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## (54) PHOTOGRAPHIC CAMERA

(71) We, EASTMAN KODAK COMPANY, a Company organized under the Laws of the State of New Jersey, United States of America of 343 State Street, Rochester, New York 14650, United States of America 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.

An object of the present invention is the provision of a compact camera.

According to the present invention, there is provided a photographic camera comprising a plurality of specularly reflecting surfaces having operative positions in which they act in series to reflect taking rays from an objective as hereinafter defined to an exposure plane of the camera, and cover means enclosing the reflecting surfaces in light-tight manner, at least one of the reflecting surfaces and that portion of the cover means covering it being movable out of the operative position into an inoperative position in which the bulk of the camera is reduced.

As one or more of the specially reflecting surfaces may be capable of focusing an image, the term "objective" as used herein, includes not only a lens but also a non-focussing window where through light may pass for exposing a photosensitive material in the camera.

The invention will now be described by way of example, with reference to the accompanying drawings, wherein like reference numerals denote like elements and wherein:

Fig. 1 is a perspective front view of a first

embodiment of a camera according to the invention, showing the camera in an erect, operative configuration;

Fig. 2 is a perspective view of the film holder used in the camera of Fig. 1;

Fig. 3 is a perspective rear view of the camera shown in Fig. 1;

Fig. 4 is a phantom view corresponding to Fig. 3, showing the arrangement of camera mirrors, a collapsible linkage, and a bellows when in their operative, erect positions;

Fig. 5 is a cross-section taken along line 5—5 of Fig. 1;

Fig. 6 is a perspective rear view similar to Fig. 3 but showing the camera of that Figure in a collapsed, inoperative configuration;

Fig. 7 is a cross-section, similar to Fig. 5 but showing the camera of that Figure in its collapsed, inoperative configuration shown in Fig. 6;

Fig. 8 is a cross-section, similar to Fig. 5 but showing a second embodiment of a camera according to the invention, in an erect, operative configuration;

Fig. 9 is a cross-section, similar to Fig. 8 but showing the camera of that Figure in a collapsed, inoperative configuration;

Fig. 10 is a diagrammatic representation of a view similar to Figs. 5 and 8 but of a third embodiment of a camera according to the invention which has only one movable mirror;

Fig. 11 illustrates the camera of Fig. 10, in a inoperative condition;

Fig. 12 is a diagrammatic representation similar to Fig. 10, but of a fourth embodiment of a camera according to the invention;

Fig. 13 is a view similar to Fig. 11 of the fourth embodiment; and

Fig. 14 illustrates diagrammatically a mirror control means included in the

cameras of the third and fourth embodiments.

The camera 1 illustrated in Figs. 1 and 3-7 of the drawings comprises a rigid, relatively thin, substantially rectangular, box-like housing 10 comprising an upper, head section 12 and a lower, body section 14. The housing 10 preferably is molded of a high impact strength plastics material to provide a strong, unitary structure for supporting further various elements of the assembled camera.

A mechanism support member 16, which also is molded of a strong plastics material, provides the top and front walls 20 and 22, respectively, of the upper, head section 12 of the housing 10. The support member 16 supports a forward-facing objective lens 24 and a shutter mechanism, which is represented in Figs. 5 and 7 by a pair of shutter blades 26 and an aperture plate 28. The support member 16 also supports a shutter operating slide 30, a viewfinder 32, and a flash illumination system comprising a rotatable flash unit socket 34 associated with a mechanism for indexing the socket and firing successive flash lamps in synchronism with the operation of the camera shutter. An automatic exposure control system also can be mounted on member 16 to vary the speed of the shutter or the aperture. A slide plate 36 located forwardly of the lens may be slid endwise by a serrated slide button 38 to a position at which it covers both the lens and the viewfinder to protect them from dirt or accidental damage when the camera is not in use. Because all of these elements are supported by member 16, the entire film exposing mechanism can be produced as a unitary subassembly, which greatly facilitates both the manufacture and the servicing of the camera.

