July 5, 1966 G. IRWIN 3,259,868

FLASH BULB HOLDING MEANS

Filed Oct. 11, 1963

Fig. 1

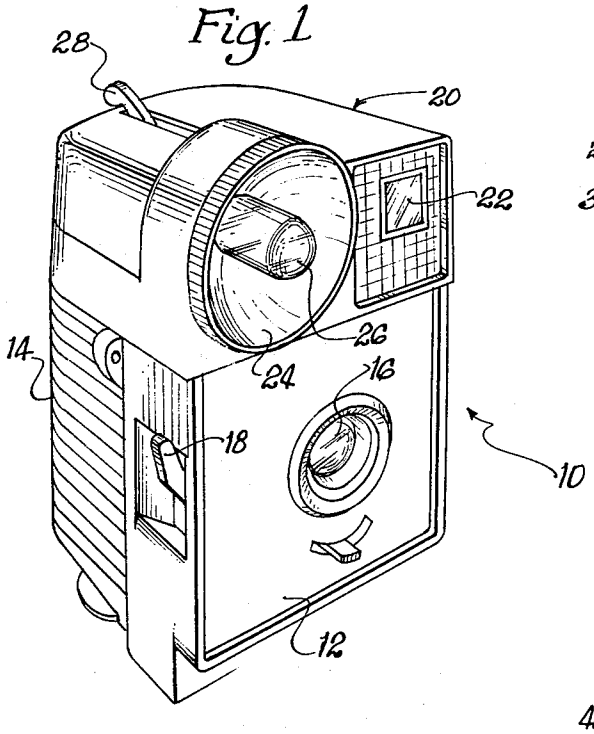


Fig. 2

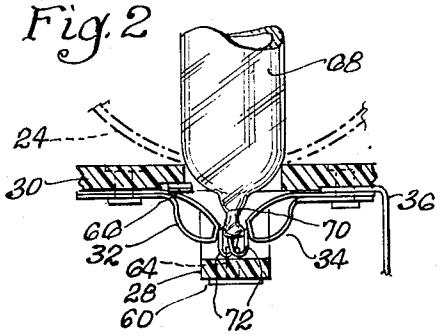
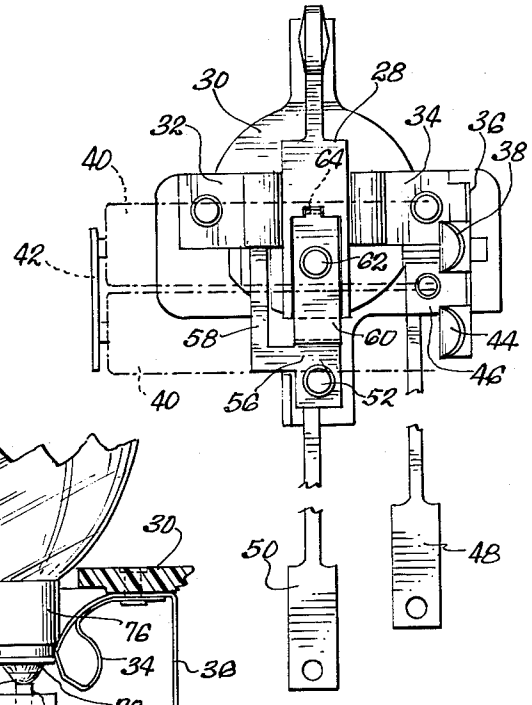


