United States Patent [19]

Wagner

[11] **3,712,197**

[45] **Jan. 23, 1973**

[54] **ILLUMINATING ARRANGEMENT FOR USE IN OR WITH PHOTOGRAPHIC APPARATUS**

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[22] Filed: **Nov. 5, 1970**

[21] Appl. No.: **87,142**

[30] **Foreign Application Priority Data**

Nov. 8, 1969 Germany.....P 19 56 319.0

[52] **U.S. Cl.**.....**95/11.5 R**

[51] **Int. Cl.**.....**G03b 9/70**

[58] **Field of Search**.....95/11 R, 11 L, 11.5 R

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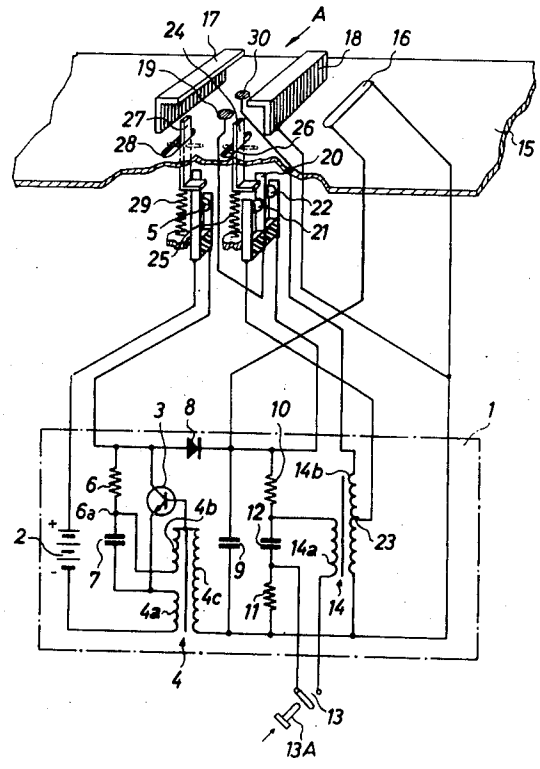
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[57] **ABSTRACT**

The housing of a photographic camera or a discrete illuminating device has a shoe for the foot of an electronic flash unit or a photoflash unit. The housing contains a current supplying circuit whose high-voltage generating portion is a transformer or a piezoelectric crystal and is connected with the tube of the electronic flash unit or with the lamp of the photoflash unit in response to connection of the respective unit to the housing. The tube or lamp is fired in response to opening of the shutter by the shutter release element.

