

ECLA**EUROPEAN CLASSIFICATION****G03B****APPARATUS OR ARRANGEMENTS FOR TAKING PHOTOGRAPHS OR FOR PROJECTING OR VIEWING THEM; APPARATUS OR ARRANGEMENTS EMPLOYING ANALOGOUS TECHNIQUES USING WAVES OTHER THAN OPTICAL WAVES; ACCESSORIES THEREFOR**

(optical parts of such apparatus G02B; systems for automatic generation of focusing signals for optical elements per se [G02B7/28](#); photosensitive materials or processes for photographic purposes G03C; apparatus for processing exposed photographic materials G03D)

Note

This subclass covers, as far as processes are concerned, only processes characterised by the use or manipulation of apparatus classifiable per se in this subclass.

[N: Notes

1. This subclass covers:

1. apparatus or methods for taking photographs using light sensitive film for image capture, apparatus, or methods for printing, for projecting or viewing images using film stock, photographic film or slides by optical means, e.g. mounting of optical elements, flashes, or their related controls, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake), cooling, beam shaping;
2. aspects of apparatus or methods for taking photographs using an electronic image sensor [EIS] for image capture, insofar as they correspond to those of said apparatus or methods for taking photographs using light sensitive film, i.e. insofar not peculiar to the presence of the EIS, e.g. mounting of optical elements or flashes not peculiar to the presence of the EIS, or their related controls insofar they are not peculiar to the presence of the EIS, e.g. exposure, focus, (opto-) mechanical motion blur (anti-shake);
3. aspects of apparatus or methods for projecting or viewing images using an electronic spatial light modulator [ESLM], insofar as they correspond to those of said apparatus or methods for projecting or viewing images using film stock, photographic film or slides, i.e. insofar as not peculiar to the presence of the ESLM, e.g. mounting of optical elements not peculiar to the presence of the ESLM, or their related controls not peculiar to the presence of the ESLM, e.g. cooling, beam shaping, optical keystone correction;
4. (opto-)mechanical image enhancement in printers or projectors, e.g. keystone correction;
5. optical viewfinders;
6. remote control of cameras and projectors insofar not peculiar to the EIS or ESLM;
7. optical aspects of camera modules using electronic image sensors or related constructional details;
8. constructional aspects of projectors, e.g. cooling, beam shaping, light integrating means not peculiar to the ESLM.

2. This subclass does not cover:

1. concerning cameras or projectors:

- a. arrangements or methods for image capture peculiar to the presence or use of an EIS or image projection peculiar to the presence or use of an ESLM, and their related controls insofar they are peculiar to the presence or use of the EIS or ESLM, which are covered by H04N;
 - b. processing of electrical image signals from the EIS or provided to the ESLM, which is covered by H04N;
 - c. electronic viewfinders, e.g. control of image pickup devices based on information indicated by the electronic viewfinder displaying an image signal generated by the EIS, which are covered by H04N;
 - d. electrical or mechanical aspects of camera modules using electronic image sensors and related constructional details as in webcams or mobile phones, which are covered by H04M, H04N;
 - e. details of projectors peculiar to the use of an ESLM, e.g. dichroic or polarizing arrangements specially adapted for the ESLM, which are covered by H04N;
 - f. remote control of cameras or projectors peculiar to the EIS or the ESLM, e.g. affecting their operation, or based on a generated electrical image signal, which is covered by H04N;
 - g. adaptations peculiar to the use of an EIS or ESLM or the display, the transmission, recording or other use of electrical image data and related circuitry, e.g. mounting of EIS or ESLM, integrated cleaning system for the EIS, dust mapping, cooling of the EIS. which are covered by H04N;
 - h. video cameras, TV cameras, e.g. in studios, CCTV cameras, surveillance cameras and camcorders; constructional and mechanical details related to such cameras, e.g. housings, even when not peculiar to the presence of an EIS, which are covered by [H04N5/225](#);
 - i. systems or apparatus wherein the inventive contribution lies in features covered above, concerning cameras when interacting with those to be covered by G03B, e.g. switch-over between electronic motion-blur correction of electronic viewfinder during focussing and optical motion-blur correction of the lens during exposure, electronic-motion blur correction of the electronic image signal based on output signals of additional sensor, or interaction between mechanical shutter and electronic control of the charge accumulation period of the EIS, which are covered by H04N.
 - j. EIS-sensor read-out, which is covered by [H04N5/335](#);
 - k. processing or use of electrical image signals from the EIS for the generation of camera control signals. e.g. focusing, exposure control, electronic blur correction, display in electronic viewfinder, which are covered by [H04N5/232](#), [H04N5/235](#).
2. optical parts for apparatus or arrangements for taking photographs or for projecting or viewing them, which are covered by G02B;
 3. photosensitive materials for photographic purposes, which are covered by G03C;
 4. apparatus for processing exposed photographic materials; accessories therefor, which are covered by G03D.

5. optical elements or arrangements associated with solid state imager structures, which are covered by [H01L27/146](#);

3. In this subclass the following expression is used with the meaning indicated:

- o subject to the application of Notes 1 and 2 above, "photography" is the process of recording pictures by means of capturing light on a light-sensitive medium, e.g. silver halide based chemical or an electronic image sensor. Light patterns reflected or emitted from objects expose such a light sensitive medium during a timed exposure, usually through a photographic lens in a device known as a camera.

4. In this subclass, as in subclass H04N, the following terms are used with the meaning indicated:

- o "camera": a device capturing image information represented by light patterns reflected or emitted from objects, and exposing a light sensitive film or a main electronic image sensor during a timed exposure, usually through a photographic lens, and producing an image on a light sensitive film or an electrical image information signal respectively;
- o "projector": a device displaying image information by projection of light patterns, usually through an optical lens, wherein the light patterns are generated by illuminating an image, e.g. film or slide, or by converting an electric image signal into an optical signal using an electronic spatial light modulator;
- o "electronic image sensor [EIS]": optoelectronic transducer, converting optical image information into an electrical signal susceptible of being processed, stored, transmitted or displayed;
- o "additional sensor": a sensor, other than the main electronic image sensor, used for controlling a camera;
- o "electronic spatial light modulator [ESLM]": optoelectronic transducer converting electric signals representing image information into optical image information.]

