

[54] CLOSE-UP PHOTOGRAPHIC SYSTEM

[75] Inventor: Jan Van Der Meer, Enschede, Netherlands

[22] Filed: April 16, 1971

[21] Appl. No.: 134,679

[52] U.S. Cl. 95/11 R, 95/86, 355/18

[51] Int. Cl. G03b 19/02

[58] Field of Search.....95/11 R, 13, 44 R, 86, 10 C; 355/18, 39

[56] References Cited

UNITED STATES PATENTS

3,228,283	1/1966	Fulton et al.....	95/11 R
962,844	6/1910	Kaufmann	95/86
2,277,448	3/1942	Munsinger.....	355/39
3,425,326	2/1969	Von Wasielewski.....	95/10 C
3,246,585	4/1966	Scudder.....	95/10 C
3,067,664	12/1962	Winslow	95/44 R
2,926,577	3/1960	Albrecht.....	95/44 R
3,049,968	8/1962	Johanson	95/44 R X
3,396,649	8/1968	Bishop et al.....	95/86
2,697,961	12/1954	Casselman et al.....	95/86 X

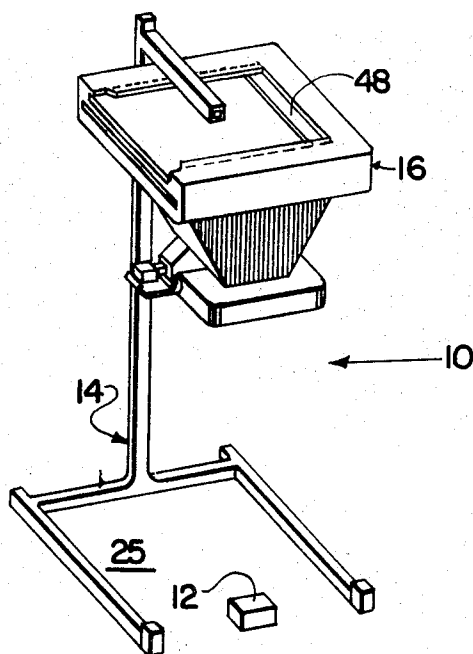
3,447,433 6/1969 Wick et al.....95/11 R

Primary Examiner—Samuel S. Matthews
Assistant Examiner—Kenneth C. Hutchison
Attorney—Brown & Mikulka, William D. Roberson and Robert L. Berger

[57] ABSTRACT

A simple relatively inexpensive "close-up" device or system for easily and accurately photographing, at short range, such subjects as book illustrations, drawings, letters, flowers, various small objects, etc. The system is primarily intended to permit the employment therein, optionally, of either of two widely used, low-priced, self-processing cameras, of types manufactured by Polaroid Corporation, in conjunction with novel mounting-stand means. The latter cooperates with recessed channeled portions of the camera back to enable firm and correct mounting of the camera. A combined supplemental close-up lens and photocell aperture-reducing element, a flash unit, a color-correction filter, and light-polarizing means for reducing reflected glare are included in the system.