29 Claims, 8 Drawing Figures



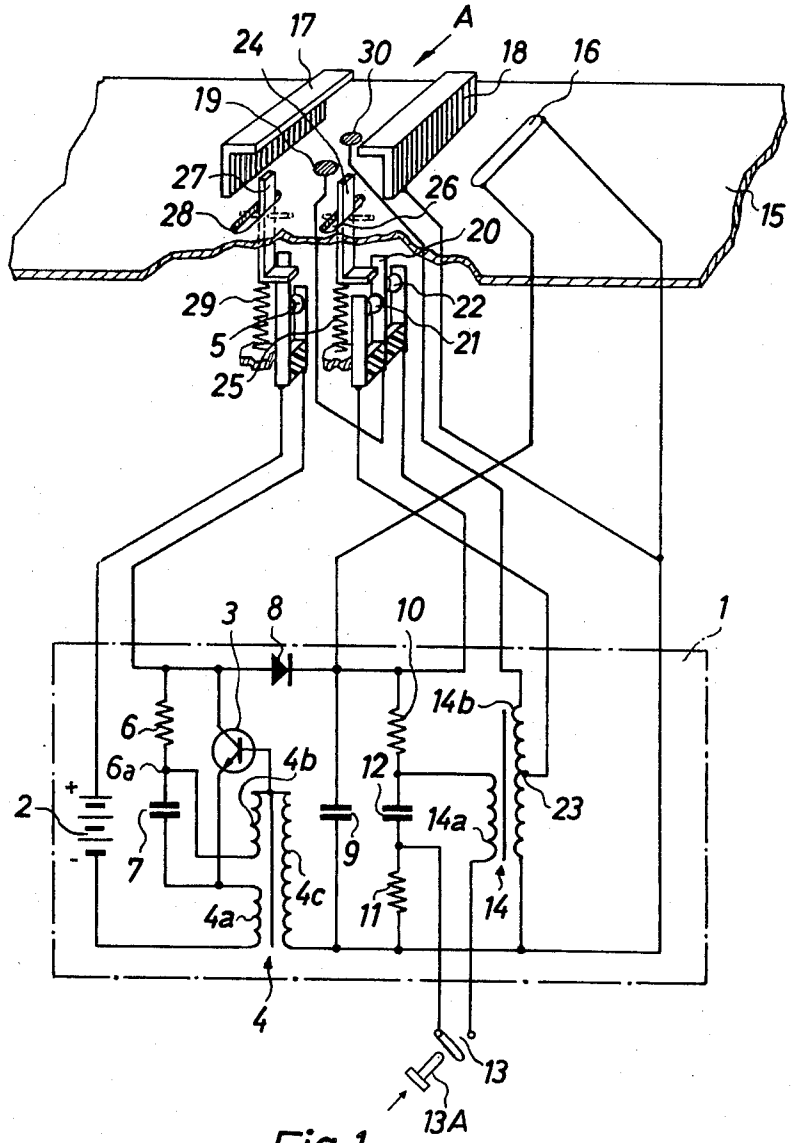


Fig. 1

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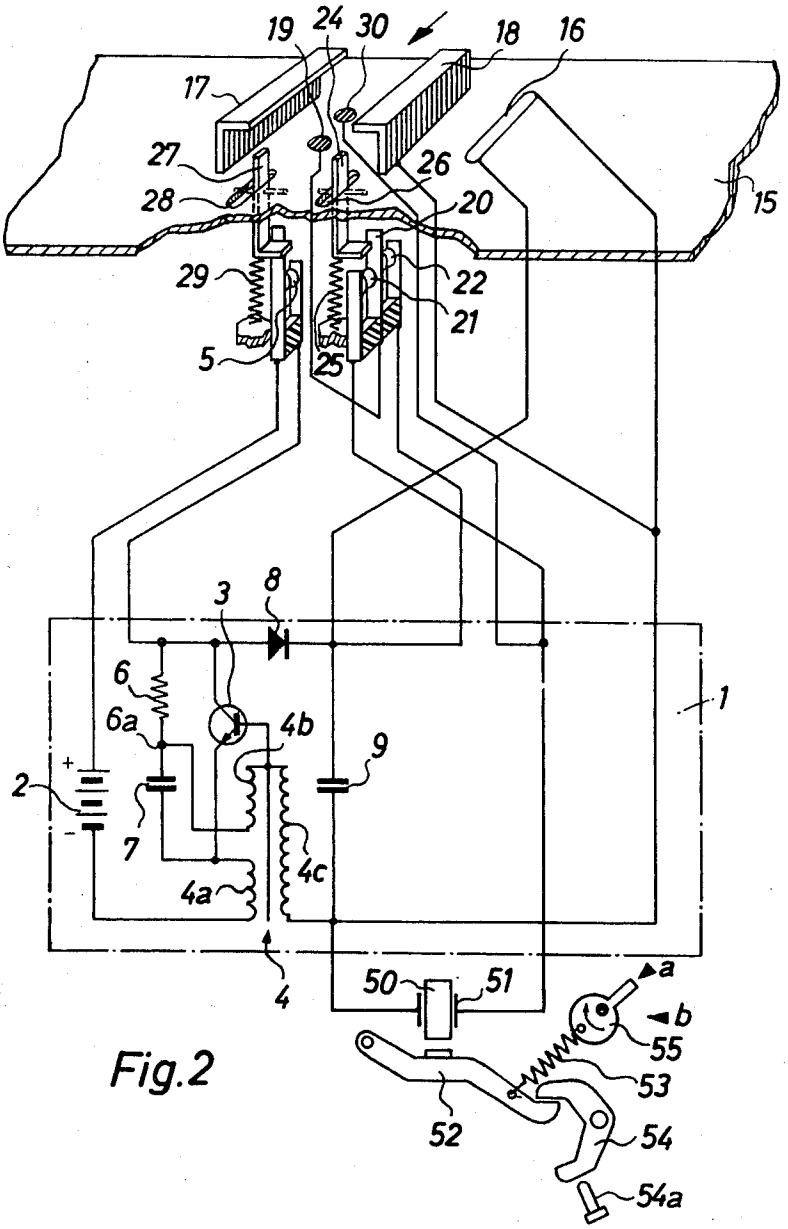


Fig.2

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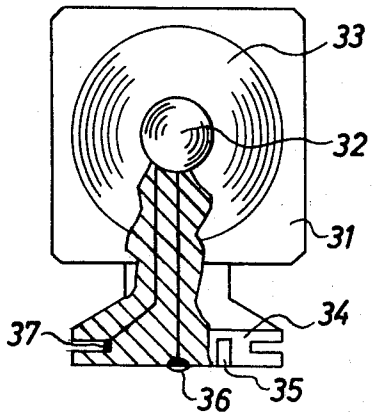


