

July 21, 1942.

R. P. WUERFEL

2,290,264

ATTACHMENT FOR CAMERAS

Filed Dec. 5, 1939

2 Sheets-Sheet 1

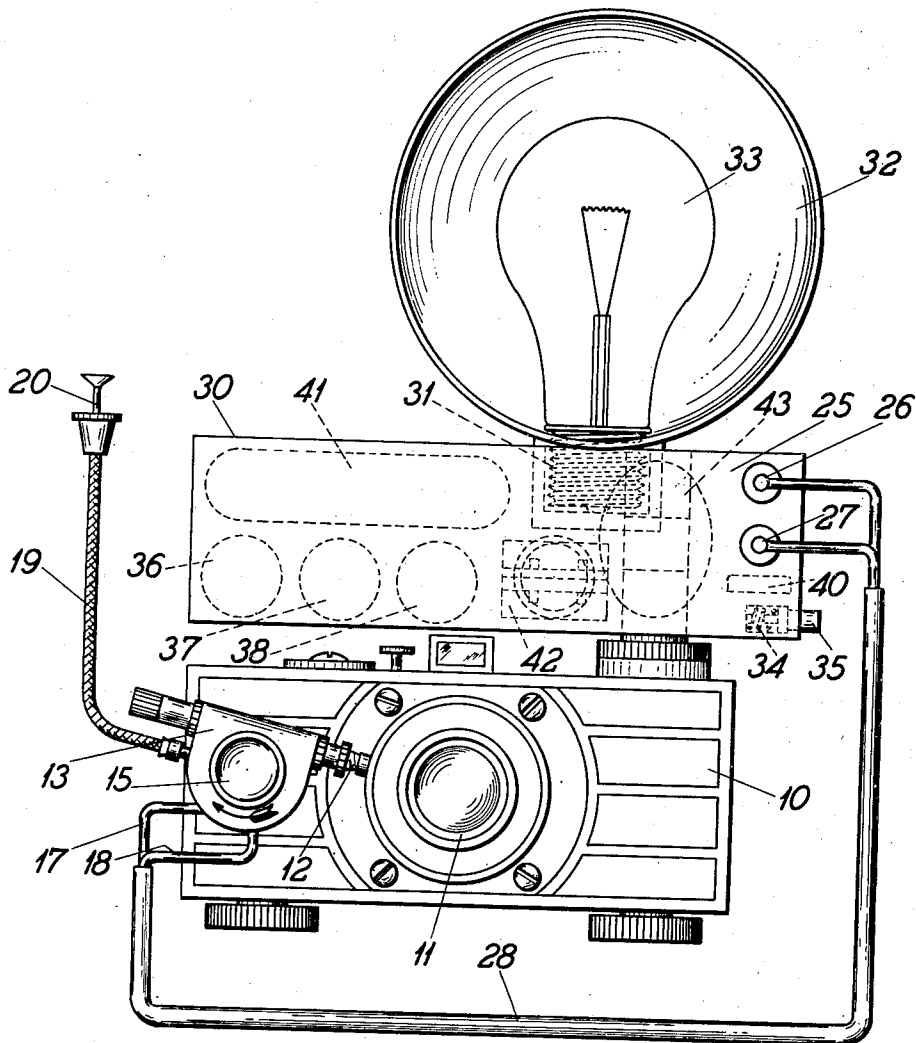


FIG. 1

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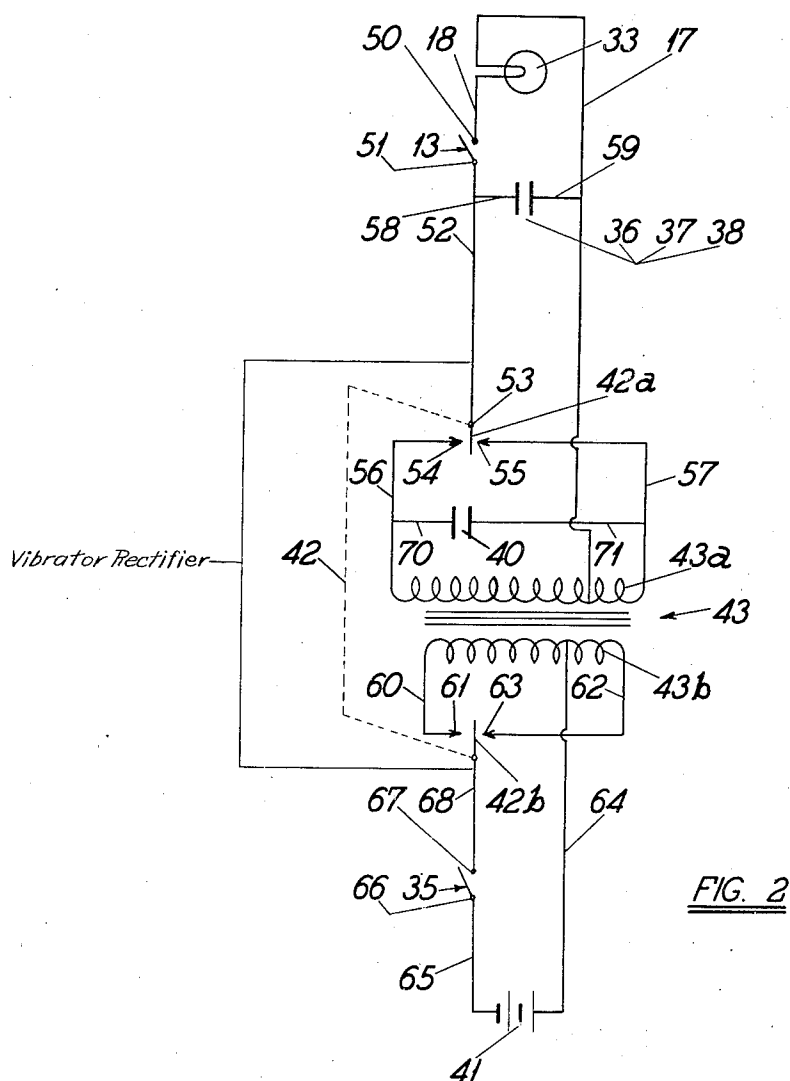
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UNITED STATES PATENT OFFICE

