Feb. 6, 1934. S. KUCHARSKI 1,946,323

DEVICE FOR TAKING PHOTOGRAPHS IN SERIES

Original Filed July 16, 1929 2 Sheets-Sheet 1

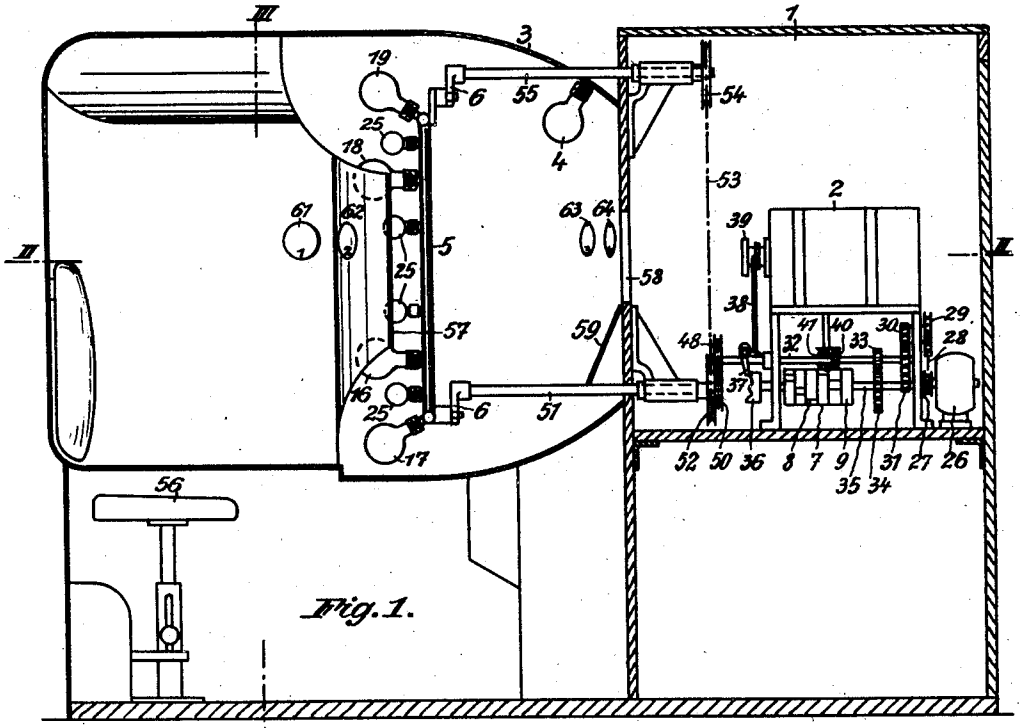


Fig. 1.

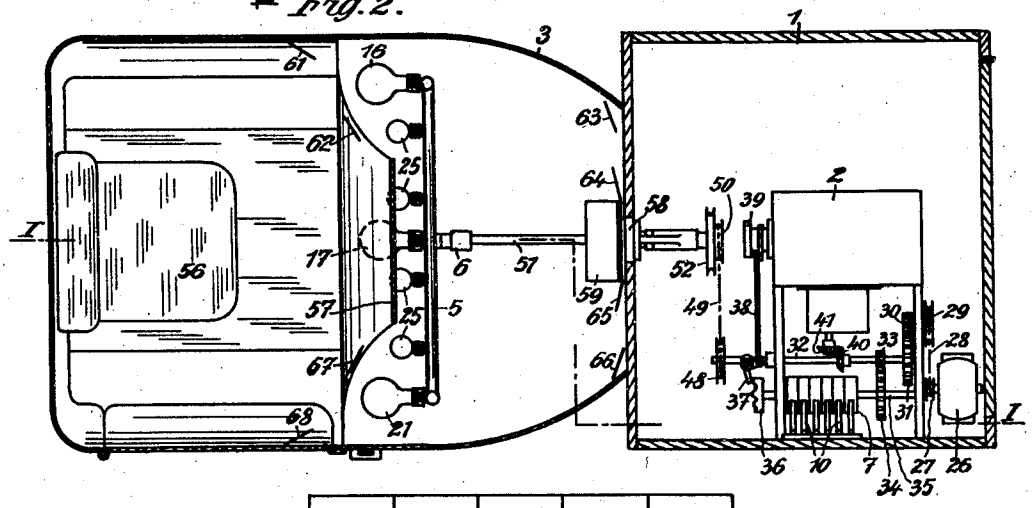


Fig. 2.