23 Claims, 6 Drawing Figures



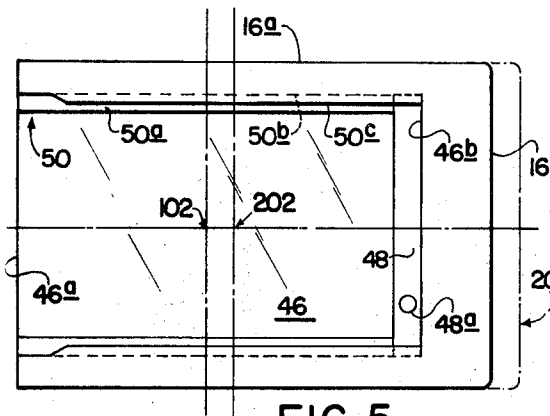


FIG. 5

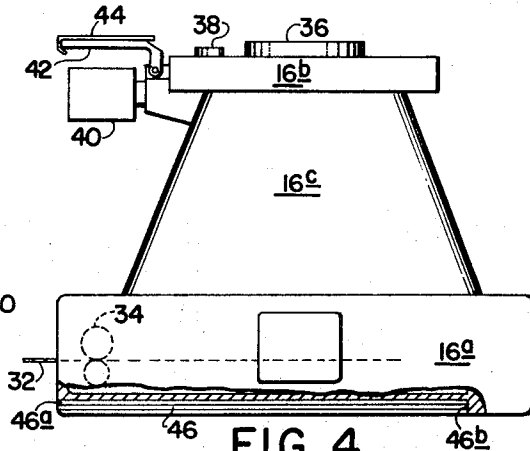


FIG. 4

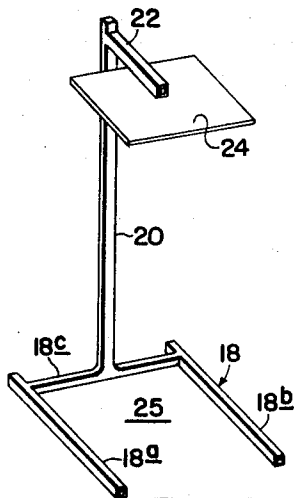


FIG. 2

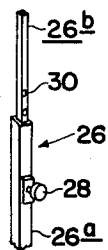


FIG. 3

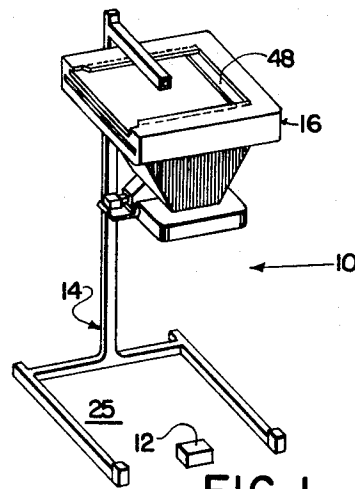


FIG. 1

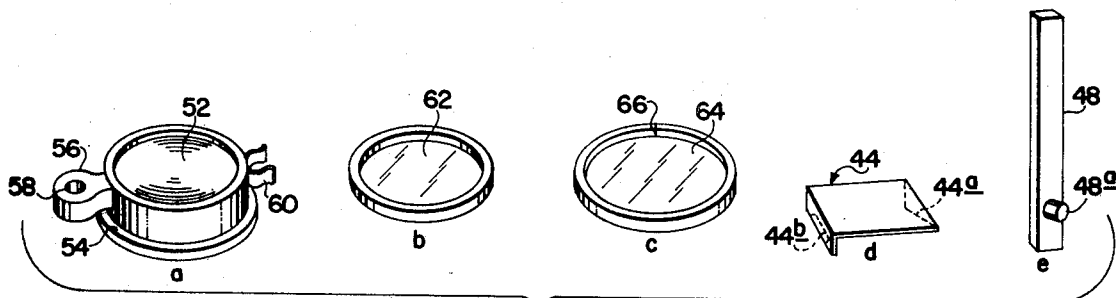


FIG. 6

INVENTOR.
JAN VAN DER MEER

BY

Brown and Mikulka
ATTORNEYS

CLOSE-UP PHOTOGRAPHIC SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a short-range or "close-up" system for widening the availability to people of limited ability or means of photographic apparatus capable of producing high-quality original prints or copy material. This is rendered possible because of the simplicity, excellent performance and relative inexpensiveness of the equipment involved.

2. Description of the Prior Art

The system of the present invention contemplates the employment of well-known self-processing features associated with cameras and film materials manufactured by Polaroid Corporation, whereby a finished print may be produced within a matter of a few seconds following the photographic exposure.

Camera and copying apparatus which, conceivably may be considered as relating in certain respects to the subject invention are described in detail in U.S. Pat. Nos. 3,143,941; 3,270,652; 3,396,649 and 3,498,197, all of which are assigned to Polaroid Corporation.

