E. GOLDENSKY & P. H. BARTLETT.

PHOTOGRAPHIC APPARATUS.

APPLICATION FILED AUG. 17, 1912.

Patented Mar. 3, 1914.

1,088,695.

FIG. 1.

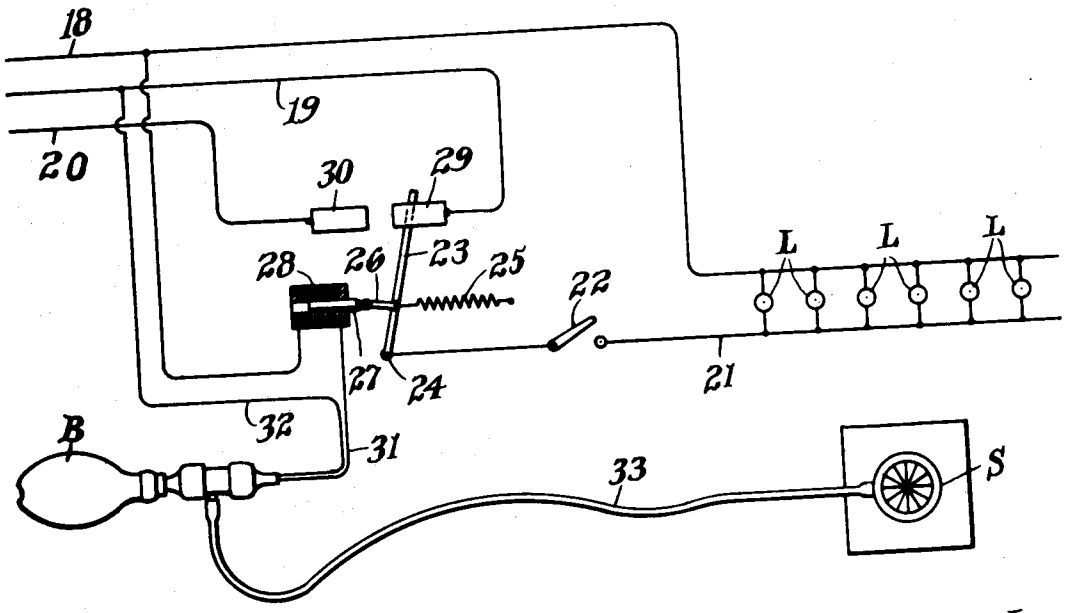


FIG. 2.

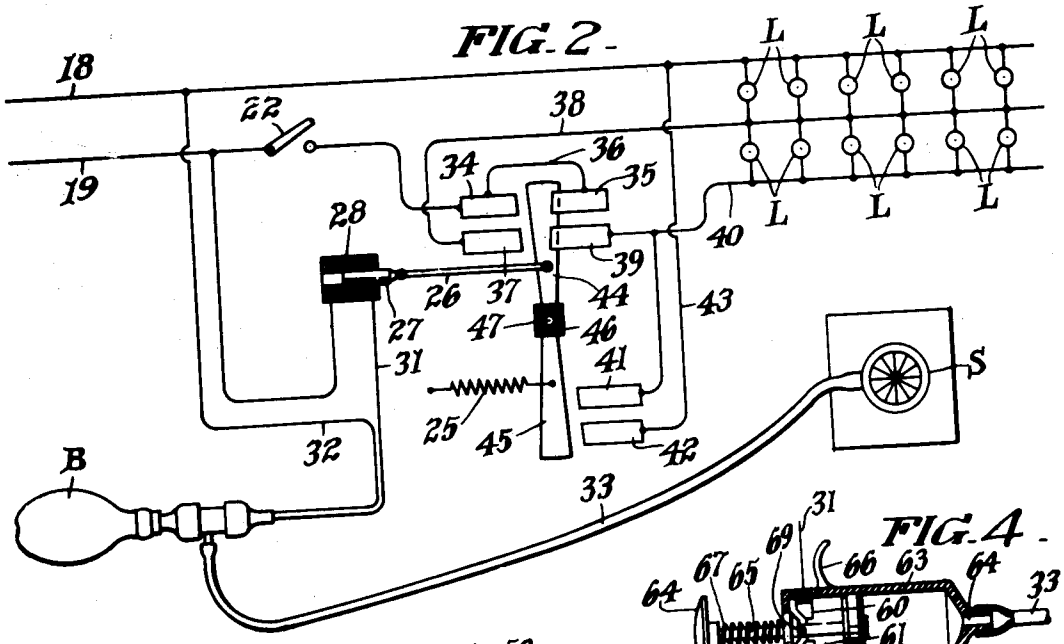


FIG. 3.