Fig. 6.

a	b	c	d	e
f	g	h	i	k

Inventor:
S. Kucharski,

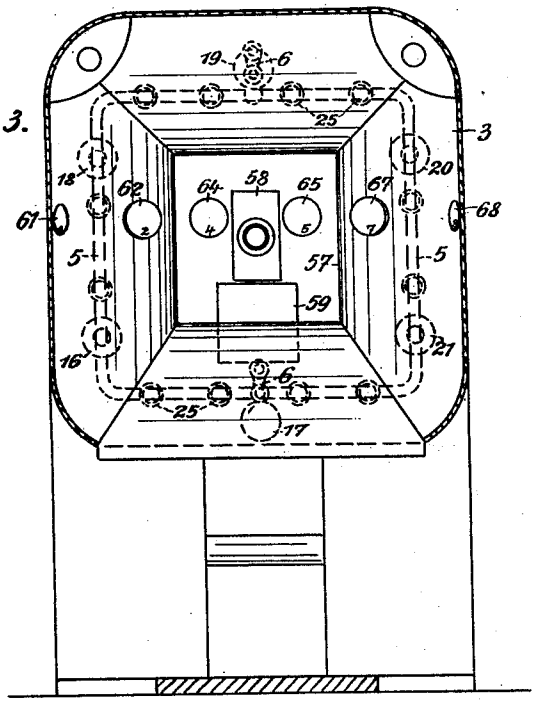
Attys.

Feb. 6, 1934. S. KUCHARSKI 1,946,323

DEVICE FOR TAKING PHOTOGRAPHS IN SERIES

Original Filed July 16, 1929 2 Sheets-Sheet 2

Fig. 3.



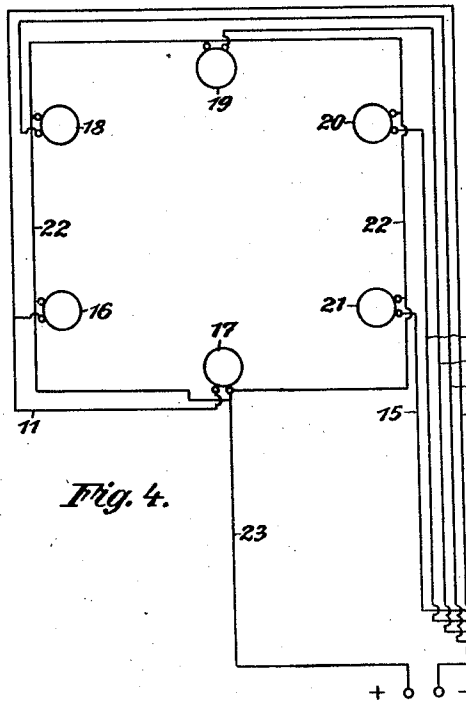
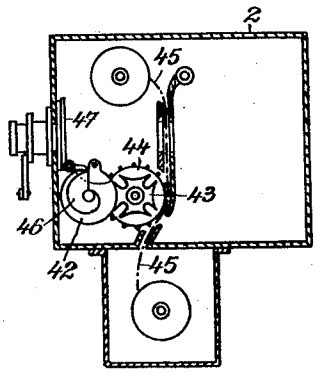


Fig. 4.

Fig. 5.



Inventor:
S. Kucharski,
Attys.

Patented Feb. 6, 1934 1,946,323

UNITED STATES PATENT OFFICE

1,946,323

DEVICE FOR TAKING PHOTOGRAPHS IN SERIES

Stanislaus Kucharski, Berlin-Charlottenburg, Germany

Application July 16, 1929, Serial No. 378,722, and in Germany July 19, 1928. Renewed May 31, 1933

5 Claims. (Cl. 88—16)

The invention relates to an illuminating arrangement for taking photographs. The essential feature of the invention is, that a number of illuminating devices, lamps, reflectors, shadow-distributors and so forth are provided and that by an automatic switch arrangement always one part after the other of the existing illuminating arrangements is put into action, the object to be photographed, especially if a person, being illuminated successively by very different effects. During one certain kind of illuminating always one photograph is taken, thereby a series of photographs being produced which show the person to be photographed in different light-tones. By means of the invention photographs can be produced one after the other, which show the object and the person to be photographed respectively once illuminated by dispersed light from the side, another time illuminated by light from above at a steep angle, further by moderated light from below, such as proceeds from a fire place. It is advisable to print the photographs taken in the different lighting tones on one card, so that an especially good opportunity is offered to display quite clearly the effects of the different lightings on the character of the pictures. The object of the invention is also very suitable for stunt or joke photographs.

In the drawings:

Fig. 1 is a vertical cross section on the line I—I of Fig. 2.

Fig. 2 is a horizontal cross section on the line II—II of Fig. 1.

Fig. 3 is a vertical section on the line III—III of Fig. 1.

Fig. 4 is a diagrammatic showing of the wiring of the illuminating devices.

Fig. 5 is a horizontal section of the camera showing the feeding mechanism.