Fig.3

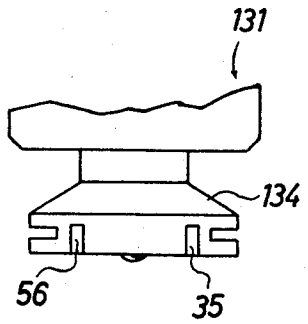


Fig.4

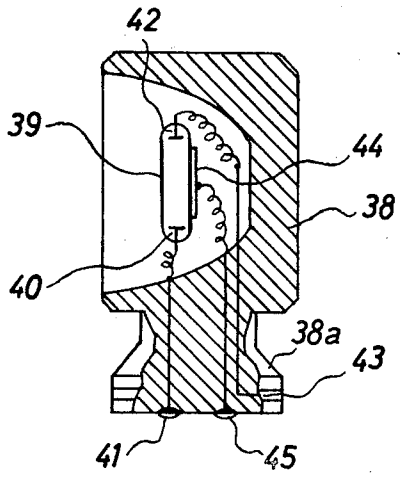


Fig.5

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Fig.7

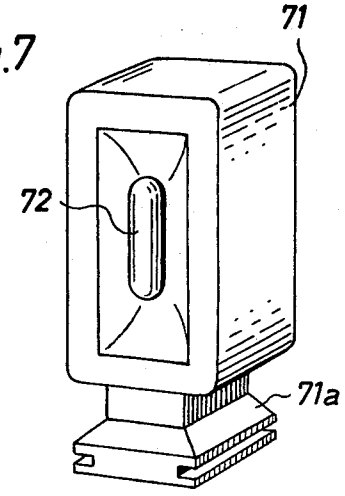


Fig.8

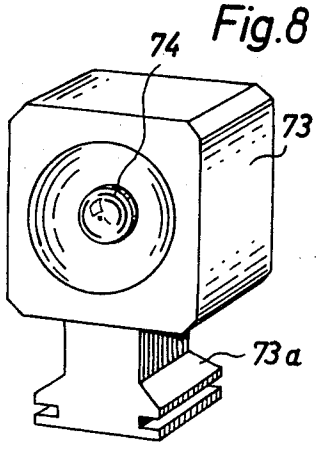
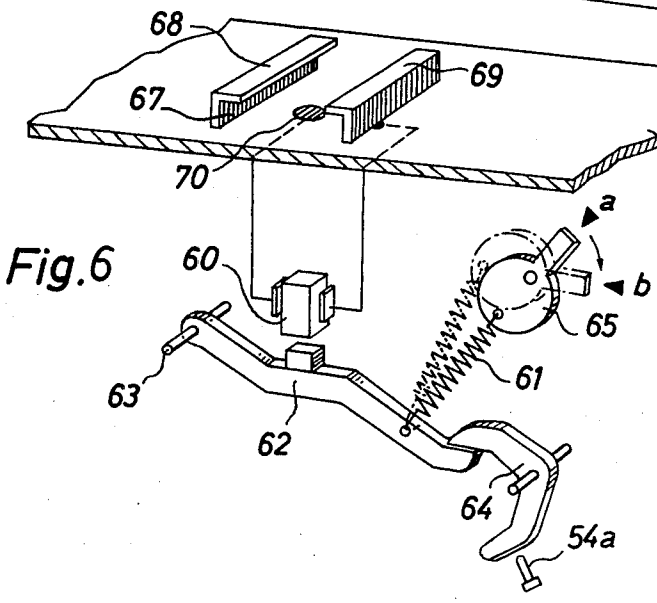


Fig.6



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ILLUMINATING ARRANGEMENT FOR USE IN OR WITH PHOTOGRAPHIC APPARATUS

BACKGROUND OF THE INVENTION

The present invention relates to arrangements for artificial illumination of a subject or scene during the making of exposures with a photographic camera. More particularly, the invention relates to illuminating arrangements which can utilize different types of flash units, especially photoflash units or electronic flash units.

It is already known to utilize a photoflash unit in addition to an electronic flash unit. As a rule, the photoflash unit is mounted between the camera and the electronic flash unit. The photoflash unit includes a storage capacitor which can be charged by the firing capacitor of the electronic flash unit by way of an inserted photoflash lamp and two contacts which extend from the housing of the photoflash unit.

It is also known to employ a housing which can support an electronic flash unit and a photoflash unit. The housing contains the current-supplying parts for both units. When the synchronizing switch is closed, for example, by the camera release element, the tube of the electronic flash unit is fired simultaneously with the lamp of the photoflash unit.

SUMMARY OF THE INVENTION

An object of the invention is to provide an illuminating arrangement, namely, a photographic camera or a discrete illuminating device which can employ different types of flash units and wherein the selected flash unit (such as an electronic flash unit or a photoflash unit) automatically effects the necessary adjustments of the current supplying circuit in response to proper attachment to the housing of the camera or of a discrete illuminating device so that the user need not carry out any operations excepting the attachment of the selected flash unit to the housing.

Another object of the invention is to provide a novel and improved current supplying circuit for use in a camera or in an illuminating device of the just outlined character.

