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PATENT SPECIFICATION

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DRAWINGS ATTACHED.



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COMPLETE SPECIFICATION.

Miniature Photographic Camera.

We, FRANKE & HEIDECHE, G.m.b.H. a German Body Corporate, trading as Rollei-Werke Franke & Heidecke, of P.O. Box 419, 33, 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:—

10 The invention relates to a miniature photographic camera with axially movable lens tube.

According to the present invention there is provided a miniature photographic camera with a housing and a lens tube movable into and out of the camera housing, the lens tube carrying a lens unit and focussing means for adjusting the lens unit or the front lens thereof wherein a knurled ring provided on the front and serving as an operating device for moving the tube is cut away, above and below, to the extent of about a quarter of its periphery.

25 A rotatable distance scale drum is preferably mounted concentrically underneath the said knurled ring, the passages provided by the removal of parts of the latter serving as viewing windows for this scale. The scale drum is preferably movable by less than half a rotation within the adjusting range, so that special scales, e.g. one in metres and one in feet, can be provided for the two open parts.

35 A constructional embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawing, wherein:—

Figure 1 is a front view of a camera according to the invention;

40 Figure 2 is a plan view of the camera shown in Figure 1; and

Figure 3 shows a detail of Figure 2.

The lens unit is situated in a lens tube 11 which can be inserted in the camera housing and secured by bayonet joints in the inserted and/or extended position. The operating device for moving the lens tube consists of a knurled ring 12 which is cut away above and below (as viewed in the operative position) to the extent of one-quarter of the periphery so that window-like passages 13 and 14 are formed through which a reading can be taken of the scale drum 15 situated concentrically underneath the operating ring 12. This scale drum forms a constructional unit in conjunction with the knurled ring 16 and is connected in the known manner with that part of the lens mount which is rotatable for the purpose of sharp focussing, or with the front lens. If the rotation range of the focussing mount, i.e. of the scale drum 15 and of the knurled ring 16, amounts to less than half a rotation, two different scale graduations, e.g. one in metres and one in feet can be provided, one of which can be seen from the upper window 13 and the other through the lower window 14.

The invention further relates to adjusting knobs for time or diaphragm, with concentric indicator or reference discs rotatable in the knobs. When such adjusting knobs are provided on the front side of photographic cameras they are provided with a system of peripheral teeth, arranged like the teeth of a bevel gear, so that they can be easily operated, despite the fact that they rest flat against the front panel. Such adjusting knobs or discs are usually provided with concentric additional adjusting discs or knobs which can be rotated within such adjusting knobs and discs and relative thereto for which special operating devices are provided, which have been constructed in the form of concentric knurled rings, projecting

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to a corresponding distance in the axial direction. The reference discs are to be of flat or almost flat construction and flush with the front plane of the adjusting knobs and provided with a number of radial fingernail grooves. These grooves preferably run radially inwards from the periphery and extend over about one-quarter of the diameter; the cross section of the said grooves is preferably keyway-shaped or core-shaped.

As shown in the drawing, the front panel 1 of the camera bears the adjusting knobs 2 for the diaphragm adjustment and 3 for the exposure time adjustment. The knobs are provided with narrow peripheral systems of teeth 4 and 5 which can be gripped so that the knobs can be adjusted. Further knobs 6 and 7 e.g. for adjustment in accordance with the film speed and type of film, are provided, concentrically in the said knobs. These further knobs, as is well known, are adjusted once and for all when the film is inserted, and it is therefore advisable to take steps to prevent their accidental displacement, while on the other hand it must be possible to adjust them without the use of tools. Furthermore, these adjusting discs should not project beyond the plane of the adjusting knobs 2 and 3 if it can be avoided. For this purpose they are made flush with the front part of the adjusting knobs 2 and 3 and include, by way of operating element, notch-shaped radial fingernail slits 8 proceeding from the outside towards the inside and extending over about one-quarter of the diameter. In the example illustrated there are three notches 8 situated opposite a further three notches 8 but the invention is not necessarily confined to this particular number.

A film winding lever 21, shutter release knob 23 and the release knob 22 for the lens tube are arranged on top of the camera. A tripod nut 24, shoe 25 for attachments, e.g. flash-gun, and re-winding handle 26 are arranged on the bottom of the camera in such a way that they provide a flat surface on which the camera can stand.

WHAT WE CLAIM IS:—

1. A miniature photographic camera with a housing and a lens tube movable into and out of the camera housing, the lens tube carrying a lens unit and focussing means for ad-

justing the lens unit or the front lens thereof wherein a knurled ring provided on the front and serving as an operating device for moving the tube is cut away, above and below, to the extent of about a quarter of its periphery.

2. A miniature photographic camera as claimed in claim 1, wherein the focussing means comprises a rotatable distance scale drum provided concentrically underneath the knurled ring which drum can be viewed through two passages formed as a result of the removal of part of the knurled ring.

3. A miniature photographic camera as claimed in claim 2, wherein the scale drum is movable by less than half a rotation, whereby special scales (e.g. metres and feet) can be provided for the two passages.

4. A camera as claimed in any one of claims 1 to 3, having an adjusting knob for time or diaphragm, with indicator or reference discs concentrically rotatable in the knob, the reference discs being flush or almost flush with the front plane of the knob and provided with a number of radial fingernail notches forming operating elements.

5. A camera as claimed in claim 4, wherein the notches extend from the periphery towards the centre and cover about one-quarter of the diameter.

6. A camera as claimed in claim 4 or 5, wherein the notches are of wedge-shaped cross section.

7. A camera as claimed in any one of claims 1 to 6, wherein a film winding lever, shutter release knob and lens tube securing device are mounted on the upper side of the camera.

8. A camera as claimed in any one of claims 1 to 7, wherein a film re-winding handle, tripod nut and flash-gun shoe are mounted on the lower side of the camera and together form a flat surface.

9. A miniature photographic camera substantially as described with reference to and as illustrated in the accompanying drawing.

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WHAT WE CLAIM IS:—

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2. A miniature photographic camera as claimed in claim 1, wherein the focussing means comprises a rotatable distance scale drum provided concentrically underneath the knurled ring which drum can be viewed through two passages formed as a result of the removal of part of the knurled ring.

3. A miniature photographic camera as claimed in claim 2, wherein the scale drum is movable by less than half a rotation, whereby special scales (e.g. metres and feet) can be provided for the two passages.

4. A camera as claimed in any one of claims 1 to 3, having an adjusting knob for time or diaphragm, with indicator or reference discs concentrically rotatable in the knob, the reference discs being flush or almost flush with the front plane of the knob and provided with a number of radial fingernail notches forming operating elements.

5. A camera as claimed in claim 4, wherein the notches extend from the periphery towards the centre and cover about one-quarter of the diameter.

6. A camera as claimed in claim 4 or 5, wherein the notches are of wedge-shaped cross section.

7. A camera as claimed in any one of claims 1 to 6, wherein a film winding lever, shutter release knob and lens tube securing device are mounted on the upper side of the camera.

8. A camera as claimed in any one of claims 1 to 7, wherein a film re-winding handle, tripod nut and flash-gun shoe are mounted on the lower side of the camera and together form a flat surface.

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