Fig. 6 is a diagrammatic showing of a card having a series of photographs printed thereon.

In the drawings a casing is marked 1, within which the camera 2 is arranged. To casing 1 a second casing or box 3 is attached in which the person intending to be photographed takes a seat and in which further the illuminating devices are arranged. The illuminating devices provided in the box 3 are partly fixed firmly as for instance the bulb 4, and partly they are fixed on a movable frame 5 which can be given a circular motion by means of cranks 6.

One part of the illuminating devices gives light continually whilst one whole series of photographs is being taken, whereas another part of these devices is switched on only temporarily in order to produce different lighting effects. In order to govern those illuminating devices which are not to work during the whole series of photographs to be taken, but which are to work only in taking one certain photograph of the series, a contact drum 7 is used (see Figs. 1, 2 and 4). The contact drum 7 is provided with contact plugs 8 and a contact ring 9 in the shape of model as shown. Opposite the contact plugs 8 and the contact ring 9 there are sliding brush-contacts 10 joined with wires 11, 12, 13, 14, 15. The wire 11 leads to the bulbs 16 and 17 fixed on the frame 5, wire 12 leads to the bulb 18, wire 13 to the bulb 19, wire 14 to the bulb 20 and wire 15 to the bulb 21. All these bulbs 16 to 21 are connected to the circuit connection 22 which is itself connected with one pole of a current supply system by the return-wire 23, whereas the other pole of the current supply system is connected by the wire 24 with that contact-brush 10 working together with ring 9 of the governing drum 7. The further bulbs 25 arranged on the frame 5 are not governed by the switch drum 7, but burn continually whilst one series of photographs is being taken.

It is expressly pointed out that the invention is not at all restricted to illuminating devices being composed always of single bulbs only, but this method has been chosen in the drawings merely in order to show the idea of the invention more clearly in the drawings.

To set the switch drum 7 in motion, there is a motor 26 which drives a belt pulley 29 by means of a belt pulley 27 and of a belt 28. This belt pulley 29 again turns a pinion wheel 30 moving a cogged wheel 31 which is placed on a shaft 32 provided with a pinion 33 which gears into another cogged wheel 34 firmly fixed to the shaft 35. This shaft 35 bears at the same time the switch drum 7 and further a cam disk 36, the governing surface of which influences a lever 37. The latter is connected by a rod 38 with a diaphragm regulating the size of aperture of the lens 39. (This diaphragm is not shown in the drawings.)

On the shaft 32 there is fixed firmly a conical wheel 40 besides the pinion drive. The conical wheel 40 gears into a second conical wheel 41. The second conical wheel 41 puts in motion by means of a combination of rods the tappet-disc 42 having its pivots inside the camera casing (see Fig. 5) and turning the Maltese cross 43 by periodic drives in the well known manner. On the shaft of the Maltese cross 43 there is fixed firmly the cogged drum 44, the teeth of which gear into the perforations of the sensitive film 45. The disk 42 is further provided with a spiral-formed cam 46

which puts in motion a covering disc 47. This disc 47 prevents the light from influencing the film in the intervals between the taking of two photographs, when the film band is moved forward for another section.

At the end of the shaft 32 there is fixed a belt pulley 48 putting in motion the belt pulley 50 by means of a belt 49. The belt pulley 50 is fixed on one end of the shaft 51, whereas the other end of this shaft bears the lower crank 6. A second belt pulley 52 arranged on the shaft 51 is connected by a belt 53 with a belt pulley 54 fixed firmly to the shaft 55. The shaft 55 puts in motion the upper crank 6 of the frame 5.

Inside the box 3 there is a place to sit with a seat the height of which can be adjusted. The person to be photographed takes his place on this adjustable seat. Between this person and the camera taking the photographs in series the frame 57 is arranged which can be made of transparent or translucent glass pearls or beads or other translucent or transparent materials. Furthermore a mirror 59 is provided below the opening 58 in the front wall of the casing 1. The purpose of this frame 57 and of the mirror 59 will be explained in more detail below. Between the rims of the frame 57 and the wall of box 3 there are arranged gauze curtains and the like in order to prevent the person to be photographed from being dazzled by the illuminating devices arranged behind this gauze. Finally there are eight small mirrors 61, 62, 63, 64, 65, 66, 67 and 68 provided within the box, the purpose of which is also explained below in more detail.