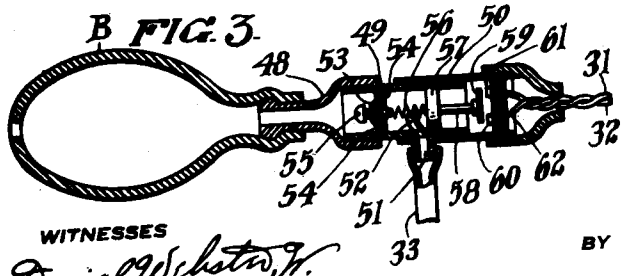
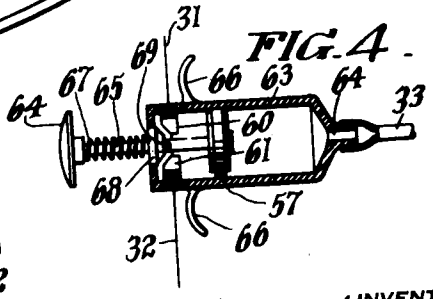


FIG. 4.



WITNESSES

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PHOTOGRAPHIC APPARATUS.

1,088,695. Specification of Letters Patent. Patented Mar. 3, 1914.

Application filed August 17, 1912. Serial No. 715,557.

To all whom it may concern:

Be it known that we, ELIAS GOLDENSKY and PERCY H. BARTLETT, citizens of the United States, residing in Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented new and useful Improvements in Photographic Apparatus, of which the following is a specification.

Our invention relates to photographic apparatus and a system particularly adapted to studio photography, whereby the photographer is independent of daylight and depends upon artificial lighting of his subjects.

Our invention resides in a system involving sources of light whereby the subject to be photographed is first lighted by relatively low intensity sources and during the period of exposure of the sensitive plate or film these same sources emit light of greatly increased intensity. And in this connection our invention resides in means for simultaneously operating the camera shutter and increasing the voltage impressed upon the lamp terminals.

Our invention resides in the features hereinafter described and claimed.

For an illustration of some of the forms our invention may take reference is to be had to the accompanying drawings, in which:

Figure 1 is a diagrammatic view illustrating a system for increasing the voltage impressed upon the electric lamps at the time exposure is made. Fig. 2 is a diagrammatic view illustrating a modified system for the same purpose. Fig. 3 is a longitudinal sectional view through a bulb and contacting or switch apparatus. Fig. 4 is a longitudinal sectional view through a modified form of switching and shutter actuating apparatus.

Referring to Fig. 1, the wires 18, 19 and 20 represent the conductors of a "three wire" system, the conductor 19 being known as the neutral wire or conductor. The lamps L, preferably tungsten, tantalum, or other metallic filament incandescent lamps, or other incandescent lamps which will stand repeated subjection to voltage much higher than normal voltage, have terminals connected to the conductor 21, adapted to communicate through switch 22, with the movable contact lever 23, pivoted at 24, and normally held in the position shown by the spring 25, and connected by pivot link 26 to the core 27 of a solenoid whose winding is 28. Normally the contact lever 23 is in contact with the terminal 29 connected with the neutral conductor 19. The movable contact lever 23 is adapted to engage, as later explained, with contact terminal 30 in electrical communication with the conductor 20. The winding 28 of the solenoid has one of its terminals connected, for example, to the conductor 18 while its other terminal connects by conductor 31 with a switch, described later, whose other terminal connects by conductor 32 with the conductor 19. B represents a bulb, such as commonly used for actuating the shutter of a camera, such shutter being here indicated at S, tube 33 extending from the bulb to the shutter, as well understood in the photographic art.

The operation is as follows: When the subject is in position, the switch 22 is closed, whereupon the lamps L are subjected to the voltage existing between the conductors 18 and 19, for example 110 volts. These lamps then glow at their normal brilliancy and the subject becomes accustomed to this light before exposure is made. Upon pressing the bulb B the shutter S is opened, as well understood in the art, and simultaneously the conductors 31 and 32 are brought into electrical communication with each other, by mechanism such as later described, whereupon current will flow from conductor 18, through the solenoid winding 28, conductor 31, conductor 32, to the conductor 19, thus energizing the solenoid and causing its core 27 to be attracted toward the left, moving the lever 23 in opposition to spring 25 into engagement with contact 30, whereupon the lamps L will be subjected to voltage higher than their normal voltage, as for example 220 volts, this being, for example, the difference of potential between the conductors 18 and 20, and these lamps then glow at extremely high intensity and illuminate the subject sufficiently for short exposures. This increase in intensity of the lights coming from the lamps L, due to the fact that the lamps were previously glowing, does not startle the subject nor cause other conditions found disadvantageous as when making flash light exposures, as by flash powder. As soon as pressure upon the bulb B is released the shutter closes and the solenoid 28 is deënergized and the spring 25 restores the lever 23 to engagement with conductor 29, whereupon the

lamps L are again subjected to normal voltage. Then upon opening the switch 22 the current is entirely cut off from the lamps L.