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Guide heading: **Details common to at least two of the following types of apparatus: cameras, projectors, printers** ([details common to cameras only G03B7/00 to G03B17/00, to projectors only G03B21/00, G03B23/00, to printers only G03B27/00](#))

G03B1/00

Film strip handling

- G03B1/02 . Moving film strip by pull on end thereof
- G03B1/04 . . Pull exerted by take-up spool
- G03B1/06 . . . rotated by lever operated ratchet and pawl
- G03B1/08 . . . rotated by band, chain, rack, or other linear reciprocating operation
- G03B1/10 . . . rotated by knob through gearing
- G03B1/12 . . . rotated by motor, e.g. spring
- G03B1/14 . . Special arrangements to ensure constant length of movement of film
- G03B1/16 . . . by film-arresting pins

- G03B1/18 . moving film strip by means which act on the film between the ends thereof
- G03B1/20 . . Acting means
- G03B1/22 . . . Claws or pins engaging holes in the film
- G03B1/24 . . . Sprockets engaging holes in the film
- G03B1/26 . . . Spiked wheels or pins not penetrating the film
- G03B1/28 . . . Shuttle feed
- G03B1/30 . . . Belt feed
- G03B1/32 . . . Friction grippers or rollers
- G03B1/34 . . . Beaters
- G03B1/36 . . . Pneumatic acting means
- G03B1/38 . . embodying Geneva motion, e.g. Maltese-cross gearing

- G03B1/40 . embodying frictional coupling or clutches

- G03B1/42 . Guiding, framing, or constraining film in desired position relative to lens system
- G03B1/44 . . Guides engaging edge of film ([gates G03B1/48](#))
- G03B1/46 . . Rollers engaging face of film, e.g. barrel, waisted, conical ([gates G03B1/48](#))
- G03B1/48 . . Gates or pressure devices, e.g. plate
- G03B1/50 . . . adjustable or interchangeable, e.g. for different film widths
- G03B1/52 . . . Pneumatic pressure devices
- G03B1/54 . . Tensioning or loop-maintaining devices

- G03B1/56 . Threading; Loop forming
- G03B1/58 . . automatic

- G03B1/60 . Measuring or indicating length of the used or unused film; Counting number of exposures ([measuring length in general G01B](#))
- G03B1/62 . . involving locking or stop-motion devices
- G03B1/64 . . by means which ascertain the radius of the film coiled on a spool
- G03B1/66 . . Counting number of exposures ([counting mechanisms per se G06M](#))

- G03B3/00** **Focusing arrangements** ([focusing means, autofocus systems for cameras G03B13/00](#); [means for automatic focusing of projectors G03B21/53](#); [means for automatic focusing of projection-printing apparatus or copying cameras G03B27/34, G03F](#))

- G03B3/02 . moving lens along baseboard

- G03B3/04 . adjusting position of image plane without moving lens
- G03B3/06 . . using movable reflectors to alter length of light path

- G03B3/10 . Power-operated focusing
- G03B3/12 . . adapted for remote control ([control systems in general G05](#))

- G03B5/00** **Adjustment of optical system relative to image or object surface other than for focusing**

- G03B5/02 . Lateral adjustment of lens
- G03B5/04 . Vertical adjustment of lens; Rising fronts
- G03B5/06 . Swinging lens about normal to the optical axis
- G03B5/08 . Swing backs

Guide heading: Details common to cameras

- G03B7/00** **Control of exposure by setting shutters, diaphragms, or filters separately or conjointly** (measuring intensity of light [G01J](#); control systems in general [G05](#))
- G03B7/00B . [N: setting of both shutter and diaphragm ([G03B7/02](#) to [G03B7/22](#) take precedence)]
 - G03B7/00C . [N: setting of both diaphragm and distance ([G03B7/02](#) to [G03B7/22](#) take precedence)]
 - G03B7/02 . Control effected by setting a graduated member on the camera in accordance with indication or reading afforded by a light meter, which may be either separate from or built into camera body
 - G03B7/04 . Control effected by hand adjustment of a member that senses indication of a pointer of a built-in light-sensitive device, e.g. by restoring point to a fixed associated reference mark
 - G03B7/06 . . by a follow-up movement of an associated reference mark to the pointer
 - G03B7/08 . Control effected solely by response to built-in light-sensitive device to the intensity of light received by the camera
 - G03B7/08C . . [N: Control circuits ([G03B7/10](#) takes precedence)]
 - G03B7/081 . . Analogue circuits
 - G03B7/083 . . . for control of exposure time
 - G03B7/085 . . . for control of aperture
 - G03B7/087 . . . for control of both exposure time and aperture [N: see provisionally also [G03B7/081](#)]
 - G03B7/089 . . . for storage of exposure value in mirror reflex cameras [N: see provisionally also [G03B7/081](#)]
 - G03B7/091 . . Digital circuits
 - G03B7/093 . . . for control of exposure time
 - G03B7/095 . . . for control of aperture
 - G03B7/097 . . . for control of both exposure time and aperture [N: see provisionally also [G03B7/091](#)]
 - G03B7/099 . . Arrangement of photoelectric elements in or on the camera
 - G03B7/099B . . . [N: on the camera or in the objective]
 - G03B7/099C . . . [N: in the camera]
 - G03B7/099C2 [N: TTL measuring]
 - G03B7/099C2C [N: in mirror-reflex cameras ([G03B7/099C2D](#) takes precedence)]
 - G03B7/099C2C2 [N: using the mirror as sensorlight reflecting or transmitting member]

- G03B7/099C2C4 [N: using the mirror as sensor]
- G03B7/099C2C6 [N: using the film or shutter as sensorlight reflecting member]
- G03B7/099C2C8 [N: the sensor being mounted in, before, or behind the porro-prism]
- G03B7/099C2C10 [N: with a movable light-measuring element]
- G03B7/099C2C12 [N: Protection against viewer backlight or integration of the viewer light into the measured light]

- G03B7/099C2D [N: Multi-zone light measuring]
- G03B7/10 . . . a servo-motor providing energy to move the setting member
- G03B7/12 . . . a hand-actuated member moved from one position to another providing the energy to move the setting member, e.g. depression of shutter release button causes a stepped feeler to co-operate with the pointer of the light-sensitive device to set the diaphragm and thereafter release the shutter
- G03B7/14 . . . setting of both shutter and diaphragm aperture being effected so as to give the optimum compromise between depth of field and shortness of exposure