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ATTACHMENT FOR CAMERAS

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5 Claims. (Cl. 67—29)

This invention relates to an attachment for cameras, and more particularly to a device for synchronizing a flash unit with the operation of a camera shutter to facilitate photography in an otherwise unsatisfactory light.

The primary object of this invention is the provision of a flash unit adapted to utilize a conventional electric bulb which may be utilized a number of times rather than the single flash at present permitted of a flash bulb.

A secondary object is the provision of means to control an electrolytic condenser to charge the same to permit imparting an overload to a conventional electric bulb to produce a flash therefrom.

Other objects will in part be obvious and in part be pointed out hereinafter.

The invention accordingly resides in the combination of elements, arrangements of parts, and features of construction all as will be more fully pointed out hereinafter and disclosed in the accompanying drawings wherein:

Fig. 1 is a front elevational view of a camera provided with the attachment of the instant invention, and

Fig. 2 is a schematic wiring diagram showing the control circuit therefor.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Having reference now to Fig. 1, there is generally indicated at 10 a camera of any desired type provided with a shutter 11, a lens (not shown), and a shutter operating member 12. Attached to the shutter operating member 12 is a shutter synchronizing switch 13 of a known type provided with a knob 15, which, in turn, is provided with a brush type switch (not shown), adapted to close a contact between wires 17 and 18 for a purpose to be hereinafter described. The rotation of knob 15 is controlled by a cable release 19 having a conventional button 20 for operating the same. Thus it will be seen that pressure on button 20 operates shutter 11 of the camera and simultaneously closes a circuit between wires 17 and 18.

Secured to camera 10 in any desired manner, is a photo flash unit 25 provided with a pair of terminals 26 and 27 to which wires 17 and 18 lead respectively through a cable 28. Unit 25 is comprised of a casing 30 containing a socket 31 attached to which is a reflector 32 and in which is placed a conventional electric bulb 33 which may be of any desired capacity, illustratively, as 60 watts or 100 watts. Casing 55

30 contains a switch 35 adapted to be depressed manually from open circuit position to closed circuit position and returned upon release thereof from closed to open circuit position by a spring 34. Likewise, container 30 contains 3 microfarad 450 volt electrolytic condensers 36, 37 and 38 connected in series, as will be pointed out hereinafter, and a condenser 40. A conventional flashlight battery 41 is also provided as is a double rectifying vibrator type switch 42 and a step up transformer 43.

The operation of the mechanism hereinbefore set out may be best understood by having reference to the wiring diagram shown in Fig. 2.

From light bulb 33, wire 17 leads to the high voltage secondary 43a of transformer 43. Wire 18 leads to one contact 50 of switch 13 which is also provided with a second contact 51 from which wire 52 leads to terminal 53 of one portion, 42a, of double vibratory switch 42. Portion 42a is adapted alternately to engage contacts 54 and 55. From contact 54, wire 56 leads also to secondary 43a of transformer 43. Similarly from contact 55, wire 57 leads to the opposite side of secondary 43a. A wire 58 leads from wire 52 to condensers 36, 37 and 38 and an additional wire 59 leads to the opposite side of said condensers from wire 17. From the primary 43b of transformer 43 a wire 60 leads to one contact 61 adapted to be engaged by the second portion, 42b, of switch 42. Similarly from the opposite side of primary 43b, a wire 62 leads to a corresponding contact 63, likewise adapted to be engaged by member 42b. Similarly from an intermediate point of primary 43b, a wire 64 leads to one side of battery 41 from which a wire 65 leads to one terminal 66 of switch 35, of which the other terminal, 67, is connected by a wire 68 to member 42b.