The lower, body section 14 of the housing 10 is substantially the same thickness as the upper, head section 12, although it may be made slightly thicker at the bottom to provide a broader base on which the camera can stand in its vertical orientation, as shown. The body section 14 includes an internal film holder compartment 40 as shown in Figs. 5 and 7. The compartment 40 is in lateral alignment with a rectangular opening in end wall 42 for receiving a film holder 44 in a position suitable for exposing a photosensitive film sheet 46 therein to actinic radiation admitted into the camera by shutter blades 26.

The film holder 44 used in the illustrated camera, and best shown in Figs. 2, 5 and 7 comprises a box-like casing 48 with a forward-facing (as viewed in Fig. 2) exposure window 50 surrounded by a lip 52. The photosensitive film sheet 46 is located in a groove 54 in the casing, as shown in Figs. 5 and 7, so that its emulsion surface is held in

a flat plane behind the exposure window 50. An opaque cover member 60 having a handle 62 at one end thereof is initially located in a groove 64 forwardly of the film sheet 46, as shown in Figs. 2 and 7, to protect the emulsion surface from ambient light. After the film holder 44 has been fully inserted into the camera as shown in Fig. 1, the cover member 60 is withdrawn from the groove 64 and inserted into another groove 66 located behind the film sheet, as shown in Fig. 5. The groove 64 at its open end is provided with light sealing means, of a type known in the art, to prevent ambient light from entering groove 64 and fogging the film sheet 46. After the film sheet 46 has been exposed, the cover member 60 is withdrawn from the groove 66 and reinserted into the groove 64 to protect the exposed film sheet 46 from ambient light when the film holder 44 is removed from the camera.

To remove the film sheet 46 from its holder 44 for processing, the holder 44 is provided with a removable end member 68 which is slidable endwise from a mating, mortise-shaped casing groove 70 which opens inwardly to the groove 54 and outwardly to the exterior of the holder 44 when the member 68 is removed. With the member 68 removed, the holder 44 need merely be turned on its now-open end and the film sheet 46 allowed to slide out of the groove 54. The holder 44 may then be reloaded with a new, unexposed film sheet and used again as just described.

When the film holder 44 is fully inserted into the compartment 40, as shown in Figs. 1, 5 and 7, the exposed window 50 faces rearwardly relative to the camera. A rectangular opening 74 in the body section 14 of the camera housing is aligned with the exposure window 50 and is surrounded by a rectangular, forwardly projecting rib 76. A pair of springs 78 on the inner face of the body section front wall 80 urge the film holder 44 rearwardly to seat its rectangular surface 82 surrounding lip 52 against the forward face of the camera rib 76. Such engagement of the surface 82 with the rib 76 provides a light-tight interface between the film holder 44 and the camera housing, and accurately locates the photosensitive surface of the film sheet 46 in a predetermined exposure plane oriented in generally parallel relation to the camera housing.

Behind the objective lens 24, the head section 12 of the camera housing includes an opening 84 through which scene light admitted by the shutter 26 passes to the flat front surface of a first specularly reflecting surface constituted by an angularly disposed upper mirror 86. As best shown in Fig. 4, the mirror 86 preferably is of a trapezoidal shape corresponding generally to the shape of the periphery of the pyramidal optical

path between lens 24 and exposure window 50, at its intersection with the plane of the mirror. The mirror 86 is supported by a U-shaped link 88 which preferably is made of sheet metal and it pivotally coupled to the head section 12 as at pin 90. The link 88 is biased for pivotal movement toward the camera housing by a spring 92. A similarly shaped but larger second specularly reflecting surface is constituted by a lower mirror 94 supported in rearward alignment with the exposure window 50 by a link 96 also preferably made of sheet metal and pivotally coupled to the body section 14 as at pin 98. The link 96 is biased for pivotal movement away from the camera housing by a spring 100.