BRIEF SUMMARY OF THE INVENTION

The present invention is directed to the devising of a versatile photographic system or device for original and copy work which is less cumbersome, operationally simpler and less expensive than comparable systems. Accordingly, the scope of such methods of photography is believed to be considerably widened and enhanced through its introduction. Basically, the system comprises a readily available low-cost camera and associated film material capable of producing black- and-white pictures in a few seconds and color prints in approximately 1 minute. More specifically, the system embodies either of the film-pack cameras designated "Colorpack II" and "Colorpack 80", sold by Polaroid Corporation, Cambridge, Mass., U.S.A. The camera utilized employs a photocell and transistorized shutter-diaphragm means for automatically controlling correct exposure under various lighting conditions. In conjunction therewith are provided supplemental lens means for close-up photography of such subjects as book illustrations and printed matter, letters, memos, flowers, geological or organic specimens, etc. Flash means, associated glare-reducing polarizing filters and a color-correction filter are included to provide a rounded capability. A mounting stand adapted to ready attachment and correct alignment of the camera, without requiring any structural changes in the latter, completes the system.

In accordance with the foregoing considerations, objects of the invention are to provide an inexpensive and efficient system for performing close-up photography; to provide a simple low-cost copy camera assembly adapted to wide usage; to provide a mounting-stand adapted to cooperate with standard portions of a conventional self-processing camera for predeterminedly suspending the latter above a subject to be photographed; to provide a mounting-stand and cooperating means for centering the optical axis of a camera mounted thereon with respect to a subject framing area; to provide a mounting-stand, the angularly-disposed feet of which form a framing area for positioning therein a photographic subject; to provide a close-

up system of the character described comprising supplemental lens, flash means, photocell control, and color-correction components; and to provide a mounting-stand, as described, embodying an adjustable upright or pedestal component.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

BRIEF DESCRIPTION OF THE DRAWING

The novel features that are considered to be characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof will best be understood from the following description of the preferred embodiment when read in connection with the accompanying drawing wherein like numbers have been employed in the different figures to denote the same parts and wherein:

FIG. 1 is a diagrammatic perspective view of the camera and mounting-stand of the invention, in assembled relation;

FIG. 2 is a similar view of the mounting-stand only;

FIG. 3 is a diagrammatic fragmentary view of a modification of the mounting-stand upright or pedestal of FIGS. 1 and 2;

FIG. 4 is a diagrammatic side view of the camera component;

FIG. 5 is a rear view of the camera intended to be mounted in the mounting-stand of this invention; and

FIG. 6 is a diagrammatic perspective view of several supplemental components of the system.

DETAILED DESCRIPTION

The close-up photographic device or system 10 of the invention is illustrated in operative condition, relative to a photographic subject 12, in FIG. 1. Basically, it includes the mounting-stand 14 and the camera 16. The mounting-stand, shown above in FIG. 2, comprises a base 18 composed of the supporting feet 18a, 18b and 18c, an upright or pedestal 20, a lateral arm 22 and a substantially flat plate 24 for suspending camera 16 therefrom. Mounting-stand 14 may, appropriately, be formed of a plurality of square steel tubular members, the parts being soldered or welded together to provide a strong rigid assemblage. Between the feet 18 is formed a framing-area 25 of predetermined dimensions.

While the rigidity and strength insured by the foregoing structure are desirable features, it would be possible to provide an adjustable pedestal 26, partially shown in FIG. 3, to vary the magnification characteristics of the system, as discussed below. The pedestal 26 comprises telescoping members 26a and 26b, and an adjusting thumb-screw 28, the tip of which is adapted to enter any of a plurality of predeterminedly spaced depressions 30 formed in member 26b.

The camera 16, as shown in FIG. 4, and which may be considered as comprising an aforementioned "Colorpack 80" camera sold by Polaroid Corporation, comprises a back member or section 16a, a front section 16b, and an intermediate section 16c which, in the illustration, may be considered to be a rigid pseudo-bellows, characteristic of the contemplated low-cost camera. The rear section 16a houses a film pack, the

leader 32 of which, only, being shown, and compressive processing means 34, the details of which are well known in the art and not essential to an understanding of the present invention. The camera front 16b includes therewithin photocell-controlled and transistorized shutter and diaphragm means (not shown), a lens (not shown), the lens-aperture bezel 36, the photocell-aperture bezel 38, a flash-cube 40, a pivotal flash-diffusing plate 42, and a clip-on light-polarizing element 44 for linearly polarizing the light rays emanating from the flash-cube. The optical axis of this camera has been designated by the numeral 102 in FIG. 5 of the drawings.