- G03B7/16 . . . in accordance with both the intensity of the flash source and the distance of the flash source from object, e.g. in accordance with "guide number" of flash bulb and the focusing of the camera

- G03B7/18 . . . in accordance with light-reducing "factor" of filter or other obturator used with or on the lens of the camera

- G03B7/20 . . . in accordance with change of lens

- G03B7/22 . . . in accordance with temperature or height, e.g. in aircraft

- G03B7/24 . . . automatically in accordance with markings or other means indicating film speed or kind of film on the magazine to be inserted in the camera

- G03B7/26 . . . Power supplies; Circuitry or arrangement to switch on the power source; Circuitry to check the power source voltage

- G03B7/28 . . . Circuitry to measure or to take account of the object contrast

- G03B9/00** **Exposure-making shutters; Diaphragms**

- G03B9/02 . . . Diaphragms
- G03B9/04 . . . Single movable plate with two or more apertures of graded size, e.g. sliding plate, pivoting plate
- G03B9/06 . . . Two or more co-operating pivoted blades e.g. iris type ([shutters functioning as diaphragms by limiting extent of opening movement G03B9/08](#))
- G03B9/07 . . . with means for presetting the diaphragm

- G03B9/08 . . . Shutters ([electro-, magneto-, or acousto-optical shutters G02F1/00](#))
- G03B9/10 . . . Blade or disc rotating or pivoting about axis normal to its plane
- G03B9/12 Two relatively-adjustable aperture-defining members moving as a unit
- G03B9/14 Two separate members moving in opposite directions
- G03B9/16 Two separate members moving in the same direction
- G03B9/18 More than two members

- G03B9/20 each moving in a single direction first to open and then to reclose
- G03B9/22 each moving in one direction to open and then in opposite direction to close, e.g. iris type
- G03B9/24 . . . Adjusting size of aperture formed by members when fully open so as to constitute a virtual diaphragm that is adjustable
- G03B9/26 . . . incorporating cover blade or blades
- G03B9/28 . . Roller blind or flexible plate
- G03B9/30 . . . Single blind with multiple slots or other aperture
- G03B9/32 . . . Double blind
- G03B9/34 with adjustable slot; with mechanism controlling relative movement of blinds to form slot
- G03B9/36 . . Sliding rigid plate
- G03B9/38 . . . Single rigid plate with multiple slots or other apertures
- G03B9/40 . . . Double plate
- G03B9/42 with adjustable slot; with mechanism controlling relative movement of plates to form slot
- G03B9/44 . . . Curved track and plate
- G03B9/46 . . Flap shutters pivoting about axis in plane of flap
- G03B9/48 . . . Double flap
- G03B9/50 . . . Louvre type
- G03B9/52 . . Barrel shutters
- G03B9/54 . . Conical shutters; Rotating plate with axis of rotation inclined to optical axis of shutter

- G03B9/58 . Means for varying duration of "open" period of shutter
- G03B9/60 . . by varying speed of movement of obturating members
- G03B9/62 . . by varying interval of time between end of opening movement and beginning of closing movement

- G03B9/64 . Mechanism for delaying opening of shutter ([separate from shutter G03B17/38](#))

- G03B9/66 . Means for cocking shutter separate from means for releasing shutter
- G03B9/68 . . Cocking effected by movement of film

- G03B9/70 . with flash-synchronising contacts

- G03B11/00** **Filters or other obturators specially adapted for photographic purposes (filters per se G02B [N: 5/20]) [M1207]**

- G03B11/02 . Sky masks

- G03B11/04 . [N: Hoods or caps for eliminating unwanted light from lenses, viewfinders or focusing aids] [N1204]

- [N: **WARNING**
Groups [G03B11/04B](#) to [G03B11/04Z](#) are not complete pending reclassification; see also [G03B11/04](#)
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- G03B11/04B . . [N: Lens caps as separate accessory (accessories in general G03B17/56)] [N1204]
- G03B11/04D . . [N: Protective lens closures or lens caps built into cameras] [N1204]
- G03B11/04F . . [N: Lens hoods or shields] [N1204]
- G03B11/04H . . [N: for viewfinders or eyepieces] [N1204]
- G03B11/04Z . . [N: Hoods or caps not provided for in groups G03B11/04B to G03B11/04H] [N1204]
- G03B11/06 . . Lens caps for exposure making

G03B13/00

Viewfinders; Focusing aids for cameras; Means for focusing for cameras; Autofocus systems for cameras (hoods, caps 11/04; reflex camera arrangements [G03B19/12](#), [G03B19/14](#); rangefinders per se [G01C3/00](#); automatic focusing in general [G02B7/09](#); systems for automatic generation of focusing signals [G02B7/28](#))

- G03B13/02 . Viewfinders
- G03B13/04 . . of direct vision type, e.g. frame, sighting mark
- G03B13/06 . . with lenses with or without reflectors
- G03B13/08 . . . with reflected image of frame
- G03B13/10 . . adjusting viewfinders field
- G03B13/12 . . . to compensate for change of camera lens or size of picture
- G03B13/14 . . . to compensate for parallax due to short range
- G03B13/16 . . combined with focusing aids
- G03B13/18 . Focusing aids
- G03B13/20 . . Rangefinders coupled with focusing arrangements, e.g. adjustment of rangefinder automatically focusing camera
- G03B13/22 . . . coupling providing for compensation upon change of camera lens
- G03B13/24 . . Focusing screens
- G03B13/26 . . . with magnifiers for inspecting image formed on screen
- G03B13/28 . . . Image-splitting devices
- G03B13/30 . . indicating depth of field
- G03B13/32 . Means for focusing
- G03B13/34 . . Power focusing
- G03B13/36 . . . Autofocus systems

G03B15/00

Special procedures for taking photographs; Apparatus therefor

- G03B15/00B . [N: Apparatus for photographing CRT-screens]
- G03B15/00C . [N: Apparatus mounted on flying objects]
- G03B15/02 . Illuminating scene
- G03B15/03 . . Combinations of cameras with lighting apparatus; Flash units
- G03B15/035 . . . Combinations of cameras with incandescent lamps
- G03B15/04 . . . Combinations of photographic apparatus with non-electronic flash apparatus; Non-electronic flash units ([N: control of the photographic apparatus according

to the flash apparatus characteristics [G03B7/16](#); test apparatus for flash [G03B43/00](#);) light sources using a charge of combustible material [F21K5/00](#); ignition circuits [H05B43/02](#))