Pivotally interconnecting links 88 and 96 are a pair of relatively short links 120, best shown in Fig. 4. Each link 120 is pivotally coupled at one end thereof to a rearwardly extending end portion 122 of the link 88 by a pin 124, and at its other end to an intermediate point on a rearwardly extending arm 126 of the link 96 by a pin 128. Each link 120 is separated from the arm 126 to which it is coupled by a spacer 130 having an outside diameter approximately equal to the width of the arm 126. It will be noted that each arm 126 is spaced from the mirror supporting portion 132 of link 96 by a cut-out area 134 which is dimensioned to receive the respective link 120 and end portion 122 when moved to their collapsed positions shown in Fig. 7. At the rearwardly extending end portion 136 of each arm 126 is a substantially U-shaped opening 138, which is constricted slightly at its entrance and otherwise dimensioned matingly to receive and releasably to retain a cooperating end portion 140 of the pin 124 when the links 88, 96 and 120 are in their erect positions shown in Figs. 4 and 5. It will thus be apparent that such cooperation between the opening 138 and the end portion 140 of the pin 124, especially when aided by the biasing influences of the springs 92 and 100, effectively but releasably retains the links in their erect positions as shown.

To release the links from those positions and move them to their collapsed positions shown in Fig. 7, the user need merely press forwardly with his thumbs against the link 96, or rather against the enclosing bellows behind the link 96, preferably at points aligned approximately with the spacers 130. As viewed in Fig. 4, this will cause the link 96 to pivot clockwise about the pin 98 toward the housing 10, thereby withdrawing the end portion 140 of the pin 124 from the opening 138, which in turn will cause each link 120 to pivot counterclockwise about the pins 128 and 124 as it is moved toward the housing by the arm 126, and will cause the link 88 to pivot counterclockwise about the

pin 90 as it is moved toward the housing by the link 120. In this manner, the mirror supporting linkage comprising links 88, 96 and 120 is moved from its erect condition shown in Figs. 4 and 5 to its collapsed condition shown in Fig. 7. To facilitate such movement, each pin 128 is received in a slot 142 in its corresponding link 120 to permit a small amount of lost motion between the arms 126 and links 120 as they are moved to their collapsed positions.

To hold the mirror supporting linkage releasably in its collapsed condition, a pair of pins 144, similar to and parallel to the pins 124, project laterally from mid-portions of the link 88 as shown in Fig. 4. The pins 144 are so located on the link 88 that, during the final portion of the collapsing movement of the linkage, the pins 144 enter the openings 138 in the arms 126 just as the pins 124 do during the final portion of the erecting movement. With the pins 144 thus fully seated in the openings 138, and with the springs 82 and 100 tending to maintain that relationship, the linkage is effectively but releasably retained in its collapsed condition shown in Fig. 7. To release the linkage from that condition and return it to its erect condition shown in Fig. 5, the user need merely squeeze the enclosing bellows laterally inwardly, preferably against the end portions 140 of pins 124, and pull rearwardly. Such action will withdraw pins 144 from openings 138 and cause motions of the various links in directions opposite to those described above in reference to the collapsing movement, until the linkage is again releasably retained in its erect condition.

When the linkage is in its erect condition, the mirrors 86 and 94 supported thereby are accurately disposed in their operative positions. When so disposed, as shown in Fig. 5 by optical rays 102, the upper mirror 86 reflects the optical ray path from the lens 24 downwardly to the lower mirror 94 which, in turn, reflects the ray path forwardly so that the optical image is accurately focused in coincidence with the plane of the film sheet 46. As mentioned above, the trapezoidal shapes of the two mirrors correspond to the shapes of the periphery of the pyramidal optical ray bundle between the lens and the rectangular film exposure area at its intersections with the planes of the two mirrors, thereby minimizing the size of the mirrors and their corresponding supporting structures. Because the central optical ray is folded through an angle of 180 degrees between the lens and the film plane, the two mirrors are oriented at an angle of 90 degrees relative to each other. Instead of being at 45-degree angles relative to the lens axis and the film plane, however, the lower mirror 94 is at an