A further object of the invention is to provide a current supplying circuit which comprises a relatively small number of parts.

An additional object of the invention is to provide the current supplying circuit with novel means for supplying high-voltage current for the firing of a tube or lamp in an electronic flash unit or a photoflash unit.

The invention is embodied in an illuminating arrangement which may constitute a portion of a photographic camera or a discrete illuminating device and comprises a housing (e.g., the body of a camera), a current supplying circuit having a high-voltage generating portion (such as a transformer or a piezoelectric crystal) mounted in the housing, an electronic flash unit having a tube, a foot or an analogous member separably connectable with an accessory shoe or analogous receiving means on the housing, and contact means for connecting the tube with the high-voltage generating portion in response to connection of the foot with the accessory shoe, a photoflash unit usable interchangeably with the electronic flash unit and having lamp means, a member (such as a foot) which is connectable with the receiving means on the housing,

and contact means for connecting the lamp means with the high-voltage generating portion in response to connection of the shoe on the photoflash unit with the receiving means, and means (such as the synchronizing switch of a camera) for initiating the firing of the tube or lamp means, depending upon whether the arrangement is being used with the electronic flash unit or with the photoflash unit.

At least the major part of the current supplying circuit is preferably mounted in the housing. The circuit may further comprise switching means which is actuatable in response to connection of at least one of the two members (shoes) to the receiving means on the housing. If the high-voltage generating portion of the current supply circuit is a transformer, the circuit further comprises an energy source and normally open switch means with connects the energy source with the high-voltage generating portion in response to proper attachment of either unit to the receiving means of the housing.

The novel features which are considered as characteristic of the invention are set forth in particular in the appended claims. The improved illuminating arrangement itself, however, both as to its construction and its mode of operation, together with additional features and advantages thereof, will be best understood upon perusal of the following detailed description of certain specific embodiments with reference to the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a fragmentary partly diagrammatic and partly perspective view of a photographic apparatus with a built-in illuminating arrangement which is constructed in accordance with a first embodiment of the invention;

FIG. 2 is a similar view of a second camera embodying a modified illuminating arrangement;

FIG. 3 is a schematic perspective view of a photoflash unit which can be used in the apparatus of FIG. 1 or 2;

FIG. 4 is a fragmentary schematic perspective view of a second photoflash unit which can be utilized in the photographic apparatus of FIG. 2;

FIG. 5 is a schematic perspective view of an electronic flash unit which can be used in the apparatus of FIG. 1 or 2 as a substitute for the photoflash unit of FIG. 3 or 4;

FIG. 6 is a fragmentary perspective view of a photographic apparatus with a built-in illuminating arrangement which embodies a third form of the invention;

FIG. 7 is a perspective view of an electronic flash unit which can be utilized in the apparatus of FIG. 6; and

FIG. 8 is a perspective view of a photoflash unit which can be utilized in the apparatus of FIG. 6 as a substitute for the electronic flash unit of FIG. 7.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to FIG. 1, there is shown a photographic camera with a built-in illuminating arrangement which embodies the invention. The camera comprises a housing or body whose top wall is shown at 15. The housing contains a current supplying circuit 1

which comprises an energy source 2. This current supplying circuit (hereinafter called supply circuit for short) serves to supply current for the firing of an electronic flash unit or a photoflash unit. The energy source 2 is connected with a transformer assembly including a transistor 3 and a transformer 4. The emitter of the transistor 3 is connected with the negative pole of the energy source 2 by way of a first primary winding 4*a* of the transformer 4. The collector of the transistor 3 can be connected with the positive pole of the energy source 2 by way of a switch 5. The emitter-collector circuit of the transistor 3 is connected in parallel with a fixed resistor 6 which is in series with a capacitor 7. A tap 6*a* between the resistor 6 and capacitor 7 is connected with the base of the transistor 3 by way of a second primary winding 4*b* of the transformer 4. The base of the transistor 3 is further connected to one terminal of the secondary winding 4*c* of the transformer 4.

The transistor 3 constitutes a d-c current chopper and the high voltage at the output of the transistor is rectified by a rectifier 8 and smoothed by a storage capacitor 9. The capacitor 9 serves to supply current to the tube of the electronic flash unit and is connected in parallel with two resistors 10, 11 and a firing capacitor 12. The elements 10–12 are connected in series. The capacitor 12 can be connected in parallel with the primary winding 14*a* of a high-voltage transformer 14 by way of a synchronizing switch 13. The secondary winding of the transformer 14 is shown at 14*b*. This transformer constitutes the high-voltage generating portion of the circuit 1.