- G03B15/04B [N: Non-electronic flash apparatus incorporated in photographic apparatus]
- G03B15/04C [N: Separatable flash apparatus; Means for mounting the flash apparatus on the photographic apparatus]
- G03B15/04C2 [N: Mounting means comprising transversal slide and separate cable]
- G03B15/04C3 [N: Mounting means comprising transversal slide and incorporated contacts of the type "Hot shoe"]
- G03B15/04C4 [N: Mounting means comprising longitudinal slide and incorporated contacts (for multiple lamps)]
- G03B15/04C5 [N: Rotatable mounting means]
- G03B15/04C6 [N: Mounting means for sequential translation]
- G03B15/04D [N: Constructional details of the flash apparatus; Arrangement of lamps, reflectors, or the like ([G03B15/04P2](#) takes precedence)]
- G03B15/04D2 [N: Energy sources; Batteries; Capacitors]
- G03B15/04F [N: Electrical ignition means connected to the shutter]
- G03B15/04F2 [N: Ignition mechanisms for sequential ignition of flash lamps]
- G03B15/04F3 [N: Piezo-electric ignition mechanisms]
- G03B15/04F4 [N: Ignition mechanisms permitting choice of multiple ignition modes; Adaptors for different modes]
- G03B15/04F5 [N: Remote controlled ignition mechanisms]
- G03B15/04P [N: Combinations of photographic apparatus with percussion type flash ignition systems]
- G03B15/04P2 [N: Constructional details of the flash apparatus]
- G03B15/04P3 [N: Means for ignition by percussion]
- G03B15/04P4 [N: Means for mounting percussion type flash apparatus]
- G03B15/05 Combinations of cameras with electronic flash apparatus; Electronic flash units (discharge lamps per se [H01J](#); circuit arrangements [H05B41/00](#))
- G03B15/06 Special arrangements of screening, diffusing, or reflecting devices, e.g. in studio
- G03B15/07 Arrangements of lamps in studios

- G03B15/08 Trick photography
- G03B15/10 using back-projection, i.e. blending artificial background with real foreground
- G03B15/12 using mirrors

- G03B15/14 for taking photographs during medical operations

- G03B15/16 for photographing the track of moving objects (high-speed photography [G03B39/00](#); recording tracks of nuclear particles [G01T5/00](#))

- G03B17/00** **Details of cameras or camera bodies; Accessories therefor (lens hoods or caps [G03B11/04](#))**

- G03B17/02 Bodies
- G03B17/04 collapsible, foldable, or extensible, e.g. book-type (bellows for instruments in general [G12B](#))

- G03B17/04B . . . [N: Bellows]
- G03B17/06 . . with exposure meters or other indicators built into body but not connected to other camera members
- G03B17/08 . . Waterproof bodies or housings
- G03B17/10 . . Soundproof bodies
- G03B17/12 . . with means for supporting objectives, supplementary lenses, filters, masks, or turrets
- G03B17/14 . . . interchangeably
- G03B17/16 . . for containing both motion-picture camera and still-picture camera
- G03B17/17 . . with reflectors arranged in beam forming the photographic image, e.g. for reducing dimensions of camera

- G03B17/18 . Signals indicating condition of a camera member or suitability of light ([indicating depth of field G03B13/30](#))
- G03B17/20 . . visible in viewfinder
- G03B17/22 . with means for cutting-off film
- G03B17/24 . with means for separately producing marks on the film, e.g. title, time of exposure
- G03B17/24B . . [N: Optical means]

- G03B17/26 . Holders for containing light sensitive material and adapted to be inserted within the camera ([holders for X-ray films G03B42/04](#))
- G03B17/26B . . [N: specially adapted for motion picture film e.g. cassettes ([cassettes for projection purposes G03B21/32B2](#))]

- G03B17/28 . Locating light-sensitive material within camera
- G03B17/30 . . Locating spools or other rotatable holders of coiled film
- G03B17/30B . . . [N: for roll film cameras]
- G03B17/32 . . Locating plates or cut films
- G03B17/34 . . . Changing plates or cut films

- G03B17/36 . Counting number of exposures ([of film strips G03B1/66](#); [counting mechanisms per se G06M](#))

- G03B17/38 . Releasing-devices separate from shutter ([integral with shutter G03B9/08](#))
- G03B17/40 . . with delayed or timed action

- G03B17/42 . Interlocking between shutter operation and advance of film or change of plate or cut-film
- G03B17/42B . . [N: motor drive cameras]

- G03B17/44 . Means for exchanging focusing screen and light sensitive material

- G03B17/46 . Means for exposing single frames in motion-picture camera

- G03B17/48 . adapted for combination with other photographic or optical apparatus ([with microscopes, with telescopes G02B](#))
- G03B17/50 . . with both developing and finishing apparatus ([processing apparatus G03D](#))