Further referring to the back member 16a of FIG. 4, an elongated, open-faced recess 46, having an open end 46a and a closed extremity 46b, is formed within the rear surface thereof. In cameras of the type hereinbefore mentioned, this recessed area is normally employed to store a so-called "cold clip" or hinged plate element which, when removed, is used during cold environmental conditions to transfer heat from the photographer's body to a film unit undergoing processing.

In FIG. 5, the recessed area 46, including, additionally, a spacer bar or insert 48 to be described below, is shown in greater detail. The recessed area includes a pair of channels 50 formed by the inner bearing surfaces 50a, the outwardly projecting side surfaces 50b extending from surfaces 50a, and the outer bearing surfaces 50c extending from surfaces 50b so as to overlie surfaces 50a. The channels, as thus described, are adapted to slideably receive and frictionally engage the plate member 24 of the mounting stand.

As previously intimated, the present system is pointed toward the incorporation therewith of a relatively low-cost, readily available camera having a recessed area of the character described formed in its back. More particularly, such a camera is exemplified by the aforementioned "Colorpack II" and "Colorpack 80" cameras produced by Polaroid Corporation. Each of these cameras includes a lens having focal-length characteristics similar to those of the other. Additionally, the length and width of the recessed areas 46 of the "Colorpack 80" and "Colorpack II" cameras are dimensionally the same. However, the back component of the "Colorpack II" camera, which camera has been designated by the numeral 200 in FIG. 5, is larger than that of the "Colorpack 80" camera 16 and its optical axis 202 is positioned at a different location with respect to the lengthwise dimension of the recessed area 46 than the optical axis 102 of the "Colorpack 80" camera 16 is located lengthwise of its recessed area as shown in that Figure of the drawing. Accordingly, a full insertion of the mounting-stand plate 24 in the "Colorpack 80" camera recess would cause an "off-center" relation of the optical axis of the camera with respect to the framing-area 25. The plate 24 is configured such that, when the "Colorpack II" camera is fully seated thereon, its optical axis is positioned midway between the feet 18a and 18b. However, the spacer element 48 is inserted within the channels 50, as by the handle 48a, to provide a modified limit stop element which reduces the depth of insertion of mounting-stand plate 24 by an amount such as to insure that the optical axis of the "Colorpack 80" camera is correctly centered with respect to the framing area 25.

With reference to the possible fields of use of the subject system, one such field which is considered of importance is the copying of material carried by a sheet of the standard European size designated "A-4" which measures approximately $8\frac{1}{2} \times 10\frac{1}{2}$ inches. To accommodate thereto, a mounting-stand having a longer pedestal and providing a larger subject framing area, together with a supplemental close-up lens differing from the necessary for photographing the general run of subject material, would be required. A mounting-stand having an adjustable pedestal, as described, with a base providing the larger framing area is one solution to the problem. A second method involves two separate rigid mounting-stands. The requirements, relative to either of the aforesaid cameras, may be met by either form of mounting-stand, both of which are contemplated by the invention. Thus, the significant requirements applying to the larger framing area of $8\frac{1}{2} \times 10\frac{1}{2}$ inches are a pedestal providing an overall height of the mounting-stand of approximately 18 $\frac{1}{2}$ inches, a distance of the film plane to the photographic object of approximately 17 inches and a supplemental lens of +3.25 diopters; those relating to a smaller framing area of $5 \times 5\frac{3}{4}$ inches, are a pedestal providing an overall height of approximately 13 inches, a distance of film plane to photographic object of approximately 13 inches and a supplemental close-up lens of +6.25 diopters.