The device constructed in accordance with the invention works as follows:

The whole arrangement is set in motion by the motor 26. This motor can be switched on either by a hand switch or by a "coin in the slot" automatic device and can be switched off again in the same way. As soon as the motor runs the governing drum 7 is revolved, so that the bulbs 16 and 17 arranged in one group and afterwards the bulbs 18, 19, 20 and 21 are successively lighted. Always as soon as one bulb or one group of bulbs respectively is burning, one photograph is taken. In consequence of the different arrangement of the bulbs burning at different times a continual change of lighting is effected. At the same time with the governing drum 7 also the Maltese cross device for the periodical moving forward of the film is put in motion as well as the shutter of the objective lens and the diaphragm of this lens by means of the motor. The motion is effected in such a manner that in the moment of a new lighting effect being switched on always an unexposed section of the film is also in a position ready for taking a new photograph. In order to adapt the exposure to the changing degree of light the aperture of the lens is changed automatically by the governing parts 35, 36, 37 and 38.

The movability of the frame 5, on which one part of the illuminating devices is fixed, is intended to produce softened light effects. By the method of arranging the frame 57 and the mirror 59 the purpose is realized that the person whose photographic portraits are to be taken, can assume without difficulty the right position before the camera. The person to be photographed and sitting on the chair needs only to observe his position of body in the mirror which reproduces also the surroundings of the frame and thereupon needs only to bring himself in such an attitude that his reflection in the glass shows the desired position within the frame. The other arranged small mirrors 62 to 68 offer a possibility to the photographed person to keep that direction of view during the different exposures which is most suitable for each picture. The person to be photographed needs only to look successively in the mirrors having a continuous numbering, in order to have the most suitable position of the head in the single pictures.

A certain series of photographs having been taken the apparatus is switched off. The exposed series of pictures can then be developed in any automatic or non-automatic developing device.

The most suitable manner of printing is to have the pictures printed on one car together as shown in Fig. 6 by an example. Copying the single pictures taken in different lighting effects on one card makes it easier to compare the single photographs with each other. As to the card shown in Fig. 6 ten pictures are supposed in this case to be copied on same. Only 5 different lighting effects being governed by the switch drum in the shapes of model described as examples, on these ten photographs printed on one card each tone of lighting can be found on two pictures. In order to get nevertheless 10 different pictures one should take care that the attitude of the person to be photographed is changed between both photographs taken with the same lighting effect.

It can be understood without difficulty that the invention is not at all restricted to the shown examples of models, but numerous modifications are possible. For example the groups regulated by the governing drum and put in action successively can be formed also entirely or partly of fixed and immovable bulbs. Further the method can be put into practice according to the invention by use of such illuminating devices which are moved from one place to the other between the single exposures, thereby not always other bulbs being used in order to produce the different illuminating effects, but continually the same bulbs, only after their position has been changed.

I claim:

1. A device for producing photographic pictures in series, comprising, in combination, a camera, means for feeding successive sensitive surfaces to said camera, illuminating devices arranged on different sides of the person to be photographed, means for actuating successively various of the illuminating devices, and means for simultaneously operating said feeding means and actuating means so that the illumination on the person to be photographed is changed as each new sensitive surface is exposed in the camera.

2. A device for producing photographic pictures in series, comprising, in combination, a camera, means for feeding successive sensitive surfaces to said camera, illuminating devices arranged on different sides of the person to be photographed, means for actuating successively various of the illuminating devices, movable supports carrying said illuminating devices, means for moving said supports, and means for simultaneously operating said feeding means and actuating means so that the illumination on the person to be photographed is changed as each new sensitive surface is exposed in the camera.

3. A device for producing photographic pictures in series, comprising, in combination, a camera, means for feeding successive sensitive surfaces to said camera, illuminating devices arranged on different sides of the person to be photographed, means for actuating successively

various of the illuminating devices, a movable frame on which some of said illuminating devices are mounted, cranks connected to said frame, driving shafts connected to said cranks, means for rotating said driving shafts to move said frame, and means for simultaneously operating said feeding means and actuating means so that the illumination on the person to be photographed is changed as each new sensitive surface is exposed in the camera.

4. A device for producing photographic pictures in series, comprising, in combination, a camera, means for feeding successive sensitive surfaces to said camera, illuminating devices arranged on different sides of the person to be photographed, means for actuating successively various of the illuminating devices, an adjustable diaphragm in said camera, means controlled by said actuating means for adjusting the aperture of said diaphragm, and means for simultaneously operating said feeding means and actuating means so that the illumination on the person to be photographed is changed as each new sensitive surface is exposed in the camera.

5. A device for producing photographic pictures in series, comprising, in combination, a camera, means for feeding successive sensitive surfaces to said camera, illuminating devices arranged on different sides of the person to be photographed, means for actuating successively various of the illuminating devices, means for simultaneously operating said feeding means and actuating means so that the illumination on the person to be photographed is changed as each new sensitive surface is exposed in the camera, a frame between the camera and the person to be photographed, and a mirror between the frame and the camera to be observed by the person to be photographed through said frame, whereby the person to be photographed may locate himself with respect to the camera and frame.

STANISLAUS KUCHARSKI.