- G03B17/52 . . . of the Land type
 - G03B17/53 . . . for automatically delivering a finished picture after a signal causing exposure has been given, e.g. by pushing a button, by inserting a coin
 - G03B17/54 . . with projector
 - G03B17/55 . with provision for heating or cooling, e.g. in aircraft
 - G03B17/56 . Accessories ([camera cases A45C11/38](#); [N: lens caps [G03B11/04B](#); stands or trestles as support for apparatus or articles placed thereon [F16M11/00](#); means for attachment of apparatus allowing quick-release [F16M11/04A](#); means for supporting on, or holding steady relative to a person [F16M13/04](#); tripods [F16M11/24](#); tripods with telescopic legs [F16M11/32](#); monopod or tripod having a central telescopic column [F16M11/28](#); heads or undercarriages for supporting an object and allowing movement thereof [F16M11/04T](#) to [F16M11/14](#) or [F16M11/20A](#) to [F16M11/24](#)]) [N1204]
- [N: **WARNING**
Groups [G03B17/56B](#) to [G03B17/56Z](#) are not complete pending reclassification; see also [G03B17/56](#)
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- G03B17/56B . . [N: Support related camera accessories] [N1204]
 - G03B17/56D . . [N: Camera grips, handles (means in general for steadying hand-held apparatus [F16M13/00](#))] [N1204]
 - G03B17/56F . . [N: Optical accessories, e.g. converters for close-up photography, tele-convertors, wide-angle convertors] [N1204]
 - G03B17/56H . . [N: Accessory clips, holders, shoes to attach accessories to camera (if integral part of camera body [G03B17/02](#))] [N1204]
 - G03B17/56Z . . [N: Camera accessories not provided in groups [G03B17/36B](#) to [G03B17/56H](#)] [N1204]
 - G03B17/58 . . Attachments for converting cameras into reflex cameras
- G03B19/00** **Cameras** ([details G03B17/00](#))
- G03B19/02 . Still-picture cameras
 - G03B19/02B . . [N: Multi-image cameras] [N9510]
 - G03B19/02B2 . . . [N: Sequence cameras] [N9510]
 - G03B19/04 . . Roll-film cameras
 - G03B19/06 . . . adapted to be loaded with more than one film, e.g. with exposure of one or the other at will ([G03B19/07](#) takes precedence)
 - G03B19/07 . . . having more than one objective
 - G03B19/08 . . . with provision for alternative use with plates or cut-films
 - G03B19/10 . . Plate or cut-film cameras ([with provision for alternative use with roll film G03B19/08](#))
 - G03B19/12 . . Reflex cameras with single objective and a movable reflector or a partly-transmitting mirror
 - G03B19/14 . . with paired lenses, one of which forms image on photographic material and the other forms a corresponding image on a focusing screen
 - G03B19/16 . . Pin-hole cameras
 - G03B19/18 . Motion-picture cameras ([with non-intermittently running film G03B41/02](#))

- G03B19/20 . . Reflex cameras
 - G03B19/22 . . Double cameras
 - G03B19/24 . . adapted to be loaded with more than one film, e.g. with exposure of one or the other at will
 - G03B19/26 . . with fade-in and fade-out effects
- G03B21/00** **Projectors or projection-type viewers; Accessories therefor** (devices for changing pictures [G03B23/00](#); Zoetropes [G03B25/00](#); photographic printing apparatus [G03B27/00](#); arrangements for obtaining special effects on stages or in circuses or in arenas [F21S8/00R4](#); optical projection comparators [G01B9/08](#); projection microscopes [G02B21/36](#)) [N: laser projectors using scanning devices [H04N9/31L](#); interactive projectors, e.g. whiteboards, with input means to control the projection [G06F3/00](#); optical distortion correction, e.g. keystone [G03B21/14](#); projection devices comprising an electronic spatial light modulator and peculiar thereto [H04N5/74](#) or [H04N9/31](#)] **[M1207]**
- [N: **WARNING**
Groups [G03B21/00B](#) to [G03B21/00F4](#) are not complete pending a reorganisation; see also [G03B21/00](#)
]
- G03B21/00B . [N: Slide projectors] [\[N1204\]](#)
 - G03B21/00D . [N: Cine-projectors] [\[N1204\]](#)
 - G03B21/00F . [N: Projectors using an electronic spatial light modulator but not peculiar thereto] [\[N1204\]](#)
 - G03B21/00F2 . . [N: using LCD's] [\[N1204\]](#)
 - G03B21/00F4 . . [N: using micro-mirror devices] [\[N1204\]](#)
 - G03B21/02 . Multiple-film apparatus
 - G03B21/04 . . Picture "juke-boxes"
 - G03B21/06 . affording only episcopic projection
 - G03B21/08 . affording epidiascopic projection
 - G03B21/10 . Projectors with built-in or built-on screen (projection screens in general [G03B21/56](#))
 - G03B21/11 . . for microfilm reading
 - G03B21/11B . . . [N: of roll films]
 - G03B21/11B1 [N: Handling roll films]
 - G03B21/11C [N: of microfiches]
 - G03B21/11C1 [N: Handling microfiches]
 - G03B21/11D [N: Reader-printers]
 - G03B21/12 . adapted for projection of either still pictures or motion pictures (prolonged exhibition of single frame [G03B21/38](#))
 - G03B21/13 . Projectors for producing special effects at the edges of picture, e.g. blurring
 - G03B21/132 . Overhead projectors, i.e. capable of projecting hand-writing or drawing during action (epidiascopic projectors [G03B21/08](#))

- G03B21/134 . Projectors combined with typing apparatus or with printing apparatus
- G03B21/14 . Details [N1204]
 - [N: **WARNING**
Groups [G03B21/14D](#) to [G03B21/14H](#) are not complete pending a reorganisation; see also [G03B21/14](#)]
- G03B21/14D . . [N: Adjusting of projection optics] [N1204]
- G03B21/14F . . [N: Housing details, e.g. position adjustments thereof] [N1204]
- G03B21/14H . . [N: Optical correction of image distortions, e.g. keystone] [N1204]
- G03B21/16 . . Cooling; Preventing overheating
- G03B21/18 . . Fire preventing or extinguishing
- G03B21/20 . . Lamp houses (condensers per se G02B) [N1204]
 - [N: **WARNING**
Groups [G03B21/20B](#) to [G03B21/20Z](#) are not complete pending a reorganisation; see also [G03B21/20](#)]
- G03B21/20B . . . [N: characterised by the light source] [N1204]
- G03B21/20B2 [N: Plural light sources] [N1204]
- G03B21/20B4 [N: Incandescent light sources] [N1204]
- G03B21/20B6 [N: Gas discharge type light sources, e.g. arcs] [N1204]
- G03B21/20B8 [N: LED or laser light sources] [N1204]
- G03B21/20B8B [N: using secondary light emission, e.g. luminescence or fluorescence (using different colours G03B33/00; if related to video signals H04N9/31V)] [N1204]
- G03B21/20D . . . [N: Positional adjustment of light sources] [N1204]
- G03B21/20F . . . [N: Intensity control of illuminating light (controlled by video signal processing H04N5/74 or H04N9/31)] [N1204]
- G03B21/20H . . . [N: Control of light source other than position or intensity] [N1204]
- G03B21/20J . . . [N: Reflectors in illumination beam (in projection beam G03B21/28)] [N1204]
- G03B21/20L . . . [N: Polariser in the lamp house (peculiar to electronic spatial light modulators H04N9/31V)] [N1204]
- G03B21/20N . . . [N: Homogenising, shaping of the illumination light] [N1204]
- G03B21/20P . . . [N: Security or safety means in lamp houses] [N1204]
- G03B21/20Z . . . [N: Details of lamp houses not provided in groups G03B21/20B to G03B21/20P] [N1204]
- G03B21/22 . . Soundproof bodies
- G03B21/26 . . Projecting separately subsidiary matter simultaneously with main image ([light pointers G02B27/20](#))
- G03B21/28 . . Reflectors in projection beam [N: in illumination beam G03B21/20J] [N1204]
- G03B21/30 . . adapted to collapse or fold, e.g. for portability
- G03B21/32 . . Details specially adapted for motion-picture projection ([with film moving continuously through the gate G03B41/02](#))
- G03B21/32B . . . [N: Holders for films, e.g. reels, cassettes, spindles]
- G03B21/32B2 [N: Cassettes ([G03B21/32B3](#), [G03B21/32B4](#) take precedence; for containing