A supplemental close-up lens 52, of either of the foregoing powers, and a mount 54 therefor are shown in FIG. 6a. The mount 54, appropriately formed of a plastic such as "ASB," is adapted to be attached to the lens bezel 36 of the camera. An integral projecting tab or ear 56 has an aperture 58 formed therein. A pair of manually operable spring clips 60 permit installation and release of mount 54. When a subject 12 is illuminated by incandescent light, only, the mount 54 is rotated so as to position the aperture 58 in front of the photocell aperture within and behind the bezel 38, thus reducing the effective size of the photocell aperture. A blue color-correction filter 62 is placed, also, in front of the lens when employing incandescent light.

A light polarizing filter 64, having an index mark 66 is positioned in front of the lens for flash photography, the mark 66 being aligned with a mark on the lens mount to insure that the polarizing orientation thereof is at 90° to that of the clip-on polarizing filter 44 in front of the flash-cube. The function of the two polarizers is to reduce any glare-producing rays which may be reflected from the subject. It will be noted that the polarizer 44 includes resilient projecting clip portions 44a and 44b which are adapted to engage the diffusing element 42. No filters are required in daylight. In all instances, the distance setting of the camera is maintained at infinity, correct focus being provided, automatically by the appropriate supplemental lens in conjunction with that of the camera. A control element for obtaining different exposure settings for black-and-white and color film is provided on the camera's above-described commercially available film having speeds of 3,000 for black-and-white and 75 for color being suitable for employment.

It will be understood that the subject invention may be modified in certain aspects without departing from the spirit or character thereof. The preferred embodiment described herein is, therefore, to be regarded as

illustrative and not restrictive, the scope thereof being indicated by the appended claims, and all variations which come within the meaning of the appended claims are intended to be embraced therein.

What is claimed is:

1. Photographic close-up apparatus for use with a camera of the type having a channelled recess of a given width and length formed in and part way along its back component, such channelled recess normally being used to slidably receive a component employed in connection with film processing operations, said apparatus comprising:

a base member;

an upright component extending from said base member;

an upper component including a plate-like member mounted from said upright component to be disposed in horizontal alignment when said apparatus is seated on its said base member, said plate-like member being configured to be slidably engaged by such channelled recess to suspend such camera from said apparatus with its optical axis disposed in vertical alignment for photographic operations.

2. The apparatus of claim 1 additionally including a bar-like member configured to be slidably insertable into such channelled recess to reduce the extent to which said plate-like member may be inserted into such channelled recess.

3. The invention of claim 1 wherein said base member comprises a pair of substantially parallel feet spaced apart a distance substantially defining the extent of the area to be photographically reproduced by such camera and wherein said plate-like member is further configured, and said base member, said upright component and said upper component arranged to position the optical axis of such camera midway between said parallel feet when said plate-like member is fully seated in such channelled recess.

4. The invention of claim 1 additionally including a supplemental lens and means for removably mounting said supplemental lens over the objective lens of such camera, said supplemental lens being capable of cooperating with such camera objective lens to form an image of a subject disposed in the plane of said base member at the film plane of such camera when such camera is mounted on said upper component.

5. Photographic close-up apparatus for use with a camera of the type having a channelled recess of a given width and length formed in and part way along its back component and including a photocell of a given effective area adjacent its objective lens, said apparatus comprising:

a base member;

an upright component;

an upper suspension component including a plate-like member positioned to be disposed in horizontal alignment when said apparatus is seated on its said base, said plate-like member being configured to be slidably engaged by such channelled recess to position such camera on said apparatus for photographic operations;

a supplemental lens; and

means for removably mounting said supplemental lens over such camera objective lens, said supple-

mental lens being capable of cooperating with such camera objective lens to form an image of a subject disposed in the plane of said base member at the film plane of such camera when such camera is mounted on said upper suspension component, said supplemental lens mounting means serving to rotatably mount such supplemental lens over the camera objective lens and including an appendage having an aperture formed therethrough smaller in area than such given effective area of such photocell whereby said mounting means may be selectively rotated to position said aperture over such photocell to reduce the actual effective area thereof.