The operation of the device should now be readily understandable. Closure of switch 35 causes energization of vibratory switch 42 which causes portions 42a and 42b to vibrate respectively between contacts 54 and 55 and contacts 61 and 63. The dotted line in Figure 2 illustrates diagrammatically a mechanical connection between switch members 42a and 42b. This mechanical connection is preferably oscillated by an electromagnetic vibrator of the type usually employed in vibrator rectifier apparatus to cause synchronized movements of switch portions 42a and 42b.

It is to be understood that the vibrator rectifier apparatus embraced by the bracket in Figure 2 may be of any conventional type wherein

the low voltage primary of a transformer is repeatedly interrupted and reversed and the high voltage secondary is rectified, such as in the usual vibrator rectifiers employed in automobiles for energizing radio receivers and the type disclosed in United States Letters Patent No. 1,920,150. Timed manual closure of switch 35 establishes a circuit from battery 41, wire 55, contacts 59 and 57, wire 58, alternately contacts 51 and 53, and similarly alternately wires 59 and 62, to primary 43b thence through wire 64 to battery 41. In this manner, the charge is built up in primary 43b which is stepped up in secondary 43a. The increased charge of primary 43b which, it is to be noted, is by the vibratory action of member 42b, translated to direct current, due to the alternate positive and negative circuits, established in a known manner, passed through a circuit comprised alternately of secondary 43a, wire 56, contact 54, member 42a, terminal 53, wire 52, wire 58, condensers 36, 37 and 38, wire 59, wire 17, back to secondary 43a; and secondary 43a, wire 57, contact 55, member 42a, terminal 53, wire 52, wire 58, condensers 36, 37 and 38, wire 59 and wire 17; into the condensers 36, 37 and 38 where it is built up into a charge of approximately 450 volts, depending upon and varying somewhat with the length of time the switch 35 is depressed. When the condensers 36, 37 and 38 have achieved their approximate capacity, the manual switch 35 is released and the device is now fully charged and ready for operation. When such operation is desired, push button 20 is depressed which closes switch 13 and establishes an overload circuit through bulb 33, such circuit being as follows:

Condensers 36, 37 and 38, wire 58, switch 13, including contacts 51 and 59, wire 18, the filament of bulb 33, wire 17, wire 59 and back to the condensers. A wire 70 leads from wire 56 to condenser 40 and wire 71 leads from wire 57 to the opposite side of condenser 40. Thus it will be seen that condenser 40 is connected in parallel with the secondary 43a of transformer 43 and its sole purpose is to provide a means of absorbing surges transmitted to the secondary, in a known manner, to preclude overloading or burning out of the secondary 43a.

This momentary overload creates a brilliant flash in bulb 33 sufficient for any desired photographic necessity in either a dim light or in darkness.

Now from the foregoing it will be seen that there is herein provided a device which accomplishes all the objects of this invention and others including many advantages of great practical utility.

As many embodiments may be made of this inventive concept and as many modifications may be made in the embodiment herein shown and described, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted merely as illustrative and not in a limiting sense.

What is claimed and desired to be secured by Letters Patent is:

1. In a camera having a shutter and shutter operating means, a photographic light attachment for said camera capable of repeated use and comprising an incandescent lamp of relatively low capacity, a condenser, a battery, means to charge said condenser from said battery to a relatively high voltage, said means comprising a transformer connected to the battery and the condenser and vibrating means for interrupting the current from said battery and rectifying the voltage across said condenser and means including a switch actuated by said shutter actuating means to discharge said condenser through said lamp for momentarily overloading said lamp above its normal capacity and producing a brilliant flash.

2. A self contained flashlight attachment for use with a camera having a shutter, said attachment comprising a battery, a transformer having its primary winding connected to said battery, a condenser connected across the secondary winding of said transformer, means for periodically reversing the current in the primary winding, means for rectifying the secondary voltage, a lamp and means for simultaneously actuating the camera shutter and discharging the condenser through said lamp.

3. A self contained flashlight attachment for use with a camera having a shutter, said attachment comprising a battery, a transformer having its primary winding connected to said battery, a condenser connected across the secondary winding of said transformer, means for periodically reversing the connection between the battery and the transformer, means for simultaneously reversing the connection between the condenser and the transformer, a lamp and means for simultaneously actuating the camera shutter and discharging the condenser through said lamp.

4. In a camera having a shutter, means for actuating said shutter to make an exposure, a light source, a condenser, a battery, means for charging said condenser from said battery comprising a transformer connected to said battery and said condenser, and vibrating means interrupting the current from said battery and rectifying the current to said condenser, and means for simultaneously operating said shutter and discharging said condenser through said light source.

5. In a camera having a shutter, a light source, a condenser, a battery, means for charging said condenser comprising a step-up transformer, having its primary connected to said battery and its secondary connected to said condenser, means for periodically interrupting the primary current and means for rectifying the secondary voltage, actuating means for operating the shutter to make an exposure, and means for simultaneously discharging said condenser through said light source.

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