angle of 35 degrees relative to the film plane, for a focal length of approximately 135 millimeters. Such an angle permits location of the lens close to the film sheet, to reduce the height of the camera and keep the camera compact in other dimensions. The illustrated angular orientation of the two mirrors thus represents a design that achieves greater overall compactness than if the mirrors were located at 45 degrees relative to the film plane and the lens axis.

It is important to note that the film sheet must not receive light reflected directly by the upper mirror 86 alone. To prevent that from occurring, an internal housing wall 104 supporting the upper portion of the rib 76 serves as a baffle that prevents any optical ray from reaching the film sheet directly from the mirror 86.

The mirror enclosure 106 comprises a flexible bellows formed of a thin, opaque, elastomeric material, such as rubber, neoprene, silicone rubber, or the like, and is crimped, cemented, or otherwise fixedly secured along the forward edge portions of its rectangular base to the rear wall 108 of the camera housing, as a 110 and 112, to provide a light-tight optical path between the lens, the mirrors, and the film sheet. The endwise profile of the enclosure corresponds generally to the angular shape defined by the location of the mirrors, and the enclosure preferably is spaced slightly from the mirror support structure so that a slight dent or distortion of the enclosure will not detract from the accurate positioning of the mirrors. Although the mirror enclosure is generally rectangular at its base, it may be tapered inwardly as it extends rearwardly for aesthetic reasons and for compactness, and in this regard the size of the illustrated enclosure could be further reduced by making it conform more closely to the pyramidal optical path. Preferably, the enclosure 106 is narrower than the rear wall 108 of the camera housing and is spaced from the ends of the housing, as shown in Fig. 3, so that the housing can be gripped conveniently by the user. The enclosure 106 is made so that it is readily foldable, along the fold lines  $a-t$  indicated in Fig. 3, from its fully extended configuration shown in Figs. 3 and 5 to its folded configuration shown in Figs. 6 and 7.

A second embodiment in the form of a camera 200 constructed in accordance with the present invention is illustrated in Figs. 8 and 9, which correspond to Figs. 5 and 7, respectively, referred to above. The camera 200 differs from the camera 1 of the first embodiment only in the linkage arrangement used for moving the two mirrors between their operative and inoperative positions, in the means employed for releasably retaining the mirrors

in those positions, and in the flexible enclosure used for maintaining the lens, mirrors, and film sheet in light-tight relation.

Referring first to Fig. 8, which shows the mirrors in their operative positions, an upper mirror 202 is supported by a link 204 that is pivotally coupled at its forwardly extending end portion to the camera housing 206 by a pin 208. The link 204 is biased in a counterclockwise direction (as seen in Fig. 8) away from the housing by a spring 210. A lower mirror 212 is supported by a link 214 that is pivotally coupled at its forwardly extending end portion to the housing by a pin 216. The link 214 is biased in a counterclockwise direction toward the housing by a spring 218 which is stronger than the spring 210. Pivotaly interconnecting the links 204 and 214 are a pair of links 220, only one of which is shown, that are disposed at opposite sides of the links 204 and 214. Each link 220 is pivotally coupled at its forwardly extending end portion to the rearwardly extending end portion of the link 204 by a pin 222 secured to the link 204 and received in an L-shaped slot 224 in the link 220, and each link 220 is pivotally coupled at its rearwardly extended portion to the rearwardly extending end portion of the link 214 by a pin 226. The links 220 are biased in a counterclockwise direction by springs 227 which are weaker than spring 210. It will be seen that the pin 222 does not lie on the line of centers between the pins 208 and 226. This is because the links 204 and 220, when in their fully erect positions, are cocked, in toggle fashion, at a slight angle relative to the line of centers as shown, in other words, the links 204 and 220 may be regarded as being in an over-center condition. That slight angle is determined by the engagement of a nose 228 on the forwardly extending end portion of the link 220 with a cooperating tab 230 on the rearwardly extending end portion of the link 204. When the links 204 and 220 are so cocked, the pins 222, with the aid of the springs 227, are seated at the upper ends of the short legs of the L-shaped slots 224 in the links 220 to prevent relative sliding movement of the pins 222 along the long legs of the slots 224, thereby locking the links 204 and 220, and also the link 214, in their fully erect positions. Those positions are thus maintained, with the aid of the springs 210 and 218, until the user desires to collapse the linkage in order to move the mirrors to their inoperative positions.

