

PATENT SPECIFICATION

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(54) MINIATURE PHOTOGRAPHIC CAMERA

- (71) We, BALDA-WERKE PHOTOGRAPHISCHE GERÄTE UND KUNSTSTOFF R. GRÜTER K.G. of 498 Bünde 1, Steinmeisterstrasse 16-20, Germany, a German Company, 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:—
- 10 The invention relates to a miniature camera of shallow, typically parallelepipedic, form, having an objective and a view-finder disposed along a narrow front face.
- 15 In one known camera of this type a rigid slide is arranged to protect the objective, and the slide is displaceable to one side of the objective when an exposure is to be made. With a truly miniature camera
- 20 it is not possible to cover all the operating elements distributed over the entire front side, such as view-finder, exposure meter and objective with a rigid slide because there does not remain sufficient space in
- 25 the front for the lateral displacement required to expose all elements when making the exposure. In the known camera with a rigid slide only the objective can be covered and the view-finder remains un-
- 30 protected. This is very disadvantageous with miniature cameras, which are to be put in a trouser or jacket pocket without any camera case.
- 35 It would be possible to use instead of a rigid slide a roller blind movable around an edge of the front wall of the camera when the elements on the camera front are to be exposed. Such blinds, however, are susceptible to jamming and not very stable,
- 40 their function being very considerably impaired by dirt, almost unavoidable when the camera is carried in the pocket of trousers or a jacket.
- 45 The invention is concerned with the provision of a covering arrangement which [Price 25p]

in one position covers the view-finder and the objective and in the other position frees them for exposure, which can be constructed from a few separate parts, and which can be both robust and reliable. 50

In accordance with the invention there is provided a miniature camera having an objective and a view-finder disposed in a front face of the camera, and two flaps pivotable in opposite directions about axes parallel to an edge of the front face to extend over the view-finder and the objective. Such pivotable flaps can be produced as rigid, stable injection-moulded components and their reliable functioning can be assured. 55 60

With the two flaps arranged to pivot in opposite directions in the manner of a hinged visor there is the advantage that, when opened, the camera has a smaller depth overall than a similar camera with only one flap. If actuation is by means of an operating element, such as a slide member, than the operational travel for a camera with two oppositely pivotable flaps can be smaller than for a similar camera having only one flap, which is an important advantage because of the small space available. 65 70

The two flaps may be coupled for joint pivotal movement, preferably by means of interengaging toothed segments concentric with the respective pivot axes, operation of one flap resulting in synchronous operation of the other. Toothed segments are preferably arranged at each end of both flaps. This improves the stability and torsion-resistance of the construction, each flap increasing the resistance to torsion of the other by the positive engagement of the teeth. 75 80 85

At least one flap may preferably be arranged to be held in its fully extended position by means of a latch device to guard against unintentional closure. Such a 90

latch device can for example comprise an over-centre spring arrangement. Such a spring may be arranged to hold one or both flaps in both the closed and the open positions.

For convenience in operation a slide member may be positively connected to at least one flap in such a way that the flap may be swung by rectilinear displacement of the slide member. The slide member may advantageously be coupled to one or both flaps by a pin-and-slot connection.

Alternatively a rack on the slide member may mesh with a toothed segment on one or both flaps.

The slide member is adapted to be latched in at least one end position.

It is particularly advantageous that the slide member should comprise a lug which clears the path of the camera shutter release member only when the flaps are fully extended. Such an arrangement ensures that an exposure cannot be made in error with the camera not fully opened.

If the closure line between the two flaps is located in front of the common plane of the two pivot axes the flaps have to be respectively swung through only a relatively small angle to expose the light path to the objective.

In order that the invention may be more thoroughly understood, the construction of a camera in accordance with it will be described in some detail, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of the camera shown in the open position;

Figure 2 shows the camera in the closed position;

Figure 3 is a perspective view of part of the camera, shown partly broken away; and,

Figure 4 is a diagrammatic view of the side parts of the flaps.

The miniature camera to be described has an elongated parallelepipedic shape. In the construction shown in Figures 1 and 2, a housing 1 has flaps 3 and 4 which can be pivoted in opposite directions along its front narrow face 2, which flaps, when hinged inwards, cover the objective 5, range finder 6, exposure meter 7 and view-finder 8. The flaps 3 and 4 have fluting 9 to reduce reflection, this fluting also being provided on side cheeks 10 and 11 of the flaps. The camera shutter release member 12 is arranged on the top of the housing 1. Disposed on an end face of the camera is a slide member 13 which serves to operate the two flaps.

Figure 4 shows how side cheeks 10 and 11 of the flaps 3 and 4 comprise positively interengaging toothed segments, 14 and 14a respectively, not visible in the perspective

Figures 1 to 3. The effect of the toothed segments 14 and 14a is that when one flap is actuated, the other moves synchronously.