The storage capacitor 9 is connected in parallel with a readily observable signal lamp 16 which is installed below the top wall 15 of the camera housing. The top wall 15 further supports a receiving means here shown as an accessory shoe which includes two parallel L-shaped guide rails 17, 18. A contact 19, provided in the wall 15 between the rails 17, 18 of the accessory shoe, is connected with the movable central contact 20 of a two-way switch which further includes two fixed contacts 21, 22. The contact 21 is connected with a tap 23 of the secondary winding 14*b*, and the contact 22 is connected with the storage capacitor 9. The movable contact 20 normally engages the fixed contact 21.

The means for actuating the two-way switch (i.e., for moving the contact 20 against the contact 22) comprises a two-armed lever 24 which is biased to the idle position shown in FIG. 1 by a helical spring 25. The upper arm of the lever 24 extends through and beyond a slot 26 in the top wall 15 and is located in the path of movement of a foot of an electronic flash unit when the foot is properly inserted into the space between the guide rails 17, 18 of the accessory shoe.

The space between the guide rails 17, 18 accommodates a portion of the upper arm of a second two-armed actuating lever 27 which extends through a slot 28 of the wall 15 and is biased to an idle position by a helical spring 29. When the upper arm of the lever 27 is moved forwardly, as viewed in FIG. 1, its lower arm closes the aforementioned switch 5 so that the switch 5 connects the energy source 2 with the transformer 14.

A second contact 30 is mounted in the wall 15 between the guide rails 17, 18 and is connected to the free end of the winding 14*b*.

A photoflash unit 31 which can be attached to the shoe on the wall 15 is shown in FIG. 3. An electronic flash unit 38 which can be attached to the accessory shoe when the photoflash unit 31 is removed is shown in FIG. 5. The photoflash unit 31 has a socket for a photoflash lamp 32 located in front of a reflector 33. The foot 34 of the photoflash unit 31 has a front face provided with a recess or notch 35 which can receive the upwardly extending portion of the actuating lever 24 when the foot 34 is inserted between the rails 17, 18 of the accessory shoe on the wall 15. A contact 36 at the underside of the foot 34 engages the contact 19 when the photoflash unit 31 is properly mounted on the wall 15. A further contact 37 of the foot 34 engages the rail 18 and is thereby connected to the ground when the foot 34 is received in the accessory shoe.

The electronic flash unit 38 of FIG. 5 has a tube 39 with electrodes 40 and 42. The electrode 40 is connected with a first contact 41 at the underside of the foot 38*a*, and the electrode 42 is connected with a second contact 43 provided on a side face of the foot 38*a*. A contact electrode 44 of the tube 39 is connected with a third contact 45 which is also provided at the underside of the foot 38*a*. When the foot 38*a* is properly inserted into the space between the guide rails 17, 18, the contacts 41 and 45 respectively engage the contacts 19 and 30.

The operation:

When the user decides to use the photoflash unit 31 of FIG. 3, the foot 34 is inserted between the rails 17, 18 of the accessory shoe on the wall 15 in the direction indicated by arrow A. The front face of the foot 34 then pivots the lever 27 against the opposition of the spring 29 so that the lever 27 closes the switch 5. The lever 24 extends into the notch 35 of the foot 34 and remains in the illustrated idle position in which the movable contact 20 of the two-way switch 20–22 engages the fixed contact 21. The capacitors 9 and 12 are charged after the elapse of a certain period of time. This is indicated to the user by the signal lamp 16.

The user then actuates a camera release element 13A (which is preferably mounted on the wall 15) to close the synchronizing switch 13 simultaneously with opening of the shutter, not shown. The capacitor 12 discharges abruptly through the primary winding 14*a* of the high-voltage transformer 14. This produces a high voltage surge in the secondary winding 14*b*. The current flows from the tap 23 by way of the contacts 21, 20 of the two-way switch, contact 19 on the wall 15, contact 36 on the foot 34 and to the photoflash lamp 32 which is fired to illuminate the subject or scene.

The photoflash unit 31 can be of the type wherein the lamp 32 is replaced by a flashtube or strobe lamp which can be used repeatedly.

If the user decides to use the electronic flash unit 38 of FIG. 5 as a substitute for the photoflash unit 31, the foot 38*a* is inserted into the space between the rails 17, 18 in the direction indicated by the arrow A. The front face of the foot 38*a* pivots the actuating levers 24, 27 so that the lever 27 closes the switch 5 and the lever 24 moves the contact 20 of the two-way switch against the contact 22. The contact 19 is then connected with the positively charged plate of the capacitor 9. The contacts 19, 30 on the wall 15 are respectively engaged by the contacts 41, 45 on the foot 38*a*.

When the synchronizing switch 13 is closed by the camera release element 13A, a high-voltage surge is induced in the secondary winding 14*b* of the transformer 14 so that the tube 39 produces an electronic flash. The storage capacitor 9 discharges by way of the tube 39.

