serve as a closure cover for the attachment.

The invention will now be described with reference to the accompanying drawings, which show a miniature camera having an elongated rectangular housing, the flash attachment being connected directly to one narrow end wall thereof.

In the drawings:

Figure 1 shows the camera mounted on a tripod;

[Price 4s. 6d.]

Figure 2 is a perspective view of the flash attachment itself; and

Figure 3 is an enlarged detail section through the wedge plate.

5 The flash attachment 1 is firmly connected to the camera by a bayonet or screw connection and is provided with a wedge prism plate 3 in front of its reflector opening, said plate being connected by means of a hinge
10 4 on the flash attachment housing or on an intermediate holder 5. The formation of the wedge plate is shown in Figure 3. The wedge angle β is so chosen that there is a deflection of the reflector central ray through
15 the angle α for the required usual exposure range, which is for example fixed by the reproduction tripod 6, so that this central ray intersects the optical axis of the camera in the plane of the object to be photo-
20 graphed. The deflection α is in practice uninfluenced by the inclination of the prism plate 3, and is determined only by the size of the wedge angle β .

25 The wedge plate 3 preferably consists of a translucent plastics material with a grey colouring or a transparent plastics with a neutral grey foil stuck thereon. It is possible to use glass, but this is less desirable on account of the danger of the plate crack-
30 ing when subjected to the heat from the flash bulb. The holder 5 for the wedge raster plate consists in the constructional example of a springy sheet metal clip of which the side arms 9 are able to engage over pro-
35 jections provided on the flash attachment 1. An opening 7 is formed in this sheet metal clip 5 through which the bayonet components 8 of the flash attachment 1, by which it can be fixed in the camera, remain acces-
40 sible.

45 It is alternatively possible for the flash attachment to be provided with a permanently connected wedge plate which is mounted for pivotal movement on the flash attachment so that the flash bulb can be replaced after the wedge plate has been swung away.

It is also possible to provide the holder 5 with detents, by which the wedge plate 3 can be fixed in a predetermined inclined position.

WHAT WE CLAIM IS:—

1. A photographic camera with a flash attachment fitted therein or thereon, wherein a light permeable wedge plate is fitted in front of the light-exit opening of the flash attachment, the wedge angle (β) of said plate being so chosen that the light from the flash attachment is deflected towards the camera optical axis.

2. A photographic camera according to Claim 1, wherein the wedge plate is formed as a stepped wedge.

3. A photographic camera according to Claim 1 or 2, wherein the wedge plate has a light-absorbing tone, advantageously a grey tone, for subduing the light from a flash bulb.

4. A photographic camera according to Claim 1 or 2, wherein the wedge plate is provided with a holder for accommodating an interchangeable grey or subduing filter.

5. A photographic camera according to any one of Claims 1 to 4, wherein the wedge plate is hingeably connected to the flash attachment as a reflector cover.

6. A photographic camera according to any of Claims 1 to 4, wherein the wedge plate is arranged to pivot on a holder adapted to be fitted on to the flash attachment and held by the latter on the camera.

7. A photographic camera with a flash attachment fitted therein or thereon, substantially as described with reference to and as illustrated in the accompanying drawings.

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Figure 3 is an enlarged detail section through the wedge plate.

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