- light-sensitive material [G03B17/26B](#)]
- G03B21/32B2B [N: Endless cassettes]
- G03B21/32B3 [N: Means for fixing the film on the axis of a reel or spindle]
- G03B21/32B4 [N: Means for fixing the film on the periphery of a reel]
- G03B21/34 Change-over arrangements
- G03B21/36 Fades, dissolves, or wipes
- G03B21/38 Prolonged exhibition of single frame
- G03B21/40 Eliminating or reducing effect of flicker
- G03B21/42 Preventing damage to film due to abnormal operation of projector
- G03B21/43 Driving mechanisms
- G03B21/44 Mechanisms transmitting motion to film-strip feed; Mechanical linking of shutter and intermittent feed ([film-strip per se G03B1/00](#))
- G03B21/46 affording adjustment for framing
- G03B21/48 for altering frame speed; for regulating constancy of film speed
- G03B21/50 Control devices operated by the film strip during the run ([controlling or regulating speed G03B21/48](#))
- G03B21/52 by prepared film
- G03B21/53 Means for automatic focusing, e.g. to compensate thermal effects ([automatic focusing in general G02B7/09](#); [systems for automatic generation of focusing signals G02B7/28](#))
- G03B21/54 Accessories
- G03B21/56 Projection screens
- G03B21/56B [N: Screens moving during projection ([G03B21/58 to G03B21/62 take precedence](#))]
- G03B21/56C [N: Screens allowing free passage of sound ([G03B21/58 to G03B21/62 take precedence](#))]
- G03B21/56D [N: for colour projection (G03B21/58, G03B21/60 take precedence)] [N1204]
- G03B21/58 collapsible, e.g. foldable; of variable area
- G03B21/58B [N: Inflatable screens] [N1204]
- [N: **WARNING**
Not complete pending a reorganisation; see also [G03B21/58](#)
]
- G03B21/60 [N: Characterised by the nature of the surface] [N1204]
- G03B21/60B [N: Lenticular ([G03B21/62B takes precedence](#))] [M1112]
- G03B21/60C [N: Polarised] [N1204]
- G03B21/60D [N: For relief projection] [N1204]
- G03B21/60F [N: Fluid screens] [N1204]
- [N: **WARNING**
Not complete pending a reorganisation; see also [G03B21/60](#)
]
- G03B21/62 Translucent screens [N1204]
- G03B21/62B [N: Lenticular translucent screens] [N1204]
- G03B21/64 Means for mounting individual pictures to be projected, e.g. frame for transparency

G03B23/00 **Devices for changing pictures in viewing apparatus or projectors (film-strip handling [G03B1/00](#); direct viewers per se [G02B](#))**

Note

For the purposes of this group the term "picture" denotes any flat representation, whether transparent or not, e.g. produced by photography, writing or printing

- G03B23/02 . in which a picture is removed from a stock and returned to the same stock or another one; Magazines therefor
- G03B23/04 . . with linear movement
- G03B23/04A . . . [N: whereby the picture is not returned to the same stock after projection]
- G03B23/04B . . . [N: whereby the picture is returned to the same stock]
- G03B23/04C . . . [N: Picture changing devices]
- G03B23/04D . . . [N: with horizontally sliding mechanism]
- G03B23/06 . . with rotary movement

- G03B23/08 . in which pictures are attached to a movable carrier
- G03B23/10 . . drum or disc carrier
- G03B23/10B . . . [N: disc carriers]
- G03B23/12 . . linear strip carrier
- G03B23/12B . . . [N: the pictures being attached to a chain or linked up to form a chain]

- G03B23/14 . Carriers operable to move pictures into, and out of, the projection or viewing position and carrying one or two pictures only in a removable manner ([G03B23/18](#) takes precedence) [N: also other devices not provided with a stock, e.g. chutes]

- G03B23/18 . with fade-in and fade-out effects

G03B25/00 **Viewers, other than projection viewers, giving motion-picture effects by persistence of vision, e.g. zoetrope (high-speed photography [G03B39/00](#))**

- G03B25/02 . with interposed lenticular or line screen

G03B27/00 **Photographic printing apparatus (film-strip handling [G03B1/00](#))**

- G03B27/02 . Exposure apparatus for contact printing
- G03B27/04 . . Copying apparatus without a relative movement between the original and the light source during exposure, e.g. printing frame, printing box
- G03B27/06 . . . for automatic repeated copying of the same original
- G03B27/08 . . . for automatic copying of several originals one after the other, e.g. for copying cinematograph film
- G03B27/10 . . Copying apparatus with a relative movement between the original and the light source during exposure
- G03B27/12 . . . for automatic repeated copying of the same original
- G03B27/14 . . Details
- G03B27/16 . . . Illumination arrangements, e.g. positioning of lamps, positioning of reflectors