The contact 30 is preferably offset with reference to the contact 19 (as considered in the direction of the arrow A). This prevents unintentional firing of the tube 39 or lamp 32 during insertion of the unit 38 or 31 by preventing the contact 41 or 36 on the foot 38*a* or 34 from engaging the contact 19.

If the contacts 19 and 30 are aligned as shown in FIG. 1, the lever 27 is positioned in such a way that it can be pivoted by the foot 34 or 38*a* only after the contact 36 or 41 moves beyond the contact 30.

FIG. 2 illustrates a second embodiment wherein all such parts which are clearly analogous to or identical with the parts of the structure shown in FIG. 1 are denoted by similar reference characters. The parts 10–14 of FIG. 1 are replaced with a high-voltage generating portion in the form of a piezoelectric crystal 50 whose electrode 51 is connected to the contact 30 and with the contact 19 by way of the contacts 20, 21 of the two-way switch. A pivotable impeller or hammer 52 is adjacent to the crystal 50 and is normally held in the illustrated cocked position by a pivotable blocking pawl 54. A spring 53 biases the hammer 52 in a counterclockwise direction, as viewed in FIG. 2, so that the head of the hammer tends to strike against the crystal 50. The spring 53 is connected to a manually or automatically turnable eccentric 55 having an index which is movable into registry with the graduation *a* or *b* of a fixed scale. The eccentric 55 serves as a means for adjusting the bias of the spring 53 and for thereby determining the strength of impacts which are applied to the crystal 50 when the blocking pawl 54 is moved to an inoperative position.

If the user decides to use the photoflash unit 31 of FIG. 3, the foot 34 is inserted between the rails 17, 18 so that it closes the switch 5 by way of the lever 27. The contact 36 engages the contact 19 and the contact 37 engages the rail 18 which conducts current. The lever 24 extends into the notch 35 and leaves the contact 20 in the illustrated position in which the contact 20 engages with the contact 21.

It is assumed that the index of the adjusting eccentric 55 registers with the graduation *a* so that the bias of the spring 53 is relatively small. When the user thereupon actuates the camera release element 54*a* to open the shutter (not shown), the release element 54*a* pivots the blocking pawl 54 in a clockwise direction to release the hammer 52 which strikes against the crystal 50 with a force determined by the bias of the spring 53. This generates a high voltage which causes the firing of the lamp 32.

The photoflash unit 31 of FIG. 3 can be replaced in the apparatus of FIG. 2 with a photoflash unit 131 of the type shown in FIG. 4. The foot 134 of the unit 131 has two notches or recesses 35, 56 for the levers 24 and 27, respectively. Thus, when the foot 134 is inserted between the rails 17, 18 of the accessory shoe on the wall 15, the switch 5 remains open and the median contact 20 of the two-way switch remains in engagement with the fixed contact 21. The voltage produced by the crystal 50 suffices to fire the lamp of the unit 131 while the switch 5 remains open.

If the user decides to use the electronic flash unit 38 of FIG. 5, the foot 38*a* closes the switch 5 by way of the lever 27 and causes the lever 24 to move the contact 20 into engagement with the contact 22 of the two-way switch. The contacts 20, 22 then connect the contact 19 on the wall 15 with the storage capacitor 9. The user also turns the adjusting eccentric 55 so that the index of this eccentric registers with the graduation *b*, i.e., the bias of the spring 53 increases. When the camera release element 54*a* moves the blocking pawl 54 away from the cocked hammer 52, the latter transmits to the crystal 50 a strong impulse which generates a very high voltage, i.e., a voltage higher than that which is generated when the camera is used with the photoflash unit 31 or 131. The high-voltage current is conveyed by way of the contact 30, contact 45 and control electrode 44. The tube 39 is fired and the storage capacitor 9 discharges by way of this tube.

The structure of FIG. 2 can be modified by replacing the eccentric 55 with a resistor (not shown) which is connected in parallel with the crystal 50 in response to insertion of the foot 34 or 134 into the accessory shoe on the wall 15. The spring 53 is then anchored directly in the housing of the camera and causes the hammer 52 to strike the crystal 50 with a force which is sufficient to fire the tube 39 of the electronic flash unit. The resistor is disconnected from the circuit of the crystal 50 when the apparatus is used with the electronic flash unit 31. This resistor is in parallel with the crystal only when the apparatus is used with a photoflash unit whose firing requires a lower voltage.

The eccentric 55 can be adjusted to the required position in automatic response to attachment of a photoflash unit or an electronic flash unit. The arrangement can be such that the eccentric 55 normally assumes the position which is shown in FIG. 2 and moves to the other position (to increase the bias of the spring 53) in response to insertion of the foot 38a into the accessory shoe on the wall 15.