To collapse the linkage in the camera 200, the user need merely press downwardly and forwardly with his thumbs against those portions of the flexible enclosure 232 that lie directly behind the pins 222, thereby urging the pins 222 out of their seated positions in the short legs of the L-shaped slots 224

toward the forward ends of the long legs of those slots. At the same time, the link 204 is caused to pivot clockwise about the pin 208 toward the camera housing, the links 220 are caused to pivot counterclockwise about the pins 222 and 226, and the link 214 is caused to pivot counterclockwise about the pin 216 toward the housing. As the link 204 approaches its forwardmost position, the relatively strong spring 218, aided by the relatively weak springs 227 and the lost motion allowed by the long legs of the slots 224, causes the links 214, 220 and 204 to complete their collapsing movements and assume their collapsed positions shown in Fig. 9. Those positions are then maintained by the spring 218 until the user again wishes to return the links to their erect positions. To do that, he need merely squeeze the flexible enclosure 232 laterally inwardly against the ends of the pins 226 and pull rearwardly, thereby causing motions of the various links in directions opposite to those described above, until the linkage again becomes releasably retained in its erect condition shown in Fig. 8.

The flexible enclosure 232 of this second embodiment comprises a bellows similar to that of the first embodiment described above, the principal differences being the different way in which it is folded over the linkage and the different profiles it assumes in its erect and collapsed conditions.

A third embodiment will be described with reference to Figs. 10 and 11.

The camera includes a housing 301, a taking lens 304 and behind it a stationary deflecting mirror 305 attached to a portion 301a of the housing 301. A U-shaped cover portion 309 is pivotably mounted about the fulcrum 312 at the free end of said housing portion 301a.

The cover portion 309 is provided with an arm 309b which, when the camera is in the inoperative position, cooperates with the free end of a mirror 306 holding it in a stable position. In this inoperative position the mirror 306 lies with its free end against a stop 301b on the camera. The stop 301b is located directly in front of the photosensitive material 303 and so the mirror 306 covers the material, thereby contributing extra protection against light. The photosensitive material 303 is accommodated in a cartridge 302.

A further U-shaped cover portion 308 is pivotably mounted on the cover portion 309 about the fulcrum 311. At its other end this portion 308 is rotatably and slidably mounted on the camera housing 301 about a pin 308d by means not shown. The lateral portions 308a, 309a arranged on each side of the cover portions 308, 309 overlap each other and the adjacent camera housing, the mirror area thus being light-tight.

The mirror 306 is pivotably mounted on the camera housing 301 about the pin 307 and cooperates with the cover portion 308 via a lever 314 (Fig. 14). This lever 314 has, at its free end, an angular part 314c which embraces the mirror mounting 307 and has a laterally extending tab 314b which rests against the mirror 306 under spring bias. The lever 314 is moved via a rounded tip 308c of the cover portion 308 which engages an incline 314a on the lever 314. In the region of the rounded tip 308c, the cover portion 308 is provided with a knob 308b with which it is possible to take hold of the cover portion 308.