6. Photographic close-up apparatus for use with two different types of cameras, both types having channelled recesses of substantially the same given width and length formed in and part way along their back components while the optical axis of one such camera is spaced a lesser distance from the closed end of its such channelled recess than the optical axis of the other of such cameras is spaced from the closed end of its such channelled recess, each such channelled recess normally being used to slidably receive a component employed in connection with film processing operations, said apparatus comprising:

a base member including a pair of spaced apart substantially parallel feet;

an upright component extending from said base member;

an upper component including a plate-like member mounted from said upright component to be disposed in horizontal alignment when said apparatus is seated on its said base member, said plate-like member being configured to be alternately slidably engaged by the channelled recesses of such two types of cameras to fixedly suspend such cameras from said apparatus for photographic operations and to vertically align the optical axis of such one camera substantially midway between said parallel feet when said plate-like member is fully seated in its such channelled recess; and

means for limiting the extent to which said plate-like member may be inserted into such channelled recess of such other camera to vertically align the optical axis of such other camera substantially midway between said parallel feet when said limiting means, said plate-like member and such other camera are disposed in their normal operative relationship.

7. The apparatus of claim 6 wherein said limiting means comprises a bar-like element having a length substantially equivalent to said given width and a thickness facilitating its slidable insertion into such channelled recess of such other camera.

8. A photographic system comprising:

a camera having a channelled recess of a given width and length formed in and along its back component, said channelled recess normally being used to slidably receive a component employed in connection with film processing operations; and apparatus including:

a base member;

an upright component extending from said base member; and

an upper component including a plate-like member mounted from said upright component to be disposed in horizontal alignment when said apparatus is seated on its said base member, said plate-like member being configured to be slidably engaged by said channelled recess to fixedly suspend said camera from said apparatus with its optical axis disposed in vertical alignment for photographic operations.

9. A combined lens and mount therefor capable of supplementing the lens of a camera for altering its focal length, said combined lens and mount being adapted to be rotatably mounted on the bezel of such camera lens and comprising:

a lateral appendage integral with said supplementary lens mount; and

an aperture of given dimensions formed in said appendage, said aperture being superimposed with a photocell aperture of such camera of a given effective area located adjacent to such lens bezel thereof when said lens mount is rotated and, said appendage aperture being smaller in area than the given effective area of such photocell, thereby serving to reduce the actual effective area of the latter.

10. A close-up photographic system for photographing subject material at short range, said system comprising:

a camera including interconnected front and back sections;

a supplemental close-up lens and mounting means therefor cooperating with the lens of said camera; means forming a rectangular recess in, and substantially encompassing, the rear surface of said back section so as to include open access means at that end which is aligned with an edge of said back section and to be closed at an opposite end by a portion of said back section, said rectangular recess being normally used to slidably receive a component employed in connection with film processing operations;

means forming a pair of channels extending along the sides of said recess between said ends;

a mounting-stand including interconnected base, upright and upper components, said upper component being in the form of a generally flat, horizontally disposed plate-like member adapted to be slidably inserted within said open end of said recess and along said pair of channels thereof to suspend said camera from said mounting-stand with its optical axis disposed in vertical alignment; and

limit stop means for determining the depth of insertion of said plate-like member within said recess so as to correctly align the optical axis of said camera relative to a subject to be photographed.

11. A close-up photographic system, as defined in claim 10, wherein a bar-like element is provided for mounting transversely of said recess for shortening the length thereof to alter the depth of insertion of said plate-like member where necessary for insuring the alignment of said optical axis with said subject.

12. A close-up photographic system, as defined in claim 11, which is adapted to operation with either of two cameras having relatively different lengths of said recess.

13. A close-up photographic system, as defined in claim 10, wherein said base component of said mounting-stand comprises a plurality of differentially disposed feet defining therebetween a framing area within which said subject material is positioned.

14. A close-up photographic system, as defined in claim 10, wherein said upright component of said mounting-stand is in the form of a plurality of sections which are variably adjustable for varying the height of said upright component.