Fig. 3



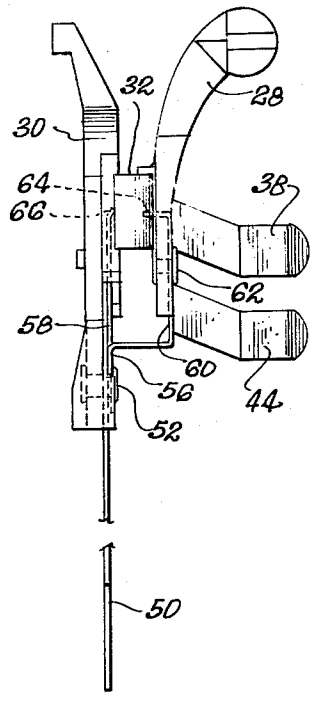


Fig. 5

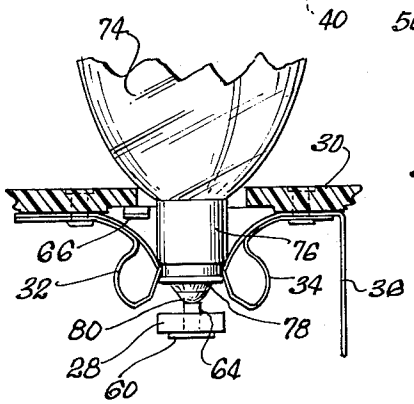


Fig. 4

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FLASH BULB HOLDING MEANS

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The present invention is related to camera constructions and it is particularly related to flash bulb holding means adapted to be utilized in combination with a variety of camera constructions.

It is well-known that a wide variety of flash bulbs are employed for use in taking pictures. These flash bulbs are of various designs and in many instances, flash bulb holding mechanisms can only accommodate one type of flash bulb. For example, the so-called AG–1 type of flash bulb is characterized by a construction substantially different from other flash bulb constructions. Specifically, the AG–1 bulb provides a glass stem which is more or less rectangular in cross section and contact wires are disposed on either side of the stem. Other conventional constructions, such as the M–2 bulb, comprise a more or less cylindrical stem portion having a conductive sheath and having a conductive tip portion which is insulated from the sheath.

It is an object of this invention to provide a flash bulb holding means for use in combination with various camera constructions which is versatile in character in that it can accommodate flash bulbs of different designs.

It is a more particular object of this invention to provide an improved flash bulb holding means which is adapted to accommodate flash bulbs of the so-called AG–1 type in addition to flash bulbs such as the M–2 type.

These and other objects of this invention will appear hereinafter and for purposes of illustration but not of limitation, specific embodiments of this invention are shown in the accompanying drawings in which:

FIGURE 1 is a perspective view of a typical camera construction which can be employed in combination with the flash bulb holding means of this invention;

FIGURE 2 is a fragmentary cross-sectional view illustrating the flash bulb holding means with an AG–1 type bulb associated therewith;

FIGURE 3 is a plan view of a flash bulb holding means assembly characterized by the features of this invention;

FIGURE 4 is a fragmentary cross-sectional view of the flash bulb holding means having a flash bulb of the M–2 type associated therewith; and

FIGURE 5 is an elevational view of the flash bulb holding means assembly illustrated in FIGURE 3.

The flash bulb holding means of this invention is adapted to be associated with a typical system for providing a firing circuit for the flash bulbs. Specifically, a source of electrical power, for example batteries, is adapted to be associated with the holding means, and conductive members are provided for engaging the flash bulb whereby it can be fired when the firing circuit is completed.

The specific holding means of this invention are characterized by contact arms which are mounted for movement in response to insertion of a flash bulb. One of the contact arms is permanently fixed to a first conductive means while the other of the contact arms is disposed to be engaged with a second conductive means while in one position and is adapted to be moved out of engagement with the second conductive means when displaced to a different position. A third conductive means is adapted to be interposed between the contact arms, and this third conductive means is adapted to be included in the firing circuit when the second conductive means is taken out of the firing circuit.

The concepts of this invention will be more readily understood when considering the accompanying drawings. FIGURE 1 illustrates a camera construction **10** which comprises a lower housing **12** having a removable back **14** to provide for insertion of film and having a lens **16**. A shutter lever **18** is provided for taking pictures in a conventional manner. The upper section **20** of the camera includes a view finder **22** and a reflector **24** with a central opening for receiving a flash bulb **26**. A flash bulb ejector arm **28** is adapted to be moved forwardly after firing of a bulb to provide for easy ejection thereof. It will be noted that the flash bulb holding arrangement illustrated comprises a permanent portion of the camera construction. It will be understood, however, that the concepts of this invention can be applied to flash bulb holding means which are adapted to be separated from the camera construction including the type which are connected to the construction only by means of electrical leads. In addition, the concepts of this invention can be applied to flash bulb firing means which are independent of the camera operation.

