

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Improvements in or relating to Photographic Cameras

We, FRANK & HEIDECHE G.M.B.H., a German Body Corporate, trading as ROLLEI-WERKE FRANK & HEIDECHE, of 196, Salz-
dahlumerstrasse, 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:—

The invention relates to a photographic
camera with a displaceable lens carrier and
long extensions, the lens carrier being dis-
placeable along rigid slide blocks on the
camera housing, in the direction of the
optical axis. This movement must be
limited in both directions, and it must be
possible for the "infinity" position to be
established with particular accuracy. For
this reason a stop device for the slide bars
or the lens carrier itself is unsuitable, even
in the case of normal setting operations; a
more advantageous and accurate method is
to mount this stop on the adjusting knob
or adjusting shaft. If the adjusting knob
is only rotatable through an angle of 360°
or less it is comparatively easy to provide
a stop of this kind, by mounting a fixed
pin on the housing camera, a lug or groove
of the rotating knob interacting with the
said pin. Fine adjustment can easily be
effected if the rotating knob is made dis-
placeable or adjustable on its adjusting
shaft.

Such measures, however, are no longer
feasible if the adjustment of the lens carrier
is effected by a rotating knob of which the
rotary movement bears such a relationship
to the linear movement of the slide bars,
via cams or racks, that in order to cover
the entire range of adjustment the knob
has to be rotated a number of times.

Adjusting devices of this kind, with which
the adjusting knob performs more than one

rotation, are described, for example, in Ger-
man Patent Specification Nos. 1246389 and
1240387.

According to the present invention there
is provided a photographic camera having
a lens carrier rigidly connected to slide bars
which are displaceable along slide blocks on
the camera housing, in the direction of the
optical axis, the said bars being connected
with a rotatable disc the rotary movement
of which effects rectilinear movement of the
bars via cams or racks wherein there is
provided a movable stop for a lug con-
nected to a range setting shaft carrying the
rotatable disc, the position of which stop
is controlled by the movement of the lens
carrier on the slide bars in such a way that
it does not enter the path of movement of
said lug until a desired stop position is
imminent, thus limiting the lens extension in
one or both directions. The control of the
movable stop is preferably effected by a
control cam which is provided on the slide
bar and which actuates the rotatable stop
lever via the scanning pin.

A constructional embodiment of the
present invention will now be described, by
way of example, with reference to the
accompanying drawing which shows a per-
spective view of a device according to the
present invention.

A lens carrier 1 is rigidly connected to
slide bars 2. These slide bars 2 slide via
grooves 3 on slide blocks 4. The slide
blocks 4 are rotatable about the pin 5 on
a camera housing. The pivotable guide
blocks are fitted with segments 6 engaged
by pinions 7 mounted on a shaft 8, which
can be operated outside the camera housing
by means of an adjusting knob. By rotating
this adjusting knob or the shaft 8, the lens
carrier in any extension position, can be
pivoted upwards or downwards, the optical

[Price 5s. 0d.]

axis being thus inclined as required. The slide bars 2 are fitted at the side with racks 9 engaged by flat threaded ribs 10 of a disc 11, which is mounted on a range setting shaft 12, and can be operated from outside the camera by means of a knob. A drive of this kind provides a very high transmission ratio for the range setting operation, from the shaft 12 to the feed movement of the lens, so that the knob has to perform a number of rotations to cover the entire adjustment range. As a means of limiting the extension, a movable stop lever 13 is provided for a lug 14 of the adjusting shaft 12. The lug 14 is shown in the drawing for simplicity as integral with disc 11 but it is to be understood that the lug 14 and the disc 11 bearing thread ribs 10 can be displaced in relation to each other. The movable stop lever 13 is controlled by the movement of the lens carrier with the slide bars 3 in such a way that it does not enter the path of movement of the lug 14 belonging to the shaft, until a desired stop position is imminent, thus limiting the extension of the lens in both directions. For this purpose the slide bars 2 are fitted with control cams surfaces 15 which interact with a pin 16 of the movable stop lever 13, which is pivotable about the fixed pin 17. It is obvious that the invention is not confined to the form of gearing illustrated and that it can also be provided, for example, on a camera in which the displaceable lens carrier is operated from the rotatable adjusting knob via a pinion and rack, or in some other manner. The exact setting of the final stops is effected by rotating the disc 11 in relation to the shaft 12 and by fixing it in position after this adjustment. A number of lugs 14 can also be provided arranged

around the periphery of the disc 11, and displaceable in relation thereto, thus simplifying the adjustment operation, as the path of the adjusting movement can then be shortened. In addition, this may increase the accuracy with which the stop is set for close-ups, as it is then no longer necessary to use the same lugs for these latter as for the "infinity" stop.

WHAT WE CLAIM IS:—

1. A photographic camera having a lens carrier rigidly connected to slide bars which are displaceable along slide blocks on the camera housing, in the direction of the optical axis, the said bars being connected with a rotatable disc the rotary movement of which effects rectilinear movement of the bars via cams or racks wherein there is provided a movable stop for a lug connected to a range setting shaft carrying the rotatable disc the position of which stop is controlled by the movement of the lens carrier on the slide blocks in such a way that it does not enter the path of movement of said lug until a desired stop position is imminent, thus limiting the lens extension in one or both directions.

2. A photographic camera as claimed in claim 1, wherein there is provided a control cam on the slide bar for a pin of the stop lever rotatable about a fixed pin. (17).

3. A photographic camera having a device substantially as described with reference to and as illustrated in the accompanying drawing.

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