FIG. 6 illustrates a third embodiment of the invention. A high-voltage generating piezoelectric crystal 60 is mounted in the camera housing which includes a top wall 66 for the L-shaped guide rails 68, 69 of an accessory shoe 67. The crystal 60 can receive impulses from an impeller or hammer 62 which is pivoted in the housing, as at 63, and is normally held in the illustrated cocked position by a pivotable blocking pawl 64. The hammer 62 is biased by a helical spring 61 which is attached to an adjusting eccentric 65 having an index or pointer movable into registry with a graduation *a* or a graduation *b*. The bias of the spring 61 is stronger when the pointer registers with the graduation *b*. When held in the solid-line position of FIG. 6, the eccentric 65 biases the hammer 62 to the extent required for operation with a photoflash unit. The bias of the spring 61 is increased by moving the eccentric 65 to the phantom-line position of FIG. 6 when the camera is to be used with an electronic flash unit.

The guide rail 69 of the accessory shoe 67 conducts current and is connected with one electrode of the crystal 60. The other electrode of the crystal 60 is connected with a contact 70 mounted on the wall 66 in the space between the rails 68 and 69. The shoe 71*a* of the electronic flash unit 71 shown in FIG. 7 has at its underside a contact (not shown) which engages the contact 70 when the foot 71*a* is properly inserted into the

shoe 67. The contact 70 then connects the left-hand electrode of the crystal 60 with the control electrode of the tube 72 in the electronic flash unit 71. All other parts of the supply circuit which includes the crystal 60 are mounted in the electronic flash unit 71. This simplifies the construction of the camera because the wall 66 then merely supports two contacts 70, 69 connected to the electrodes of the crystal 60. The latter is mounted in the housing of the camera or in the housing of a discrete illuminating device.

The electronic flash unit 71 of FIG. 7 can be used interchangeably with the photoflash unit 73 of FIG. 8. The foot 73*a* of the unit 73 is receivable in the shoe 67 upon removal of the foot 71*a*. The underside of the foot 73*a* carries a contact (not shown) which engages the contact 70 and connects the crystal 60 with the lamp 74.

It is clear that the structure shown in FIG. 1, 2 or 6 can be installed in a housing which forms part of a discrete illuminating device and can use electronic flash units or photoflash units. All that counts is to install the supply circuit in and/or on a housing which is provided with receiving means (preferably an accessory shoe) for the foot of a photoflash unit or an electronic flash unit. Thus, the housing which includes the wall 15 or 66 can constitute the body of a camera or the housing of an illuminating device which can be used with a camera to effect artificial illumination of a subject or scene when the shutter of the camera opens.

The housing of the camera or of a discrete illuminating device can be provided with two shoes, one for the foot of the electronic flash unit and the other for the foot of the photoflash unit. With reference to FIG. 6, the second shoe (not shown) can be used to receive the foot 71*a* of the electronic flash unit 71 and the inserted foot 71*a* can automatically move the eccentric 65 to the phantom-line position. One rail of the second shoe is connected to the right-hand electrode of the crystal 60 and the contact (corresponding to 70) in the second shoe is connected to the left-hand electrode of the crystal 60 or to the contact 70.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features which fairly constitute essential characteristics of the generic and specific aspects of my contribution to the art and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the claims.

What is claimed as new and desired to be protected by Letters Patent is:

1. In an illuminating arrangement, a combination comprising a housing having receiving means; circuit means mounted in said housing and having a high-voltage generating portion and a current-supplying portion; first contact means mounted in said housing and connected with said current-supplying and said high-voltage generating portions; a photoflash unit and an electronic flash unit, said units being usable interchangeably and each thereof comprising a coupling member separably connectable with said receiving means, said photoflash unit further including lamp means and first complementary contact means for connecting said lamp means only with said high-voltage generating portion by way of said first contact means in response to connection of the respective coupling member to said receiving means, said electronic flash unit further including a tube and second complementary contact means for connecting said tube with said current-supplying and high-voltage generating portions by way of said first contact means in response to connection of the respective coupling member to said receiving means; and means for effecting the generation of high-voltage pulses by said high-voltage generating portion.

2. A combination as defined in claim 1, wherein said high-voltage generating portion comprises transformer means having secondary winding means provided with a tap, said first complementary contact means being connected with said tap by way of said first contact means in response to connection of the coupling member of said photoflash unit to said receiving means.

3. A combination as defined in claim 1, wherein said high-voltage generating portion comprises a piezoelectric crystal and impeller means movable from a cocked position against said crystal whereby the latter produces the voltage required for firing of said lamp means or said tube, said means for effecting the generation of high-voltage pulses comprising shutter opening means arranged to effect a movement of said impeller means from said cocked position in response to opening of the shutter.