The device illustrated in Figs. 10 and 11 functions are follows:

In the operative position (Fig. 10) the movable mirror 306 is in the path of the taking rays, between the taking lens 304 and the photosensitive material 303. It is held in this position by a catch, which is not illustrated, and so said mirror 306 and the cover portions 308 and 309 covering the mirror area assume a stable position. In this position the release member (not shown) has been freed for actuation too, and possibly also the exposure control circuit (not shown) closed.

To bring the device into the inoperative position (Fig. 11) the knob 308b is moved in the direction of the arrow "A". The rounded tip 308c of the cover portion 308 thereupon slides along the incline 314a of the lever 314 (Fig. 14) and pivots said lever 314 anticlockwise. As a result the mirror 306 is first pivoted anticlockwise by the tap 314b of the lever 314 until the mirror 306 contacts the stop 301b and covers the material 303. As the knob 308b is actuated further in the direction of the arrow "A", the rounded tip 308c of the cover portion 308 slides along the lever 314 without moving it any further, while the cover portions 308 and 309 are moved against the camera housing 301 to form a more or less level surface (Fig. 11). Here they are anchored in their flat position by means not illustrated and the exposure control circuit (not shown) is possibly interrupted once more. When the camera is in the closed, inoperative position, the release member, not illustrated, is prevented from being actuated.

In the fourth embodiment illustrated in Figs. 12 and 13, parts will be given the same reference numerals as the parts to which they correspond in the third embodiment, but with the addition of a prime (') suffix.

The fourth embodiment, featured in Figs. 12 and 13, comprises two movable mirrors 305', 306'. As opposed to the third embodiment, in Figs. 10 and 11, the mirror 305' associated with the taking lens 304' is attached to a cover portion 313 which is pivotably mounted about the pin 315 on the

camera. The cover portions 309' and 308' are pivotably mounted on this cover portion 313 as has already been described and are connected to the camera housing 301' via the mounting 308d'. The cover portion 313 is also U-shaped, and the lateral portions 313a overlap the lateral portions 309a'. In addition to these lateral portions 308a', 309a' and 313a which enclose the mirror area there are further lamellar covers, 316 and 317, pivotably and slidably mounted about the fulcrum 308d'. These overlap each other, the lateral portions 308a', 309a' and 313a and the adjacent camera housing 301' and so the mirror area is light-tight.

This device, the fourth embodiment, functions as follows:

In the operative position (Fig. 12) the two movable mirrors 305' and 306' are in the path of the taking rays, between the taking lens 304' and the negative material 303', and are held in this position.

To bring the device into the inoperative position (Fig. 13) the knob 308b' is moved in the direction of the arrow "A" whereupon the operations described with reference to the third embodiment take place in the same order. In addition to the cycle of operations of the third embodiment (Figs. 10 and 11) the cover portion 313 is pivoted too in the fourth embodiment, when the knob 308b' is actuated. As a result all the cover portions 308', 309', 313, 316 and 317 of the mirror area are moved into or onto the camera housing 301'. The device assumes a particularly flat form when out of use, owing to the cover portions 308', 309', 313 making a more or less level surface which covers one side of the camera.

Although the cameras of the embodiments illustrated herein employ two substantially flat, reflective surfaces and a lens, it should be noted that the lens can be eliminated entirely by employing, as the specularly reflecting surfaces, one or more spherical or parabolic mirrors to focus the photographic image onto the film sheet. The "objective" then takes the form of a window in the camera housing.

#### WHAT WE CLAIM IS:—

1. A photographic camera comprising a plurality of specularly reflecting surfaces having operative positions in which they act in series to reflect taking rays from an objective as hereinbefore defined to an exposure plane of the camera, and cover means enclosing the reflecting surfaces in light-tight manner, at least one of the reflecting surfaces and that portion of the cover means covering it being movable out of the operative position into an inoperative position in which the bulk of the camera is reduced.