15. A close-up photographic system, as defined in claim 10, wherein are included a plurality of supplemental lenses of relatively different focal lengths adapted to use with various heights of said mounting-stand upright component.

16. A close-up photographic system, as defined in claim 10, wherein said camera is adapted to use color film and wherein a color correction filter is included for positioning in front of and releasable attachment to said supplemental lens mounting means.

17. A close-up photographic system for photographing subject material at short range, said system comprising:

a camera including interconnected front and back sections and a photocell of a given effective area for controlling an exposure function of said camera;

a supplemental close-up lens and mounting means therefor cooperating with the lens of said camera, said supplemental lens mounting means including an extension thereof having an aperture formed therein of smaller area than the given effective area of said photocell and being adapted to rotation for superimposing its said aperture with said photocell to reduce, in effect, the actual effective area of the latter;

means forming a rectangular recess in, and substantially encompassing, the rear surface of said back section so as to include open access means at that end which is aligned with an edge of said back section and to be closed at an opposite end by a portion of said back section;

means forming a pair of channels extending along the sides of said recess between said ends;

a mounting-stand including interconnected base member and upright and top components, said top component being in the form of a generally flat, horizontally disposed plate-like member adapted to be slidably inserted within said open end of said recess and along said pair of channels thereof whereby said camera depends from said plate-like member; and

limit stop means for determining the depth of insertion of said plate-like member within said recess so as to correctly align the optical axis of said camera relative to a subject to be photographed.

18. A close-up photographic system for photographing subject material at short range, said system comprising:

a camera including interconnected front and back sections;

a supplemental close-up lens and mounting means therefor cooperating with the lens of said camera;

flash means incorporated with said camera front section, said flash means including means for mount-

ing a flash-cube, a light diffusing plate positionable in front of such flash-cube, a first resilient linear light polarizer having a given orientation adapted to be clipped to said light-diffusing plate, and a second linear light polarizer having an orientation 5 orthogonal to that of said first light polarizer adapted to be positioned in front of said camera lens;

means forming a rectangular recess in, and substantially encompassing, the rear surface of said back section so as to include open access means at that end which is aligned with an edge of said back section and to be closed at an opposite end by a portion of said back section;

means forming a pair of channels extending along the sides of said recess between said ends;

a mounting-stand including interconnected base member and upright and top components, said top component being in the form of a generally flat, horizontally disposed plate-like member adapted to be slidably inserted within said open end of said recess and along said pair of channels thereof whereby said camera depends from said plate-like member; and

limit stop means for determining the depth of insertion of said plate-like member within said recess so as to correctly align the optical axis of said camera relative to a subject to be photographed.

19. A mounting-stand for suspending a close-up camera above an area within which an object to be photographed is located, said mounting-stand comprising in interconnected relation:

a base member;

an upright component extending from said base 35

member;

an upper component mounted from said upright component to engage a laterally disposed channelled slot formed within the back of such camera, such channelled slot normally being used to slidably receive a component employed in connection with film processing operations, said upper component comprising a horizontally disposed plate-like member which is insertable within such camera slot to suspend such camera from said apparatus with its optical axis disposed in vertical alignment for photographic operations.

20. A mounting-stand, as defined in claim 19, wherein is included supplementary thereto and for the purpose of aligning the optical axis of such camera, a bar-like element of given dimensions which may be inserted transversely of such slot of the camera to limit the depth to which said plate-like member can be inserted therein.

21. A mounting-stand, as defined in claim 19, wherein said base member comprises a plurality of relatively angularly disposed feet defining therebetween an area for positioning subject material to be photographed.

22. A mounting-stand, as defined in claim 19, wherein said base member and said upright and suspension components are in the form of rigid fixedly interconnected metallic appendages.

23. A mounting-stand, as defined in claim 19, wherein said upright component is in the form of a plurality of telescoping parts and wherein there is included detent means for variably positioning and holding said parts relative to one another to alter the effective height of said upright component.

* * * * *

40

45

50

55

60

65