The operation of the slide 13 can best be seen in Figure 3.

The flaps 3 and 4 are mounted in the housing 1 to pivot about pivot pins 15 and 16 on the end wall. Formed in the side cheeks 10 and 11 are curved slots 17 and 18, these slots being engaged by pins 19 and 20 on arms 21 and 22 of the slide member 13. The slide member 13 carries an extension or lug 23 which lies beneath the release member 12 when the flaps 3 and 4 are closed and blocks the movement of the release member. To open the camera, the slide 13 is advanced in the direction of the arrow 24. With this movement the arms 21 and 22, acting through the pins 19 and 20 and the slots 17 and 18, carry the flaps 3 and 4 forwards and swing the flaps 3 and 4 into the extended position shown in Figure 1. When the slide 13 reaches its most advanced position, the lug 23 clears the path of the release member 12 allowing an exposure to be made.

In this construction the closure line 26 between the flaps 3 and 4 is located in front of the common plane of the pivot axes 15 and 16. In order to retain the flaps 3 and 4 in an open or closed position a spring-loaded member such as a ball may be arranged to locate into notches or recesses formed in the slide member 13 or in one of the flaps 3 and 4.

Alternatively, an over-centre spring may be provided on one of the two flaps 3 and 4, or on the slide member 13.

WHAT WE CLAIM IS:—

1. A miniature camera having an objective and a view-finder disposed in a front face of the camera, and two flaps pivotable in opposite directions about axes parallel to an edge of the front face to extend over the view-finder and the objective.

2. A camera according to Claim 1, in which the two flaps are coupled for synchronous pivotal movement.

3. A camera according to Claim 2, in which the flaps are coupled by means of inter-engaging toothed segments concentric with the respective pivot axes.

4. A camera according to Claim 3, in which toothed segments are arranged at each end of both flaps.

5. A camera according to any preceding claim, in which one flap at least is arranged to be held in its fully extended position by means of a latch device.

6. A camera according to any preceding claim, in which a slide member is positively connected to at least one flap in such a way that the flap may be swung by rectilinear displacement of the slide member.



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In order that the invention may be more thoroughly understood, the construction of a camera in accordance with it will be described in some detail, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of the camera shown in the open position;

Figure 2 shows the camera in the closed position;

Figure 3 is a perspective view of part of the camera, shown partly broken away; and,

Figure 4 is a diagrammatic view of the side parts of the flaps.

The miniature camera to be described has an elongated parallelepipedic shape. In the construction shown in Figures 1 and 2, a housing 1 has flaps 3 and 4 which can be pivoted in opposite directions along its front narrow face 2, which flaps, when hinged inwards, cover the objective 5, range finder 6, exposure meter 7 and view-finder 8. The flaps 3 and 4 have fluting 9 to reduce reflection, this fluting also being provided on side cheeks 10 and 11 of the flaps. The camera shutter release member 12 is arranged on the top of the housing 1. Disposed on an end face of the camera is a slide member 13 which serves to operate the two flaps.

Figure 4 shows how side cheeks 10 and 11 of the flaps 3 and 4 comprise positively interengaging toothed segments, 14 and 14a respectively, not visible in the perspective

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In this construction the closure line 26 between the flaps 3 and 4 is located in front of the common plane of the pivot axes 15 and 16. In order to retain the flaps 3 and 4 in an open or closed position a spring-loaded member such as a ball may be arranged to locate into notches or recesses formed in the slide member 13 or in one of the flaps 3 and 4.

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3. A camera according to Claim 2, in which the flaps are coupled by means of inter-engaging toothed segments concentric with the respective pivot axes.

4. A camera according to Claim 3, in which toothed segments are arranged at each end of both flaps.

5. A camera according to any preceding claim, in which one flap at least is arranged to be held in its fully extended position by means of a latch device.

6. A camera according to any preceding claim, in which a slide member is positively connected to at least one flap in such a way that the flap may be swung by rectilinear displacement of the slide member.



7. A camera according to Claim 6, in which the slide is coupled to one or both flaps by a pin-and-slot connection.

8. A camera according to Claim 6, in which a rack on the slide meshes with a toothed segment, on one or both flaps.

9. A camera according to claim 6, 7 or 8, in which the slide can be latched in at least one end position.

10. A camera according to claim 6, 7 or 8, in which the slide comprises a lug which clears the path of the camera shutter release member only when the flaps are fully extended.

11. A camera according to any preceding claim, in which the line of closure of the two flaps is located in front of the common plane containing the two pivot axes.

12. A miniature camera substantially as described with reference to Figures 1 to 4 of the accompanying drawings.

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