4. A combination as defined in claim 1, wherein said circuit means further comprises an energy source and normally open switch means for connecting said high-voltage generating portion with said energy source, the coupling member of said electronic flash unit having means for effecting the closing of said switch means in response to connection of said last mentioned coupling member to said receiving means and the coupling member of said photoflash unit being arranged to leave said switch means in open position when said last mentioned coupling member is connected to said receiving means, said high-voltage generating portion comprising a piezoelectric crystal and impeller means actuatable to strike against said crystal.

5. A combination as defined in claim 1, wherein said housing constitutes the body of a photographic apparatus.

6. A combination as defined in claim 1, wherein said housing forms part of a self-supporting illuminating arrangement.

7. A combination as defined in claim 1, further comprising switching means provided in said circuit means and actuatable in response to connection of at least one of said coupling members to said receiving means.

8. A combination as defined in claim 1, wherein said circuit means further comprises an energy source and normally open switch means arranged to connect said energy source with said high-voltage generating portion in response to closing thereof, and further comprising means for closing said switch means in response to connection of any one of said coupling members to said receiving means.

9. A combination as defined in claim 7, wherein said means for closing said switching means comprises actuating means receiving motion from that one of said coupling members which is being connected with said receiving means.

10. A combination as defined in claim 7, wherein said circuit means further comprises second switching means operable only by one of said coupling members when said one coupling member is being connected with said receiving means.

11. A combination as defined in claim 3, further comprising adjustable means for biasing said impeller means away from said cocked position with a variable force.

12. A combination as defined in claim 11, further comprising adjusting means for said biasing means, said adjusting means being movable between a plurality of positions each of which corresponds to a different bias upon said impeller means.

13. A combination as defined in claim 12, wherein said adjusting means is movable by hand.

14. A combination as defined in claim 12, wherein said adjusting means comprises a rotary eccentric, said biasing means comprising spring means connected with said impeller means and said eccentric.

15. A combination as defined in claim 1, wherein said housing constitutes the body of a photographic apparatus and said receiving means comprises a single receiving device for reception of one of said coupling members at a time.

16. A combination as defined in claim 15, wherein said first contact means comprises three contacts disposed in the region of said receiving device, the first of said contacts being connected with the ground, the second of said contacts being connected with said high-voltage generating portion of said circuit means and said circuit means further comprising a firing portion for said tube, said firing portion being connected with the third of said contacts.

17. A combination as defined in claim 16, wherein said circuit means comprises an energy source and normally open switch means for connecting said energy source with said high-voltage generating portion, and further comprising actuating means operable to close said switch means, said coupling members being connectable with said receiving device in response to movement in a predetermined direction to thereby operate said actuating means and said second and third contacts being aligned with each other as considered in said direction, said second complementary contact means having a pair of contacts which are aligned with each other and respectively engage said second and third contacts in response to connection of the coupling member of said electronic flash unit to said receiving device, said actuating means being operated by the coupling member of said electronic flash unit after one of said pair of contacts of said second complementary contact means moves beyond that one of said second and third contacts which is located behind the other of said second and third contacts as considered in said direction.

18. A combination as defined in claim 16, wherein said first contact is connected with the ground by way of said circuit means.

19. A combination as defined in claim 16, wherein said first contact forms part of said receiving device.

20. A combination as defined in claim 19, wherein said receiving device is an accessory shoe.

21. A combination as defined in claim 16, wherein each of said coupling members is connectable with the receiving device by moving in a predetermined direction and wherein said second and third contacts are aligned with each other, as considered in said direction.

22. A combination as defined in claim 16, wherein each of said coupling members is connectable with the receiving device by moving in a predetermined direction and wherein said second and third contacts are offset with reference to each other, as considered in said direction.

23. A combination as defined in claim 1, wherein said circuit means further comprises switch means and actuating means operable in response to connection of at least one of said coupling members to said receiving means to thereby actuate said switch means.

24. A combination as defined in claim 23, wherein said actuating means comprises a lever which is pivotably mounted in said housing and has a portion extending into the path of movement of said one coupling member during connection of said one coupling member to said receiving means.

25. A combination as defined in claim 24, wherein said housing has an opening and said portion of said lever extends outwardly through said opening.

26. A combination as defined in claim 24, further comprising biasing means for urging said lever to a predetermined position from which said lever is pivoted in response to movement of said one coupling member during connection to said receiving means.

27. A combination as defined in claim 1, wherein said circuit means further comprises a storage capacitor and two-way switch means arranged to connect said high-voltage generating portion with the lamp means of said photoflash unit in one position thereof and to connect said storage capacitor with the tube of said electronic flash unit in another position thereof.

28. A combination as defined in claim 1, wherein said circuit means further comprises an energy source, a storage capacitor connected with said source in response to connection of at least one of said coupling members to said receiving means whereby said capacitor is charged, and signal lamp means observable from without said housing to indicate the condition of said capacitor.

29. A combination as defined in claim 1, wherein said high-voltage generating portion comprises a piezoelectric crystal.

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