As best shown in FIGURES 3 and 5, the illustrated flash bulb holding means comprises a base portion **30** having contact arms **32** and **34** riveted thereto. These contact arms are adapted to be moved in response to insertion of a flash bulb since they are formed of a flexible material, such as copper strip, and are only attached to the base by means of the rivets.

With reference to FIGURES 2 and 4, it will be noted that the contact arm **34** is connected to conductive member **36** which extends outwardly from the base **30** to a battery engaging portion **38**. As illustrated in FIGURE 3, a circuit extends from the conductive members **36** through the batteries **40**, conductor **42** and then to the battery engaging portion **44** of conductive member **46**. This conductive member is electrically connected to strip **48** which is in turn adapted to be electrically connected to strip **50** when the shutter contacts (not shown) are closed.

The strip **50** is connected by means of rivet **52** to the base **30**. Conductive member **56** is also connected to the base by means of the rivet **52** and this conductive member includes two extensions **58** and **60**. The extension **60** is connected to the ejector arm **28** by means of rivet **62**, and an inwardly turned tab **64** is formed at the end of this extension. The tab **64** extends through an opening in the ejector arm **28** whereby the tab will be disposed between contact arms **32** and **34**.

The extension **58** of the conductive member **56** extends to a position beneath contact arm **32**. The end **66** of the extension **58** can be bent as best shown in FIGURE 5 to insure contact with the arm **32**.

FIGURE 2 illustrates the arrangement of the bulb holding means when a bulb **68** of the AG–1 type is held thereby. This bulb includes a stem portion **70** which has a generally rectangular cross section. Contact wires **72** extend outwardly from the base of the stem and are bent around to the sides thereof, one on each side.

When a bulb of the AG–1 type is inserted into the bulb holding means of this invention, the contact wires **72** of the bulb engage the contact arms **32** and **34**. The design of the construction is such that the arm **32** will be engaged with the end **66** of the extension **58** of conductive member **56**. Accordingly, when the camera shutter is closed, a circuit is completed from the contact arm **32** through the conductive member **56**, conductive strips **50** and **48**, through the batteries **40** and then to conductive arm **34**. Accordingly, the bulb **68** will fire.

FIGURE 4 illustrates the situation wherein a bulb **74** of the M–2 type is held by the bulb holding means. This bulb is characterized by a stem portion which includes a conductive sheath **76**, insulating portion **78** and a

conductive tip **80**. When this bulb is inserted, the sheath **76** engages the contact arms **32** and **34**. However, since the stem of this bulb will extend further into the construction, the arm **32** will be bent out of contact with the end **66** of extension **58**. However, the conductive tip **80** of the bulb will engage the end **64** of the extension **60**. As a result, a circuit is completed, when the shutter is snapped, through conductive member **56**, strips **50** and **48**, batteries **40** and contact arm **34**.

It will be noted that with the bulb **74** in place, the contact end **64** must be properly positioned to enable completion of the firing circuit. However, this contact end does not come into play when the bulb **68** is inserted since, as shown in FIGURE 2, the wires **72** straddle the end **64** without contacting this end.

After firing of either bulb, the ejection means **28** can be operated to move the bulb out of engagement with the arms **32** and **34**. The strip **60** is flexible in character and functions to provide the pivotal mounting for the ejection arm in addition to acting as part of the firing circuit. This arrangement greatly facilitates the assembly operations involved in producing the mechanism of this invention.

It will be appreciated that there has been described a flash bulb holding construction which is extremely versatile in character. The construction of this invention includes a relatively few operating parts which can be formed and assembled in a highly economical fashion. The construction eliminates the necessity for providing flash bulb holding means of a different character when bulbs of different configurations are to be employed.