- controlling the exposure [G03B27/72](#))
- G03B27/18 . . . Maintaining or producing contact pressure between original and light-sensitive material
 - G03B27/20 by using a vacuum or fluid pressure
 - G03B27/22 by stretching over a curved surface
 - G03B27/24 . . . Separating the original from the print
 - G03B27/26 . . . Cooling
 - G03B27/28 . . . Edge-masking devices
 - G03B27/30 . . . adapted to be combined with processing apparatus ([processing apparatus per se G03D](#))
 - G03B27/30G [N: Gas processing ([gas processing apparatus G03D7/00](#))] [N9510]
 - G03B27/30H [N: Heat development ([heat development apparatus G03D13/00D](#))] [N9510]
 - G03B27/32 . Projection printing apparatus, e.g. enlarger, copying camera
 - G03B27/32C . . [N: Copying cameras ([G03B27/34 to G03B27/70 take precedence](#))]
 - G03B27/32E . . [N: Enlargers ([G03B27/34 to G03B27/70 take precedence](#))]
 - G03B27/34 . . Means for automatic focusing therefor ([systems for automatic generation of focusing signals G02B7/28](#))
 - G03B27/36 . . . by mechanical connections, e.g. by cam, by linkage
 - G03B27/38 embodying screws with non-uniform pitch
 - G03B27/40 adapted for use with lenses of different focal length
 - G03B27/42 . . for automatic sequential copying of the same original ([G03B27/34, G03B27/53 take precedence](#))
 - G03B27/42C . . . [N: in copying cameras]
 - G03B27/42E . . . [N: in enlargers]
 - G03B27/44 . . for multiple copying of the same original at the same time ([G03B27/34, G03B27/53 take precedence](#))
 - G03B27/46 . . for automatic sequential copying of different originals, e.g. enlargers, roll film printers ([G03B27/34, G03B27/50, G03B27/53 take precedence](#))
 - G03B27/46E . . . [N: in enlargers, e.g. roll film printers]
 - G03B27/46S . . . at different positions of the same strip, e.g. microfilm
 - G03B27/47 . . . at different positions of the same sheet, e.g. microfiche
 - G03B27/47S . . . copying cinematographic film ([G03B27/48 takes precedence](#))
 - G03B27/48 . . . with original in the form of a film strip moving continuously and compensation for consequent image movement
 - G03B27/50 . . with slit or like diaphragm moving over original for progressive exposure ([G03B27/34 takes precedence](#); [N: [projection optics per se G03B27/52P2](#)])
 - G03B27/52 . . Details
 - G03B27/52C . . . [N: Arrangements for applying a supplementary information onto the sensitive material, e.g. coding ([producing marks on the film in cameras G03B17/24](#))]
 - G03B27/52P . . . [N: Projection optics ([for electro-photographic copiers in particular G03G15/04](#))]
 - G03B27/52P1 [N: for full time exposure]
 - G03B27/52P2 [N: for slit exposure]
 - G03B27/52P2M [N: in which the projection optics move]
 - G03B27/52P2M1 [N: as a whole in a translatory movement]

- G03B27/52P2S [N: in which the projection optics remain stationary]
- G03B27/53 Automatic registration or positioning of originals with respect to each other or the photosensitive layer (within photo-mechanical production of textured or patterned surfaces, e.g. of integrated circuits, [G03F9/00](#))
- G03B27/54 Lamp housings; Illuminating means (controlling the exposure [G03B27/72](#))
- G03B27/54C [N: for copying cameras, reflex exposure lighting]
- G03B27/54E [N: for enlargers]
- G03B27/54E1 [N: colour mixing heads]
- G03B27/56 Mounting enlarger head on column [N: Mounting reproduction camera on column]
- G03B27/58 Baseboards, masking frames, or other holders for the sensitive material ([G03B27/53](#) takes precedence; [N: for electrophotographic copiers [G03G15/00G](#)])
- G03B27/58C [N: in copying cameras ([G03B27/60](#) takes precedence)]
- G03B27/58E [N: Baseboards, easels]
- G03B27/58M [N: Handling microfiche]
- G03B27/58S [N: Handling cut photosensitive sheets]
- G03B27/58S1 [N: Supply stacks; Peeling off]
- G03B27/58W [N: Handling photosensitive webs ([G03B1/00](#) takes precedence)]
- G03B27/58W1 [N: Supply rolls; Cutting arrangements]
- G03B27/60 using a vacuum or fluid pressure
- G03B27/62 Holders for the original ([G03B27/53](#) takes precedence; [N: for electrophotographic copiers [G03G15/00F](#)])
- G03B27/62C [N: in copying cameras]
- G03B27/62C1 [N: Copy boards]
- G03B27/62C2 [N: Transparent copy platens]
- G03B27/62C2C [N: Platen covers]
- G03B27/62C2R [N: Reciprocating copy platens]
- G03B27/62C3 [N: Masks; Overlays; Transparent carriers]
- G03B27/62C4 [N: Apparatus which relate to the handling of originals, e.g. presence detectors, inverters]
- G03B27/62C4R [N: Arrangements for moving an original once or repeatedly to or through an exposure station]
- G03B27/62C4S [N: Arrangements for moving several originals one after the other to or through an exposure station]
- G03B27/62E [N: in enlargers]
- G03B27/62E1 [N: Handling single frame negatives]
- G03B27/62E2 [N: Handling strips ([G03B1/00](#) takes precedence)]
- G03B27/62E3 [N: Handling microfiche]
- G03B27/64 using a vacuum or fluid pressure
- G03B27/66 specially adapted for holding half-tone screens
- G03B27/68 Introducing or correcting distortion, e.g. in connection with oblique projection
- G03B27/70 Reflectors in printing beam
- G03B27/72 Controlling or varying light intensity, spectral composition, or exposure time in photographic printing apparatus (exposure meters per se [G01J](#); control of light