In case a three wire system is not available, but only an ordinary two wire circuit is provided, the same result may be obtained by the system illustrated in Fig. 2. Here the conductors 18 and 19 are the current supply conductors, and from them the solenoid 28 is energized as described in connection with Fig. 1. The conductor 19 communicates through switch 22 with the contacts 34 and 35 electrically connected to each other by a conductor 36. The conductor 37 is connected to conductor 38 with which one terminal of each of the lamps L is electrically connected. A contact 39 is connected to conductor 40 to which the other terminals of some of the lamps are connected, the other terminals of the remaining lamps being connected to the conductor 18. The contact 41 is connected with conductor 40, and the contact 42 is connected through conductor 43 with conductor 18. The movable contact members 44 and 45 are insulated from each other by member 46 carrying the contacts 44 and 45 and pivoting them at 47. A spring 25 holds the members 44 and 45 normally in the position indicated in Fig. 2 and the pivoted link 26 connects these members 44 and 45 with the core 27 of the solenoid. The lamps L in this case may be 55 volt lamps, pairs of which are connected in series with each other between conductors 18 and 40, the different pairs being connected in parallel with each other between these conductors 18 and 40.

The operation is as follows: When the subject is in position, the switch 22 is closed, whereupon current will flow from conductor 18 through the pairs of 55 volt lamps in series to the conductor 40, through contact 39, member 44, contact 35, conductor 36, contact 34, to conductor 19, the difference in potential between conductor 18 and 19 being, for example, 110 volts. The lamps L burn therefore at their normal intensities because each lamp is then subjected to its normal potential difference, for example, 55 volts. When the bulb B is pressed, the shutter S is actuated and the conductors 31 and 32 brought into electrical communication with each other, as described in connection with Fig. 1. The solenoid 28 is now energized and it attracts its core 27 toward the left swinging the members 44 and 45 in a counter clockwise direction upon their pivot 47, causing contact 44 to leave contacts 35 and 39 and to engage contacts 34 and 37, contact 45 engaging contacts 41 and 42. Now current flows from conductor 18 through the upper set of lamps through conductor 38 to contact 37, through member 44 to contact 34, to conductor 19 with the result that the upper set of lamps is subjected to 110 volts, or twice their normal voltage. Simultaneously however current flows from conductor 18 through conductor 43, contact 42, member 45, contact 41, conductor 40, through the lower set of lamps L to conductor 38, contact 37, contact 44, contact 34, to conductor 19, thus subjecting this set of lamps to double voltage also. In consequence all the lamps glow with extreme intensity. And when the exposure is terminated by release of the bulb B the solenoid is deënergized and the spring 25 restores the members 44 and 45 to the positions shown in Fig. 2 where the lamps glow at their normal intensities.

As an illustration of one form of means for simultaneously making the exposure and energizing the solenoid 28, reference may be had to Fig. 3 where B is the bulb communicating with the hollow member 48 to which the tube 49 is attached. Movable longitudinally of and around the tube 49 is the tube 50 having the opening 51 communicating with the tube 33 extending to the shutter. Registering with the opening 51 is the elongated opening 52 in the wall of the tube 49, longitudinal and rotary adjustment of the tube 50 upon the tube 49 maintains these openings 51 and 52 in register, but changes the position of the tube 51 longitudinally of the tube 49. Within the tube 49 is secured the member 53 having apertures 54 and carrying the screw 55 to which is connected a spring 56 whose other end is connected to the piston or plunger 57 to which is secured a stem 58, preferably of insulating material, carrying the bridging contact 59 adapted to bridge the contacts 60 and 61 supported on the insulating member 62 fixed within the tube 50. The conductors 31 and 32 contact with the terminals 60 and 61 respectively. When the bulb B is pressed air pressure is exerted through the apertures 54 and through the tube 33 upon the shutter mechanism and simultaneously upon the plunger 57 which then moves toward the right, as viewed in Fig. 3, causing the contact 59 to bridge the contacts 60 and 61, thereby causing the energization of solenoid 28. Upon release of the pressure on the bulb B terminating the exposure, the spring 56 retracts the plunger 57 and therefore separates the contact 59 from contacts 60 and 61, causing deënergization of the solenoid 28. By the longitudinal adjustment of the tube 50 upon the tube 49 the time of travel of the plunger 57 before contact 59 engages contacts 60 and 61 may be adjusted. And the plunger 57 may be so positioned that contact 59 has engaged or almost engaged contacts 60 and 61 before it uncovers the port or opening 52 to allow air to pass through the tube 33 to actuate the shutter.