It will be understood that various changes and modifications can be made in the bulb construction described which provide the characteristics of this invention without departing from the spirit thereof particularly as defined in the following claims.

That which is claimed is:

1. In a flash bulb firing construction of the type including a source of electrical power and conductor members connected to said source and to a flash bulb holding means whereby the flash bulbs can be included in a firing circuit, the improvement in said holding means comprising a pair of spaced-apart contact arms, means mounting said arms whereby the arms can be displaced when engaged by flash bulbs, a first conductive means fixed to one of said arms, a second conductive means positioned to be engaged by the other of said arms, and a third conductive means disposed between said arms, said first and second conductive means being adapted to include a flash bulb in said firing circuit when engaged by conductive elements on the flash bulb and said first and third conductive means being adapted to include a flash bulb of a different type in said firing circuit when conductive elements on said different flash bulb are engaged.

2. A construction in accordance with claim **1** including a pivotally mounted ejector arm having an ejection portion adapted to be forced into engagement with a bulb stem held by said contact arms to thereby force the bulb out of gripping engagement with said contact arms, and wherein said third conductive means comprises a conductive strip secured to said ejector arm with the contact end of said strip extending inwardly of the ejection portion of said arm in a direction toward said contact arms.

3. A construction in accordance with claim **2** wherein the conductive strip of said third conductive means acts as a pivotal mounting member for said ejector arm.

4. A construction in accordance with claim **1** including a mounting base for said holding means and wherein said contact arms comprise flexible metal strips including freely extending portions defining a bulb stem receiving space therebetween, and end portions anchored to said base whereby insertion of a bulb will act to bend said metal strips.

5. A construction in accordance with claim **4** wherein said second conductive means comprises a strip fixed to said base adapted to engage the underside of said other contact arm, and wherein insertion of bulbs of a type adapted to contact said third conductive means operates to displace said other contact arm out of engagement with said second conductive means while insertion of a bulb of a type having separate conductive elements for engaging said contact arms will not displace said other contact arm out of contact with said second conductive portion.

6. In a flash bulb firing construction of the type including a source of electrical power and conductor members connected to said source and to a flash bulb holding means whereby said flash bulbs can be included in a firing circuit, the improvement in said holding means comprising a pair of spaced-apart contact arms, means mounting the arms whereby the arms can be displaced when engaged by flash bulbs, a first conductive means fixed to one of said arms, a second conductive means positioned to be engaged by the other of said arms, and a third conductive means disposed between said arms, said first and second conductive means being adapted to include in said firing circuit a flash bulb of the type having conductive wires disposed on opposite sides of a stem portion, said wires being adapted to engage said contact arms, and said first and third conductive means being adapted to include in said firing circuit a flash bulb of the type having a conductive stem portion and a tip portion insulated from said stem portion, said stem portion being adapted to engage said one contact arm and said tip portion being adapted to engage said third conductive means.

7. A construction in accordance with claim **6** including a pivotally mounted ejector arm having an ejection portion adapted to be forced into engagement with a bulb stem held by said contact arms to thereby force the bulb out of gripping engagement with said contact arms, and wherein said third conductive means comprises a conductive strip secured to said ejector arm with the contact end of said strip extending inwardly of the ejection portion of said arm in a direction toward said contact arms.

8. A construction in accordance with claim **7** wherein the conductive strip of said third conductive means acts as a pivotal mounting member for said ejector arm.

9. A construction in accordance with claim **6** including a mounting base for said holding means and wherein said contact arms comprise flexible metal strips including freely extending portions defining a bulb stem receiving space therebetween, and end portions anchored to said base whereby insertion of a bulb will act to bend said metal strips.

10. A construction in accordance with claim **9** wherein said second conductive means comprises a strip fixed to said base adapted to engage the underside of said other contact arm, and wherein insertion of bulbs of a type adapted to contact said third conductive means operates to displace said other contact arm out of engagement with said second conductive means while insertion of a bulb of a type having separate conductive elements for engaging said contact arms will not displace said other contact arm out of contact with said second conductive portion.

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