2. A camera as claimed in Claim 1

wherein the specularly reflecting surfaces are constituted by two planar mirrors.

3. A camera as claimed in Claim 1 or 2, wherein each reflecting surface, and the portion of the cover means covering it, are arranged for folding movement between the operative and inoperative positions.

4. A camera as claimed in Claim 1, 2 or 3, including an objective lens having an optical axis which extends through the exposure plane of the camera adjacent a support means for a photosensitive element, at least one of the reflecting surfaces being disposed rearwardly of the exposure plane for reflecting image forming light which has emerged rearwardly from the objective lens, forwardly onto a photosensitive element supported by the support means.

5. A camera as claimed in Claim 4 as appendant to claim 2, wherein both the reflecting surfaces are movable between operative and inoperative positions and are supported by linkage means pivotally coupled to a housing of the camera.

6. A camera as claimed in Claim 5, wherein the linkage means includes a first link pivotally coupled by one end to the housing and supporting a first of the reflecting surfaces, a second link pivotally coupled by one end to the housing and supporting a second of the reflecting surfaces, and a third link pivotally coupled by one end to the other end of the first link and pivotally coupled at its other end to the second link at a point thereon intermediate the ends thereof.

7. A camera as claimed in Claim 5 or 6 further comprising means for releasably maintaining the linkage means in an erect condition corresponding to the operative positions of the reflecting surfaces.

8. A camera as claimed in Claim 7 wherein the maintaining means includes spring means biasing the second link for pivotal movement away from the housing and means at the other end of the second link, engageable with cooperating means at said one end of the third link, for stopping pivotal movement of the second link when the linkage means has reached the erect condition.

9. A camera as claimed in Claim 7 or 8, wherein the maintaining means further includes spring means biasing the first link for pivotal movement thereof towards the housing.

10. A camera as claimed in Claim 5 wherein the linkage means includes a first link pivotally coupled by one end thereof to the housing and supporting a first of the reflecting surfaces, a second link pivotally coupled by one end thereof to the housing and supporting a second of the reflecting surfaces, and a third link pivotally coupled by one end thereof to the other end of the

camera. The cover portions 309' and 308' are pivotably mounted on this cover portion 313 as has already been described and are connected to the camera housing 301' via the mounting 308d'. The cover portion 313 is also U-shaped, and the lateral portions 313a overlap the lateral portions 309a'. In addition to these lateral portions 308a', 309a' and 313a which enclose the mirror area there are further lamellar covers, 316 and 317, pivotably and slidably mounted about the fulcrum 308d'. These overlap each other, the lateral portions 308a', 309a' and 313a and the adjacent camera housing 301 and so the mirror area is light-tight.

This device, the fourth embodiment, functions as follows:

In the operative position (Fig. 12) the two movable mirrors 305' and 306' are in the path of the taking rays, between the taking lens 304' and the negative material 303', and are held in this position.

To bring the device into the inoperative position (Fig. 13) the knob 308b' is moved in the direction of the arrow "A" whereupon the operations described with reference to the third embodiment take place in the same order. In addition to the cycle of operations of the third embodiment (Figs. 10 and 11) the cover portion 313 is pivoted too in the fourth embodiment, when the knob 308b' is actuated. As a result all the cover portions 308', 309', 313, 316 and 317 of the mirror area are moved into or onto the camera housing 301'. The device assumes a particularly flat form when out of use, owing to the cover portions 308', 309', 313 making a more or less level surface which covers one side of the camera.

Although the cameras of the embodiments illustrated herein employ two substantially flat, reflective surfaces and a lens, it should be noted that the lens can be eliminated entirely by employing, as the specularly reflecting surfaces, one or more spherical or parabolic mirrors to focus the photographic image onto the film sheet. The "objective" then takes the form of a window in the camera housing.