In Fig. 4 a cylinder 63 communicates through apertures 64 with the tube 33 ex-

tending to the shutter. The plunger 57 is moved in this cylinder 63 by pressure upon the head 64 upon the rod 65 to which the plunger 57 is attached, finger grips 66 being provided upon the cylinder 63 so that the device may be actuated by one hand. The motion of the plunger 57 is opposed by the spring 67. Surrounding the rod 65 is the contact 68 adapted to bridge the contacts 60 and 61 supported by and insulated from the cylinder 63, the contacts 31 and 32, as before, connecting with the contacts 60 and 61 respectively. When the head 64 is pressed toward the right the plunger forces air ahead of it through tube 33 to actuate the shutter. And contact 68 engages contacts 60 and 61 to close the circuit of the solenoid, the plunger 57 and rod 65 continuing their movement, if necessary, after the engagement of these contacts, through the member 68. When the pressure upon the head 64 is released the spring 67 retracts the plunger and finally pin 69 carried by the rod 65 engages the member 68 and carries it away from contacts 60 and 61, causing deënergization of the solenoid.

While Figs. 3 and 4 give examples of means for simultaneously operating the shutter and closing the solenoid circuit, it is to be understood that we are not limited to these constructions, except where it is specifically stated in the claims; and it is to be understood that the contacting mechanism may be situated at the shutter and moved by the shutter mechanism itself when actuated either by bulb or any other means.

What we claim is:

1. The combination with an incandescent electric lamp, of a camera shutter, means for energizing said lamp at predetermined voltage, switching means for causing energization of said lamp at higher voltage, and means for simultaneously actuating said shutter and said switching means.

2. The combination with a plurality of incandescent electric lamps, of means for supplying current at different voltages, said lamps normally energized at a lower voltage, a camera shutter, and means for simultaneously actuating said shutter and subjecting said lamps to higher voltage.

3. The combination with a plurality of incandescent lamps, of a camera shutter, means for energizing said lamps at predetermined voltage, a switch for causing energization of said lamps at higher voltage, electro-magnetic means controlling said switch, a second switch controlling said electro-magnetic means, and means for simultaneously actuating said second switch and said camera shutter.

4. The combination with a plurality of incandescent lamps having filaments capable of withstanding repeated subjection to voltages higher than normal, of a camera shutter, switching means for subjecting said incandescent lamps to voltage higher than normal, and means for simultaneously actuating said shutter and said switching means.

5. The combination with a plurality of incandescent electric lamps, of a camera shutter, a three wire system of electric current supply, said lamps normally connected to conductors of said three wire system whereby said lamps are energized at predetermined voltage, means for transferring said lamps whereby said lamps are energized at higher voltage of said three wire system, and means for simultaneously actuating said shutter and said transferring means.

6. The combination with an electric lamp, of a camera shutter, a three wire system of electric current supply, said lamp normally connected to two conductors of said three wire system, switching means for transferring said lamp to another pair of conductors of said three wire system, and means for simultaneously actuating said shutter and said switching means.

7. The combination with an electric lamp, of a camera shutter, a switch for transferring said lamp from a source of lower voltage to a source of higher voltage, electro-magnetic means for actuating said switch, a second switch controlling said electro-magnetic means, and a bulb for simultaneously actuating said shutter and said second switch.

8. The combination with a three wire system of current supply, of a plurality of electric lamps normally connected between conductors of said system delivering current at low voltage, switching means for transferring said lamps to conductors of said system delivering current at higher voltage, electro-magnetic means for operating said switching means, a camera shutter, and means for simultaneously operating said shutter and said electro-magnetic means.

In testimony whereof we have hereunto affixed our signatures in the presence of the two subscribing witnesses.

ELIAS GOLDENSKY.
PERCY H. BARTLETT.

Witnesses:
ELEANOR T. MCCALL,
BEATRICE WHITNEY.