- intensity in general [G05D25/00](#))
- G03B27/72A . . [N: when the reproduction scale is changed]
- G03B27/72B . . [N: Optical projection devices wherein the contrast is controlled electrically (e.g. cathode ray tube masking)]
- G03B27/72C . . [N: Optical projection devices wherein the contrast is controlled optically (e.g. uniform exposure, two colour exposure on variable contrast sensitive material)]
- G03B27/73 . . Controlling exposure by variation of spectral composition, e.g. multicolor printers
- G03B27/73B . . . [N: in dependence upon automatic analysis of the original]
- G03B27/74 . . Positioning exposure meters in the apparatus
- G03B27/80 . . in dependence upon automatic analysis of the original ([G03B27/73](#) takes precedence)
- G03B29/00** **Combinations of cameras, projectors, or photographic printing apparatus with non-photographic non-optical apparatus, e.g. clocks, weapons; Cameras having the shape of other objects** (combinations with flash apparatus [G03B15/03](#); combinations with instruments for medical examination [A61B1/04](#), [G03B3/14](#); combinations with surveying instruments [G01C](#); combinations with core or moderator structure of nuclear reactors [G21C17/08](#); structural combinations with electric discharge tubes [H01J5/16](#), [H01J29/89](#), [H01J37/22](#))
- Guide heading:** **Special techniques**
- G03B31/00** **Associated working of cameras or projectors with sound recording or reproducing means** (record carriers characterised by the selection of the material and comprising cinematographic film and magnetic track [G11B5/633](#))
- G03B31/02 . in which sound track is on a moving-picture film
- G03B31/04 . in which sound track is not on, but is synchronised with, a moving-picture film
- G03B31/06 . in which sound track is associated with successively-shown still pictures
- G03B31/08 . with fade-in and fade-out effects
- G03B33/00** **Colour photography, other than mere exposure or projection of a colour film** (printing apparatus [G03B27/00](#); stereoscopic colour photography [G03B35/00](#))
- G03B33/02 . by two-colour separation records, e.g. red-aspect and white complete records; using Land effect
- G03B33/04 . by four or more separation records
- G03B33/06 . by additive-colour projection apparatus
- G03B33/08 . Sequential recording or projection ([G03B33/02](#), [G03B33/04](#), [G03B33/06](#) take precedence)
- G03B33/10 . Simultaneous recording or projection ([G03B33/02](#), [G03B33/04](#) [G03B33/06](#) take precedence)

- G03B33/12 . . . using beam-splitting or beam-combining systems, e.g. dichroic mirrors
- G03B33/14 . . . using lenticular screens ([integral with film G03C](#))
- G03B33/16 . . . using colour-pattern screens ([integral with film G03C](#))

- G03B35/00** **Stereoscopic photography** ([panoramic or widescreen systems G03B37/00](#); [photogrammetry G01C](#))

- G03B35/02 . . . by sequential recording
- G03B35/04 . . . with movement of beam-selecting members in a system defining two or more view-points
- G03B35/06 . . . with axial movement of lens or gate between exposures

- G03B35/08 . . . by simultaneous recording
- G03B35/10 . . . having single camera with stereoscopic-base-defining system
- G03B35/12 . . . involving recording of different view-point images in different colours on a colour film

- G03B35/14 . . . Printing apparatus specially adapted for conversion between different types of record ([G03B42/08 takes precedence](#))

- G03B35/16 . . . by sequential viewing

- G03B35/18 . . . by simultaneous viewing
- G03B35/20 . . . using two or more projectors
- G03B35/22 . . . using single projectors with stereoscopic-base-defining system
- G03B35/24 . . . using apertured or refractive resolving means on screens or between screen and eye
- G03B35/26 . . . using polarised or coloured light separating different viewpoint images

- G03B37/00** **Panoramic or wide-screen photography; photographing extended surfaces, e.g. for surveying; Photographing internal surfaces, e.g. of pipe**

- G03B37/00B . . . [N: [Photographing internal surfaces, e.g. of pipe, \(G03B37/02 to G03B37/06 take precedence; Instruments for performing medical examinations of cavities or tubes of the body by photographic inspection A61B1/00\)](#)]

- G03B37/02 . . . with scanning movement of lens or cameras
- G03B37/04 . . . with cameras or projectors providing touching or overlapping fields of view
- G03B37/06 . . . involving anamorphosis ([G03B37/02, G03B37/04 take precedence](#))

- G03B39/00** **High-speed photography**

- G03B39/00B . . . [N: [using image converters or amplifiers](#)]
- G03B39/02 . . . using stationary plate or film ([G03B39/06 takes precedence](#))
- G03B39/04 . . . using moving plate or film ([G03B39/06 takes precedence](#))

- G03B39/06 . using light-guides for transferring image frame or elements thereof into different array, e.g. into a line
- G03B41/00 Special techniques not covered by groups [G03B31/00](#) to [G03B39/00](#); Apparatus therefor**
- G03B41/02 . using non-intermittently running film
- G03B41/02B . . [N: combined with shutter]
- G03B41/02C . . [N: combined with slit]
- G03B41/04 . . with optical compensator
- G03B41/06 . . . with rotating reflecting member
- G03B41/08 . . . with rotating transmitting member
- G03B41/10 . . . with oscillating reflecting member
- G03B41/12 . . . with oscillating transmitting member
- G03B41/14 . . Overcoming image movement by brief flashes of light
- G03B42/00 Obtaining records using waves other than optical waves; Visualisation of such records by using optical means (investigating or analysing materials using electromagnetic or sonic waves [G01N](#); using radar, sonar or analogous techniques [G01S](#); [N: holography [G03H](#)])**
- G03B42/02 . using X-rays (measurement of X-radiation [G01T](#); X-ray apparatus, circuits therefor [H05G1/00](#))
- G03B42/02C . . [N: Apparatus for direct X-ray cinematography (circuit arrangements for obtaining a series of X-ray photographs or for X-ray cinematography [H05G1/60](#))]
- G03B42/02C2 . . . [N: Apparatus for indirect X-ray cinematography i.e. by taking pictures on ordinary film from the images on the fluorescent screen (by transforming the picture information intermediately into electrical signals [G03B27/72B](#))]
- G03B42/02P . . [N: Positioning or masking the X-ray film cartridge in the radiographic apparatus]
- G03B42/02S . . [N: for obtaining three-dimensional pictures]
- G03B42/02T . . [N: Industrial applications]
- G03B42/04 . . Holders for X-ray films
- G03B42/04D . . . [N: for dental applications (see also [A61B6/14](#)); (individual packages for X-ray film [G03C3/00D](#))]
- G03B42/04L . . . [N: apparatus for loading or unloading the holders]
- G03B42/04M . . . [N: provided with marking means]
- G03B42/06 . using ultrasonic, sonic or infrasonic waves (measurement of ultrasonic, sonic or infrasonic waves [G01H](#))
- G03B42/08 . Visualising the records by optical means (optical means using spatial filters [G02B27/46](#); optical systems for visualising phase objects [G02B27/50](#))
- G03B43/00 Testing correct operation of photographic apparatus or parts thereof (measuring specific variables [G01](#))**
- G03B43/02 . Testing shutters (measuring time intervals [G04F](#))