#### 50 WHAT WE CLAIM IS:—

1. A photographic camera comprising a plurality of specularly reflecting surfaces having operative positions in which they act in series to reflect taking rays from an objective as hereinbefore defined to an exposure plane of the camera, and cover means enclosing the reflecting surfaces in light-tight manner, at least one of the reflecting surfaces and that portion of the cover means covering it being movable out of the operative position into an inoperative position in which the bulk of the camera is reduced.

2. A camera as claimed in Claim 1

wherein the specularly reflecting surfaces are constituted by two planar mirrors.

3. A camera as claimed in Claim 1 or 2, wherein each reflecting surface, and the portion of the cover means covering it, are arranged for folding movement between the operative and inoperative positions.

4. A camera as claimed in Claim 1, 2 or 3, including an objective lens having an optical axis which extends through the exposure plane of the camera adjacent a support means for a photosensitive element, at least one of the reflecting surfaces being disposed rearwardly of the exposure plane for reflecting image forming light which has emerged rearwardly from the objective lens, forwardly onto a photosensitive element supported by the support means.

5. A camera as claimed in Claim 4 as appendant to claim 2, wherein both the reflecting surfaces are movable between operative and inoperative positions and are supported by linkage means pivotally coupled to a housing of the camera.

6. A camera as claimed in Claim 5, wherein the linkage means includes a first link pivotally coupled by one end to the housing and supporting a first of the reflecting surfaces, a second link pivotally coupled by one end to the housing and supporting a second of the reflecting surfaces, and a third link pivotally coupled by one end to the other end of the first link and pivotally coupled at its other end to the second link at a point thereon intermediate the ends thereof.

7. A camera as claimed in Claim 5 or 6 further comprising means for releasably maintaining the linkage means in an erect condition corresponding to the operative positions of the reflecting surfaces.

8. A camera as claimed in Claim 7 wherein the maintaining means includes spring means biasing the second link for pivotal movement away from the housing and means at the other end of the second link, engageable with cooperating means at said one end of the third link, for stopping pivotal movement of the second link when the linkage means has reached the erect condition.

9. A camera as claimed in Claim 7 or 8, wherein the maintaining means further includes spring means biasing the first link for pivotal movement thereof towards the housing.

10. A camera as claimed in Claim 5 wherein the linkage means includes a first link pivotally coupled by one end thereof to the housing and supporting a first of the reflecting surfaces, a second link pivotally coupled by one end thereof to the housing and supporting a second of the reflecting surfaces, and a third link pivotally coupled by one end thereof to the other end of the



first link and pivotally coupled by its other end to the other end of the second link.

11. A camera as claimed in Claim 10, further comprising means for releasably maintaining the linkage means in an erect condition.

12. A camera as claimed in Claim 11 wherein the maintaining means includes spring means biasing the first link for pivotal movement away from the housing and means on one of the first and third links engageable with cooperating means on the other of the first and third links for stopping the pivotal movement of the first link when the linkage means has reached the erect condition.

13. A camera as claimed in Claim 12 wherein the maintaining means further includes spring means biasing the second link for pivotal movement thereof towards the housing.

14. A camera as claimed in Claim 1, 2 or 3 wherein one of the reflecting surfaces cooperates with the portion of the cover means covering it through a control means

which, when the said reflecting surface is being returned to the inoperative position, first brings the reflecting surface and thereafter brings its covering portion into the inoperative position whereas, to prepare the camera in readiness for exposure, first the covering portion and thereafter the said reflecting surface are brought into the operative position.

15. A camera as claimed in Claim 14 wherein the control means is a lever which is pivotally mounted on the camera housing and has at its free end an angular part with an incline and a laterally extending tab, the angular part embracing a mounting of the said at least one reflecting surface and the tab cooperating with the reflecting surface.

16. A photographic camera substantially as hereinbefore described with reference to and as illustrated in Figs. 1 to 7, Figs. 8 and 9, Figs. 10, 11 and 14 or Figs. 12, 13 and 14 of the accompanying drawings.

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